

56th Annual National Conference of

NUTRITION SOCIETY OF INDIA

Theme: Transdisciplinary Approaches in Addressing Nutrition Challenges

14th - 15th November, 2024



Programme, Proceedings & Abstracts



॥वसुधैव कुटुम्बकम्॥

Venue:

**Symbiosis School of Culinary Arts and
Nutritional Sciences (SSCANS)**

**Faculty of Medical and Health Sciences (FoMHS),
Symbiosis International (Deemed University), Pune,
Maharashtra, India 412 115**

NUTRITION SOCIETY OF INDIA

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Presidential Address

Dr. Sarath Gopalan

President, Nutrition Society of India, India

Dear Colleagues,

In my capacity as the National President, Nutrition Society of India, I am honoured to be a part of this 56th Annual Conference of NSI and have been very closely involved in many aspects pertaining to this Conference being held from November 13-15, 2024 at the prestigious Symbiosis University in Pune. Individuals may take the initiative or provide appropriate guidance but it is ultimately a team effort which contributes to the outcome of a Conference and this Conference is no exception. All of us who have been involved in the organization of this Conference and designing the Scientific Programme have worked tirelessly for several months to bring this Conference to fruition and make it memorable!

As the theme of the Conference suggests – **“Transdisciplinary Approaches in Addressing Nutritional Challenges”**, a very sincere effort has been made by the Local Organizing Committee as well as the Scientific Committee of this Conference to bring all the stakeholders involved in Nutrition under one roof! The three pre-Conference Workshops are addressing different aspects but all have a common link – Nutrition. The understanding of the Gut Microbiome and its relation to Nutrition and Health, Clinical and hospital – based Nutrition and culinary aspects are all important and are being discussed in the respective pre-Conference Workshops. In the Main Conference, panel discussions, debates, Orations and original research presentations have all contributed to the rich scientific content of the Programme. In keeping with the theme of this Conference, I urge our young nutrition students who will become the future nutrition scientists of tomorrow to have a broad understanding of the many dimensions of the science of Nutrition. We may be experts in specific areas of Nutrition but the acquisition of knowledge should not be restricted only to the area of expertise and this knowledge must be shared among colleagues and peers. In

the effort to promote awareness regarding Nutrition across India and to increase involvement, the NSI has been continuously striving to create new chapters in different regions of the country and activate the dormant ones. We have all tried to do our best to contribute to the success of this Conference and ensure that both the scientific content and local arrangements at the venue and stay arrangements for the participants are addressed as best as possible. Even then, if there are any shortcomings, please excuse us and we assure you that your well being and satisfaction is our top priority.

EAT WELL, EAT RIGHT AND HAVE A HEALTHY INNINGS IN LIFE!

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Symbiosis School of Culinary Arts and Nutritional Sciences (SSCANS)
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56th Annual National Conference of Nutrition Society of India (NSI) in association with SSCANS, SIU



13th to 15th November 2024, SIU Lavale campus, Pune
Transdisciplinary Approaches in Addressing Nutrition Challenges
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WORKSHOP II

Navigating Health Through Precision: Advancing Clinical Nutrition Assessment for different populations

Moderated by:

Day & Date: Wednesday, 13th November, 2024

Time	Session		
8.30 am to 9.00 am	Registration Venue: Connecting Plaza, SSCANS		
	PRE-CONFERENCE WORKSHOPS (Parallel Sessions)		
	PRE-CONFERENCE WORKSHOP- I Inner Balance: Exploring the Gut Microbiome's Impact on Health Venue: Symbiosis Studio Kitchen, SSCANS	PRE-CONFERENCE WORKSHOP- II Navigating Health Through Precision: Advancing Clinical Nutrition Assessment for different populations Venue: Multipurpose Hall, SSCANS	PRE-CONFERENCE WORKSHOP- III Savouring Health: Exploring the Link between Culinary Nutrition and Culinary Medicine Venue: Culinary Laboratories, SSCANS
9.00 am to 9.30 am	Common Inaugural Session Venue: Symbiosis Studio Kitchen, SSCANS Prof. Atul A Gokhale , <i>Director, Symbiosis School of Culinary Arts and Nutritional Sciences, SIU, Pune</i> Dr. Sarath Gopalan , <i>Senior Consultant Pediatric Gastroenterologist & Hepatologist, Madhukar Rainbow Children's Hospital, New Delhi, and National President, NSI</i>		

	Dr. SubbaRao M. Gavaravarapu , <i>Scientist F & Head, Nutrition Information, Communication & Health Education (NICHE) Division, ICMR -National Institute of Nutrition and National Secretary, NSI</i>	
9.30 am to 10.50 am	Nutrition in the Critically Ill Patient Chairperson: Dr. Urvi Shukla , <i>Intensivist (Anaesthesia), SUHRC, Pune</i> a) Intensivist Perspective- Dr. N. Ramakrishnan , <i>Critical Care Specialist, Apollo Hospitals, Chennai</i> b) Nutritionist Perspective- Dr. Bhuvaneshwari Shankar , <i>Senior Consultant Dietitian, Apollo Hospitals, Chennai</i>	Introduction of speakers: 10 minutes Session: 25 minutes Session: 25 minutes Discussion/QA: 15 minutes Felicitation of speakers: 5 minutes
10.50 am to 11.20 am	Tea Break	
11.20 am to 12.35 pm	Nutritional Intervention in the Patient with Kidney Disease a) Nephrologist's Perspective- Dr. Girish Kumthekar , <i>Nephrologist, SUHRC, Pune</i> b) Nutritionist Perspective- Ms. Zamurrud Patel , <i>Chief Dietician, Global Hospitals. Mumbai</i>	Introduction of speakers: 10 minutes Session: 25 minutes Session: 25 minutes Discussion/QA: 10 minutes Felicitation of speakers: 5 minutes
12.35 pm to 12.45 pm	Energizers	
12.45 pm to 01.45 pm	Lunch	
1:45 pm to 3.15 pm	Hands on Session: Enteral and Parenteral Nutrition Dr. N. Ramakrishnan , <i>Critical Care Specialist, Apollo Hospitals, Chennai</i> Dr. Bhuvaneshwari Shankar , <i>Senior Consultant Dietitian, Apollo Hospitals, Chennai</i> Dr. Radha R Chada , <i>Lead Consultant, AIG, Hyderabad</i> Dr. Vishwajit Karandikar ,	Number of workstations = 3 For each workstation: 30 minutes

	<i>Business Head, Parenteral Nutrition Fresenius Kabi, Pune</i>	
3.15 pm to 5.30 pm (Tea break 3:45 pm to 4 pm)	Hands on Workstations: Anthropometric Assessment Dr. Mansi Patil, <i>Chief Program Officer, IAPEN Hypertension Core Group, Pune</i> Dr. Shilpa Varma, <i>Chief Clinical Nutritionist, Bellevue MultiSpeciality Hospital, Mumbai</i> Dr. Datta Patel, <i>HoD, Nutrition & Dietetics, D. Y. Patil University, Mumbai</i>	Community-based screening Session: 20 minutes Hands-on training: 20 minutes Clinical/critical care screening (adults) Session: 20 minutes Hands-on training: 20 minutes Pediatric screening Session: 20 minutes Hands-on training: 20 minutes



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WORKSHOP III

Savouring Health: Exploring the Link between Culinary Nutrition and Culinary Medicine

Moderated by: Prof. Atul Gokhale

Day & Date: Wednesday, 13th November, 2024

Time	Session		
8.30 am to 9.00 am	Registration Venue: Connecting Plaza, SSCANS		
	PRE-CONFERENCE WORKSHOPS (Parallel Sessions)		
	PRE-CONFERENCE WORKSHOP- I Inner Balance: Exploring the Gut Microbiome's Impact on Health Venue: Symbiosis Studio Kitchen, SSCANS	PRE-CONFERENCE WORKSHOP- II Navigating Health Through Precision: Advancing Clinical Nutrition Assessment for different populations Venue: Multipurpose Hall, SSCANS	PRE-CONFERENCE WORKSHOP- III Savouring Health: Exploring the Link between Culinary Nutrition and Culinary Medicine Venue: Culinary Laboratories, SSCANS
9.00 am to 9.30 am	Common Inaugural Session Venue: Symbiosis Studio Kitchen, SSCANS Prof. Atul A Gokhale , <i>Director, Symbiosis School of Culinary Arts and Nutritional Sciences, SIU, Pune</i> Dr. Sarath Gopalan , <i>Senior Consultant Pediatric Gastroenterologist & Hepatologist, Madhukar Rainbow Children's Hospital, New Delhi, and National President, NSI</i>		

11.20 am to 12.35 pm	<p>Culinary Medicine 11.20 am to 11.50 am</p> <p>Chef. Shailendra Kekade, <i>General Manager and Executive Chef, Stone Water Grill, Pune</i></p> <p>Dr. Manjari Chandra, <i>Nutritionist, and Founder of Manjari Wellness, New Delhi</i></p> <p>Use of Nutrient-dense ingredients: 11.50 am to 12.15 pm</p> <p>Sponsored Session 1- Turkish Hazelnuts</p> <p>Dr. Naaznin Husein, Nutrition Specialist, Mumbai</p> <p>Sponsored Session 2- American Pistachios</p> <p>Exploring nutrient-dense ingredients that provide a high concentration of essential vitamins, minerals, and other beneficial compounds with relatively few calories like nuts, seeds, greens and lean proteins.</p> <p>Ingredient and culinary myth busting- 12.15 pm to 12.45 pm</p> <p>Chef Shailendra Kekade, Dr. Megha, and Dr. Manjari Chandra</p> <p>The world of cooking is often surrounded by myths and misconception related to cooking and debunk these myths to help you make informed choices in your kitchen, enhancing both flavour and health in your dishes.</p>	<p>Introduction of speakers: 10 minutes</p> <p>Session: 30 minutes</p> <p>Session: 20 minutes</p> <p>Session: 30 minutes</p>
12.35 pm to 12.45 pm	Energizers	
12.45 pm to 01.45 pm	Lunch	

1:45 pm to 3.45 pm	Chef Nilesh Limaye, and Chef Rizwan Yargatti, Mr. Keval Jadhav-Diet Club, Pune Emphasis on the link between theory and practice through hands-on meal preparation sessions that focus on therapeutic diets.	
4.15 pm to 4.45 pm (Tea break 3:45 pm to 4 pm)	Sustainable Eating Chef Dr. Parvinder Bali, and Dr Megha How to incorporate locally sourced, seasonal ingredients into a healthy diet, promoting sustainability alongside health. Food and Lifestyle Medicine Dr Megha and Dr. Manjari Chandra Exploring how diet fits into broader lifestyle changes that can lead to improved health outcomes, including exercise, stress management, and mindfulness.	
5.15 pm to 5.30 pm	Closing remarks and Felicitation of speakers	



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MAIN CONFERENCE

Day & Date: Thursday, 14th November, 2024

8.30 am to 9.30 am	Registration Venue: QMB building Hilltop campus
9.30 am to 10.45 am	Inaugural function Venue: SIU Auditorium Welcome address: Prof. Atul A Gokhale, <i>Director,</i> <i>Symbiosis School of Culinary Arts and Nutritional Sciences, SIU, Pune</i> Overview of the Conference: Dr. Radhika Hedao, <i>Assistant Professor, SSCANS, SIU, Pune, Convenor Pune Chapter and Organising Secretary, NSI</i> Address by ProVost: Dr. Rajiv Yeravdekar, <i>ProVost, FoMHS, Symbiosis International (Deemed University), Pune</i>

	<p>Address by Pro-Chancellor: Dr. Vidya Yeravdekar, <i>Pro-Chancellor, Symbiosis International (Deemed University), Pune</i></p> <p>Address by Chancellor: Prof. (Dr.) S.B. Mujumdar, <i>Founder and President, Symbiosis, Chancellor, Symbiosis International (Deemed University), Pune</i></p> <p>NSI Secretary Report: Dr. SubbaRao M. Gavaravarapu <i>Scientist F & Head, Nutrition Information, Communication & Health Education (NICHE) Division, ICMR -National Institute of Nutrition and National Secretary, NSI</i></p> <p>Presidential Address: Dr. Sarath Gopalan, <i>Senior Consultant Pediatric Gastroenterologist & Hepatologist, Madhukar Rainbow Children's Hospital, New Delhi, and National President, NSI</i></p> <p>Release of Souvenir Book: Invited Esteemed Dignitaries, NSI & SIU Leadership</p> <p>Vote of Thanks: Dr. Kavitha Menon, <i>Professor and Head Nutrition and Dietetics Program, Symbiosis School of Culinary Arts and Nutritional Sciences, SIU, Pune</i></p>
10.45 am to 11.00 am	<p>Nutrition and Food Exhibition Inauguration Venue: SIU Foyer</p> <p>Prof. Atul A Gokhale, <i>Director, Symbiosis School of Culinary Arts and Nutritional Sciences, SIU, Pune</i></p> <p>Dr. Sarath Gopalan, <i>Senior Consultant Pediatric Gastroenterologist & Hepatologist, Madhukar Rainbow Children's Hospital, New Delhi, and National President, NSI</i></p>
11.00 am to 11.30 am	Tea break

11.30 am to 1:00 pm	<p>PLENARY SESSION: Transdisciplinary Approaches in Addressing Nutritional Challenges Symposium Venue: SIU Auditorium</p> <p>Co-Chairs: 1. Dr. Raman Gangakhedkar, <i>Distinguished Professor, SIU</i></p> <p>2. Dr. Kamala Krishnaswamy, <i>Former Director, NIN & Past-President, NSI</i></p> <p>Speakers:</p> <p>Holistic Health: food and supplements as therapy</p> <p>Prof. Janusz Jankowski, <i>Honorary Clinical Professor, University College London (UCL), UK</i></p> <p>Transdisciplinary approach to defining nutrient and dietary requirements in Indian context</p> <p>Dr. Anura Kurpad, <i>Prof. Department of Physiology, St. John's Medical College & Founding Dean, St. John's Research Institute, Bangalore</i> <i>Senior Advisor, TATA Trusts, Mumbai.</i></p> <p>Mr. Sanjeev Kapoor, <i>Master Chef and Chair Professor, SIU</i></p> <p>Imperatives of the food system approach to meet nutritional needs of the growing population</p> <p>Mr. Pawan Agarwal, <i>CEO & Founder Food Future Foundation and former CEO FSSAI, New Delhi</i></p> <p>Dr. Mudit Kapoor, <i>Associate Professor, Indian Statistical Institute, New Delhi</i></p>	
1.00 pm to 1.45 pm	<p>Executive Council Meeting NSI</p> <p>Venue: SIU Conference Room</p>	<p>Poster Presentations</p> <p>Venue: SIU Auditorium Foyer</p>
1.45 pm to 2.30 pm	Lunch	
2.30 pm to 3.00 pm	Dr. Rajammal P Devadas Memorial Award Lecture:	

	Venue: SIU Auditorium Establishing Anthropometric and Bone health norms for Optimising Health and Nutrition in Indian children Dr. Anuradha Khadilkar, <i>Deputy Director, Hirabai Cowasji Jehangir Medical Research Institute, Pune</i>		
3.00 pm to 4.00 pm	Junior Young Scientists Award- Experimental Nutrition & Community Nutrition Venue: SIU Auditorium Chairs: 1. Dr. Asna Urooj <i>Prof. Food Science & Nutrition Department, University of Mysore, Mysore</i> 2. Dr. Kavitha Menon <i>Professor and Head Nutrition and Dietetics Program, Symbiosis School of Culinary Arts and Nutritional Sciences, SIU, Pune</i>	Partner Sessions: Venue: Convention Hall, SIU Chair: Dr. Raj Bhandari, <i>MD Senior Paediatrician, Govt Advisor, India</i> The Role of Sorghum and Millets in Reshaping Global Food and Agriculture Paradigms Mr. Nate Blum, <i>CEO, Sorghum United, Lincoln, NE, United States</i> Diabetes Epidemic in India and Role of Nutritional Supplements Dr. Amey Mane, <i>Senior General Manager Medical Affairs and Clinical Research, Sun Pharma, Mumbai</i> - UNICEF representative, India Healthy Fats: World Macadamia Organisation Dr. Naaznin Husein, <i>Nutrition Specialist, Mumbai</i>	Parallel Sessions: Venue: SIDTM Auditorium Learning from Japan: A blueprint for India's Health and Nutrition Future Chair and Anchor: Mr. Pawan Agarwal, <i>Director, Future Food Foundation, New Delhi</i> Keynote Address: Mr. Shigeyuki Takeuchi <i>Associate General Manager, Global Communications Department, Science Group, Ajinomoto</i> Panellist: Dr. Jagmeet Madan, <i>Professor, SVT College of Home Science, SNDT University for Women, Mumbai</i> Dr. Anuja Agarwala, <i>AIIMS, New Delhi</i> Ms. Neha Khara, <i>SENU Project, GIZ</i>
4.00 pm to 4.45 pm	Role of Artificial Intelligence in Nutrition Practice and Research Venue: SIU Auditorium		

	<p>Chair: Dr. M. Vishnu Vardhana Rao, <i>Former Director, National Institute of Medical Statistics, Delhi & Currently ICMR Chair on Medical Statistics and AI in Health</i></p> <p>Anchor: Dr. Prachi Kadam, <i>Assistant Professor, Symbiosis Institute of Technology, SIU, Pune</i></p> <p>Opening Remarks: Panellist: Dr. Ganesh Baglar, <i>Professor, Indraprastha Institute of Information Technology, New Delhi</i></p> <p>Mr. Yash Parashar, <i>Founder Mama Nourish, Mumbai</i></p> <p>Dr. Rashida Vapiwala, <i>Founder Label Blind, Mumbai</i></p>
4.45 pm to 5.15 pm	High Tea
5.15 pm to 6.00 pm	<p>Dr. Gopalan Memorial Oration Award Venue: SIU Auditorium</p> <p>Childhood stunting - should this remain as pervasive as before?</p> <p>Dr. Tahmeed Ahmed, <i>Executive Director, International Centre for Diarrheal Disease Research, Bangladesh</i></p>
6:00 pm to 6.45 pm	<p>Strategies for Reducing Diabetes Mellitus Venue: SIU Auditorium</p> <p>Prevention Strategies for Reducing Diabetes Prevalence</p> <p>Anchor: Brigadier (Dr.) Satyanand Kadloor, <i>SUHRC, SIU</i></p>

	<p>Dr. Chittaranjan Yajnik, <i>Director & Consultant - Diabetes Unit KEM Hospital, Pune</i></p> <p>Dr. Shailaja Kale, <i>Director, SKDC Diabetes and Speciality Clinics, Pune</i></p> <p>Ms. Ambika Nair, <i>Founder - Director, My Nutritional needs</i> <i>Chief Dietitian, Jupiter Hospital RD, CDE</i></p>
6.45 pm to 7.30 pm	<p>Cultural Program</p> <p>Venue: SIU Auditorium</p>
7.30 pm to 8.00 pm	Networking
8.00 pm onwards	<p>Gala Dinner</p> <p>Venue: Sandipani Lawns</p>

Day & Date: Friday, 15th November, 2024

8.00 am to 9.00 am	<p>Annual General Body Meeting (AGM- NSI)</p> <p>Venue: SIU auditorium</p> <p>NSI Executive Council and chapter convenors and members</p>	
9.00 am to 9.45 am	<p>Global Hunger Index. Does it depict Hunger and Malnutrition?</p> <p>Venue: SIU Auditorium</p> <p>Anchor: Dr. Sarath Gopalan, <i>Senior Consultant Pediatric Gastroenterologist & Hepatologist, Madhukar Rainbow Children's Hospital, New Delhi, and National President, NSI</i></p>	
	<p>For the Motion</p> <p>Dr. Seema Puri, <i>Former Professor Institute of Home Economics, University of Delhi, New Delhi</i></p>	<p>Against the Motion</p> <p>Dr. Vanisha Nambiar, <i>Professor, M. S. University of Baroda, Vadodara</i></p> <p>Dr. Anjali Rao,</p>

	Dr. Pratibha Dwarkanath, <i>Associate Professor, Division of Nutrition, St. Johns Research Institute, Bangalore</i>	<i>Senior Research Associate, CCDC, PHFI, New Delhi</i>
9:45 am to 10:00 am	Presentation of Dr. B.K. Anand Memorial Award Venue: SIU Auditorium Dr. Som Nath Singh, <i>Scientist 'F', Defence Institute of Physiology & Allied Sciences (DIPAS), New Delhi</i>	
10:00 am to 11:30 am	FREE COMMUNICATIONS- PARALLEL SESSIONS Senior Young Scientist awards – Community Nutrition Venue: SIU Auditorium <hr/> Chair: 1. Dr. Kumud Khanna, <i>Retired Director Institute of Home Economics Delhi University and Past President NSI</i> Co-Chair: 2. Dr. Avula Laxmaiah, <i>Past Secretary, Former Scientist G, ICMR-NIN</i> Senior Young Scientist awards – Experimental Nutrition Venue: SIU Auditorium Chairs: 1. Dr. Madhavan Nair, <i>Scientist 'F' (Retd.) ICMR-NIN, Hyderabad</i> 2. Dr. Sadhana Joshi, <i>Distinguished Professor and Head, Mother and Child Health Division in Interactive Research School for Health Affairs (IRSHA) of Bharati Vidyapeeth</i> Category: Community Nutrition- Session I Venue: Convention Hall Chair: Dr. Updesh Kumar, <i>NITI Ayog, New Delhi</i>	

Co-Chair:

Dr. Ruchika Ghanekar,

Director, Symbiosis Centre for Research and Innovation, SIU, Lavale, Pune

Category: Community Nutrition- Session II

Venue: SIDTM - Bhaskaracharya Convention Hall

Chair:

Dr. S. Kowsalya,

Registrar, Avinashilingam University for Women, Coimbatore &, Joint Secretary, NSI

Co-Chair:

Dr. Pranati Das,

Professor & Head

Department of Food Science & Nutrition, Assam Agricultural University, Jorhat, and EC Member, NSI

Category: Nutrition Education & Communication

Venue: SIU QMB Conference Hall

Chair:

Dr. M. Sylvia Subapriya,

Professor, Department of Food Science and Nutrition. Avinashilingam University, Coimbatore

Co-Chair:

Prof. (Dr.) Bani Tamber Aeri,

Associate Professor, Institute of Home Economics, University of Delhi

Category: Nutrition & Health Policy Research/ Sports Nutrition

Venue: SIU Conference Hall 1

Chair:

Dr. Santosh Jain Pasi,

Institute of Home Economics, University of Delhi, D1/1073, Sector D, Pocket-1, Vasant Kunj, New Delhi

Co-Chair:

Dr. Pratibha Dwarkanath,

Associate Prof. Division of Nutrition, St. John's Research Institute, Bangalore

Category: Clinical Nutrition

Venue: SIDTM Classroom - 1 (Ramanujan)

Chair:

Dr. Jagmeet Madan,

SVT College, Mumbai

Co-Chair:

Dr. Anita Jatana,

Apollo Hospitals, New Delhi

Category: Food Science & Nutrition -Session I

Venue: SIDTM Classroom 2 (Lilavati)

Chair:

Dr. Mamoni Das,

Prof. & Dean, Department of Food Science & Nutrition, College of Community Science, Assam Agricultural University, Jorhat

Co-Chair:

Dr. Mini Sheth,

Professor and I/C Head,

Department of Foods and Nutrition, Faculty of Family and Community Sciences, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat.

Category: Food Science & Nutrition -Session II

Venue: SIDTM Classroom 3 (C V Raman)

Chairs:

1. Dr Pulkit Mathur,

Professor and Teacher-in-Charge,

Dept. of Food and Nutrition, Lady Irwin College, New Delhi

2. Dr. A. Sundaravalli,

Professor, Department of Home Science and Nutrition and Dietetics, Mount Carmel College, Bangalore

Category: Experimental Nutrition

Venue: SIDTM- Classroom 4 (Gargi)

Chair: Dr. B. Dinesh Kumar,

Former Scientist G (Retd.), ICMR-NIN, Hyderabad &, Former Vice-President, NSI

Co-Chair:

Dr. Anuja Agarwala,

AIIMS, New Delhi

11:30 am to 11:45 am	Tea break
11.45 am to 12.15 noon	Poster Presentations
12.15 noon to 1:00 pm	Dr. S. G. Srikantia Memorial Oration Award Lecture: Venue: SIU Auditorium Foyer B-Vitamins and Age-Related Chronic Disorders Dr. G. Bhanuprakash Reddy, <i>Scientist G & Head, Biochemistry Division, ICMR-National Institute of Nutrition, Hyderabad</i>
1.00 pm to 1.15 pm	Benefits of Pistachio Nuts for Health Venue: SIU Auditorium Simran Chopra, <i>Founder Nourish with Sim</i>
1.15 pm to 2.15 pm	Lunch
2.15 pm to 2.30 pm	Partner session: Venue: SIU Auditorium Chair: Prof. Atul A Gokhale, <i>Director, SSCANS</i> Co-Chair: Dr. Prakash Rao, <i>Dy Director, Symbiosis Institute of International Business (SIIB)</i> Harvest Plus Ms. Jyoti Jha, <i>Advisory Lead,</i> <i>HarvestPlus Solutions</i>

2.30 to 3.30 pm	<p>Valedictory address Venue: SIU Auditorium</p> <p>Guest of Honour Dr.Sanjay Zodpey, <i>President, Public Health Foundation of India, New Delhi</i></p> <p>PRESENTATION OF AWARDS FOR BEST PAPERS & POSTERS</p> <p>Closing Remarks Dr. Sarath Gopalan, <i>Senior Consultant Pediatric Gastroenterologist & Hepatologist, Madhukar Rainbow Children's Hospital, New Delhi, and National President, NSI</i></p> <p>Vote of Thanks Prof. Atul A Gokhale, <i>Director, SSCANS</i></p> <p>Dr. SubbaRao M. Gavaravarapu, <i>Scientist F & Head, Nutrition Information, Communication & Health Education (NICHE) Division, ICMR -National Institute of Nutrition and National Secretary, NSI</i></p>
3.30 pm	High Tea

***Tentative schedule subject to change.**

GOPALAN MEMORIAL ORATION

THE AWARD

The Gopalan Oration Award was instituted in the year 1974 by the Nutrition Society of India in honour of its Founder-President, Dr. C. Gopalan, who has been the guiding force behind the Society since its inception. In his capacity as the Founder-President and as a permanent Executive Committee Member, Dr. Gopalan has nurtured the Society and has built it up to its present stature. The Society, as it is today, bears testimony to his genius as an architect and father of nutrition sciences in India.

Dr. Gopalan was the founder and President of the Nutrition Foundation of India. He was a scientist of international eminence and has spearheaded the cause of nutrition science for over four decades. His contribution towards the betterment of the nutrition of the population has benefited not only India but other developing countries as well. It has helped to strengthen and inspire movements for the eradication of undernutrition among the underprivileged in many Third World countries.

Dr. Gopalan had a brilliant academic career at the Madras Medical College and obtained a Doctoral degree in Medicine. During his illustrious career, Dr. Gopalan has held several prestigious positions with distinction that have brought fame not only to him but to his country as well. He was the first Asian to be elected the President of the International Union of Nutrition Sciences and the first Chairman of the Regional Advisory Committee on Medical Research for South-East Asia of WHO. He was on several World Health Organisation Expert Panels for many years and was the Chairman of the Technical Session of the World Health Assembly. He was elected a Fellow of the Royal Society of London. He was also the first Nuffield Foundation Fellow from India in the Medical Research Council of the United Kingdom and a Rockefeller Foundation Fellow.

The National Institute of Nutrition (NIN), Hyderabad, India, was nurtured by Dr. Gopalan with rare dedication as its Director from 1960 to 1974. Dr. Gopalan was also responsible for forging a fraternity of Asian nutrition scientists and initiating the first Asian Congress of Nutrition and promoting the subsequent ones, which led to the formation of the Federation of Asian Nutrition Societies. He is an able administrator and a visionary. During his tenure, as the Director of NIN and later as the Director-General of ICMR, the country as a whole focussed its attention on nutritional and medical problems of public health importance. Under his leadership a wealth of information was generated to tackle problems such as Protein Energy Malnutrition, Vitamin A deficiency, Phrynoderma, Lathyrism, Fluorosis and Pellagra. The foundation of the National Nutrition Monitoring Bureau was laid by him. Dr. Gopalan has also created the Nutrition Foundation of India, which has a wide interdisciplinary research network in the country and has brought out valuable reports which are of great value to nutrition scientists, administrators, and policymakers. Some of the renowned national and international honours bestowed on him for his outstanding contributions include Dr. B.C. Roy National Award (1974), Dhanvanthri Award (1978), WHO Health for All Medal (1988), Sir C.V. Raman Gold Medal of the Indian National Science Academy (1988), International Union of Nutrition

Sciences Award (1989), R.D. Birla Award (1990) and Fellow of the International Union of Nutrition Sciences (1993) and ICMR – NIN centenary award (2018). He was also conferred the prestigious civilian awards Padma Shri in 1970 & Padma Bhushan in 2003 by the Government of India.

Living Legend Awards from the International Union of Nutritional Sciences -IUNS (2003) and the Federation of Asian Nutrition Societies – FANS (2019). Dr.Gopalan passed away after 100 fruitful years of life on 3rd October 2019. The Gopalan Oration Award is given every year to an expert who has made significant contributions in the field of nutrition and allied sciences.

The Nutrition Society of India is proud to announce that the 48th Gopalan Oration will be delivered by **Dr. Tahmeed Ahmed**, Executive Director, ICDDR, Bangladesh, on "**Childhood stunting - should this remain as pervasive as before?**".

RECIPIENTS OF THE GOPALAN ORATION AWARD

1977	Dr. D. B. Jelliffe World Trends in Infants Feeding.
1978	Dr. J. Cravioto Intersensory Integration as a Function of Nutrition and Stimulation.
1979	Dr. M. Behar National Nutrition Policy & Trace Elements and Metabolism.
1980	Dr. M. S. Swaminathan Green Power and Freedom from Hunger.
1981	Dr. V. M. Dandekar Measurement of Undernutrition.
1982	Dr. S. Varadarajan Technology for Better Nutrition.
1983	Dr. H. K. Jain Evolutionary March of Indian Agriculture.
1984	Dr. S. G. Srikantia Nutrition Adaptation in Man.
1985	Dr. K. T. Achaya Invisible Fats Revised.
1986	Dr. V. Kurien Oils and Fats Beyond Nutrition.
1987	Dr. R. K. Chandra Nutrition Immunity and Clinical Outcome.
1988	Dr. Anand S. Prasad Human Zinc Deficiency.
1989	Dr. J.V.G.A. Durnin Is Satisfactory Energy Balance Possible on Low Energy Intake?
1990	Dr. J. C. Waterlow A New Look at Protein-Energy Malnutrition - Controversies and Challenges.
1991	Dr. Vernon R. Young Amino Acids Kinetics in Humans
1992	Dr. M. C. Latham Alleviating Malnutrition in the developing countries of the World.
1993	Dr. Nevin S. Scrimshaw Complementarities among foods and nutrients.
1994	Dr. W.P.T. James Assessing Energy Need : Recent Advances.
1995	Dr. Florentino S Solon Food Fortification Programme Development in the Philippines.
1996	Dr. John D Potter Plant Foods and Cancer Risk - Science and Tradition.
1997	Dr. B. N. Tandon Nutrition Intervention in 2000 AD

- 1998 Dr. Artemis P. Simopoulos
Genetic variation and nutrition
- 1999 Dr. R.S. Paroda
Household Food and Nutritional Security through Advances in Agriculture
- 2000 Dr. Gurdev S. Khush
Strategies to meet the global food and nutrient needs in the New Millennium
- 2001 Dr. B.S. Narasinga Rao
Newer perspectives in energy nutrition and malnutrition and their relevance to India.
- 2002 Dr. Chen Chunming
Nutrition and Economic Development
- 2003 Dr. Prakash Shetty
Non-communicable diseases in developing societies: causes, costs and consequences
- 2004 Prof. Mark L. Wahlqvist
The New Nutrition Science: Solution for Development
- 2005 Dr. Shanti Ghosh
For better health and nutrition, prioritise the young child
- 2006 Prof. M.K. Bhan
Preparing to Face the Challenge
- 2007 Prof. Ricardo Uauy
Nutrition Challenges for the 21st Century: The double burden of disease
- 2008 Prof. John M Pettifor
Vitamin D and Calcium Nutrition in Children in Developing Countries
- 2009 Prof. K. Srinath Reddy
Public health nutrition in India : Moving from science to policy and action
- 2010 Prof. David Barker
Nutrition in the Womb
- 2011 Prof. Barry M Popkin
The Global Dynamics of Diet, Activity and Body Composition : Rapid Shifts in the Stages of the Nutrition Transition
- 2012 Dr. Reynaldo Martorell
The First 1000 Days and Human Development: Implications for India
- 2013 Dr. Robert E Black
Fetal Growth Restriction: Nutritional Determinants, Consequences in Childhood and Interventions
- 2014 Dr. Michael S Kramer
International Standards For birth weight- Does One size fit all?
- 2015 Dr. Prema Ramachandran
India's Nutrition Challenges
- 2016 Dr Anura V Kurpad
The health-nutrition-agriculture connect for protein in India
- 2017 Prof. C.S. Yajnik,
In Search of Modifiable Susceptibility to Diabetes in Indians: Story of a Hungry Indian Fetus
(Due to personal reasons Prof. C.S. Yajnik was not delivered the oration lecture in 2017. It was delivered in 2018 conference.)

- 2018 Prof. John H Cummings
50 years of dietary fibre
- 2018 Dr. Kamala Krishnaswamy
Honoured by Gopalan Centenary Award (one time award) at the Golden Jubilee Conference of NSI
- 2019 Dr. K. M. Venkat Narayan
Back to the Future: Historic Roots of Diabetes Point to Unknown Solutions
- 2020 Prof. Christopher Paul Duggan
Race, Caste and Nutrition in the 21st Century: Select Studies in Maternal and Child Health
- 2021 Dr. V. Mohan
The diabetes epidemic in India: Some lessons learnt
- 2022 Prof. Caroline Fall
Mothers, Babies and Health in Later Life
- 2023 Prof. Ramesh Chand
Decoding India's Nutrition Puzzle: Some Options for Future

48th GOPALAN MEMORIAL ORATION

"Childhood stunting - should this remain as pervasive as before?"



Dr. Tahmeed Ahmed
Executive Director
ICDDR, B
Bangladesh

THE RECIPIENT

Dr. Tahmeed Ahmed is the Executive Director of the International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR, B) and has over three decades of experience in addressing maternal and childhood malnutrition, tuberculosis, and diarrheal diseases. Alongside Dr. Jeffrey Gordon of Washington University in St. Louis, he discovered Microbiota-Directed Complementary Food (MDCF), named a top scientific breakthrough in 2019 by **Science**. He also developed **Sharnali**, a food-based treatment for severe acute malnutrition (SAM), currently being trialed among Rohingya children.

Dr. Ahmed obtained his Medical degree from Mymensingh Medical College, Bangladesh, and a PhD from the University of Tsukuba, Japan. He has been with ICDDR, B for 38 years, leading cutting-edge research in nutrition and health. As a member of the WHO's Nutrition Guidance Expert Advisory Group, he helped revise global guidelines for managing childhood acute malnutrition and advises the Global Task Force on Cholera Case Control (GTFCC) on cholera treatment in children.

Dr. Ahmed has received numerous accolades for his work, including the Bangladesh Academy of Science Gold Medal in 2003 and the Islamic Bank Development Transformers' Roadshow Award in 2018. In 2024, he was recognized as a Goalkeeper Champion by the Bill & Melinda Gates Foundation for his contributions to childhood nutrition.

He has published over 500 scientific papers and collaborates with WHO, UNICEF, and the International Atomic Energy Agency (IAEA) on research, policy development, and training in nutrition. Dr. Ahmed also serves as a Professor of Public Health Nutrition at the James P. Grant School of Public Health, BRAC University, Dhaka.

ABSTRACT

With more than 140 million children under the age of five years suffering from stunted growth globally, stunting or linear growth retardation is the most important and common childhood ailment in the world. Stunted children have a risk of death several folds higher than healthy peers. They also have impaired development of the brain both in terms of structure and cognitive functions. Brain white matter has been found to be correlated with length-for-age Z score. Stunted children have less work productivity in adulthood. Recent analysis of pooled data from longitudinal cohort studies demonstrates that the highest incidence of stunting occurs during the first three months of life. The incidence is highest among children in South Asia than in Sub-Saharan Africa or Latin America. This suggests that much of stunting occurs in utero, and therefore, more efforts to prevent growth retardation should be directed to pregnancy and the first six months of life. To be comprehensive, it is the first 1000 days – from conception to 24 months of age – which is the crucial time to prevent stunting and to take care of the condition. As opposed to wasting where recovery is frequent, recovery from stunting is possible but not common. Because stunting affects the brain, a large part of which normally gets developed by 3 years of age, it is even more important to prevent stunting and to take care of it before the child gets older and the effects on the brain become irreversible. Risk factors for stunting as identified from the multi-country longitudinal cohort MAL-ED study, include weight at birth, maternal stature (a proxy indicator of nutritional status), household socioeconomic status, quality of diet, and presence of pathogens in stool. Recent groundbreaking research from Bangladesh has shown that environmental enteric dysfunction (EED) or enteropathy is an important cause of stunting, and that as many as 14 members of the gut microbiome inhabit the duodenum of children with EED and stunting. These members are associated with gut inflammation – a prime feature of EED.

There is, unfortunately, no single remedy for treatment of stunting. Programs that attempt to improve the length-for-age Z score focus on growth monitoring and promotion, immunization, counseling on infant and young child feeding. A novel microbiota-directed complementary food (MDCF) has been developed that modulates the gut microbiome and helps proliferate growth-promoting members of the microbiome. A recently conducted trial has demonstrated the linear growth impact of MDCF.

The Global Nutrition Target for stunting is to achieve by 2025 a 40% reduction in the baseline number of children under-five who are stunted. Many countries are way behind achieving the target for stunting. We cannot let this problem continue to affect children in such huge numbers. Serious thinking and action are required for prioritizing budgetary allocation for community nutrition promotion programs. There are novel interventions based on our new knowledge of the gut microbiome and its role in gut dysbiosis and EED. These interventions can be implemented for targeted use.

Dr. S.G. SRIKANTIA MEMORIAL LECTURE AWARD

THE AWARD

Dr.S.G.Srikantia Memorial Lecture Award was instituted in 1989 by the Nutrition Society of India to honour late Dr.S.G.Srikantia, one of the Founder-Members of the Society. As a Member, and later as its Treasurer (1974-1978) and Vice-President (1978-80), Dr.Srikantia was instrumental in building, expanding and consolidating the activities of the Society.

Dr.Srikantia was born in 1926 in an illustrious family in Mysore. After his brilliant undergraduate career in Mysore Medical College, he joined the National Institute of Nutrition - then known as the Nutrition Research Laboratories, Coonoor, in 1951. He served the Institute with rare distinction and dedication for more than three decades till his voluntary retirement in 1980. From 1974 to 1980, he was the Director of the Institute and contributed to the growth and development of the Institute.

Dr.Srikantia was an internationally renowned nutrition scientist and made outstanding contributions in clinical nutrition. He was a versatile, knowledgeable and well informed scientist not only in clinical nutrition but also in nutritional biochemistry and public health nutrition. Under his able stewardship, the National Institute of Nutrition diversified its research activities and had a coordinated approach, which added new dimension and depth to nutrition research.

A scientist with ideas, vision, initiative and drive, he could enthuse colleagues in an inimitable, gentle and persuasive manner. His elegant studies on the role of ferritin in the pathogenesis of nutritional oedema have attracted considerable attention. His pioneering research contributions on protein energy malnutrition, vitamin A deficiency, nutritional anaemias, pellagra and fluorosis have earned him academic recognition. He led the studies on the prevention and control of vitamin A deficiency in the country and was the man behind the National Vitamin A Prophylaxis Programme. Even after his voluntary retirement, he continued to be active in research and teaching, and was associated with the University of Mysore and served as Temporary Adviser, WHO. He was a member of the Editorial Board of the Indian Journal of Medical Research and was valued for his unbiased critical and mature views on a wide range of topics.

Dr.Srikantia has several publications to his credit including Chapters in books. He was frequently invited by national and international agencies to be on their expert committees.

He was a tower of support and strength to the Nutrition Foundation of India and played a leading role in the formulation and implementation of many of its research projects and in the preparation of its scientific reports.

A man of simple habits and sterling qualities; upright, sincere and devoted to scientific pursuits and loyal to the committed cause, Srikantia was a friend, philosopher and guide to many a junior colleagues.

He was a diamond among men, transparent in his dealing with people, dazzling in intelligence, hard in getting the work done and sharp in seeing through people.

The Nutrition Society of India is proud to announce that the 36th Dr. Srikantia Memorial Lecture will be delivered by **Dr. G. Bhanuprakash Reddy**, Scientist-G & AcSIR-Professor, Head, Biochemistry Division, ICMR-National Institute of Nutrition, Hyderabad, INDIA on **“B-Vitamins and Age-Related Chronic Disorders”**

PREVIOUS RECIPIENTS

- 1989 *Dr.P.S.Shetty*
Energy Metabolism in Chronic Energy Deficiency.
- 1990 *Dr.M.Gabr*
Better Nutrition for the World Poor : A Challenge of the Future.
- 1991 *Dr.B.N.Tandon*
Malnutrition and Gastroenterological Disorders.
- 1992 *Dr.B.S.Narasinga Rao*
Current concepts in human nutrient requirements and allowances - A critique of their use in practice and a need for an alternative.
- 1993 *Dr.Rajammal P. Devadas*
Empowering women towards improving family nutrition.
- 1994 *Dr.Tara Gopaldas*
Problems and prospects in upscaling Nutrition-Research-Action Projects or Pilots to Programmes.
- 1995 *Dr. Vinodini Reddy*
Dietary approaches to combat vitamin A deficiency.
- 1996 *Dr. N. Kochupillai*
Micronutrient Deficiency and Human Health and Development.
- 1997 *Dr. M. V. Rao*
Population - Food - Nutrition : Challenges and Options Before India.
- 1998 *Dr. Shanti Ghosh*
Nutrition, Growth and Development - The first two years are crucial.
- 1999 *Dr. Mahtab S. Bamji*
Understanding and combating recognized and less recognized vitamin deficiencies.
- 2000 *Dr. S. Rajagopalan*
Perspective Planning for Human Development.
- 2001 *Dr. Prema Ramachandran*
Research Studies on Mother Child Dyad - Foundation for National Programmes.
- 2003 *Dr. M. S. Swaminathan*
Ensuring Ecological, Social and Economic Access to Balanced Diets and Safe Drinking Water.
- Prof. K. N. Agarwal*
Nutrition and Brain.
- 2004 *Dr. Kamala Krishnaswamy*
Turmeric – The Salt of the Orient is the Spice of Life.
- 2005 *Dr. Subadra Seshadri*

- The Persistent Problem of Iron Deficiency Anaemia and its Consequences: A Life Cycle Approach is Critical for its Control.
- 2006 *Dr. K. Vijayaraghavan*
Community Nutrition Research in India – Contributions, Constraints and Controversies.
- 2007 *Dr. V. Prakash*
Nutrition Links in the Food Chain.
- 2008 *Dr. Ramesh V Bhat*
Status of Food Safety in India : Past, Present and Future.
- 2009 *Prof. H.P.S. Sachdev*
Improving Nutrition through Relevant Evidence: Transforming an Indian Dream into Reality.
- 2010 *Dr. B. Sivakumar*
Carotene conversion to vitamin A is not inefficient.
- 2011 *Dr. B. Sesikeran*
Technology for Better Nutrition
- 2012 *Dr. B. S. Ramakrishna*
Gut Microbiota: Roles in Nutrition and Perturbations in Disease
- 2013 *Dr. Sheila C Vir*
Scaling Up Nutrition Interventions : Key Learnings and Challenges
- 2014 *Dr. Anura V Kurpad*
Poverty and the State of Protein Nutrition in India
- 2015 *Dr. Vinod K Paul*
International Fetal Growth Standards - Should we or should we not adopt them?
- 2016 *Dr GNV Brahmam*
Dietary diversification as a means of prevention of micronutrient deficiencies in the communities: A distant dream?
- 2017 *Maj. Gen. Raman K Marwaha*
“Wonder Vitamin of Recent Times: Vitamin D”.
- 2018 *Dr. Biplab K. Nandi*
Food and Nutrition Security as Fundamentals of Human Development: National Perspective
International Agenda
- 2019 *Dr. K. Madhavan Nair*
“NUTRITION FOR ANEMIA”
- 2020 *Dr. Siddharth Ramji*
“Optimizing nutrition in Low Birth weight Infants”
- 2021 *Dr. Avula Laxmaiah*

"Time trends in triple burden of malnutrition in India - Pilot intervention models for low and middle income countries"

2022 *Dr. R. Hemalatha*

"Nutrient recommendations and food consumption pattern among adults in India"

2023 Dr. Shally Awasthi

"Micronutrient deficiencies are affecting cognitive functioning of school going children in India"

36th Dr. SRIKANTIA MEMORIAL LECTURE

B-Vitamins and Age-Related Chronic Disorders



Dr. G. Bhanuprakash Reddy
Scientist-G & AcSIR-Professor
Head, Biochemistry Division
ICMR-National Institute of Nutrition
Hyderabad, India
Email:

THE RECIPIENT

G. Bhanuprakash Reddy obtained his MSc and PhD in Biochemistry from Osmania University. He pursued postdoctoral research at the Indian Institute of Science, Bangalore and Case Western Reserve University, USA. In 2000, he joined the ICMR-National Institute of Nutrition (NIN) where he currently serves as Scientist-G and Head of the Biochemistry Department. During his tenure at ICMR-NIN, he has undertaken various research stints abroad, including as a Visiting Scientist at the University of Michigan, USA (2003), an ICMR-International Fellow (2005), a DBT-Overseas Associate (2007) and a DHR-Short-term Fellow at Cincinnati Children's Hospital Medical Center, UAS (2014).

His research focuses on various aspects molecular nutrition and non-communicable diseases including nutrient requirements, nutrient deficiency assessment, and impact of diet/nutrition on chronic diseases. His work has highlighted the prevalence of micronutrient deficiencies with a particular focus on unraveling micronutrient-mediated molecular processes in age-related disorders. Additionally, his extensive work on protein modifications and aldo-keto reductases under chronic hyperglycemia has led to the identification of novel bioactive molecules from functional foods and the subsequent development of functional food formulations for complications of diabetes and obesity.

He has published over 250 research papers with an h-index of 56 and more than 10,000 citations. Under his guidance, thirty students have obtained PhD degrees. He is the recipient of numerous awards, including the ICMR-Basanti Devi Award, Scopus India Young Scientist Award, RPB-International Scholars Award, ICMR-Dr. V. N. Patwardhan Prize, and the Nutrition Society of India Young Scientist Award.

He is a Fellow of the International Union of Nutritional Sciences (IUNS), the National Academy of Medical Sciences, the National Academy of Sciences, India, the Royal Society of Chemistry (London) and the Telangana Academy of Sciences. He serves as the Chairman of the INSA-National Committee for IUNS

and is currently the Vice-President of both the Nutrition Society of India and the Telangana Academy of Sciences. Additionally, he is a member of FSSAI Scientific Panels and numerous other scientific societies and committees.

ABSTRACT

The increase in life expectancy is one of the most remarkable achievements in health sciences. However, this increased longevity is associated with the burden of several chronic, age-related non-communicable diseases (NCDs) such as diabetes, obesity, CVD, stroke, and neurological disorders. The rate of aging is different among individuals and also among different organ systems within the same individual. Various factors contribute to the predisposition of adults and elderly to NCDs, with nutrition is recognized as a key factor in influencing the functional outcomes of biological aging and age-related disorders. Aging itself also has a profound impact on nutritional status. Currently, around 540 million people worldwide are affected by diabetes, and this number is projected to rise to 783 million by 2045. Additionally, global obesity rates have tripled since 1975, largely due to sedentary lifestyles and unhealthy diets. In India, one in four people is at risk of dying from an NCD before reaching the age of 70.

In addition to aging, consistent high blood glucose levels can affect different organs and hence people with diabetes have an increased risk of developing various age-related complications such as cardiovascular diseases, blindness, renal failure, and neurological problems. Similarly, obesity increases the risk of degenerative diseases, including CVD, stroke, certain types of cancers, neurological and ocular complications. In addition to genetics, many other environmental factors including nutrition are likely to be involved in developing these complications. Diabetes and obesity are likely to alter the nutritional status including deficiency of some micronutrients. Many micronutrients particularly B-vitamins are known to modulate molecular processes such as accumulation of homocysteine and advanced glycation end-products (AGEs), mitochondrial free radical generation, fibroproliferation and differentiation, apoptosis and activation of polyol pathway that have been implicated in the pathogenesis of complications in diabetes and obesity. Similarly, telomere attrition and mitochondrial DNA variations are implicated in the biological aging process and age-related NCD as they are linked to genomic stability. It is fairly acknowledged that genomic stability is influenced by nutritional factors including B-vitamins. Many B-vitamins are also essential for the optimal physiological function of the pancreas and insulin. However, micronutrients status and in particular the influence of B-vitamins deficiency on molecular mechanisms involved in age-related disorders such as diabetic complications is a less explored area. Thus, our studies are aimed at assessing the micronutrients status including B-vitamins of diabetes patients with and without complications as well as investigating the impact of deficiency of B-vitamins on molecular processes involved in age-related disorders.

Through a series of hospital-based cross-sectional case-control studies, we have assessed the blood levels of micronutrients in type-2 diabetes subjects with diabetic complications (retinopathy, nephropathy and neuropathy) and without any complications along with normal control subjects. Similarly, we have also conducted community-based observational studies on aging and age-associated ailments. We have developed and validated a raw food based quantitative Food Frequency Questionnaire (FFQ) of one-year duration tool to elicit long-term habitual dietary intake patterns of adults without and with various age-related complications. As this FFQ used in this study is raw food based it could be adopted to other parts of the country. Using this FFQ we obtained dietary intake data and the probability of adequacy (PA) was calculated by the estimated average requirement to assess the extent of inadequacy of the nutrient intake. Blood levels of micronutrients (B-vitamins) and homocysteine were assessed. In addition, a set of biomarkers of aging that include markers of polyol pathway (ALR2 activity) and protein glycation (AGEs), protein oxidations (protein carbonyls), relative telomere length (rTL) and mitochondrial DNA copy number (mtCN) were determined.

Our studies indicate that while, the levels of vitamins B1, B2, B9 and D were significantly lower in diabetes patients as compared to controls, there was no difference in the levels of these vitamins between diabetes patients with and without complications. However, interestingly, we found a significantly lower level of plasma vitamin-B12 in diabetic retinopathy patients, and vitamin B6 in diabetic neuropathy patients compared to diabetes patients without complications as well as control subjects. Intriguingly plasma levels of many vitamins were higher in diabetic nephropathy patients compared to diabetes patients without complications as well as control subjects, suggesting that plasma levels of micronutrients particularly B-vitamins under renal impairment conditions may not represent functional deficiency. While plasma homocysteine levels were found to be higher in diabetes patients compared to control subjects, homocysteine was further higher in diabetic retinopathy and, diabetic nephropathy patients. We also found in elderly subjects aged >60 years significantly shorter telomeres and lower mtCN compared to the subjects <60 years age irrespective of the presence or absence of diabetes and its complications. In a separate cohort, it was observed that plasma levels of vitamins B1, B6, B9 and total B12 were lower in the elderly above 60 years with frailty (a syndrome of aging) compared to the age-matched elderly without frailty. Most importantly, when data from all groups are considered, there was an inverse correlation between vitamin B1 and ALR2 activity and between vitamin B6 and AGE levels. Whereas plasma homocysteine levels were inversely related to plasma vitaminB12 and folate but not to vitamins B1, B2, and B6. Further, rTL and mtCN, were positively correlated with plasma folate and vitamin B12 levels. These results suggest that deficiency of vitamins B12, B9, B6 and

B1 appear to modulate the status of homocysteine, AGEs, ALR2 activity, rTL and mtCN. Vitamin B1 has been shown to influence the activity of rate limiting enzyme of the polyol pathway, ALR2. Similarly, cofactors of vitamin B6 are reported to act as AGE inhibitors. Hyperhomocysteinemia also involves the deficiency of B-vitamins other than vitamin B12 and folate. Our studies revealed a decline of rTL and mtCN with age in the Indian population and interestingly vitamins B9 and B12 positively correlated with rTL and vitamin B12 with mtCN. In other words, folate and vitamin B12 may delay aging by preventing the reduction in rTL length and mtCN. Dietary intake of many food groups was low and there was an inadequacy of nutrients including B-vitamins during aging and age-related complications.

Deficiency of B-vitamins may modulate the biochemical pathways, influencing the molecular mechanisms linked to aging and age-related diseases, in particular diabetic complications. Further, studies on experimental animal models validated these findings. For instance, vitamin B12 supplementation to diabetic rats was beneficial in ameliorating retinal lesions by circumventing retinal hypoxia, VEGF overexpression, and ER stress-mediated cell death in the retina. Similarly, vitamin B12 supplementation conferred neuronal protection in type 2 diabetic rat model, protecting against homocysteine-induced cerebral ER stress and associated apoptosis, suggesting vitamin B12 as a neuroprotective agent. Further, experimental studies with vitamin B2 and B6 deficient animal models demonstrated their critical roles in age-related retinal abnormalities and fibrotic changes, respectively. Together, these studies indicate that a deficiency of B-vitamins may enhance the risk of developing age-related diseases.

However, prospective human studies, along with the supplementation trials, are necessary to better understand the role of B-vitamins in the aging process and their potential in the prevention and development of age-related diseases. These findings may pave the way for developing targeted, context-specific B-vitamin nutritional interventions for age-related disorders. Given that elderly individuals are particularly vulnerable to nutritional deficiencies, including B-vitamins, which can impact age-related diseases, it is crucial to systematically assess nutritional status, dietary intake and their possible associations with age-related disorders among the elderly in India.

Dr. RAJAMMAL P DEVADAS MEMORIAL LECTURE AWARD

THE AWARD

The Rajammal P Devadas Memorial Lecture Award was instituted by the Nutrition Society of India, in association with Avinashilingam Education Trust and Avinashilingam University for Women in the year 2009. Dr. Rajammal P Devadas (lovingly called 'amma' by her colleagues and students) had made significant contributions for the cause of Nutrition Science, Home Science and Women's development in the country. She was the President of the Nutrition Society of India during 1987 to 1991.

Born in Kallikulam in Tirunelveli District of Tamil Nadu, Dr. Devadas had her early education in Chennai and graduated from Women's Christian College. She received her Ph.D. degree from Ohio State University, USA, with copious honours in 1950, and her Post Doctoral D.Sc. degree from the University of Madras in 1978. As a leading nutritionist of international reputation, Dr. Devadas, in her various capacities as Principal, Vice Chancellor and Chancellor, had a stupendous academic record throughout. Dr. Devadas held several celebrated positions such as Chief Home Economist and Joint Director (Home Science), Directorate of Extension, Ministry of Food and Agriculture, Government of India (1955-1961) and Assistant Director General (Nutrition) ICAR (1975-76). She also served with immense merit as the Regional Vice President - International Federation for Women in Agriculture (IFWA), Regional Coordinator for Research-World Alliance for Breast Feeding and the First Vice President of the World Food Conference convened by the FAO in 1970 in The Hague, Holland, besides holding many other memorable advisory positions in National and International Organizations.

Dr. Devadas's major scientific contributions in the area of Home Science and Community Nutrition has resulted in various implementable programmes. To name a few, nutrition consultation in the colossal State-wide Nutritious Noon Meal Programme of the Government of Tamil Nadu, organization of training programmes for thousands of workers involved in nutrition intervention programmes, direction of a project in five states to commence Nutrition/Health Education and Environmental Sanitation in primary schools in which 10,000 teachers from five districts of Tamil Nadu were skilled in nutrition. In the academic year 1991-1992, she integrated NSS into the undergraduate curriculum of the Avinashilingam University giving it credits and an academic status. She toiled hard to educate the community on the significance of nutrition by developing educational materials and conducting research and community outreach programmes. She was the chief editor of the Indian Journal of Nutrition and Dietetics, Research Highlights and the Tamil Science monthly Vignana Chudar. She has left behind to her credit over 500 research papers and 57 books. She represented India in more than 50 International Nutrition/Home Science Conferences in about 40 countries.

She received many awards from various national and international organizations for her commendable and priceless service in different fields including the Tagore Literacy award (1991), Padma Shri from Government of India (1992) and Dr.B.C.Guha memorial award (1993). She was awarded the Honorary

Degree of Humane Letters from Oregon State University (1993) and Ohio State University (1994), Honorary D.Sc. from Chandrasekar Azad University of Agriculture and Technology, Kanpur (1994), Honorary Degree of D.Sc. from University of Ulster, Northern Ireland (1996), G.D. Birla award (1998), the Malcolm S. Adiseshiah award (2000) and the prestigious International Union of Nutrition Sciences (IUNS) award in 2001 at Vienna, Austria.

The phenomenal growth of the Avinashilingam Institutions to the present heights is only due to the consistent and unstinted efforts of Dr. Devadas. Sri Avinashilingam Home Science College for Women was established in 1957, the Home Science College acquired the Deemed University status in 1988 with Dr. Rajammal P. Devadas as its first Vice Chancellor.

Dr. Rajammal P. Devadas Memorial Lecture Award is given every year to an outstanding women nutrition scientist of Indian origin working in India who has made noteworthy contributions in the field of applied nutritional sciences.

The Nutrition Society of India is proud to announce that the 15th Dr. Rajammal P. Devadas Memorial Lecture Award will be delivered by **Dr. Anuradha Khadilkar**, Deputy Director and Consultant Pediatrician, Hirabai Cowasji Jehangir Medical Research Institute, Jehangir Hospital, Pune on **“Establishing anthropometric and bone health norms for optimising Health and Nutrition in Indian children”**.

PREVIOUS RECIPIENTS

- 2010 *Dr. Mahtab S Bamji*
Striving for village-level nutrition security - Challenges and opportunities
- 2011 *Dr. Rita S Raghuvanshi*
Reorganizing Nutrition for a Better Tomorrow
- 2012 *Prof. (Mrs.) Vijayakhader*
Impact of Economic Empowerment of Women on Health Security – Lessons from Studies in Andhra Pradesh; Karnataka, Kerala, Tamil Nadu and Kenya.
- 2013 *Prof. Jamuna Prakash*
Exploring Food Based Approaches for Translational Nutrition : From Research to Practice
- 2014 *Prof. G. Subbulakshmi*
Farm Foods and Pharm Foods
- 2015 *Prof. Satyavati Rana*
Nutrition and Disease – An Interaction
- 2016 *Dr R. Hemalatha*
Mother and Child Nutrition- Life Cycle Approach
- 2017 *Dr. Asna Urooj*
Translational nutrition research for sustainable dietary management of diabetes mellitus
- 2018 *Dr. Sadhana Ramchandra Joshi*
Maternal Nutrition and Placental Programming: Implications for Long Term Health
- 2019 *Dr. S. Kowsalya*
Neutraceutical Potentials of Functional Foods
- 2020 *Dr Seema Puri*
Mainstreaming nutrition from pre-conception to old age: the life course approach
- 2021 *Dr. Bharati Kulkarni*
Iron nutrition and anemia in India: some insights from recent research
- 2022 *Prof. Anupa Siddhu*
Maternal Nutrition; Issues and Initiatives
- 2023 *Dr. Sridevi Annapurna Singh*
Technological interventions for the preparation of protein ingredients and supplementary foods

15th DR. RAJAMMAL P. DEVADAS MEMORIAL LECTURE AWARD

Establishing anthropometric and bone health norms for optimising Health and Nutrition in Indian children



Dr. Anuradha Khadilkar

Deputy Director and Consultant Pediatrician
HirabaiCawasji Jehangir Medical Research Institute
Jehangir Hospital, Pune

THE RECIPIENT

Dr. Anuradha Khadilkar is a distinguished pediatrician and researcher, currently serving as the Deputy Director and Consultant Pediatrician at the Hirabai Cowasji Jehangir Medical Research Institute (HCJMRI) and Jehangir Hospital in Pune. She has held various positions within HCJMRI since July 2000, where she has made significant contributions to pediatric health care and research. Her extensive clinical experience is complemented by her role as a PhD teacher in the Department of Health Sciences at Pune University, where she guides and mentors emerging researchers.

Dr. Khadilkar's qualifications include a Diploma in Child Health from London (1996), an MD in Pediatrics (1991), and an MBBS (1988). Her main fields of work encompass disorders of nutrition and growth in childhood, with a particular focus on calcium and vitamin D, as well as endocrine and genetic disorders.

Dr. Khadilkar has established collaborations with esteemed professionals worldwide, including Dr. Zulf Mughal at the Royal Manchester Children's Hospital and Dr. Philip R. Fischer at the Mayo Clinic College of Medicine, Monash University in Australia and the Murdoch Children's Research Institute, showcasing her commitment to advancing pediatric care through international cooperation. Her research initiatives are extensive, with numerous grants focused on addressing critical health issues such as childhood diabetes, intergenerational malnutrition, and non-communicable diseases. Dr. Khadilkar's research is characterized by a multidisciplinary approach, integrating nutrition, endocrinology, and community health.

In her academic role, Dr. Khadilkar has supervised numerous PhD and postgraduate projects, focusing on vital topics such as calcium metabolism, dietary intake among children, and the prevalence of childhood obesity. Her contributions to research have not only advanced scientific knowledge but also improved clinical practices in pediatric nutrition and endocrinology.

Dr. Khadilkar holds several patents, and she has undergone extensive training in research methodology, grant writing, and clinical practices, further enhancing her capabilities as a researcher and educator. Throughout her career, Dr. Khadilkar has been recognized with numerous awards and accolades, including the first university rank in multiple subjects during her MBBS. She has published over 300 articles in indexed journals and contributed to ten book chapters, showcasing her dedication to disseminating knowledge and findings in pediatric health.

In addition to her clinical and research endeavors, Dr. Khadilkar is deeply committed to social causes, particularly in caring for underprivileged children with diabetes. She oversees the medical needs of over 800 such children at Jehangir Hospital, ensuring they receive essential care free of charge. With her extensive expertise and passion for pediatric health, Dr. Anuradha Khadilkar continues to be a leading figure in advancing research and clinical practice in the field of pediatrics.

ABSTRACT

Anthropometry is the study of measurements and proportions of the human body. Since growth is an important biological process in children and adolescents, it is critical to monitor growth as a first step towards optimising it. Anthropometric measurements are an inexpensive and yet an objective way of evaluating not only a child's health but also his/ her nutritional status.

After growth is measured (primarily in terms of height/length and weight), this needs to be plotted on a chart to compare the child/ adolescent to others of his/her own age and sex. This comparison is performed by plotting the child on a growth chart. A growth chart speaks for the health and disease in a child in the same way as under-five mortality speaks of health of a nation. Most disorders of health and nutrition result in growth faltering, hence, making growth monitoring an important tool for healthcare workers.

However, growth needs to be plotted on an appropriate chart, that too, in a nutritionally upwardly mobile society like India, the reference data need to be contemporary. Our journey of work in childhood growth charts started with publishing the Indian Academy of Paediatrics Growth Charts for Indian children in 2007 (PMID: 17413194); these charts were based on data collected in 1989-1992. Publishing the charts highlighted certain needs: We needed new data to depict growth of modern day Indian children, we needed better methods of smoothing and better growth curves and we also needed easier methods of growth monitoring. To bridge this gap, our team in Pune conducted a large multicentric study in 5 zones of India from 2007-2009 – we measured 18666 children (10496 boys and 8170 girls) and used the then modern LMS method for the first time in India to produce growth charts for 5-18 year old Indian children. The paper was published in India paediatrics in 2009 (PMID: 19556658). After this, the Revised IAP growth charts were published (using these and other data from centres from all over India) in 2015 (10.4103/2230-8210.159028). Also, since together with assessing attained growth, studying the rate of growth was important, our team conducted a 7 yearlong study and described height velocity and weight velocity percentiles for Indian children (PMID: 30806356; PMID: 38655892).

The process of refining and modifying growth curves has continued since then. The rising prevalence of overweight and obesity in children necessitated defining cut offs for overweight and obesity in Indian children (these needed to be different from International cut offs as Indian children, similar to Indian adults, have a higher body fat for a given body mass index (BMI); 10.1007/s13312-012-0011-y), describing norms for waist circumference percentiles (10.1016/j.jpeds.2014.02.018), defining percentiles and cut offs for triceps skin fold thickness (10.1007/s13312-015-0695-x), body fat percentage (10.1007/s13312-017-1201-4), mid-arm circumference (10.1016/j.nut.2021.111401), wrist circumference (10.1515/jpem-2017-0161) and frame size (10.1007/s12098-022-04186-0).

Further, given the time constraint and large number of children that are catered to by Health care providers, we introduced 'Friendly growth charts' (PMID: 33231172); these had a mid-parental height calculator (this helps to adjust for parents height which is a proxy for the genetic potential) and a BMI tool which helps to quickly slot a child into a normal BMI, or overweight/ obese BMI category. We also then published extended growth charts which helped in the diagnosis and monitoring in disease states (10.1515/jpem-2020-0573). Our work in growth charts continues with development of new charts in 2019 and also sitting height and proportion charts. While we worked on and published the above, we were also involved in validating these charts and assessing nutritional status and performing supplementation studies to improve health and nutrition of children.

As we worked on childhood growth, we developed an interest in the other parameter of growth, i.e., bone density. Growth in children is accompanied by an increase in bone mass. It is critical to study and optimise bone density in children, as parallel to growth, the maximal accrual of bone also takes place around puberty. The maximum amount of bone that is stored in the body, often referred to as the 'peak bone mass' is a major determinant of fractures and osteoporosis in later life. Also, with improved medical care of chronic conditions such as thalassemia, cerebral palsy, type 1 diabetes, etc, growth and bone health are impacted in these children and need to be studied and optimised.

Once again, we started with describing normative data for assessment of bone health in children (10.1016/j.bone.2010.12.013) and then, we worked on calcium deficiency, vitamin D deficiency and supplementation studies on the same. We also worked on bone health in various disease states and have been studying the determinants of bone health in normal and children with chronic disorders (PMID: 33137537; 10.1016/j.bone.2020.115730; 10.1016/j.bone.2019.115074). Supplementation studies to improve bone health in children with malnutrition and in chronic disease states have also been carried out at our centre under my supervision (10.4162/nrp.2020.14.2.117; PMID: 21245882; PMID: 22503722; 10.1016/j.jocd.2024.101468). Ours was one of the first centres in India to work on and develop expertise in interpreting bone health in children; the process is difficult because one needs to account for growth and puberty.

Our current research focuses on maternal health (gestational weight gain and its outcomes), Infant and young child feeding practices in urban slums, studies in non-communicable diseases, etc. We are also performing a cohort study in intergenerational malnutrition in rural areas near Pune.

Our focus has majorly been to help the underserved. In line with this, our social cause is the support of children with Type 1 Diabetes. We run a holistic program for the care of underprivileged children with diabetes. The program, Sweetlings, was started in 2010 and now caters to over 800 children and youth with Type 1 diabetes.

Dr. B.K. ANAND MEMORIAL AWARD

THE AWARD

This was instituted by the Nutrition Society of India, in association with B. K. Anand Benevolent Trust, New Delhi, in the year 2014 in memory of Prof. Bal Kishan Anand, an internationally renowned physiologist.

Dr. Anand was born on September 18, 1917 in Lahore (now in Pakistan). All through his formative years, he was rated as an excellent student and won many scholarships, medals and prizes. He graduated in Medicine from King Edward Medical College, Lahore in 1940 and went on to do M.D. in three subjects - Medicine, Pathology and Physiology. Prof. Anand joined the Lady Hardinge Medical College as a Professor of Physiology at a tender age of 32 in 1949. As the first Rockefeller Foundation Fellow, he went to Yale University in 1950 and discovered the existence of a neural substrate which is responsible for regulating food intake that is now known as the Feeding Centre. In 1952, he returned to India and joined the Lady Hardings Medical College as Professor and Head, Department of Physiology. Under his leadership it became the first Medical College in the country to introduce human and mammalian experiments in Physiology in 1953. By 1955, Lady Hardings Medical College was recognized to start an M.D. course in Basic Medical Sciences and he also got the credit of establishing the first Neurophysiology Research Unit in Lady Hardings Medical College in the same year.

Dr. B K Anand joined the All India Institute of Medical Sciences (AIIMS) in 1956 as its first Professor in the Department of Physiology. He demonstrated his dynamic leadership by helping to structure the MBBS course to three phases of three semesters, each followed by a year of internship that included three months of rural posting. This pattern was quickly followed throughout the country. Dr. Anand was a member of the core team which laid down the policies and curriculum for postgraduate training in AIIMS that was soon accepted by the Medical Council of India for all Medical Colleges in India. In 1969, he went on to become the Dean of AIIMS.

Dr Anand's tryst with science continued till the end of his long and distinguished scientific career by raising further questions related to the Neurobiology of feeding and satiety. The Neurophysiology Research Unit started by him at AIIMS continues to flourish even today. Besides understanding the neural basis of feeding and satiety, Dr. Anand and his team undertook studies to understand the role of limbic system in emotional and aggressive behaviour, the role of hypothalamus in reproduction as well as in cardiovascular, respiratory and gastrointestinal activities.

In 1955, Dr. B K Anand was instrumental in establishing the Association of Physiologist and Pharmacologists of India affiliated to the International Union of Physiological Sciences. In 1957, he also started the publication of Indian Journal of Physiology and Pharmacology that is now one of the best medical journals published in India. In 1974, he worked for the World Health Organization in New Delhi. Working in

Health Manpower Development Division in South East Asia, he rendered advice for policy matters relating to education, nursing and paramedical manpower in the member countries. In 1977, he joined the Family Planning Foundation as its Biomedical Doctor and he held this position till his retirement in 1982 after successfully steering research in India in Biomedical Sciences especially in the development of contraceptives. In 1982, after retiring from the Family Planning Foundation, he took up yet another challenge of establishing a Postgraduate Medical Institute in Srinagar at the behest of the late Shri Sheikh Abdullah. During the period 1982-1985, he served as the Director of Sher-i-Kashmir Institute of Medical Science, Srinagar. Throughout his career, he guided many students, practitioners, researchers and faculty. He authored numerous research publications.

Dr. Anand won numerous national and international awards and accolades. Most significant among them are the Shanti Swarup Bhatnagar Prize for Science and Technology in Medical Sciences in 1963 and Padma Shri in Medicine in 1969 from Government of India.

The Nutrition Society of India is proud to announce the 11th Dr. B.K. Anand Memorial Award is given to **Dr Som Nath Singh**, Scientist G and Head of the Department of Soldier Performance at the Defence Institute of Physiology and Allied Sciences (DIPAS) in Delhi.

PREVIOUS RECIPIENTS

2014	<i>Dr. Prema Ramachandran</i>
2015	<i>Dr.Dr. K. Satyanarayana</i>
2016	<i>Dr Mario Vaz</i>
2017	Dr.B.Sivakumar
2018	Dr. William Selvamurthy
2019	<i>Dr. Sucharita Sambashivaiah</i>
2020	<i>Dr.K.K.Deepak</i>
2021	<i>Dr.B.Dinesh Kumar</i>
2022	<i>Dr. H.P.S Sachdev</i>
2023	<i>Dr. Ramesh Bijlani</i>

11th B. K. ANAND MEMORIAL AWARD



Dr. Som Nath Singh

Scientist 'G' and Head, Department of Soldier Performance
Defence Institute of Physiology and Allied Sciences (DIPAS), Delhi

THE RECIPIENT

Dr. Som Nath Singh, a Scientist 'G' and Head of the Department of Soldier Performance at the Defence Institute of Physiology and Allied Sciences (DIPAS) in Delhi, has an extensive background in physiology, nutrition, and parasitology. With a Master's degree in Zoology from Lucknow University, where he was awarded the KN Bahal Gold Medal, and a Ph.D. from Kanpur University, his doctoral research focused on filarial parasites and host interactions. Since joining the Defence Research and Development Organization (DRDO) in 1996, Dr. Singh has worked across different roles, rising through the ranks due to his impactful research on the nutritional needs of armed forces in extreme conditions.

Throughout his career at DIPAS, Dr. Singh has conducted pivotal studies addressing the dietary and metabolic needs of soldiers operating in challenging environments such as high altitudes, deserts, and submarines. His research has contributed to refining rations for the Indian Army, Navy, and Air Force, ensuring personnel's optimal health and performance. Dr. Singh's work delves into appetite regulation, oxidative stress, and protein metabolism, particularly in high-altitude settings, where he has led efforts to develop herbal appetite suppressants and other nutraceuticals beneficial for operational use.

Dr. Singh's academic output includes over 110 research publications in reputable journals, 25 book chapters and review articles, and 18 technical reports. His contributions have earned him numerous accolades, such as the DRDO Laboratory Scientist of the Year Award, the Shakuntla Dasgupta Memorial Oration Award, and multiple research prizes. His leadership extends to committee roles within the Indian Science Congress Association and collaborations on nutritional guidelines for disaster relief with India's National Disaster Management Authority.

In addition to his research, Dr. Singh is committed to mentoring the next generation of scientists, having supervised 15 Ph.D. students and guided over 70 Master's and medical students in their dissertations. His expertise has made him a sought-after guest faculty member and examiner at various

institutions, including the University of Delhi and Jawaharlal Nehru University. Dr. Singh's influence in his field is also evidenced by his work on patents related to antiferlarial agents, cementing his role as a leader in nutrition and physiology for India's defense forces.

SYMPOSIUM

Transdisciplinary approach to defining nutrient and dietary requirements in Indian context

Dr. Anura V. Kurpad, MD, PhD, FRCP (Lond), FAMS, FNA, FASc, FNASc, FIUNS

Professor of Physiology and Nutrition, St John's Medical College, Bengaluru, Senior Advisor, Tata Trusts, Mumbai, Associate Editor, American Journal of Clinical Nutrition, President, Asia Pacific Clinical Nutrition Society

ABSTRACT

Nutrient and dietary requirements are intertwined, with the daily requirement of nutrients leading into the daily requirement of specific foods and diets. The method of defining the requirement is to find a single value from a distribution of requirements in a specific age and gender group, that can be used for everyone. This can take the form of the average, or a 'safe' value, which is the 97.5th percentile of the distribution of requirements. This seems unsatisfactory for many reasons, and a clear understanding of precision, or the application of transdisciplinary approaches in the search for precision, is required.

For example, on what group of individuals was the nutrient requirement determined? How variable were they, or how wide was the distribution of requirements? Could variation in their habitual diets cause more variation in the requirement? Could their genotypes cause variation? Does the requirement vary from day-to-day in the same person? All these questions need to be answered, and the need for a transdisciplinary approach becomes evident – like the need for a good understanding of statistics, genomics, physiology, biochemistry, pharmacokinetics, epidemiology, anthropology, developmental biology, and even for sociological measurements that make up the exposome of the persons whose nutrient requirements are being taken to represent the population. Each of these is relevant in a national or Indian context and lend themselves to precision in defining the requirement – a term called precision nutrition.

Translating nutrient requirements to 'foods and diets' is even more difficult, if precision is to be maintained. This is because foods are analysed for their nutrient content in their raw state usually, and usually this is done on a single sample of the food in question with no regard to region- or species-specific food sampling. For example, a tomato can be very different in different geographical locations. Further complexity arises when different factors for nutrient loss are needed based on the cooking process, which is also very variable. Another variability in plant foods (and by extension animal foods) comes from climate change, as the nutrient content, including polyphenols and phytates, becomes variable with temperature and drought stress. Thus, the requirement becomes broader and broader in its scope, to encompass these variabilities, and become essentially simpler as a necessity. More transdisciplinary approaches are required here, including food science, analytical methods, agriculture and horticulture and climate change.

Finally, there are two areas where the nutrient and food requirements need a transdisciplinary approach. The first is in clinical and public health, where the cure or prevention of deficiency, or the reduction of health-related risks, is through food or nutrient recommendations. This needs a good, robust clinical and public health approach. With responsible governments that do poverty alleviation, these requirements need to be translated to social provisions, through food baskets and supplementary programs. A good sense of economics, epidemiology, anthropology and sociology is paramount here.

Overall, the science (and art) of defining nutrient and food requirements must be transdisciplinary. As we learn more about the interactions between nutrients and foods and more relevant today, the risks of overeating, the more transdisciplinary approaches will be required for precision in the way we eat and lead healthy lives.

YOUNG SCIENTIST AWARDS: SESSION I

14th November 2024

Venue: SIU Auditorium

03.00 pm - 04.00 pm

Abstract ID	Presenter name	Affiliation	City	Email	Title
JUNIOR AWARD- COMMUNITY NUTRITION					
JACN-1	Ms. Dharani Priya S	Avinashilingam Institute for Home Science & Higher Education for Women	Coimbatore	dharanipriya2030@gmail.com	Edible soup mix pouch enriched with millets and medicinal herbs: A nutritious and eco-friendly solution
JACN-2	Ms. Tavleen Kaur	Tata Institute of Fundamental Research, Hyderabad	Hyderabad	tavleen1109@gmail.com	Foodporn for e-Priming Healthy Food Choices Among Adolescents: An Experimental Study Using Appealing Food Imagery
JUNIOR AWARD- EXPERIMENTAL NUTRITION					
JAEN-1	Ms. Araina Trehon	Sir Vithaldas Thackersey College of Home Science SNDT Womens University	Mumbai	atrehon@gmail.com	Association of Meal Frequency, Meal-Time Intervals and Dietary Composition with Glycemic Variability and Glycemic Control in Adults with Type 2 Diabetes Mellitus: A Case Series Study
JAEN-2	Ms. Bharathwaaj Gunaseelan	JSS Medical College, JSS Academy of Higher Education and Research	Mysore	bharathwaajgunaseelan@gmail.com	Green Jackfruit Flour Prevents MASH and Development of HCC via the AMPK and MAPK Signaling Pathways
JAEN-3	Ms. Aaina Kaushal	PGIMER	Chandigarh	aainakausha1286@gmail.com	Exploring the Use of Germinated Finger Millet Flour in Gluten-Free Pasta Production with Tapioca Flour

JACN-1

ABSTRACT TITLE: EDIBLE SOUP MIX POUCH ENRICHED WITH MILLETS AND MEDICINAL HERBS: A NUTRITIOUS AND ECO-FRIENDLY SOLUTION

Dharani Priya S, Junior Research Fellow, **Dr. Raajeswari Paramasivam**, Professor, Department of Food Science and Nutrition, Avinashilingam Institute for Home Science & Higher Education for Women, Coimbatore, Tamil Nadu, India Corresponding author: dharanipriya2030@gmail.com

Background: Soup is a versatile food that stimulates appetite, supports digestion and hydration, promotes gut health, and is often consumed as a therapeutic meal during fever, typhoid, malaria, and postpartum recovery. Instant soup mixes are frequently packed in plastic pouches, which release harmful chemicals and produce microplastics, posing significant health risks. This study aims to develop an edible millet pouch that contains millet medicinal herb soup mix that provides nutritional benefits and a sustainable alternative

to plastic. **Methods:** The development of edible pouches from millet starch derived from pearl millet, foxtail millet, and sorghum involved extracting starch through the wet milling process, while non-starch components of millets were utilized for formulation of soup mixes with variations involving three medicinal herbs such as *Cardiospermum halicacabum*, *Solanum trilobatum*, and *Coleus amboinicus*, which were standardized and packed with edible pouches. These pouches were developed using the casting technique with varying compositions of starches and plasticizer. **Results:** The pouches exhibited optimal properties, with tensile strengths of 0.92 MPa, 1.44 MPa, and 0.65 MPa, thicknesses of 0.15 mm, 0.14 mm, and 0.11 mm, and moisture permeabilities of 0.92%, 1.44%, and 0.65%, respectively. Sensory evaluations revealed high consumer acceptance across all variations, with overall acceptability scores ranging from 7.95 to 8.53. Nutrient analysis revealed an energy of 243.81–267.90 kcal, along with calcium, iron, and vitamin C. Microbial stability was assessed for 30-days, and results exhibited Total Plate Counts and Total Yeast and Mould Counts within permissible limits. **Conclusion:** Currently, the consumption of processed and ready-to-eat foods that are packed in single-use plastic has increased. The standardized nine millet medicinal herb soup mixes in an edible pouch provide essential nutrients that may improve bone health and prevent anaemia. This research could be a promising initiative towards replacing single-use plastic pouches, which can be readily included in a daily diet.

Keywords: edible films, millet, herbs, soup, property analysis

JACN-2

ABSTRACT TITLE: FOODPORN FOR E-PRIMING HEALTHY FOOD CHOICES AMONG ADOLESCENTS: AN EXPERIMENTAL STUDY USING APPEALING FOOD IMAGERY

Tavleen Kaur, Project Research Scientist, Tata Institute of Fundamental Research, Hyderabad, Telangana, India, tavleen1109@gmail.com; **Archana Konapur**, Project Coordinator, NutriAide, ICMR National Institute of Nutrition; **Thirupathi Reddy Mokalla**, Post Doctoral Research Fellow, Indiana University, Bloomington; **SubbaRao M Gavaravarapu**, Scientist F & HoD, Nutrition Information, Communication and Health Education (NICHE) Division, Indian Council of Medical Research- National Institute of Nutrition, Hyderabad, Telangana, India)

Background: Social media (SM) use has increased among adolescents, who are more susceptible to nudges in the obesogenic digital food environment. One important nudge is ‘Foodporn’- sharing of alluring, mouth-watering, and magnified food images along with folksonomy, a concept associated with non-core (unhealthy) foods. This study was conducted to assess the effect of using foodporn images on SM as a visual stimulant to prime choices of healthy food options among adolescents (13-19 years). As a secondary objective, this study also examined if secondary determinants associated with unhealthy foods (such as affordability, place of consumption, peer group etc) are relevant even when promoting healthy food options using foodporn. **Materials and Methods:** Sequential explanatory mixed-methods design with intervention framework involving pre- and post-experimental approach was utilized. The quantitative phase- conducted

with adolescents (N=203) involved 3 stages of online data collection using pre-tested questionnaires. An item pool of 15 images categorized into 3 groups: non-core foodporn, core foodporn, and core regular (non-foodporn) was created and images were shared on Instagram for 15 days with a questionnaire assessing nudges. The qualitative phase involved telephonic in-depth interviews (N=19). Baseline SM use and secondary nudging factors during the intervention were assessed using descriptive statistics and Chi-square analysis. Food measures (attitudes, frequency, intentions to consume) were compared pre- and post-intervention using McNemar's test. Reflective thematic analysis was employed for qualitative data. **Result:** Non-core food images dominated participants' SM. Visual appeal of images was found to be strongly associated with willingness to consume the foods ($p<0.01$). They perceived that colour, visual-effects, ingredients, and presentation are some characteristics of food images that determine their appeal and impact on diet. The study setting involved a majority of core food images and a positive trend was observed for all food measures. Norms like higher purchase intentions and eating out with friends exhibited stronger associations with core foodporn as compared to core regular food images. **Conclusion:** The current SM scenario can be modified using core foodporn imagery to prompt adolescents towards healthier food choices. Policy implications should target adolescents by collaborating with SM influencers, adopting popular formats, and forming SM communities.

Keywords:

JAEN-1

ABSTRACT TITLE: ASSOCIATION OF MEAL FREQUENCY, MEAL-TIME INTERVALS AND DIETARY COMPOSITION WITH GLYCEMIC VARIABILITY AND GLYCEMIC CONTROL IN ADULTS WITH TYPE 2 DIABETES MELLITUS: A CASE SERIES STUDY

Ms. Araina Trehon, Researcher, Sir Vithaldas Thackersey College of Home Science SNDT Womens University, Maharashtra, Mumbai, atrehon@gmail.com; **Dr. Jagmeet Madan**, Principal, Sir Vithaldas Thackersey College of Home Science SNDT Womens University, Maharashtra, Mumbai

Background: Glycemic Variability is more detrimental than sustained hyperglycemia in the progression of diabetic complications, yet its role, especially concerning dietary factors, remains underexplored. This study aimed to assess the influence of meal frequency, meal-time intervals and dietary composition on glycemic control and glycemic variability measured using a Continuous Glucose Monitoring System (CGMS) in Indian adults with type 2 diabetes. **Material & Methods:** A prospective case series study was conducted among adults with type 2 diabetes who received FreeStyle Libre Pro monitors to measure interstitial glucose concentrations over a three-consecutive day tracking period. Dietary intake was recorded by food diaries and assessed through consecutive three-day interviews. Postprandial glucose was additionally tracked at 15-minute intervals for 120 minutes. Glycemic Variability was evaluated using Standard Deviation (SD), Mean Amplitude of Glycemic Excursions (MAGE), Time in Range (TIR), Time Above Range (TAR), and Time Below Range; while glycemic control was assessed by HbA1C and mean glucose values. **Results:** Data from 8 participants (50% male; age 55.2 ± 14.9 years; BMI $28.81\pm4.3\text{kg/m}^2$) were analyzed. Lower

meal frequency (<6 vs. 6 meals/d) was associated with reduced glycemic variability and improved glycemic control. Regular breakfast consumption was linked to lower glucose fluctuations. Longer meal-time intervals between a)waking up and breakfast, b)breakfast and lunch but a shorter interval between c)lunch and dinner were associated with lower glycemic variability and better glycemic control. A time in range >70% was associated with better glycemic outcomes. A nutrient-dense, low-energy (20kcal/kg/d), balanced carbohydrate (55%), and low-fat diet (<35%) reduced glycemic variability and improved glycemic control. Meal sequencing highlighted that compared to consuming all components together, consumption of fruits first or fruit+dairy last or only dairy last resulted in a greater reduction of 2-hour postprandial glucose levels.

Conclusion: Dietary factors are key determinants of glycemic variability and glycemic control, emphasizing their role in personalized diabetes management. Integrating strategies including lower meal frequency, consistent meal timings, and food sequencing, present novel behavioral approaches to mitigate glycemic variability and optimize glycemic outcomes.

Keywords: diabetes; glycemic variability; glycemic control, dietary factors

JAEN-2

ABSTRACT TITLE: ABSTRACT TITLE: GREEN JACKFRUIT FLOUR PREVENTS MASH AND DEVELOPMENT OF HCC VIA THE AMPK AND MAPK SIGNALING PATHWAYS

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Background: Metabolic dysfunction-associated steatotic liver disease (MASLD), encompassing metabolic dysfunction-associated steatotic liver (MAFL) and steatohepatitis (MASH), which further progresses to hepatocellular carcinoma (HCC), is a serious public health concern. Given the paucity of approved therapeutic strategies for this lifestyle disorder, dietary interventions may prove effective. **Aim:** We evaluated how green jackfruit flour (JF) prevents MASH and progression to HCC and its underlying mechanisms. **Methods:** The study utilized two murine models that mimic human MASLD disease: (i) a diet-

induced MASH model; (ii) a MASH-HCC model induced by diet and a very low dose of CCl₄. C57Bl/6 mice were fed with chow (CD) or western diet (WD) with normal (NW) or sugar water (SW) for 12 weeks, then randomized to receive either 5 kcal% green jackfruit flour (JF) or an equal volume of wheat flour (placebo flour, PB). The biochemical, histological, and molecular analyses were assessed. Furthermore, experiments were also carried out to examine the effect of propionate, a short-chain fatty acid produced by the gut microbial fermentation of JF, in the *in vitro* MASH and HCC models using the human hepatoma cell line, HepG2 cells, and QGY-7703 cells, respectively. **Results:** JF significantly reduced body weight, liver injury, insulin resistance, and alleviated obesity, steatosis, inflammation, fibrosis, and tumor development in WDSW or WDSW/CCl₄ mice compared to placebo groups. Molecular analyses demonstrated that JF significantly suppressed lipogenesis by activating AMP-activated protein kinase (AMPK) signaling in WDSW mice. Furthermore, JF reduced tumor formation in WDSW/CCl₄ mice by inhibiting mitogen-activated protein kinase (MAPK) signaling pathway. This was supported by sodium propionate treatment, the primary short-chain fatty acid entering the liver from JF's soluble fiber microbial fermentation, which also regulated AMPK and MAPK signaling in cellular models of MASH and HCC, respectively. **Conclusion:** Our findings present strong evidence of JF's therapeutic potential in preventing MASH and MASH-HCC, warranting further investigation of JF's efficacy as a dietary intervention in clinical trials.

Keywords: MASLD, Obesity, HCC, Therapeutic strategy, green jackfruit

JAEN-3

ABSTRACT TITLE: EXPLORING THE USE OF GERMINATED FINGER MILLET FLOUR IN GLUTEN-FREE PASTA PRODUCTION WITH TAPIOCA FLOUR

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Background: Millets are among the most neglected foods in many parts of the world, despite being highly nutritious and gluten free which are highly beneficial for diabetics, cardio vascular disease, celiac disease, and many more. The objective of this study was to develop gluten-free pasta via use of use germinated finger millet flour. **Methods:** The amount of pasta in the present study was standardized with varying proportions of finger millet flour and tapioca flour (50, 70, 80, 85 and 90%). **Result:** The pasta which was developed with 70% millet with 30% tapioca was found to be the most acceptable during sensory evaluation. This gluten-free developed pasta was found with increased iron, calcium, zinc, dietary fibre, vitamin B and antioxidants whereas, the levels of carbohydrates, sugars, antinutrient phytic acid got decreased. Thereby, the results illustrate that 100 g sample of developed germinated finger millet pasta contains 26.33 mg/Kg of iron, 405 Kcal/100 g of energy, 71.78% of carbohydrates, 6.01% of protein, 10.43% of fat, 2.4% of sugar, 13.15 mg/Kg of zinc, 0.21 mg/Kg of beta-carotene, 11.95 g/100 g of dietary fibre, 32.50 mg/100 g of total phenols, 1.02 mg/100 g of phytic acid, 27.0 mg/ 100 g of total vitamin B and 2356 mg/Kg of calcium. However, 100 g of control pasta C1 contains 12.89 mg/Kg of iron, 391 Kcal/100 g of

energy, 72.34% of carbohydrates, 10.55% of protein, 6.65% of fat, 3.1% of sugar, 5.62 mg/Kg of zinc, 7.80 g/100 g of dietary fibre, 5.58 mg/100 g of total phenols, 3.09 mg/100 g of phytic acid, 6.3 mg/100 g of vitamin B and 198.2 mg/Kg of calcium. The ingestion of gluten, even in minimal quantities, can trigger inflammation in the small intestine of celiac patients, which can hinder their absorption of essential nutrients such as folic acid, calcium, iron, and fat-soluble vitamins. Germination, common household technique reduced antinutrients and improved nutritional and functional properties. **Conclusion:** Therefore, there is a critical need for developing gluten-free products that are both affordable and of high nutritional quality, since currently available gluten-free products are known to have poor nutritional quality and to cost more than gluten-containing food products.

Key words- Gluten free, Finger millet, Pasta, Germination, Controlled Diabetes

SENIOR SCIENTISTS AWARDS SESSION II

15th November 2024

Venue: SIU Auditorium

03.00 pm - 04.00 pm

Abstract ID	Presenter name	Affiliation	City	Email	Title
SENIOR AWARD COMMUNITY NUTRITION					
SACN-1	Ms. Nikhita B.R.	ICMR-National Institute of Nutrition	Hyderabad	nikhitab.r@gmail.com	Effect of Finger millet-based diet supplementation on Anthropometry, body composition and biochemical profile among Preschoolers Aged 2-5 with Moderate Acute Malnutrition (MAM)
SACN-2	Ms. Malsawmkimi Hauhnar	Avinashillingam Institute for Home Science and Higher Education for Women	Coimbatore	kimkim16162@gmail.com	Development and Evaluation of Diabetes Self-Management Education mHealth Tailored for Type 2 Diabetes Mizo Tribals.
SACN-3	Ms. Ansari Sabat Imran	The Maharaja Sayajirao University of Baroda	Vadodara	sabat.phd@gmail.com	Understanding Nutrition, Health, and Food Anthropology of Alavi Bohra: An Ethnographic Research
SACN-4	Ms. Shaonee Saha	West Bengal State University	Kolkata	shaonee.saha2@gmail.com	Determination of risk factors of Eating Disorder using anthropometric variables and EDE-Q subscale scores: A canonical multivariate analysis
SACN-5	Ms. Neelam Mahesh Rathod	The Maharaja Sayajirao University of Baroda	Vadodara	neelam_rathod92@yahoo.com	Evaluation of different food classification systems and association of ultra-processed food consumption of different food classification systems with body composition, dietary intake and various biomarkers among people with Diabetes Type 2
SENIOR AWARD EXPERIMENTAL NUTRITION					
SAEN-1	Ms. Nikita Joshi	Interactive Research School for Health Affairs	Pune	joshinikit706@gmail.com	Maternal fatty acid status influences placental fatty acid oxidation and transport in women with gestational diabetes mellitus (GDM)

SAEN-2	Mr. Udaykanth Suryavanshi	ICMR-National Institute of Nutrition	Hyderabad	mail2udaykanth@gmail.com	Vitamin B12 supplementation attenuates endoplasmic reticulum stress and neuronal cell death induced by high-fat, high-sucrose diet in C57BL/6J mice.
SAEN-3	Ms. Nandini Chopra	St. Johns Research Institute	Bangalore	nandini.chopra1906@gmail.com	Effect of Vitamin D Supplementation on Circulating Total 25(OH)D Levels During Pregnancy: Pilot Study

SACN-1

ABSTRACT TITLE: EFFECT OF FINGER MILLET-BASED DIET SUPPLEMENTATION ON ANTHROPOMETRY, BODY COMPOSITION AND BIOCHEMICAL PROFILE AMONG PRESCHOOLERS AGED 2-5 WITH MODERATE ACUTE MALNUTRITION (MAM)

Nikhita B.R., Sakshi Rai, Parth Sarin, Pallavi AB, P Harshita Yadav, Devendher Ch, Dr. J.J Babu Geddam,, Aruna Reddy, Vijayalaxmi, PhD Research Scholar (Nutrition), ICMR- NIN, nikhitab.r@gmail.com; Sourav Sen Gupta, Scientist, Emory University, Atlanta; Santosh Kumar Banjara, Radhika M, Karthik R, N. Ananthan, Hemant Mahajan, Devraj J, Scientist, ICMR- NIN; Paras Sharma, Associate professor, University of Mizoram, Mizoram, Aizawl

Background: Malnutrition is a widespread global health challenge. India faces significant child undernutrition despite ongoing efforts of government nutrition programs. Finger millet (Ragi), known for its rich nutrient profile, offers the highest calcium (364mg/100g), balanced amino acids & serves as a valuable prebiotic source. It has gained attention as a sustainable food in treating malnutrition. This study focuses on the use of Finger millet-based supplement with dates powder, to assess its impact on MAM children's body composition, anthropometry & micronutrient status. **Material & methods:** A randomized controlled intervention study was conducted in Anganwadi centres of Hyderabad, Telangana, India, among 68 MAM children (24-59 mnths) (WHZ -2 to -3). Subjects were randomly assigned to two groups to receive either finger millet based (FMD), or wheat/ rice based existing (BMD) RUTF for 8 weeks intervention. Nutrient adequacy (24h diet recall) & growth indicators (weight, height, MUAC), body composition, hemoglobin (Hb), & serum micronutrients were assessed. **Results:** Both FMD and BMD groups showed improvements in weight, height and MUAC after the 8-week intervention ($p>0.05$) with 80% consumption. An average weight gain of 1.96 and 1.6g/kg/d was observed in FMD (8%) and BMD (6.6%) respectively. WHZ scores significantly improved in FMD (from -2.34 to -1.84) and in BMD (from -2.30 to -2.14) ($p<0.05$). FMD showed great improvements in mineral mass (99%) and bone mineral content (~300%) ($p>0.05$) while BMD subjects exhibited increase in ECW (13.8%), TBW (4.2%), protein mass (8.4%), soft lean mass (5.1%), FFM (8.4%), SMM (8%), and BMR (1.34%). In FMD group, Hb levels increased by 16% ($p<0.05$) due to its robust iron content. Serum vitamin B12 (20-29%) and folate (10-16%) levels were increased in both groups ($p>0.05$).

However, 90% of MAM subjects were found to be micronutrient inadequate (MPA<0.5) and did not meet the AMDR criteria. Overall, 62% subjects recovered from MAM to healthy among both. **Conclusion:** Addition of Ragi & date powder showed improved results among MAM children in comparison to the existing product. Thus, finger millet can combat undernutrition as nutritious option that deserves broader implementation in food programs.

Keywords: Malnutrition, Finger millet, Nutrient adequacy, Weight gain, Body composition.

SACN-2

ABSTRACT TITLE: DEVELOPMENT AND EVALUATION OF DIABETES SELF-MANAGEMENT EDUCATION MHEALTH TAILORED FOR TYPE 2 DIABETES MIZO TRIBALS

Ms. Malsawmkimi Hauhnar, PhD Scholar, Avinashillingam Institute for Home Science and Higher Education for Women, Coimbatore, Tamil Nadu, kimkim16162@gmail.com ; Thirumani A Devi, Professor, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, Tamil Nadu

Background: Diabetes Self-Management Education (DSME) is crucial for managing Type 2 Diabetes Mellitus (T2DM), yet its effectiveness is often limited, especially among tribal populations in rural India. This study focuses on developing and evaluating a tailored DSME mHealth for Mizo tribals in Aizawl, Mizoram, aiming to address the unique cultural and educational needs of this group. **Methods and methods:** The study was conducted in three phases. Phase I focused on creating a culturally and contextually relevant mHealth DSME toolkit, guided by ADCES7 Self-Care Behaviour frameworks and validated by health professionals using the Suitability of Assessment of Materials (SAM). Phase II involved development of DSME mHealth and assessment of the acceptance of an DSME mHealth among 256 diabetic patients through a survey measuring perceived ease of use, usefulness, and adoption intention. Phase III involved a randomized controlled trial with 120 diabetic subjects (30-50years), evaluating the impact of the DSME mHealth intervention on nutritional status (anthropometric measures, biochemical parameters, 3 days diet recall), and self-management knowledge, attitude and practices for a period of five months. **Results:** The developed DSME toolkit was found to be suitable (>80%) SAM score for the target population and DSME mHealth received high acceptability scores, with reliability indices (Cronbach's alpha) ranging from 0.950 to 0.983. Post-intervention analyses of ANCOVA revealed that although WHR, BMI and lipids profile showed less pronounced changes, the intervention significantly improved HbA1c, nutrient intake and self-management Knowledge, Attitude and Practices among the experiment group compared to controls. It also reveals that the overall effectiveness of the intervention was consistent across different clinic types. **Conclusion:** The tailored DSME mHealth intervention demonstrated high acceptability and effectiveness in improving certain health outcomes and self-management practices among Mizo tribals. These findings suggest that culturally tailored mHealth tools can be a valuable asset in diabetes management, particularly in underserved populations. Future work should focus on optimizing these tools and exploring their long-term impacts on health outcome.

SACN-3

**ABSTRACT TITLE: UNDERSTANDING NUTRITION, HEALTH, AND FOOD ANTHROPOLOGY OF
ALAVI BOHRA: AN ETHNOGRAPHIC RESEARCH**

Ms. Ansari Sabat Imran, PhD Student, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, email:sabat.phd@gmail.com; Vanisha Sudhir Nambiar, Professor, The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat

Background: Nutrition, health, and food culture of the transnational Alavi Bohra community, with roots in Yemen, and currently living in Vadodara for over 300 years. **Methods and Materials:** Nutrition, health, and food culture of the transnational Alavi Bohra community, with roots in Yemen, and currently living in Vadodara for over 300 years involved a cross-sectional assessment of the nutritional status of 125 mothers, and 125 children of Alavi Bohra Community of Vadodara, Gujarat, using dietary profiles, anthropometry, body composition and biochemical data. The community's food culture, habits, and practices were explored through ethnographic research: interviews, focus group discussions, photo-elicitation, and transect walk. The study also developed an inventory of traditional Alavi recipes, documenting them based on lifecycle and physiological conditions. Data was analyzed using MS Excel, WHO Anthro software, JASP, SPSS, and Mini-Tab. **Result:** Of 125 Alavi Bohra mothers, 82% lived in joint families, 75% were homemakers, and 65.6% reported no recent illness. Average intake was 1403 kcal, 46.1 g protein, and 49.8 g fat; 68% met 75% RDA for energy, 86.4% for protein, while 38.4% had a low dietary diversity score. Of the 95 mothers, 71.57% had normal hemoglobin, 83% were prediabetic, 91.58% had desirable cholesterol; 96.8 had sufficient B12 levels, and 86.30% were deficient in Vitamin D. Mothers' average height was 156.60 cm, weight 64.7 kg, BMI 26.36 kg/m²; 58.4% obese, 92% at high cardiometabolic risk based on conicity index. Among children 45.6% were underweight, 69.6% stunted, and 19.2% were wasted. Over 27% were born LBW, 46.4% breastfed within 1 hour. Routine and communal meals were shared from a single thaal, with prohibited foods including alcohol, and seafood. Specific foods for fasts and feasts were made as per the Alavi Misri Lunar Calendar. An inventory of traditional recipes, including lost ones like Bataka jelly, was developed to preserve and share the culinary heritage. **Conclusion:** This study revealed the community's rich traditions, highlighting their unique identity shaped by spiritual guidance and communal practices, and health challenges such as central obesity, and stunting in children which underscored the need for culturally tailored health interventions.

Keywords: Food Anthropology, Ethnographic Research, Micro-minority community, culinary heritage

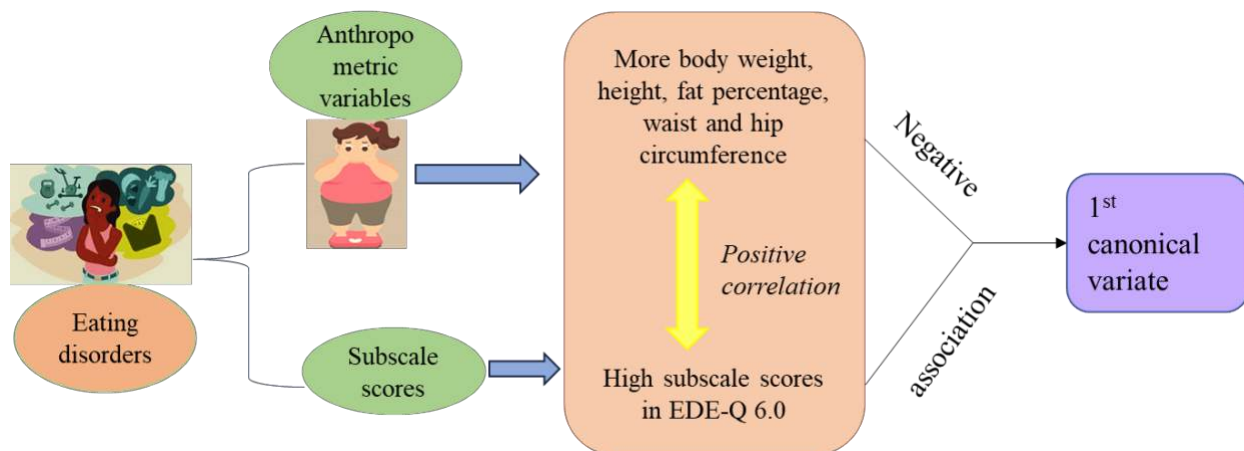
SACN-4

**ABSTRACT TITLE: DETERMINATION OF RISK FACTORS OF EATING DISORDER USING
ANTHROPOMETRIC VARIABLES AND EDE-Q SUBSCALE SCORES: A CANONICAL
MULTIVARIATE ANALYSIS**

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Background: Transformation into pubescence and adulthood imposes adolescents into greater nutritional demand along with physiological alteration which sometimes can arise body dissatisfaction and low self-esteem, prevalently among girls due to their over possessiveness about physical appearance. Striving for an ideal figure may result in unhealthy weight control methods, commonly known as eating disorders (ED). High BMI is already an established risk factor of ED but community based localized investigations including anthropometric variables and tools is essential for understanding these trends. **Objectives:** The cross-sectional study was undertaken to determine significant risk factors of ED, establish relationship between anthropometric and subscale variate set. In addition, the study will also find number of dimensions needed to explain the association of anthropometric and subscale variables in determination of ED. **Methods:** The study involved 389 adolescent girls from North 24 Parganas district, detecting eating disorders using EDE-Q 6.0 questionnaire, and recording anthropometric variables with standard protocol. Relationship between anthropometric and subscales of the questionnaire was obtained by canonical correlation analysis (CCA) using SPSS version 21. **Result:** The analysis revealed two canonical dimensions are significant and the first one can explain 79.6% variance of the data set. The sets exerted positive correlation ($r=0.48$) between them when each variable has indirect association with first canonical variate. Among the variables, body weight, waist and hip circumferences, weight and shape concern had higher association with the variate. **Conclusion:** CCA model helped to reach at variables needed to be considered during ED determination program while using EDE-Q 6.0. Psychological and anthropometric variables might be incorporated together when using EDE-Q 6.0 to reveal their impact on canonical variate.

Keywords: Canonical correlation, eating disorder, waist and hip circumference, weight, shape concern.



Graphical abstract

SACN-5

ABSTRACT TITLE: EVALUATION OF DIFFERENT FOOD CLASSIFICATION SYSTEMS AND ASSOCIATION OF ULTRA-PROCESSED FOOD CONSUMPTION OF DIFFERENT FOOD CLASSIFICATION SYSTEMS WITH BODY COMPOSITION, DIETARY INTAKE, AND VARIOUS BIOMARKERS AMONG PEOPLE WITH DIABETES TYPE 2

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Background: Different food classifications might influence conclusions on the population's consumption of various foods of different processing levels and their association with health outcomes. The study's objectives were to compare food classification systems by food quality metrics, to assess the agreement of UPFs with FOPNL, food sustainability and association of UPFs consumption of different classification systems with various markers among people with diabetes type 2(PWDs). **Methodology:** The novel approach was to apply the NOVA, ICMR-NIN and IARC classifications to the 530 foods in validated FFAQ. Mean NRF 12.3(measure nutrition density),energy density and GI of each food item as per the classification system were compared using ANOVA.UPF% was compared across the three classification using the discrepancy range. Pearson's correlation was used to assess the agreement of 284 Indian products by Open Food Facts database for Nutriscore, Eco-score and carbon footprints. Around 8010 meals were assessed to analyze UPF consumption using different classifications of 445 people with diabetes according to quartiles of UPF consumption. **Results:** Total UPFs were 254,119 and 139 as per IARC,NOVA and ICMR-NIN, respectively. The nutrient density of UPFs was lowest compared to moderate(MP) and unprocessed(UP) foods except for milk and milk products, non-vegetarian sources and oils classified by IARC. Energy density of UPFs was highest except for oils in NOVA and pulses in IARC.GI of UPFs was highest in all classifications. Eco-score of beverages was worst (10.71 ± 9.15).Carbon-footprint was greatest for chocolates(849.83 ± 542.4) followed by packaged cakes (381.68 ± 194.08). Nutriscore was the least for beverages(42.33 ± 12.21).Carbon-footprint of breakfast cereals and eco score of biscuits and fruit jam was significant with NOVA($r=0.56^{**}$, $r=-0.12^{*}$, $r=-0.07^{*}$).Except for nut butters and beverages, UPFs had worse Nutriscore.Quartile-4 of UPF consumption had a higher intake of total energy SFA and sodium than those in the lowest quartile (Q1).Lower body muscle%,protein and fibre intake was observed in Q4 of NOVA and ICMR-NIN.Higher TG and glycemic markers were observed in Q4 of IARC and ICMR-NIN. **Conclusion:** Most of the UPFs are energy-dense and nutrient deficient.The association of different food classifications on the same dataset showed that UPF consumption might impact differently on various health markers.

SAEN-1

ABSTRACT TITLE: MATERNAL FATTY ACID STATUS INFLUENCES PLACENTAL FATTY ACID OXIDATION AND TRANSPORT IN WOMEN WITH GESTATIONAL DIABETES MELLITUS (GDM)

Nikita Joshi, Deepali Sundrani, Karuna Randhir, Hemalata Pisal, Sadhana Joshi, Mother and Child Health, ICMR-Collaborating Centre of Excellence (ICMR-CCoE), Interactive Research School for Health Affairs (IRSHA), Bharati Vidyapeeth (Deemed to be University), Pune, India; Girija Wagh, Department of Obstetrics and Gynecology, Bharati Medical College and Hospital, Bharati Vidyapeeth University, Pune, India; Sanjay Gupte, Gupte Hospital and Research Centre, Pune, India.

Background: Omega-3 and omega-6 fatty acids play an essential role throughout pregnancy and are essential for fetoplacental growth and development. Any imbalance in their intake may influence the pregnancy outcome thereby leading to various complications. These polyunsaturated fatty acids (PUFAs) are essential building blocks of fetal brain development. Materno-fetal transfer of fatty acids depends on maternal intake, placental fatty acid metabolism and transport. Alterations in any of these mechanisms may affect this transfer thereby influencing fetal development. This study reports the influence of maternal and placental fatty acid levels on placental fatty acid oxidation markers and transporters in GDM and non-GDM women. **Methods:** The current study was undertaken as a part of the Indian Council of Medical Research-Centre for Advanced Research (ICMR-CAR). Women were recruited at 11-14 weeks and maternal blood (at 11-14, 18-22, 26-28 weeks and at delivery) and placenta was collected. A total of 209 GDM and 207 non-GDM women were included in the study. The mRNA and protein levels of PPAR- α , CPT1A, FATP1 and FATP4 were estimated using quantitative real time PCR and ELISA kits respectively. The correlation between maternal and placental fatty acids with placental markers was studied using partial correlation. **Results:** Total saturated fatty acids (SFA, $p < 0.05$) were higher and total PUFAs were lower in women with GDM. Placental protein levels of PPAR- α , CPT1A, FATP1 and FATP4 were higher ($p < 0.05$ for all) in GDM group. mRNA levels of PPAR- α were positively correlated with CPT1A, FATP1 and FATP4 mRNA levels. Maternal erythrocyte proportions (at delivery) of STE ($p < 0.01$) and SFA were positively associated whereas, omega-6 PUFAs ($p < 0.05$) were negatively associated with placental PPAR- α levels. Maternal erythrocyte proportions of LA, AA, omega-6 PUFAs and DHA at delivery were positively correlated with CPT1A protein levels. Placental ALA ($p < 0.05$) and STE were positively associated with PPAR- α and FATP1 while LA was negatively associated with PPAR- α protein levels. **Conclusion:** Maternal fatty acid status influences placental fatty acid oxidation and transport in GDM thereby influencing birth outcome.

Keywords: Fatty acid oxidation, fatty acid transporters, placenta, gestational diabetes mellitus

SAEN-2

ABSTRACT TITLE: VITAMIN B12 SUPPLEMENTATION ATTENUATES ENDOPLASMIC RETICULUM STRESS AND NEURONAL CELL DEATH INDUCED BY HIGH-FAT, HIGH-SUCROSE DIET IN C57BL/6J MICE

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Background: Increased consumption of a high-calorie diet results in the development of metabolic disorders and associated neurological impairments. Metabolic disturbances such as hyperglycaemia, systemic insulin resistance, and hyperhomocysteinemia (HHcy) are linked to neurodegenerative diseases. These conditions share a common pathogenic feature of increased susceptibility to protein misfolding and aggregation causing endoplasmic reticulum (ER) stress. Vitamin B12 is vital for brain health, and its deficiency is associated with HHcy, and ER stress. This study aimed to investigate the effect of B12 supplementation on diet-induced metabolic disorder-associated ER stress and neurobehavioral outcomes in C57BL/6J mice. **Materials & Methods:** Two-month-old male mice were randomly assigned to three groups and fed respective diets for 8 months: Control (Ctl) group (B12 - 25 µg/kg diet), HFHS (high-fat, high-sucrose diet, B12 - 25 µg/kg), and HFHS+B12 (B12 - 50 µg/kg). Mice were evaluated for anxiety-like behaviour using the open field test and spatial learning and memory using the morris water maze. Plasma insulin and homocysteine (Hcy), were measured using ELISA. Total cholesterol (TC) and triglycerides (TG), were determined through endpoint colorimetric assay. Amyloid deposits in the cerebral cortex (CC) were assessed using Congo red staining, while cell death was evaluated using the TUNEL assay. Neurotrophic support was analysed with RT-PCR, and cleaved Caspase 3 protein expression using immunohistochemistry. Further, astrogliosis, ER-stress, and associated apoptosis were assessed by immunoblotting. **Results:** Fasting blood glucose, glucose tolerance, TG, and TC were similar across all groups. The HFHS diet led to body weight gain, higher insulin, elevated Hcy, and HOMA-IR compared to Ctl. HFHS diet resulted in ER stress, neuronal apoptosis and astrogliosis in CC. B12 supplementation in the HFHS+B12 group significantly reduced Hcy levels, mitigated ER stress, protected against neuronal cell death, and reduced astrogliosis compared to the HFHS group. Additionally, B12 supplementation enhanced neurotrophic support and reduced anxiety-like behaviour in the HFHS+B12 group. **Conclusion:** Overall, findings suggest that B12 supplementation confers protection against Hcy-induced ER stress and apoptosis, highlighting its potential as a neuroprotective agent.

SAEN-3

**ABSTRACT TITLE: EFFECT OF VITAMIN D SUPPLEMENTATION ON CIRCULATING TOTAL
25(OH)D LEVELS DURING PREGNANCY: PILOT STUDY**

Ms. Nandini Chopra, Senior Research Fellow, St. Johns Research Institute, Bengaluru, Karnataka, nandini.chopra1906@gmail.com; Pratibha Dwarkanath, Associate Professor, St. Johns Research Institute, Bengaluru, Karnataka; Catherine Hawrylowicz, Professor, Kings College London, London; Annapurna Vyakarnam, Professor, St. Johns Research Institute, Bengaluru, Karnataka; Anura V Kurpad, Professor, St. St Johns Medical College, Bengaluru, Karnataka; John M Raj, Assistant Professor, St Johns Medical College, Bengaluru, Karnataka; Vasista Agida, Project Scientist C, St Johns Research Institute, Bengaluru, Karnataka; Roopashree C, Project Associate, St. Johns Research Institute, Bengaluru, Karnataka

Background: Vitamin D deficiency (VDD) is prevalent in all populations and is a public health priority. Given the critical role of vitamin D during pregnancy, it is important to address its deficiency, especially among women of LMICs where the current antenatal supplementation guidelines are inadequate to mitigate it. Thus, our study aimed to assess whether daily supplemental dose of 2000IU vitamin D₃/day, starting early at 14 weeks of gestation until delivery, would increase vitamin D levels and transition deficient women (total 25(OH)D<20ng/ml) to sufficiency (total 25(OH)D≥20ng/ml). **Methods:** An open-label interventional study of 2000IU vitamin D₃/day was conducted in VDD pregnant women. After obtaining written informed consent, apparently healthy, adult pregnant women with singleton fetuses were recruited at Obstetrics and Gynaecology Department of St. John's Medical College Hospital, Bengaluru. At recruitment, demographic, dietary, anthropometric, seasonal, and sun exposure data were collected. Along with supplement adherence details, aforementioned measurements were repeated at follow-up visits. Biomarkers like, serum total 25(OH)D, parathyroid hormone (PTH), vitamin D binding protein, and vitamin D receptors were analysed at recruitment (baseline), once in second, and third trimester (endline) of pregnancy. Urinary calcium-to-creatinine ratio was assessed mid-pregnancy to rule-out hypervitaminosis D. **Results:** Of 258 eligible participants, 177 subjects had longitudinal total 25(OH)D values, assessed using chemiluminescence. After an average of 23.5±5.0 weeks of supplementation, 74.5% participants transitioned to sufficiency, with mean change in total 25(OH)D of 14.2±9.9ng/ml from baseline to endline. Although, 25% of the deficient subjects did not reach sufficiency, a significant increase in total 25(OH)D levels was observed post-intervention (11.25±4.2ng/ml vs. 14.19±4.0ng/ml, p=0.001). Also, total 25(OH)D was negatively correlated with PTH at endline (r= -0.36, p<0.001). Importantly, none of the participants exceeded the predefined safety threshold of urinary calcium-to-creatinine ratio of 0.8 or total 25(OH)D of 90ng/ml, even among those with high adherence to supplementation. Further, exploratory analysis showed that maternal age, parity and baseline winter-season were significantly associated with endline total 25(OH)D status (Odds Ratio=1.09, 0.28, 3.86, respectively). **Conclusion:** The findings provide preliminary evidence supporting the safety and effectiveness of 2000IU vitamin D₃/day supplemental regimen to alleviate VDD among Indian pregnant women.

Key words: Vitamin D deficiency, pregnancy, intervention, supplementation, total 25(OH)D

FREE COMMUNICATION ORAL PRESENTATIONS

HALL NO.1: Convention Hall

15th November 2024

Time: 10:00 am to 11:30 am

SESSION 1- COMMUNITY NUTRITION

No	Abstract ID	Presenter name	Affiliation	City	Email	Title of Presentation
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No	Abstract ID	Presenter name	Affiliation	City	Email	Title of Presentation
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13	394	Dr Dr Roma Sarnaik Morghade	Datta Meghe Institute of Higher Education and Research, Wardha	Wardha	drromasarnaik@gmail.com	Food, Nutrition, Health, and Lifestyle: Effects of Nutritional Modifications and Lifestyle Changes on The Remission of Chronic Diseases

ABSTRACT ID: 008

ABSTRACT TITLE: DIETARY INTAKE ASSESSMENT AMONG PREGNANT WOMEN WITH HIGHER BODY MASS INDEX BELONGING TO UPPER SES RESIDING IN NORTH-WEST DELHI

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Background: Adequate maternal nutrition is crucial for optimal fetomaternal health. Since, overweight/obesity is often recognized as “over-nourished,” dietary intake of obese women is neglected during their pregnancies. Therefore, the present study was planned to assess dietary intake among affluent overweight/obese pregnant women residing in North-West Delhi. **Materials & Methods:** A total of 312 women with singleton pregnancy, BMI >18kg/m², belonging to upper SES were enrolled within 12th week of their pregnancies from private antenatal clinics in North-West Delhi. At enrolment, subjects were categorized into normal weight (NW; BMI:18–22.9 kg/m²), overweight (OW; BMI:23–24.9 kg/m²) and obese (OB; BMI: ≥25 kg/m²) according to Asian-Indian BMI criterion (2009). This was a longitudinal descriptive study wherein data were gathered at <12th week(baseline), 18th–20th week(midterm) and >32nd week-childbirth(term). Data related to socio-demographic and obstetric history were collected from participants using structured questionnaire. Anthropometric measurements and dietary intake were assessed using standardized tools and 24-hour dietary recall respectively. STATA version 15.1 SE was used for statistical analysis. **Results:** Overall, suboptimal diet was consumed by OB and OW subjects which was high in carbohydrate (term; OB:260g/d (SD:31.2g/d), OW:215.58g/d(SD:34.63g/d), NW:211g/d (SD:33.92g/d), p=0.000***) and fat (term; OB:48g/d(SD:9.54g/d), OW:48.62g/d (SD:7.59g/d), NW:44.68g/d (SD:7.43g/d), p=0.382) while was inadequate in protein (term; OB:52g/d (SD:11.81g/d), OW:47.52g/d(SD:3.84g/d), NW:46.32g/d(SD:4.37g/d) p=0.333). For vitamin-A (term; OB:74.76%, OW:84.06%, NW:90.41%), thiamine (term; OB:98.06%, OW: 98.55%, NW:100%), riboflavin (term; OB:100%, OW:100%, NW:100%), niacin (term; OB:98.06%, OW:100%, NW:100%), vitamin C (term; OB:48.54%, OW:56.52%, NW:69.86%), pyridoxine (term; OB:95.15%, OW:100%, NW:98.63%), cyanocobalamin (term; OB:100%, OW:100%, NW:100%) and magnesium (term; OB:36.89%, OW:34.78%, NW:36.99%), intake was inadequate among most of subjects. **Conclusion:** Our data thus, highlights a dual burden of maternal obesity and multiple micronutrient inadequacy among affluent OW and OB pregnant women residing in North-West Delhi. Further, studies are warranted to determine the adequate dietary intake for overweight/obese pregnant women to prevent excessive weight gain and achieve positive pregnancy outcome.

Keywords: Body Mass Index, Dietary intake, Micronutrients, Obesity, Pregnant women

Abstract ID: 033

ABSTRACT TITLE: COMPARISON OF WHO 2007 AND IAP 2015 GROWTH REFERENCES AMONG FEMALE ADOLESCENTS

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Background: Several growth references have been published to identify malnutrition among adolescents. However, World Health Organization (WHO) 2007 growth references and India Academy of Pediatrics (IAP) 2015 growth charts are the two most popular growth references used in India. Hence, the aim of this study was to compare BMI categories of female adolescents based on WHO 2007 growth references and IAP 2015 growth charts, and to associate this with their total body fat percentage. **Materials & Methods:** This cross-sectional study included 536 female adolescents aged 10 to 15 years from private and corporation schools in Chennai, India. Multistage sampling technique was used to recruit participants in the study. Height was measured using a stadiometer. Body weight and total body fat percentages were recorded using handheld Bioelectric Impedance Analyzer (Omron: HBF – 701 Karada scan). BMI-for-Age z-scores were calculated using both WHO 2007 and IAP 2015 growth references to classify participants as thin, normal, overweight, or obese. Chi-square test, independent t-test, and Pearson's correlation were used for analysis. P-value < 0.05 was considered statistically significant. **Results:** There was a significant difference ($p < 0.001$) in the BMI categorization of female adolescents based on WHO 2007 growth references and IAP 2015 growth charts. IAP 2015 growth charts classified nearly 1/3rd of the participants as either overweight or obese, whereas the WHO 2007 growth references classified almost 1/4th of the participants as either overweight or obese. Thinness as observed by WHO 2007 growth references was four times higher as compared to IAP 2015 growth charts. Mean total body fat percentage for participants in all categories was found to be higher under WHO 2007 growth references categorization, and a significant difference was seen with respect to thin ($p < 0.05$), normal ($p < 0.01$) and overweight ($p < 0.05$) categories. **Conclusion:** For Asian Indian ethnic group, IAP 2015 growth charts may be a better predictor than WHO 2007 growth references for identifying children with malnutrition as anthropometry of Indian adolescents varies from their western counterparts due to genetics.

Keywords: Thinness, Obesity, Total body fat percentage, Malnutrition, Adolescents, Growth references

Abstract ID: 049

ABSTRACT TITLE: EFFECT OF COVID-19 ON FRUIT AND VEGETABLE SUPPLY AND RESILIENCE MECHANISMS ADOPTED IN PUNE CITY

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Implementation Sciences, Centre for Chronic Disease Control, Delhi; Mrs. Bhushana Karandikar, Independent, Pune; Prof. Rosemary Green, Professor, London School of Hygiene and Tropical Medicine, London; Dr. Kerry Ann Brown, Senior Lecturer, University of Exeter, Brighton; Prof. Dorairaj Prabhakaran, Executive Director, Centre for Chronic Disease Control, New Delhi; Prof. Sailesh Mohan, Deputy Director and Head- CVD Epidemiology, Centre for Chronic Disease Control, New Delhi.

Background: Fresh fruits and vegetables (FV) value chains face challenges due to short shelf lives and infrastructure needs. The study focused on diversification strategies adopted by stakeholders in Pune as part of the resilience mechanism during COVID-19. This study examined how product and marketing channel diversification impacted FV availability and the economic status of supply chains. **Materials & Methods:** This cross-sectional qualitative study conducted during COVID-19 involved face-to-face or telephonic interviews with 44 FV value chain stakeholders from Pune City. They included 7 farmers, 7 wholesalers, 16 retailers, and 14 consumers. Data were collected on FV consumption, availability, accessibility, affordability, and the use of diversified FV supply chains including online methods (What's App or portals). Interviews were recorded, transcribed into English, and analyzed using qualitative thematic analysis to derive insights into the stakeholders' experiences, effects on FV consumption, and strategies during the outbreak. **Results:** Most stakeholders relied on physical methods for selling and buying FV, with only a small percentage using online options. Consumers preferred vendors who delivered to their doorsteps or were located nearby. Despite farmers producing FV in surplus, restrictions on transport and shop hours during COVID-19 reduced availability, leading to decreased consumption and increased FV loss and waste. Farmers, wholesalers, and retailers incurred significant losses, while consumers faced higher prices and lower diversity of FV. Nutrient-rich green leafy vegetables and Vitamin A-rich FV were the least available. As a result, many consumers switched to long-lasting starchy vegetables and pulses. **Conclusion:** Policymakers need to focus on streamlining market chains to enhance FV availability while understanding the value chain dynamics and preparing for potential shocks to ensure resilience within the food supply system. Further studies need to explore and identify FV supply chains to improve the supply of nutrient-rich FV. Additionally, considering planetary health goals, the environmental impacts of these supply chains need to be explored.

Keywords: Fruits and vegetables, Value chain, COVID, India

Abstract ID: 125

ABSTRACT TITLE: EFFECT OF COOKED MILLET DIET ON MICRONUTRIENTS (VITAMIN-B12, FOLATE, ZINC, CALCIUM, VITAMIN-D) STATUS AMONG ANAEMIC WOMEN OF REPRODUCTIVE AGE (17-22 YEARS)

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Background: India is undergoing a nutrition transition, with high burden of underweight, overweight along with micronutrient deficiencies. The CNNSC-2019 report revealed zinc deficiency in 32% of adolescents, with 37% deficient in folate and Vitamin-B12. Replacement of micronutrient-rich millets offers a sustainable approach to enhance their intake. This study aims to assess the impact of millet-based recipes on micronutrient status among anaemic women of reproductive age group. **Materials & Methods:** A randomized controlled trial was conducted by recruiting 822 mild to moderate anaemic women aged between 17-22 at TSWRDES college. The intervention group consumed millet-based meals (pearl millet, finger millet, and foxtail millet) for 4-5 months, while the control group maintained their regular diet. Micronutrients were analysed at both baseline and endpoint using Abbot I select 1000 autoanalyser. Paired t-tests and Wilcoxon signed rank test, were used the within group. **Results:** The mean duration of intervention was 128 days and the mean intake of millet per day was 50 g. The intervention group showed a significant increase in folate levels from 2.06 ng/mL to 3.12 ng/mL ($P < 0.001$), while the control group showed a decrease in folate levels (2.89 ng/mL to 2.64 ng/mL, $P = 0.245$), Vitamin-B12 showed improvement in both groups whereas in intervention group the improvement is significant (150.4pg/mL to 205.4 pg/mL, $P < 0.001$), but in control-group, improvement is not significant (148.4pg/mL to 156.8 pg/mL, $P = 0.331$). Zinc levels significantly decreased in both groups (Intervention-group: 110.4 mcg/dL to 97.7 mcg/dL $P < 0.001$ control-group 117.2 mcg/dL to 102 mcg/dL $P < 0.001$). Both groups showed increases in calcium (Intervention-group: 9.6 mg/dL to 11.3mg/dL, $P < 0.001$: control-group: 9.9 mg/dL to 11.1mg/dL $P < 0.001$) and Vitamin-D levels reportedly increased in both groups but significant improvement was seen in the control group. (Intervention-group-12.3 ng/mL to 13.1ng/mL $P = 0.183$, control-group-11.0ng/mL to 12.9ng/mL $P < 0.001$). **Conclusion:** In this study, there was a positive impact of a millet-based diet on micronutrient (Folate, Vitamin B12, and Calcium) status among anaemic women of the reproductive age group. Replacing a cereal-based diet with a millet-based may improve other micronutrient levels along with haemoglobin levels.

Keywords: Cooked millet recipes, Anemia, Micronutrients

Abstract ID: 138

ABSTRACT TITLE: ACCEPTABILITY OF MICROBIOTA-DIRECTED COMPLEMENTARY FOODS IN UNDER-TWO CHILDREN WITH MODERATE ACUTE MALNUTRITION: QUALITATIVE ANALYSIS FROM A PRE-PROOF OF CONCEPT STUDY

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Background: Recent studies indicate that children with acute malnutrition have impaired gut microbiota development, with lower microbiota for age Z-scores (MAZ). Current nutritional interventions may not address this issue. There are no specific guidelines for managing moderate acute malnutrition (MAM) in India. Microbiota-Directed Complementary Food (MDCF), developed through research in Bangladeshi children, can repair gut microbiota and improve growth outcomes. The analysis describes primary care-provider's perceptions of the intervention's acceptability in a community-based randomised controlled study. **Materials & Methods:** This was a multi-centric, randomised controlled study comparing MDCF with ready to use supplementary food done across 3 sites in India – Pune, Delhi and Vellore. Data collected from primary care-providers through 30 in-depth interviews (IDIs) and 6 focus group discussions (FGDs) focused on acceptability of the food supplement, participants' experiences regarding its enjoyment, adherence, quality and quantity, delivery, and willingness to continue the intervention. A deductive approach was employed to develop themes, subthemes, and codes. These codes were subsequently analyzed to extract deeper insights into the experiences and perceptions of the study participants. **Results:** The findings indicate broad acceptance of MDCF, with many infants enjoying the taste and caregivers expressing willingness to continue long-term. The supplement was perceived positively for its appealing taste, colour, aroma, and hygiene due to fresh packaging in clean, sealed tiffins. Some feedback suggested reducing sweetness, increasing spice, and offering more flavour options. Half of the caregivers found the portion size adequate, and delivery was consistent with minimal disruption to daily routines. Challenges included initial feeding hesitance, the supplement's thickness sticking to the palate and varying portion sizes based on appetite. **Conclusion:** High acceptability of MDCF among infants and caregivers, with minor adjustments needed in taste, thickness.

Keywords: Acceptability, Complementary food, Moderate acute malnutrition

Abstract ID: 154

ABSTRACT TITLE: PERCEPTION AND MATERNAL EXPERIENCES ABOUT USE OF TRADITIONAL GALACTOGOGUES: A CROSS-SECTIONAL STUDY FROM DELHI NCR

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Background: The practice of using galactogogues to enhance milk production is deeply ingrained in historical and cultural traditions. However, with the shift towards modern lifestyles, the vital knowledge surrounding these traditional foods is gradually being lost or overlooked. This study aimed to collect data on the socio-demographic characteristics of lactating women and examine the traditional galactogogues they consume. Additionally, it delved into the knowledge and practices related to their use. It also sought to assess women's awareness and attitudes toward traditional galactogogue foods during breastfeeding.

Materials & Methods: This cross-sectional study involved 1000 lactating women with infants aged 0-6 months from Delhi NCR, including 400 who used traditional galactogogues to boost milk production. Data on socio-demographics, galactogogue use, attitudes, and awareness were collected through self-designed questionnaires. Descriptive statistics and multivariate logistic regression were used to explore links between galactogogue consumption, breastfeeding frequency, and socio-economic factors. Chi-square tests assessed associations between maternal education, awareness, and attitudes toward galactogogues, with significance set at $p < 0.05$. **Results:** The mean age of the participants ($n=400$) was 27.36 ± 4.31 years. The findings revealed a majority (76.7%) of participants exclusively breastfed their infants and endorsed the use of traditional galactogogues. Chi-square analysis revealed significant relationship between maternal education and exclusive breastfeeding ($p=0.01$) and knowledge of galactogogues, including their safety ($p=0.00$) and postpartum integration ($p=0.01$). Galactogogue use was associated with alleviating postpartum complications ($p=0.04$), improving digestibility ($p=0.04$), and recipe sharing in prenatal care ($p=0.04$). Chi-square test also showed a significant association between galactogogue use and breastfeeding frequency ($\chi^2=41.73$; $p=0.04$). Multivariate linear regression indicated a significant association between family income and galactogogue consumption ($p=0.01$), while no significant association were observed with maternal age, occupation, or family structure. **Conclusion:** Maternal education and family income significantly influence the awareness and use of traditional galactogogues and breastfeeding practices. Higher education is associated with increased exclusive breastfeeding and understanding of galactogogues, underscoring the importance of education and socio-economic factors in lactation behaviours.

Keywords: Galactogogues, Awareness, Attitude, Lactating women, Delhi NCR

Abstract ID: 156

Abstract title: Body Composition, Growth and Physical Fitness of Mid-Day Meal Beneficiaries: A Cross-Sectional Study

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Background: Healthy body composition maintains the components of physical fitness, indicates the nutritional status and overall growth. During school age excess body fat mass or low muscle mass can impair growth. This study aims to assess the body composition, growth and physical fitness of rural mid-day meal beneficiaries. **Materials & Methods:** A cross-sectional study was conducted on 128 children aged 6-12 years from Primary school of Khopoli, Nagar Palika. Sociodemographic data was collected using a structured questionnaire. Body composition was measured by Body composition analyzer (Inbody J30). The Fat free mass index (FFMI) and Muscle mass index (MMI) was calculated by standard formula. The growth of the children were compared with the standard given by Indian Association of Pediatrics (IAP). Physical fitness was assessed by using the Khelo India mobile application. SPSS software (version 25) was used for statistical analysis. **Results:** In the study 51% were boys and 49% were girls with the mean age of 8.8 ± 1.8 years. Among the participants, 59.3% consumed the MDM daily, while 40.7% consumed it OCCASIONALLY. The mean height, weight and BMI values were 125.96 ± 12.1 , 24.1 ± 7.8 , 14.9 ± 3.4 respectively. Weight for age (WAZ) reflected that 17.2 % were underweight, Height for age (HAZ) revealed that 10.2% were stunted. BMI Z-scores demonstrated 25.8% were in the undernourished category. The mean fat mass 4.4 ± 3.5 , muscle mass 22.7 ± 7.8 , FFMI 14 ± 3.5 and MMI 12.4 ± 3.9 . Further the data was categorized in two groups group 1 (regular MDM Beneficiaries) group 2 (occasional MDM Beneficiaries). Significant differences in soft lean mass, bone mineral content, skeletal muscle mass, fat-free mass, and fitness scores ($p < 0.05$) between both the groups. Significant associations were found between physical fitness and BAZ (chi-square = 28.9, $p = 0.00^{**}$), WAZ (chi-square = 10, $p < 0.05$), bone mass (chi-square = 38.0, $p = 0.00^{**}$), and FFMI (chi-square = 25.4, p and = 0.00^{**}). **Conclusion:** This study highlights a strong link between physical fitness and body composition, showing that daily beneficiaries had better outcomes. Integrating physical activity programs with the MDM could further enhance children's health and development.

Keywords: Body Composition, Growth, Muscle, Physical Fitness, Nutrition, Mid-day Meal

Abstract ID: 168

ABSTRACT TITLE: MEDIATING ROLE OF BODY COMPOSITION IN THE ASSOCIATION BETWEEN HAND GRIP STRENGTH AND MARKERS OF CARDIOMETABOLIC RISK IN URBAN SOUTH INDIAN CHILDREN AGED 5–16 YEARS

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Background: Hand grip strength (HGS) correlates with markers of cardiometabolic risk (CMR) in adults; limited research exists in children. This study aimed to examine the mediating role of body composition in the association between HGS and markers of CMR in urban South Indian children aged 5 to 16 years. **Materials:** Healthy children (n = 243), were assessed cross sectionally. HGS was measured using a hand dynamometer, and body composition using Dual Energy X-ray Absorptiometry. Cardiometabolic markers included waist circumference, fasting blood glucose, lipid profile, and blood pressure (BP). Two-way ANOVA was used to examine the effects of age, sex, and their interaction effect on anthropometry, body composition, and HGS. Mediation analysis assessed the mediating role of % fat mass (FM) and % appendicular lean mass (ALM) on the association between HGS and CMR markers. **Results:** The mean age was 11.0 ± 3.0 years; 54.3% were males. Significant sexual dimorphism in HGS was observed in children > 12 years of age; increasing in males and plateauing in females. Significant interaction (sex and age) effect was observed on HGS ($p < 0.01$). The sexual dimorphism in HGS was significantly mediated by % ALM (ACME = -0.08060, $P < 0.01$) and % FM (ACME = -0.0386, $P < 0.01$). HGS had significant positive correlation with LM ($r = 0.70$), % LM ($r = 0.42$), Bone Mineral Density ($r = 0.37$), and % Bone Mineral Content ($r = 0.26$) and an inverse correlation with %FM ($r = -0.16$) [for all $p < 0.001$], Total Cholesterol (TC), Low Density Lipoprotein (LDL), Systolic and Diastolic BP. The relationship between HGS with LDL was significantly mediated by %FM and %ALM (ACME= -28.92, -25.16, respectively $p < 0.01$) and %FM mediated the association of HGS with systolic (ACME = -8.003, $p < 0.01$) and diastolic BP (ACME = -12.63, $p < 0.01$). **Conclusion:** The % FM and % ALM significantly mediate the association between HGS and certain cardio-metabolic risk factors, highlighting the importance of measuring body composition while determining metabolic health risks associated with HGS in children.

Keywords: Hand grip strength, body composition, DEXA, cardiometabolic risk, Indian children

Abstract ID: 275

ABSTRACT TITLE: GUT MICROBIOTA ALTERATIONS IN IRON DEFICIENCY ANAEMIA: INSIGHTS FROM A CROSS-SECTIONAL STUDY ON WOMEN OF REPRODUCTIVE AGE

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Background: Iron deficiency anaemia (IDA) affects 1.62 billion people globally, particularly women and children. In 2019, 29.9% of women aged 15-49 were anaemic, with 57% residing in India. IDA, caused by insufficient iron intake, micronutrient deficiencies, or poor absorption, impairs work capacity, cognition, and immunity. The gut microbiota influences iron uptake, making it crucial to explore its role in managing IDA. This study aims to compare the gut microbiota composition in women of reproductive age with iron deficiency anaemia to healthy women. **Materials & Methods:** A total of 872 women aged 17-22 years were screened, and 240 were recruited for this cross-sectional study, excluding those with chronic illnesses. Ethical approval was obtained (NIN-IEC-06/II/2018), and informed consent was provided. Participants were grouped based on haemoglobin and ferritin levels into four categories: Healthy, Iron Deficiency without Anaemia (ID), Iron Deficiency Anaemia (IDA) and Anaemia without Iron Deficiency (NoID). Haemoglobin was measured using a haematology analyser, while ferritin and CRP levels were assessed via sandwich ELISA. Fecal samples were collected and analysed using 16S rRNA sequencing of the V3-V4 region. Alpha diversity and microbial abundance were assessed using R software. **Results:** Participants were categorized as Healthy (n=41), ID (n=46), IDA (n=136), and NoID (n=17). The IDA and NoID groups exhibited significantly higher alpha diversity compared to the Healthy group. IDA samples were enriched with ASF356, Fusobacterium, and Akkermansia, while the ID group showed enrichment of Pseudorthobacter. The NoID group had elevated levels of Porphyromonas, Sporosarcina, Capnocytophaga, and Fusobacterium compared to healthy individuals. **Conclusion:** Fusobacterium, known for iron scavenging and promoting inflammation, may disrupt iron absorption, while Akkermansia's effect on gut permeability can impair overall nutrient uptake. Porphyromonas contributes to red blood cell destruction, worsening anemia, and Sporosarcina and Pseudorthobacter are linked to inflammation and competition for iron. The increased abundance of these microbes in diseased conditions suggests a connection between gut microbiota and iron deficiency anemia (IDA). Targeting these microbial imbalances could offer new therapeutic strategies to improve iron metabolism in IDA patients.

Keywords: Iron Deficiency Anaemia (IDA), Gut microbiota, Fecal Sample, Iron Absorption

Abstract ID: 293

ABSTRACT TITLE: UNDERNUTRITION AMONG TRIBAL CHILDREN AGED 7 TO 59 MONTHS IN THE GARBADA TALUKA OF DAHOD DISTRICT, GUJARAT, INDIA: A SPATIAL ANALYSIS APPROACH

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Background: The prevalence of underweight among children in Gujarat is notably high (39.7%, versus national average of 32.1% NFHS-5), showing a slight increase from 39.3% (NFHS-4). In the aspirational district of Dahod, this rate is even higher, reaching 53%. Dahod is unique with tri-state border, predominantly tribal population and the diverse terrain. Use of geo-spatial mapping technique allows for mapping the spatial heterogeneity of undernutrition to identify hot spots for timely and location-specific interventions to address undernutrition. **Materials & Methods:** A cross-sectional exploratory study was conducted between February 23- July 23 among children aged 7-59 months. Sixty-four households were sampled (Cochran's 1977 formula) with one child per household from 34 villages of Garbada Taluka. The households were distributed as point data within the study area polygon using ArcGIS software version 10.5 to maintain randomization. The GPS Essentials App and Google Earth were used to geolocate the randomly selected points. Data was collected using mobile phones equipped with Epicollect software to record geographical locations, sociodemographic characteristics, and anthropometric measurements. **Results:** The study population comprised largely of tribal population (Bhils- 56.4%; Patelia 40.9%). The mean total household gross monthly income was Rs 22848 (Skewness 1.3, Kurtosis 2.6), which indicates unequal wealth distribution. The majority lived in mixed houses (61.7 percent) and worked as skilled workers. Study results showed that 26 % of children were severely underweight, and 32% were stunted. With Moran I (0.49, 0.24), a high degree of clustering was found for stunting and underweight among children aged 7-59 months. The interpolated maps showed geographical variance in the prevalence of under-nutrition. The prevalence of severe underweight was higher among children in locations distant from Garbada town. Spatial regression analysis ($r=0.56$) revealed that stunting in under-fives was significantly associated with, poor wealth index, poor sanitation hygiene, inadequate diet, low birthweight, and low maternal education. **Conclusion:** The findings underscore the need for targeted interventions addressing socioeconomic disparities and improving maternal and child health to mitigate stunting and underweight in this vulnerable population.

Keywords: Undernutrition, Geospatial, Dahod, Spatial analysis, Spatial heterogeneity, Geospatial mapping

Abstract ID: 304

Abstract title: Association of Nutritional Status and Dietary Inflammation with Rheumatoid Arthritis: A Matched Case-Control Study

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Background: Rheumatoid Arthritis (RA), a chronic autoimmune disease, is influenced by genetic and environmental factors, including diet and gut dysbiosis. This study compares nutritional status (nutrient adequacy, dietary diversity score) and dietary inflammatory index (DII) in RA patients and healthy controls, examining their correlation with inflammatory markers. **Materials & Methods:** We recruited 301 RA Subjects from the NIMS, Hyderabad following ACR 2010 criteria and age- and gender-matched 314 healthy controls from same ethnicity. Dietary intake was assessed using a semi-quantitative Food Frequency Questionnaire (FFQ) and dietary inflammation was calculated by using DII (Dietary Inflammatory Index). Auto-antibodies like RF and Anti-CCP were measured from blood samples using the standard ELISA technique. The association of DDS, DII and probability of adequacy of various nutrients was examined with RA with appropriate statistical tests. **Results:** The median (IQR) age of participants was 38 years (30, 45). Cases consumed fewer calories (1388.31 vs. 1680.69 kcal), protein (31.48 vs. 47.37 g), carbohydrates (155.50 vs. 226.03 g), fats (22.86 vs. 34.69 g), fiber (8.97 vs. 14.17 g) and had a lower probability of meeting micronutrient adequacy (33% vs. 45%) compared to controls ($p < 0.001$). The median DDS was lower (5.00 vs. 6.00), while DII was higher (0.84 vs. 0.26) in cases than in controls. DII score positively correlated with inflammatory biomarkers (RF and Anti-CCP). In age and gender adjusted logistic regression models, a 1% increase in mean probability of adequacy was associated with a 2.2% reduction in RA odds [OR (95% CI): 0.98 (0.97, 0.99)]. Participants with adequate MPA had a 49% lower risk of RA [OR (95% CI): 0.51 (0.35, 0.74)], and a one-unit increase in DDS was linked to a 39% reduced risk of RA [OR (95% CI): 0.61 (0.53, 0.70)]. Conversely, each one-unit increase in DII was associated with a 44% increase in RA odds, adjusted for age and gender [OR (95% CI): 1.44 (1.23, 1.69)]. **Conclusion:** Higher dietary diversity and nutrient adequacy were associated with a reduced likelihood of RA, while elevated DII scores increased the likelihood of RA.

Keywords: Dietary inflammation, Dietary Diversity Score, Nutritional status, Rheumatoid Arthritis

Abstract ID: 325

**ABSTRACT TITLE: PREVALENCE OF CARDIOVASCULAR DISEASE (CVD) RISK FACTORS
AMONG POLICE PERSONNEL IN URBAN CITY – A CROSS-SECTIONAL STUDY**

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Background: Non-communicable diseases (NCDs) claim 63% deaths annually in India (WHO 2016) of which the leading cause of mortality is cardiovascular diseases (27%). CVD burden can be an occupational hazard in police personnel due to their irregular duty timings and stress, that influence their dietary habits and addiction pattern with sparse data available in India. The

leading CVD risk factors include overweight and obesity, raised blood pressure, poor dietary practices, tobacco and alcohol intake and physical inactivity. **Materials & Methods:** A cross-sectional study was conducted to identify the leading CVD risk factors among the police personnel of an Indian urban city. From a total of 8 division covering entire city 1 police station was randomly selected from each division and those police personnel who gave a written consent for participation were enrolled for the study (n=178). Data was collected with adapted WHO NCD surveillance questionnaire with STEP 1 (background, tobacco use, alcohol consumption, physical activity, and diet) and STEP 2 (weight, height, and blood pressure). Analysis done with JASP0.19. **Results:** The mean age of the participants was 35.7 years (range: 21-58years) with majority male police personnel (68%). The CVD risk factors prevalence: 99.4 % inadequate intake of fruit vegetable (<400g/day), 93.8% inadequate nuts intake (<1fist/day), 74.2% physically inactive (<150mins moderate intensity exercise/ week), 62.3% overweight and obesity (BMI >23.0 kg/m²), 61.8% abdominal obesity (WC>90cm), 60% hypertension (SBP>139mmHg, DBP>80mmHg) including prehypertensive (SBP120-139mmHg, DBP <80mmHg), 56.2% currently addicted to tobacco (smoking (10.7%) and chewable (45.5%)). The prevalence of overweight and obesity (p<0.001), abdominal obesity (<0.001) and hypertension (p<0.001) was significantly higher in males as compared to females but no significant difference was found in the intake of nuts and physical activity.**Conclusion:** The study reflects a heavy burden of cardiovascular risk factors in the police personnel, thus it is imminent that focused regular screening program for early detection is regularized in police health system and comprehensive strategy for the management of these risk factors is institutionalized.

Keywords: Cardiovascular diseases, Police personnel, India, WHO STEPS

Abstract ID: 394

Food, Nutrition, Health, and Lifestyle: Effects of Nutritional Modifications and Lifestyle Changes on The Remission of Chronic Diseases

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Backgroud: In the last 30 years, disease patterns have undergone a dramatic shift across the globe with lifestyle diseases becoming significant global health challenges. According to WHO (2017), non-communicable diseases are responsible for 70% mortality cases each year, which amounts to 40 million global deaths. Chronic diseases such as cardiovascular diseases, diabetes and obesity represent large proportion of this fatality, which highlights the need for its management and control. Although pharmacological interventions alone have been used for management of such diseases, they have shown limited, short-term effect, with many side effects and monetary challenges. **Materials & Methods:** The

current study employs holistic lifestyle approach (nutritional modifications and lifestyle changes) in addition to pharmacological interventions for management of chronic disease. The primary objective for this study is to test the effectiveness of personalised lifestyle interventions on patients with chronic diseases, with both quantitative and qualitative measures. 200 patients (Age: 51.8 ± 3.53 , 60% females) suffering from diabetes mellitus, hypertension, dyslipidemia, coronary artery disease and/or obesity were recruited from Lifestyle Medicine Clinic, Nagpur. For a period of 1 year, the patients were provided with personalised dietary plans, regular physical activity routines, stress management techniques, and sleep hygiene education. **Results:** The primary analysis reveal that holistic intervention led to reduction of HbA1c ($t(199) = 362$, $p < 0.001$), LDL cholesterol ($t(199) = 433$, $p < 0.001$), BMI ($t(199) = 128$, $p < 0.001$), resting heart rate ($t(199) = 148$, $p < 0.001$), anxiety ($t(199) = 264$, $p < 0.001$) and depression ($t(199) = 196$, $p < 0.001$), and improvement of HDL cholesterol ($t(199) = -111$, $p < 0.001$), exercise tolerance ($t(199) = -143$, $p < 0.001$), and sleep quality ($t(199) = -423$, $p < 0.001$). Additionally, qualitative analysis provided further insights into the effectiveness of these lifestyle changes with better day-to-day functioning. **Conclusion:** Hence, the current study highlights the effectiveness and importance of holistic lifestyle modification, in addition to pharmacological interventions, for better patient outcomes and prognosis in both physiological and psychological domains. This study holds implications in clinical practice to employ both pharmacological and non-pharmacological interventions to improve symptoms and prognosis of chronic conditions.

Keywords: Chronic diseases, nutritional modifications, lifestyle changes, remission, non-pharmacological interventions

FREE COMMUNICATION ORAL PRESENTATIONS

HALL NO.2,3: SIDTM Classroom 2 (Lilavati) and 3 (CV Raman)

15th November 2024

Time: 10:00 am to 11:30 am

SESSION 2- Food Science & Nutrition

No	Abstract ID	Presenter name	Affiliation	City	Email	Title of Presentation
1	14	Ms Somali Ghosh	Avinashilingam Institute for Home Science and Higher Education for Women	Coimbatore	somalighosh24@gmail.com	Harness of Viticulture Waste for Nutraceutical Development
2	31	Dr Renuka Aggarwal	Punjab Agricultural University	Ludhiana	renukaaggarwal@pau.edu	Formulation and Nutritional Assessment of Finger Millet-Based Food Products for Enhancing the Diet of School-Age Children
3	119	Dr Koushik Das	Department of Nutrition and Natural Science Research Centre, Belda College (under Vidyasagar University)	Belda, West Bengal	koushikphysiology@yahoo.com	Analysis of amino acid content in the antidiabetic sea fish protein hydrolysate by GC-MS
4	126	Ms Anusha K	Sri Ramachandra Institute of Higher Education and Research (DU)	Chennai	anushak@sriramachandra.edu.in	Development of a Health Mix Fortified with Bio-Processed MORINGA OLEIFERA Seeds and Evaluating its Nutrient Profile, Antioxidant Activity, and Sensory Attributes
5	184	Dr Ritu Pradhan	Government Home Science College, Chandigarh	Chandigarh	sharmapritu@yahoo.com	Standardization and Optimization of a Nutrient-Rich Sorghum Snack for Celiac Patients: A Sustainable Nutrition Approach
6	206	Ms Prajakta Sadashiv Gaikwad	Bharati Vidyapeeth (Deemed to be University)	Pune	prajakta.gaikwad@bharativedyapeeth.edu	Development, characterization, and stability assessment of flaxseed oil-based

						nano-emulsions for food fortification
7	227	Mr Mohammed Salman C K	ICAR-Indian Agricultural Research Institute	Pusa, New Delhi	salmanckmohammed@gmail.com	A Novel Nanosensor-ML Based System for Accurate Glycemic Response Prediction in Nutritional Science
8	229	Dr Sarah Jane Monica	Women's Christian College, Chennai	Chennai	sarahjane.monica@gmail.com	In Vitro Evaluation of Enzymatic Inhibition and Glucose Uptake Potential of Pumpkin Seeds (<i>Cucurbita maxima</i> L.) on 3T3 L1 Adipocytes
9	233	Dr sweet	Women's Christian College, Chennai	Chennai	priyadarshinis02@gmail.com	In vitro evaluation of antidiabetic potential of <i>L.acidissima</i> (Wood apple) fruit
10	280	Ms Afiya Sayed kadri	ICMR-National Institute of Nutrition	Hyderabad	asayedkadri@gmail.com	Evaluating Nutrient Variability in Traditionally Processed Finger Millet Varieties
11	313	Ms Chandrama Baruah	ICMR-National Institute of Nutrition	Hyderabad	chandramabaruah11@gmail.com	Insights on effect of processing on nutritional and antinutritional profile of millets for improved mineral bioavailability
12	342	Ms Tamma Medha	GITAM University	Visakhapatnam	mtamma@gitam.in	Structural and Functional Characterization of Non-Conventional Starch from Palmyra (<i>Borassus flabellifer</i>): Effects of Ultrasonication and Alcohol-Alkali Treatment
13	343	Ms Likhitha Yadav Prakruthi	GITAM University	Visakhapatnam	lprakrut@gitam.in	Dual Modification of Root Starches: Effects of Acetic Acid and Ultrasonication on functional and structural properties
14	362	Dr N Kapaini Basena	Assam Agriculture University	Senapati, Manipur	kapainibasete@gmail.com	Anti-Inflammatory and Antioxidant Properties of <i>Psidium guajava</i> L. Leaves Extract

Abstract ID: 14

ABSTRACT TITLE: HARNESS OF VITICULTURE WASTE FOR NUTRACEUTICAL DEVELOPMENT

Somali Ghosh, PhD Scholar, Avinashilingam Institute for Home Science and Higher Education for Women, Bharthi Park Road, Coimbatore, Tamil Nadu. somalighosh24@gmail.com; PA Raajeswari, Professor, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, Tamil Nadu.

Background: Viticulture, a cornerstone of the global beverage industry, generates substantial quantities of waste. This study investigates to combat public health crisis by quantifying bioactive compounds of edible food waste from viticulture, concentrating seed and peel. **Materials:** Instant waste from vineyard was collected and separated into seed and peel. Conventional (Sun drying) and non-conventional (Freeze Drying) was performed to analysis the presence of primary and secondary metabolites using FT-IR and UV-Vis spectrophotometry quantified flavonoids, alkaloids, steroids, and phenolic compounds using respective standards (quercetin, atropine, prednosone, galic acid). Antioxidant activity was measured using 2,2-diphenyl-1-picrylhydrazyl (DPPH) test of seed [SDS, FDS] and peel [SDP, FDP] samples in sun drying and freeze drying methods with different solvents (aqueous, ethanol, and methanol). **Results:** The C = C aromatic (~1640 cm⁻¹), C-H aromatic (~650 cm⁻¹), and -OH alcoholic/phenolic (~3200 - 3400 cm⁻¹) peaks of the four samples were identified by Fourier transform infrared spectroscopy (FTIR). The amounts of flavonoids, alkaloids, steroid and phenolic substances were found to be 128 mg/ml, 141 mg/ml, 95 AE/g, 103 AE/g and 10.2 mg/ml, 9.6 mg/ml, 170 GAE/g, 187 GAE/g, respectively, in sun-dried seed (SDS) and peel (SDP). In freeze-dried seed (FDS) and peel (FDP), flavonoids, alkaloids, steroids, and phenolic chemicals are quantified at 140 mg/ml, 102 AE/g, 8.6 mg/ml, 185 GAE/g, and 161 mg/ml, 90 AE/g, 5.8 mg/ml, 202 GAE/g, respectively. The yield of IC₅₀ in Sundried seed [SDS] sample of aqueous (5.84 ppm) and methanolic extract (6.75 ppm) extracts demonstrated significant scavenging activity, whereas Sundried seed [SDP] extracts in ethanol (47.71 ppm) and methanol (84.50 ppm) shown mild and strong scavenging activity against free radicals. FDP methanol (45.85 ppm) and FDS ethanol (7.39 ppm) both showed substantial scavenging action among freeze-dried samples in different solvents. **Conclusion:** This research aligns with sustainable and circular economy principles within the bountiful viticulture industry by focusing on human health and well-being by designing nutraceutical products and exhibiting comparable antioxidant capacity to that of fresh *Vitis vinifera* L. fruit, commonly grapes.

Keywords: Viticulture waste, Bioactive compound, Sustainable, Antioxidant.

Abstract ID: 31

ABSTRACT TITLE: FORMULATION AND NUTRITIONAL ASSESSMENT OF FINGER MILLET-BASED FOOD PRODUCTS FOR ENHANCING THE DIET OF SCHOOL-AGE CHILDREN

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Background: The present investigation was carried out to formulate and nutritionally evaluate the millet-pulse based food products by replacing traditional cereal. **Materials:** The raw grains of Wheat PBW (826), rice (PR131) finger millet (IE 2402, ICRISAT) and chickpea (purchased from local market) were selected and nutritionally evaluated. Further, Two products namely chocolate and chocopops were formulated using Finger millet-chickpea combination and tested for their acceptability and nutritional composition against the traditional cereal. **Results:** The chickpea and finger millet were found to have higher protein (21.43 and 10.78 g/100g), calcium (292 and 147 mg/100g), iron (3.70 and 2.07 mg/100g) lysine (5.21 and 3.96 g /100g), in-vitro protein digestibility (77.58 and 75.67 %) and protein digestibility amino acid score (0.60 and 0.37) respectively. The overall acceptability of the products prepared from finger millet-chickpea ranged from 8.10 to 7.24 and was comparable with the wheat/rice-based products. The finger millet chickpea chocolate had the highest protein (20.26 g/100g), lysine (5.65), in-vitro protein digestibility (81.33%), protein digestibility amino acid score (0.57) and calcium (234 mg/100g) content. The products when stored for a period of 3 months were found to be organoleptically acceptable till 45 days. The developed products were cost effective and nutritionally superior when compared with their traditional and market counterparts. **Conclusion:** The study concluded that the developed millet pulse-based products met 30% Recommended dietary allowance (RDA) for protein and more than 100% of lysine requirements of school going children. Hence, the developed Finger Millet-Chickpea combination can be effectively used as replacement of wheat/rice for preparing various food products with good quality protein.

Keywords: Finger millet, Chickpea, In vitro protein digestibility, Protein Digestibility Corrected Amino Acid Score (PDCAAS)

Abstract ID: 119

**ABSTRACT TITLE: ANALYSIS OF AMINO ACID CONTENT IN THE ANTIDIABETIC SEA FISH
PROTEIN HYDROLYSATE BY GC-MS**

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Background: Diabetes mellitus (DM) is a complex chronic metabolic disease linked with hyperglycemia, low level of insulin with β -cell dysfunction, or developing insulin resistance to its receptors in skeletal muscle

and fat cells. Management of DM by food supplementation is a challenge because of high side effects and high cost of diabetic medicines. Objective: The main objective of this present study was the analysis of amino acid content in our laboratory established antidiabetic seafish protein hydrolysate (SPH) in rat model.

Materials: At first, we prepared the SPH from volavetki (Panna microdon, Bleeker, 1849) sea fish and fed to high lipid diet (HLD) and streptozotocin (STZ, 40 mg/ b.w) induced DM rats for 28 days. There were three groups of each group (n=5) rats were subjected to DM except control and vehicle control group. After 28 days, we assessed the following parameters such as glucose (FBG), glycosylated haemoglobin (HbA1c), glucagon like peptide-1 (GLP-1), dipeptidyl-peptidase 4 (DPP-4), insulin and c-peptide. Amino acid composition was assessed for SPH by GCMS. **Results:** Hypoglycemic activity of SPH was proved by significantly lowered FBG, HbA1c, DPP-4, in SPH supplementation rats only DM rats. Further, hypoglycemic activity of SPH was again proved by significantly higher GLP-1, insulin, and c-peptide in SPH supplementation rats. Glutamic acid (100 mg / g of SPH), glycine (70.22 mg / g of SPH), aspartic acid (66.03 mg / g of SPH) and alanine (54.67 mg / g of SPH) were the main amino acid contents in SPH. **Conclusion:** It has been revealed that SPH supplementation was confirmed as anti-hyperglycemic supplementation and further study will be required of the role of amino acid contents in SPH as antidiabetic supplementation.

Keywords: Diabetes mellitus; Protein hydrolysate; Glucagon like peptide-1.

Abstract ID: 126

ABSTRACT TITLE: DEVELOPMENT OF A HEALTH MIX FORTIFIED WITH BIO-PROCESSED MORINGA OLEIFERA SEEDS AND EVALUATING ITS NUTRIENT PROFILE, ANTIOXIDANT ACTIVITY, AND SENSORY ATTRIBUTES

Anusha K, Ph.D Scholar, Sri Ramachandra Institute of Higher Education and Research (DU), Chennai, Tamilnadu, anushak@sriramachandra.edu.in; Gayathri G, Assistant Professor, Sri Ramachandra Institute of Higher Education and Research (DU), Chennai, Tamilnadu ; J Dinesh Kumar, Assistant Professor, Sri Ramachandra Institute of Higher Education and Research (DU), Chennai, Tamilnadu ;R Arivuchudar, Assistant Professor, Periyar University, Chennai, Tamilnadu.

Background: Access to animal protein sources become increasingly limited for low-income populations, exacerbating global food security challenges. Consequently, there's growing demand for plant proteins as alternatives to meet nutritional needs and promote a sustainable future. To address these challenges, there's a pressing need for cost-effective, nutrient-dense food solutions to enhance nutritional status. Fortifying underutilized sources, like MORINGA OLEIFERA seeds, a viable means to improve nutrition and support sustainability in food ecosystems, benefiting millions worldwide when fortified into ready-to-eat products. The study aims to develop a bio-processed MORINGA OLEIFERA seed fortified health mix and evaluate its nutrient composition, antioxidant properties, and sensory attributes for health benefits and

consumer acceptability. **Materials:** This study developed a fortified health mix (Proteinoksi) using bio-processed MORINGA OLEIFERA seeds, compared to a standard health mix (Protein). Three snack recipes -porridge, Nutribar, and Crackers were prepared using both the formulations. Sensory evaluation with 30 participants assessed sensory differences and consumer preferences, utilizing statistical tools such as ANOVA and Chi-square tests. Comprehensive analysis of the two most preferred recipes were conducted in a NABL-accredited lab, assessing nutritional profile, energy, protein, carbohydrates, fat, dietary fibre, omega fatty acids, and micronutrients. Antioxidant activity was measured using DPPH and total polyphenol tests, with both formulations evaluated for various functional properties. **Results:** Statistical analysis revealed significant association between consumer sensory acceptability and dietary health mix. Both mixes had 100% low acceptability for Porridge ($\chi^2 = 0.000$, $p = 1.000$). Proteinoksi achieved 100% high acceptability for Crackers ($\chi^2 = 12.857$, $p = 0.001$), while Protein had lower acceptability for Nutribar ($\chi^2 = 11.098$, $p = 0.003$). Proteinoksi crackers demonstrated significantly higher levels of protein, micronutrients and dietary fibre compared to other formulations. Proteinoksi contained higher concentrations of omega fatty acids in both recipes. Antioxidant analysis indicated that Bars achieved a higher DPPH assay value for both formulations, whereas Crackers exhibited a higher total polyphenol content compared to Bars. **Conclusion:** Fortifying Moringa seed into nutrient-dense snacks provides a powerful, sustainable alternative to commercially packaged foods, effectively addressing critical nutritional gaps.

Keywords: Sustainability, Moringa oleifera Seed, Fortification, Nutritional Content, Sensory Attributes

Abstract ID: 184

Abstract title: Standardization and Optimization of a Nutrient-Rich Sorghum Snack for Celiac Patients: A Sustainable Nutrition Approach

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Background: Sorghum, a nutrient-dense millet, has long been valued for its resilience and role in traditional diets. This study aims to develop, standardize, and optimize a gluten-free sorghum-based snack (Sorghum Chakli Sticks) to enhance nutrition for celiac patients. The research focuses on evaluating its nutritional content, conducting sensory assessments for consumer acceptability, and performing biochemical and shelf-life analysis of the most preferred recipe. **Materials:** Three variations of the sorghum-based snack (Sorghum Chakli Sticks) were prepared for standardization. Organoleptic evaluations of the three variants were conducted using a 9-point hedonic scale to assess consumer preferences. The most preferred recipe, as determined through sensory evaluation, was then analysed for its nutritional value using specialized software to ensure accuracy followed by biochemical analysis and shelf-life analysis. **Results:** The organoleptic evaluation revealed that Sample A (90% jowar flour, 10% rice flour) was the most preferred

over Sample B (70% jowar, 10% rice flour, 20% besan) and Sample C (50% jowar, 25% rice flour, 25% besan). The nutritional analysis Sample A demonstrated it to be a good source of energy (434 kcal), carbohydrates (70 g), protein (10.4 g), and micronutrients such as iron (3 mg) and calcium (20 mg). The recipe also provided 9 g of crude fiber, supporting digestive health. Biochemical analysis confirmed its nutritional profile, and shelf-life testing indicated that Sample A had a stable shelf life of 65 days at 20-25°C, making it a sustainable and nutrient-dense snack option for celiac patients. **Conclusion:** Sorghum-based snack offers an innovative, healthy, and sustainable option for individuals with gluten intolerance, while also supporting the broader goal of integrating climate-resilient grains like sorghum into modern diets for improved health outcomes. Present study successfully developed, standardized, and optimized a gluten-free sorghum-based snack (Sorghum Chakli Sticks) tailored for celiac patients. offering a well-balanced nutritional profile along with essential micronutrients. The product's stable shelf life further highlights its potential as a sustainable, nutrient-dense snack.

Keywords: Sorghum based snack, Gluten free, Celiac patients, Nutritional analysis, Sensory evaluation, Sustainable nutrition

Abstract ID: 206

**ABSTRACT TITLE: DEVELOPMENT, CHARACTERIZATION, AND STABILITY ASSESSMENT OF
FLAXSEED OIL-BASED NANO-EMULSIONS FOR FOOD FORTIFICATION**

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Background: Extensive studies have been directed to include omega-3 poly unsaturated fatty acids (PUFAs) in diet because of its numerous nutritive and therapeutic benefits for better human health. Flaxseed oil is one of the major sources of omega-3 fatty acid (alpha-linolenic acid-ALA). But, due to its poor solubility and lower stability, it has limited utility. Hence objective of the present study was to develop stabilized ALA containing flaxseed oil nano-emulsion with added additives for effective food fortification.

Materials: The development of oil in water nano-emulsion (o/w) using flaxseed oil with addition of other bio-actives like alpha-lipoic acid and flax-lignan was carried out. Formulations containing 20% (FO-A) and 25% (FO-C) of flaxseed oil content were prepared using wet gum method followed high-pressure homogenization. Formulations were characterized for droplet size measurement, zeta potential, polydispersity index, TEM, physico-chemical parameters, nutritional analysis, fatty acid content using GC-MS etc. Accelerated stability study at 40°C ± 2°C/65% RH ± 5% RH as per ICH guidelines for 3 months

has been carried out wherein particle size and fatty acid analysis were studied at pre-defined time points. Further acute-oral toxicity study was conducted as per OECD guidelines. Finally sensory evaluation using 9-point hedonic scale was carried out to understand acceptability of the formulations. **Results:** FO-A and FO-C showed particle size within nano-range of 20nm- 200 nm complimenting the results of TEM displaying homogenous nature of the droplets. Fatty acid profile confirmed the presence of total omega-3 content of 10.83 ± 1.52 and 18.53 ± 0.01 g/100g in FO-A and FO-C respectively. Accelerated stability study showed no separation till 45 days of study and maintained the nano-range. Acute oral toxicity study recorded no mortality and no gross toxicity at the end of the toxicity study ensuring the safety. Sensory evaluation marked milk as a better choice for consumption over water. **Conclusion:** The study outlines development and characterization of stable edible food grade flaxseed oil nano-emulsions containing adequate omega-3 content which can be a better alternative for direct oral consumption. Acknowledgement: Authors would like to acknowledge Chellaram Diabetes Research Centre, Pune for financial support (Project Reference#CDRC202111020)

Keywords: Nano-emulsion, Flaxseed oil, Omega-3

Abstract ID: 227

ABSTRACT TITLE: A NOVEL NANOSENSOR-ML BASED SYSTEM FOR ACCURATE GLYCEMIC RESPONSE PREDICTION IN NUTRITIONAL SCIENCE

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Background: The increasing global prevalence of diabetes mellitus, largely influenced by postprandial hyperglycemia, highlights the need for innovative approaches in food science and nutrition to manage glycemic response (GR). Accurate glycemic index (GI) assessments are vital for dietary management but are often hindered by labor-intensive, expensive methodologies that limit their application in the food industry. This study aimed to develop and validate a novel approach by integrating optimized in vitro digestion protocols, an electrochemical glucose nanosensor, and machine learning models to improve the speed, accuracy, and cost-efficiency of predicting GR in food science and nutrition. **Materials:** The study was conducted in a controlled lab setting, evaluating six established in vitro methods (IVM-1 to IVM-6) for glycemic assessment. The most accurate method, IVM-6, was optimized and applied to 53 rice samples

with varying amylose content. A non-enzymatic electrochemical glucose nanosensor was developed using V_2O_5 nanomaterials modified with Ti_3AlC_2 MAX phase. The sensor's characterization included SEM, HRTEM, SAED, EIS, and EDS. Specificity was tested against glucose and various food components. Machine learning models, including supervised models- decision tree, random forest regressors and unsupervised model- K-means clustering were employed to predict GR. **Results:** The optimized IVM-6 protocol demonstrated high predictive accuracy (MAE = 0.81, RMSE = 0.89) with in vivo data and reduced per sample costs by 37-fold. Among the 53 rice accessions, pGI ranged from 46.98 to 87.26, with corresponding Inherent Glycemic Potential (IGP) values of 23.27 to 44.01. The glucose nanosensor exhibited strong specificity for glucose detection even in complex food matrices, with a correlation ($R^2 = 0.857$) between nanosensor results and standard colorimetric methods. Machine learning models, including decision tree ($R^2 = 0.991$) and random forest ($R^2 = 0.984$) along with K-means clustering, provided accurate predictions of GR. **Conclusion:** This study successfully combined in vitro digestion models, an electrochemical glucose nanosensor, and machine learning to create a cost-effective and accurate method for predicting GR. The approach offers promising applications in nutritional labeling, dietary management and food science nutrition, potentially aiding in the global fight against diabetes through improved dietary strategies.

Keywords: Glucose sensor, Glycemic response, Machine Learning

Abstract ID: 229

ABSTRACT TITLE: IN VITRO EVALUATION OF ENZYMATIC INHIBITION AND GLUCOSE UPTAKE POTENTIAL OF PUMPKIN SEEDS (CUCURBITA MAXIMA L.) ON 3T3 L1 ADIPOCYTES

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Background: Diabetes mellitus is a metabolic disorder characterized by persistent hyperglycemia. Research into novel therapeutic strategies for type 2 diabetes mellitus, particularly those that utilize natural compounds targeting key signaling pathways, is essential. Rich in micronutrients and bioactive compounds, oilseeds represent a readily available and nutritionally dense source of health-promoting compounds. Among these, pumpkin (*Cucurbita maxima*), belonging to the Cucurbitaceae family, is notable for its low-fat, protein-rich seeds that exhibit multiple health benefits. **Materials:** Total phenolic and flavonoid content were quantified using the Folin-Ciocalteu and Aluminium Chloride methods. The antidiabetic activity was assessed through in vitro assays measuring alpha-amylase, alpha-glucosidase, and dipeptidyl peptidase IV (DPP-IV) inhibition, along with a glucose uptake assay on 3T3 L1 adipocytes. Fatty acids and phytoconstituents were identified using Gas Chromatography Mass Spectrometry (GCMS). Data analysis was performed using SPSS software. **Results:** The total phenolic and flavonoid content were found to be

313.19 ± 1.93 µg/mg GAE and 212 ± 2.83 µg/mg QE. Pumpkin seeds significantly inhibited the activity of enzymes involved in starch breakdown in a dose-dependent manner (6.2 – 500 µL) ($P < 0.05$). At a concentration of 500 µL, pumpkin seeds effectively inhibited alpha-amylase activity by 85.12%, alpha-glucosidase by 85.54%, and DPP-IV by 82.88%. The IC₅₀ values for alpha-amylase, alpha-glucosidase, and DPP-IV inhibition assays were estimated at 138, 22, and 246 mg/mL, respectively. In the 2-NBDG glucose uptake assay using the 3T3-L1 adipocyte model, pumpkin seeds increased glucose uptake by 87.15%. GCMS analysis revealed the presence of alkaloids (propylpiperidine), flavone (4H-1-benzo-pyran-4-one 2-(3,4-dihydroxyphenyl)), saturated fatty acid (palmitic acid), unsaturated fatty acid (oleic acid), and fatty acid methyl esters. **Conclusion:** The findings underscore the antidiabetic potential of pumpkin seeds, establishing a strong foundation for further research to explore the therapeutic benefits of pumpkin seeds in diabetes management.

Keywords: Diabetes mellitus, pumpkin seeds, antidiabetic potential, GCMS.

Abstract ID: 233

**ABSTRACT TITLE: IN VITRO EVALUATION OF ANTIDIABETIC POTENTIAL OF L.ACIDISSIMA
(WOOD APPLE) FRUIT**

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Background: *Limonia acidissima* or Wood apple (Rutaceae family) an indigenous tree of India, Sri Lanka, Pakistan and Bangladesh is used in traditional medicinal system owing to its vast pharmacological properties. The antihyperglycemic potential of the *L.acidissima* fruit with regard to the enzymes involved in glucose homeostasis and cellular glucose uptake remains underexplored. We hypothesized that *L.acidissima* fruit has favourable effects on the activities of alpha-amylase, alpha-glucosidase and DPP-IV enzymes, and cellular glucose uptake. The objective of the study was to evaluate the antidiabetic potential of the ethanolic extract of *L. acidissima* fruit extract. **Materials:** Total phenolic and flavonoid content were quantified using the Folin-Ciocalteu and Aluminium Chloride methods. The antidiabetic activity was assessed through in vitro assays measuring alpha-amylase, alpha-glucosidase, and dipeptidyl peptidase IV (DPP-IV) enzymes inhibition, along with a glucose uptake assay on 3T3 L1 adipocytes. Fatty acids and phytoconstituents were identified using Gas Chromatography Mass Spectrometry (GCMS). Data analysis was performed using SPSS software. **Results:** The total phenolic content (TPC) and total flavonoid content (TFC) of the ethanolic extract of *L. acidissima* fruit were 252.39±9.39 µg GAE/mg and 51.81±6.58 µg QE/mg respectively. *L. acidissima* significantly inhibited the activity of enzymes involved in starch breakdown in a dose-dependent manner ($P < 0.05$). At a concentration of 300 µL, *L. acidissima* fruit effectively inhibited alpha-amylase activity by 79.07%, and at 500 µL *L. acidissima* fruit alpha-glucosidase by 83.85%, and DPP-IV by 87.29%. The IC₅₀ values for alpha-amylase, alpha-glucosidase, and DPP-IV inhibition assays

were estimated at 143.28, 33.93 and 64.63 mg/mL, respectively. Additionally, in the 2-NBDG glucose uptake assay using the 3T3-L1 adipocyte model, L. acidissima fruit increased glucose uptake by 207%. GCMS analysis revealed the presence of flavone (2-Phenyl-4-chromone, 4H-1-Benzopyran-4-one, 3-hydroxy-7-methoxy-2-phenyl), saturated fatty acid (5,8-Octadecadienol acid, butyl ester), unsaturated fatty acid (N-2-hexadecenoic acid), and fatty acid esters (5,8-Octadecadienoic acid, methyl ester). **Conclusion:** L.acidissima fruit demonstrated significant antidiabetic potential by inhibiting key enzymes involved in glucose homeostasis and enhancing glucose uptake in 3T3 L1 adipocytes.

Keywords: antidiabetic, L.acidissima, wood apple, DPP-IV inhibition

Abstract ID: 280

**ABSTRACT TITLE: EVALUATING NUTRIENT VARIABILITY IN TRADITIONALLY PROCESSED
FINGER MILLET VARIETIES**

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Background: Finger millet (*Eleusine coracana*), or ‘ragi’ in India, is valued for its complex carbohydrates, dietary fibre, phytonutrients, essential amino acids, and minerals, contributing to the prevention of malnutrition and non-communicable diseases. It is eco-friendly and has a low carbon footprint. Although processing techniques can reduce anti-nutrients, their effects on dietary fibre and phytonutrient content—especially across different varieties—remain uncertain. The study aimed to investigate the effect of germination and roasting on the nutritional quality of finger millet, focusing on dietary fibre and phytonutrient content. To compare nutrient variability across three varieties and to determine the optimal processing method for maximizing nutrient retention. **Materials:** Three finger millet varieties—GPU-28 (red), GPU-67 (brown), and VL-Mandua-376 (light-brown)—were selected from the leading states in finger millet production. The grains were procured from ICAR-IIMR, Hyderabad, India. They were subjected to roasting (120 °C, 5min), soaking (24h), germination (24h, 48h, 72h) and a combination of germination and roasting (24h, 48h, 72h). AOAC methods were used for nutrient analysis and linear regression for statistical analysis. **Results:** The results revealed significant effects of processing techniques on the protein, insoluble dietary fibre (IDF), soluble dietary fibre (SDF), total dietary fibre (TDF), total phenolic content (TPC), total flavonoid content (TFC), and antioxidant activity (DPPH) in finger millet ($P < 0.05$). Furthermore, mean nutrient levels exhibited variability across the three varieties and among the different processing methods. The VL-Mandua-376 excelled in macronutrients, with protein content ($8.81 \pm 0.01\text{g}/100\text{g}$) and TDF ($13.23 \pm 0.26\text{g}/100\text{g}$). Germination significantly enhanced IDF across all varieties, with an increase in germination time. The GPU-28 reported high phytonutrient content, with TPC ($1552.40 \pm 4.70\text{mgGAE}/100\text{g}$), TFC ($1651.39 \pm 5.36\text{mgCEQ}/100\text{g}$), and an antioxidant capacity of (76.74%). Germination reduced

phytonutrient levels, but roasting germinated grains increased them compared to those that were only germinated. GPU-67 showed a balanced nutrient profile. The 48-hour germination followed by roasting showed the maximum phytonutrient retention. **Conclusion:** The study found that processing techniques significantly affect the nutritional quality of finger millet, with significant differences among varieties. Optimizing processing methods and selecting suitable varieties can enhance finger millet's nutritional value, benefiting health-focused diets, agricultural practices, consumer awareness, and nutrient database updates.

Keywords: Finger millet, Germination, Roasting, Nutritional quality

Abstract ID: 313

ABSTRACT TITLE: INSIGHTS ON EFFECT OF PROCESSING ON NUTRITIONAL AND ANTINUTRITIONAL PROFILE OF MILLETS FOR IMPROVED MINERAL BIOAVAILABILITY

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Background: Millets are often termed as “nutri-cereals” for their high nutritive value but they also contain antinutrients like phytic acid, tannins and polyphenols which interfere with absorption of dietary minerals. The present study aims to investigate the effect of hydrothermal processing (neutral and acidified), germination and cooking on comprehensive nutritional and antinutritional profile of major millets for improved mineral bioavailability. **Materials:** Samples namely pearl millet (*Pennisetum glaucum*), sorghum (*Sorghum bicolor*) and finger millet (*Eleusine coracana*) (2 kgs each) were procured from three different local markets of Hyderabad, Telangana, India. All analysis were carried out in triplicates using standard protocols and analytical grade reagents. **Results:** Hydrothermal processing decreased riboflavin by 14%, niacin 15%, pantothenic acid 7%, total B6 36%, tocopherols 18% and carotenoids by 58%. In contrast germination increased riboflavin by 67%, niacin 38%, pantothenic acid 70%, total B6 39% and carotenoids by 7% while tocopherols decreased by 8%. Vit C was not present in raw millets while germination increased vit C from 0.00 ± 0.00 to 0.43 ± 0.01 , 0.56 ± 0.02 and 0.40 ± 0.03 mg/100g in pearl, sorghum and finger millet respectively. Cooking results in loss of all vitamins which ranged between 5 to 20%. Fe Zn and Ca content in raw millet ranged from 3.22 ± 0.10 to 5.88 ± 0.15 , 2.06 ± 0.04 to 3.19 ± 0.04 and 33.07 ± 1.18 to 423 ± 14.43 mg/100g respectively. Processing of millets results in loss of Fe, Zn and Ca content upto 9, 11 and 17% respectively. Among all antinutrients phytic acid was present in highest amount ranging from 534 ± 4.13 to 709 ± 2.68 mg/100g in raw millets. Acidified hydrothermal processing showed highest reduction in phytic acid (48%), tannin (75%), total polyphenol (38%), free polyphenol (80%) and bound polyphenol (38%) thereby improving Fe, Zn and Ca bioavailability by 45, 41 and 40% respectively. **Conclusion:**

Different processing techniques reduced antinutritional factor in pearl millet, sorghum and finger millet to varying extent thereby improving mineral bioavailability.

Keywords: Millets, micronutrients, anti-nutrients, hydrothermal processing, mineral bioavailability

Abstract ID: 342

ABSTRACT TITLE: STRUCTURAL AND FUNCTIONAL CHARACTERIZATION OF NON-CONVENTIONAL STARCH FROM PALMYRA (BORASSUS FLABELLIFER): EFFECTS OF ULTRASONICATION AND ALCOHOL-ALKALI TREATMENT

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Background: Starch is a vital polysaccharide widely used in food and industrial applications. Non-conventional starch sources, such as palmyra (*Borassus flabellifer*), are garnering interest due to their availability and potential cost advantages. This study aims to explore the effects of ultrasonication and alcohol-alkali treatments on the structural and functional properties of palmyra starch, comparing these with the well-established cassava starch. **Materials:** Palmyra shoots were harvested and processed to extract starch. The extracted starch was subjected to ultrasonication and alcohol-alkali treatments. The morphological features were analyzed using SEM, while the crystalline structure was assessed via XRD. FTIR was utilized to investigate short-range ordered structures, and DSC determined the thermal properties, including gelatinization temperatures. Statistical analysis was conducted to evaluate significant differences between native and modified starches. **Results:** The SEM analysis revealed that native palmyra starch granules exhibit characteristics similar to cassava, with a distinct granular morphology. Following ultrasonication, the modified palmyra starch showed a significant reduction in crystalline portions, enhancing swelling power and solubility, although water absorption capacity decreased. XRD analysis indicated that the modified palmyra starch retained an A-type crystalline pattern, with diffraction peaks at $2\theta = 15.1^\circ, 17.1^\circ, 18.0^\circ, \text{ and } 23.0^\circ$, consistent with native palmyra starch. Additionally, significant changes ($p < 0.05$) in color, gelatinization transition temperatures, and functional properties were observed post-treatment. **Conclusion:** The findings demonstrate that ultrasonication and alcohol-alkali treatments significantly alter the structural and functional properties of palmyra starch, making it a promising alternative to traditional starch sources like cassava. Given its enhanced properties, palmyra starch may serve as an economical substitute in the production of food additives, condiments, beverages, and bakery products, warranting further exploration of its applications in the food industry.

Keywords: Tender palmyra shoot; Starch; Cassava; FE-SEM; Thermal properties

Abstract ID: 343

ABSTRACT TITLE: DUAL MODIFICATION OF ROOT STARCHES: EFFECTS OF ACETIC ACID AND ULTRASONICATION ON FUNCTIONAL AND STRUCTURAL PROPERTIES

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Background: Root starches are critical in food applications, yet there is limited research on their dual modification, particularly involving acetic acid and ultrasonication. This study aims to explore how these treatments influence the functional, thermal, and morphological properties of EFY, CS, and SP starches, which could enhance their applicability in various food products. **Methods:** Native starches from EFY, CS, and SP were subjected to varying durations of ultrasonication followed by acetylation using acetic acid. Native starches served as controls. We employed techniques such as Fourier-transform infrared spectroscopy (FTIR) to assess functional groups, thermal analysis to determine thermal characteristics, and scanning electron microscopy (SEM) for morphological evaluations. **Results:** This study investigates the combined effects of acetic acid (AA) modification and ultrasonication (US) on the properties of elephant foot yam (EFY) starch, cassava (CS) starch, and sweet potato (SP) starch. The research addresses a gap in the literature regarding dual modification of root starches. We analyzed functional, thermal, and morphological properties to evaluate the impact of varying ultrasonication durations followed by acetylation, comparing modified starches to their native counterparts. Our findings indicate significant alterations in starch characteristics, suggesting potential applications in the food industry. **Conclusion:** The results of this study demonstrate that the combined application of acetic acid and ultrasonication significantly modifies the functionality, morphology, and structural properties of EFY, CS, and SP starches. These enhancements suggest that modified starches can be effectively utilized in various food applications, including confectionery, bread production, tablet binders, and encapsulation processes, warranting further exploration in food technology.

Keywords: Acetic acid, ultrasonication, dual modification, root starches, functional properties.

Abstract ID: 362

ABSTRACT TITLE: ANTI-INFLAMMATORY AND ANTIOXIDANT PROPERTIES OF PSIDIUM GUAJAVA L. LEAVES EXTRACT

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Background: The guava (*Psidium guajava* L.) tree, belonging to the family Myrtaceae is a very unique and traditional plant which is grown due to its diverse medicinal and nutritive properties. In Manipur, different parts of the guava tree - roots, leaves, bark, stem, and fruits are used to treat ailments such as

stomachache, diabetes, and diarrhea. This study focused on assessing the antioxidant potential, phytonutrient content, and in-vivo anti-inflammatory effects of ethanolic leaves extract of *Psidium guajava* against acute inflammation in rat model. **Method:** Spectrophotometric methods were used to assess the total phenol, flavonoids, alkaloid and carotenoid content. The free radical scavenging activity and reducing power assay was investigated by using DPPH, FRAP and CUPRAC method. In-vivo anti-inflammatory property was investigated by using carrageenan-induced paw edema in Wistar albino rats. **Results:** The findings revealed total phenol of 237.79 ± 0.33 mg CE/100g, total flavonoids of 158.86 ± 1.05 mg QE/100g, total alkaloid of 10.53 ± 0.72 mg caffeine/100g and total carotenoid content of 2.58 ± 0.07 mg/100g. The ethanolic extract of *Psidium guajava* L. leaves demonstrated significant antioxidant activity (79.67%) with an IC₅₀ value of 42.64 μ g/ml. FRAP and CUPRAC values were recorded at 429.62 μ mol TE/g and 937.78 μ mol TE/g, respectively. The acute toxicity study showed no behavioural changes or sign of toxicity upto 14 days, with no mortality observed within 48 hours at a dose of 2000mg/kg body weight in Albino mice. Anti-inflammatory properties of oral administration of *Psidium guajava* L. leaf extracts at the doses of 100, 300 and 900 mg/kg body weight and standard drug (melonax) showed significant ($p < 0.01$) reduction and inhibition of edema induced by carrageenan at 6 hour when compared with control group. However, the decreased in rat paw volume was significantly ($p < 0.01$) highest in Test group fed with 900 mg/kg body weight of *Psidium guajava* L. leaf extract. **Conclusion:** This study indicates that guava leaf extract possesses anti-inflammatory properties by reducing edema levels. Overall, the extract of *Psidium guajava* L. shows promising antioxidant and anti-inflammatory activities, reinforcing its traditional use in treating inflammation-related diseases.

Keywords: *Psidium guajava*, Antioxidant potential, Anti-inflammatory property, Traditional use.

FREE COMMUNICATION ORAL PRESENTATIONS

HALL NO.4: SIDTM Classroom - 1 (Ramanujan)

15th November 2024

Time: 10:00 am to 11:30 am

SESSION 3- CLINICAL NUTRITION

No	Abstract ID	Presenter name	Affiliation	City	Email	Title of Presentation
1	69	Ms Pranjali Devidas Chandawad	SNDT College of Home Science	Pune	pranjalicchandawad08@gmail.com	Diet Diversity and Micronutrient Adequacy in Working Women of Reproductive Age in Pune.
2	97	Ms Syed Rubina Fatima Abdul Kani	PSG College of Arts & Science	Coimbatore	rubinasyed1199@gmail.com	Efficacy of nutrients enriched rusk on serum haemoglobin and calcium among rural pre-menopausal women
3	211	Dr Ambily Sivadas	St Johns Medical College Hospital	Bengaluru	ambily.s@sjri.res.in	CobVar: a comprehensive resource of Vitamin B12 associated genetic variants
4	336	Ms Payoshni Vivek Kulkarni	Symbiosis Skills and Professional University	Pune	payoshnikulkarni335@gmail.com	"Evaluating Waist-to-Height Ratio as a Predictor of Overweight in Children aged 5-10 years."
5	344	Ms Ankita Das	Fernandez Hospital	Hyderabad	ankita.d@fernandez.foundation	Dietary Pattern of Pregnant Women with BMI >40 at Specialized Clinic in Tertiary Care Center, Hyderabad
6	348	Ms Kaila Nova Henna Jemimah	CSIR-Central Food Technological Research Institute	Mysore	njems768@gmail.com	From grain to gut: The nutritional synergy of pearl millet and Lactobacillus plantarum DHCU70
7	366	Dr Jyoti Shirodkar	DSHS Pvt. Ltd. (BLUMARK Foods)	Pune	ceo.blumark@gmail.com	BLUMARK Research-Based-Foods for T2DM/Obesity

Abstract ID: 69

ABSTRACT TITLE: DIET DIVERSITY AND MICRONUTRIENT ADEQUACY IN WORKING WOMEN OF REPRODUCTIVE AGE IN PUNE

Ms PRANJALI DEVIDAS CHANDAWAD, Student, SNTD College of Home Science, Karve road , Pune, Maharashtra, pranjalichandawad08@gmail.com; **ANUJA KINIKAR**, Assistant Professor and Head Department of Food Science and Nutrition , SNTD College of Home Science Karve Road Pune

Background: Diversifying the meals and food groups in the diet contributes to adequate essential nutrients. Women of reproductive age (25–40 years) are especially vulnerable because of their high nutritional and physiological requirements. A sufficient intake of macronutrients and micronutrients is necessary for a healthy life. This study aimed to assess the diet diversity of working women aged 25 to 40 and evaluate micronutrient adequacy in meals. **Material:** A cross-sectional study was conducted to determine diet diversity and micronutrient adequacy in working women. This study was conducted among 120 working women aged 25–40 from Pune city. The data was collected by interview method using a pretested questionnaire for demographic details, physical activity, and three days of dietary intake. Diet diversity was checked using a Minimum Diet Diversity questionnaire by FAO. The nutrient adequacy ratio was used to determine micronutrient adequacy. Descriptive analysis was performed using SPSS software. **Results:** The mean age of the study population was found to be 31.09 ± 5.53 years. Women's minimum diet diversity was 46.7% on average. Macronutrients such as energy and protein were calculated from three days 24 hours of dietary recall; it was less than the Recommended Dietary Allowance. Micronutrients were calculated from three days of 24 dietary recall with an average of each micronutrient, and it was compared with the estimated average requirement for sedentary women. It was observed that calcium was 304.5 mg/dl, vitamin A was 284µg/d, vitamin C was 26.4µg/d, and folate was 80.7µg/d. An iron (17.9 mg/dl) requirement has been met using the estimated average requirement for sedentary women. **Conclusion:** The finding of this study shows that women of reproductive age consume a diet lacking several important micronutrients, increasing the risk of micronutrient insufficiency. Their diet diversity is average, mostly focusing on starchy staples. Micronutrient adequacy was met only for iron, and the rest of the micronutrient does not meet the recommended dietary allowance. Due to their hectic schedules and domestic duties, the majority of the participants were physically inactive. The macronutrient intake was below the daily recommended levels.

Keywords: Diet Diversity, Micronutrient Adequacy, Physical activity, Nutrient intake

Abstract ID: 97

ABSTRACT TITLE: EFFICACY OF NUTRIENTS ENRICHED RUSK ON SERUM HAEMOGLOBIN AND CALCIUM AMONG RURAL PRE-MENOPAUSAL WOMEN

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Background: Nutritional practices are crucial among the many facets of health promotion and lifestyle modification during the perimenopausal stage. Significant micronutrient deficiencies for menopausal women commonly are calcium and iron. Hence the present study aimed to find the efficacy of nutrient-enriched rusk on serum haemoglobin and calcium among rural pre-menopausal women. **Material:** A questionnaire was framed to collect the data regarding socioeconomic status, anthropometric, biochemical profile, and 24-hour diet recall. Nutrient-enriched rusk was developed for supplementation to improve serum haemoglobin and calcium status. **Results:** Nearly 130 premenopausal women belonging to the Vedapatti suburb area were selected. Around 39% were mildly anaemic, and 14% had low calcium levels. It was observed that 53% were overweight and 7% were obese. The nutrient analysis revealed that the developed rusk comprises energy (397.41 kcal), carbohydrates (67.56 g), protein (16.49 g), fat (6.09 g), fibre (9.12 g), iron (14 mg), and calcium (434.69 mg), which was found to be enhanced when compared to commercially available rusk made by refined flour. The case-control study proved that the mean haemoglobin was increased by 1.7 g/dl ($t = 6.521$) and the mean serum calcium was increased by 1.9 mg/dl ($t = 8.386$). This proves that there is a positive impact on iron calcium-enriched rusk supplementation among selected rural menopausal women. Initially, the serum haemoglobin and calcium levels were almost the same in both the cases and control subjects, and they were well correlated ($r^2 = 0.841$), and there is no difference between the case and control group ($p \leq 0.001$). **Conclusion:** Hence, it was concluded that awareness of micronutrient deficiencies should be a fundamental necessity to improve the nutritional status of rural women at premenopausal age. Nutrition education was also provided.

Keywords: micronutrients, nutrition education, pre-menopause, rusk.

Abstract ID:211

ABSTRACT TITLE: COBVAR: A COMPREHENSIVE RESOURCE OF VITAMIN B12 ASSOCIATED GENETIC VARIANTS

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Background: The importance of vitamin B12 (cobalamin) in numerous biological processes, including DNA synthesis and cellular energy production, underscores the need for therapeutic and public health strategies to address B12 insufficiency or deficiency in the population. Genetic variations in pathways influencing cobalamin absorption, transport, and metabolism can affect various direct and indirect measures of vitamin B12 status. To facilitate a structured approach to studying these genetic factors, we aimed to systematically curate and create a user friendly web database that offers comprehensive data on genetic variants influencing B12 status and associated biomarkers.

Material: A Pubmed search was performed for 5 B12 traits (total serum or plasma B12, holotranscobalamin, total transcobalamin, holohaptocorrin, and methylmalonic acid) resulting in 493 research publications (as of Aug 2024), of which 47 relevant publications were reviewed further. The database backend was built

using MongoDB and the web interface was coded in PHP, JavaScript, HTML and CSS on an Apache HTTP server.

Results: In its current version, we have manually curated and compiled the Cobalamin Associated Genetic Variant (CobVar) database, comprising a total of 324 genetic variant associations for 5 different vitamin B12 related traits involving 222 unique genetic variants and 84 genes. The database annotates genetic variants from genome wide association studies and candidate gene studies, including information on genomic coordinates, effect sizes, study population, and links to primary literature. About one third of the total genetic variant associations have been reported in more than 1 independent studies and 15 variants in more than 1 ethnic group. FUT2 gene showed the maximum number of associations for total serum or plasma B12 (39), followed by MTHFR (24) and TCN2 (23). The database is accessible online.

Conclusion: CobVar is a vital resource for researchers, offering quick access to the latest developments in B12 related genetic variant research. The database serves as a valuable tool for understanding the physiological and molecular underpinnings of B12 associated health conditions and advancing personalized treatment. Future iterations will extend the database to include variants associated with other vitamins and micronutrients, further expanding its utility in precision nutrition.

Keywords: Vitamin B12, genetic association, nutrigenetics, curation, database, online resource

Abstract ID: 336

ABSTRACT TITLE: Evaluating Waist-to-Height Ratio as a Predictor of Overweight in Children aged 5-10 years

Ms Payoshni Vivek Kulkarni, payoshnikulkarni335@gmail.com, Student, Symbiosis Skills and Professional University, Kiwale, Pune

Background: Waist-to-height ratio (WHtR) has emerged as a significant anthropometric measure for predicting obesity-related health risks, particularly in children. This study focuses on evaluating the WHtR as a significant indicator of central obesity in children aged 5-10 years, in comparison to conventional measures such as Body Mass Index (BMI). WHtR is considered a valuable alternative because it is easy to use and effectively accounts for changes in body fat percentage and height, which are essential during children's growth stages. **Material:** A cross-sectional study was conducted comprising 210 children (119 boys, 91 girls) from upper-middle-class socioeconomic backgrounds assessed using the gold standard for socioeconomic status. Inclusion criteria were children aged 5-10 years. Parents provided informed consent and completed questionnaires, which collected anthropometric data, including height, weight, birth weight, and waist circumference, used to calculate BMI percentiles and WHtR. It included other sections like food frequency, physical activity, stool pattern, and sleep. BMI percentiles determined using WHO Anthroplus software, were compared with WHO-BMI percentile cut-offs. WHtR was calculated by dividing waist circumference by height. Statistical analysis of data involved regression models used to measure the correlation between the WHtR and obesity. **Results:** The descriptive values of BMI analysis helped in categorizing children as 9% obese, 10% overweight, 48.1% normal weight, and 22.9% as underweight.

Comparatively, WHtR indicated that around 93 (44.2%) children had values greater than 0.5 while 117 (55.7%) children below 0.5 with a p-value of 1.72E-58, which indicated a strong statistical significance. The results suggested that WHtR was an accurate indicator of obesity compared to BMI percentiles, particularly in identifying central obesity. **Conclusion:** The study concludes that WHtR is an effective tool for early obesity and is a non-invasive, precise method for screening children aged 5-10 years, offering a reliable and easy-to-use alternative to BMI. Its potential to improve early detection of obesity-related health risks requires further investigation, particularly in diverse populations and age-specific cut-off values for paediatric assessments. With 44.2% of children showing high WHtR, interventions targeting waist circumference may be crucial for combating childhood obesity in Maharashtra.

Keywords: Waist-to-Height Ratio (WHtR), Childhood Obesity, BMI percentile.

Abstract ID: 344

ABSTRACT TITLE: DIETARY PATTERN OF PREGNANT WOMEN WITH BMI > 40 AT SPECIALIZED CLINIC IN TERTIARY CARE CENTRE, HYDERABAD

Ms Ankita Das, ankita.d@fernandez.foundation, Senior Dietitian, Fernandez Hospital , 4-1-1230, prime mansion ., Abids Road , Bogulkunta

Background: Maternal obesity is strongly linked to adverse maternal and fetal outcomes. This study aims to explore the dietary patterns and nutritional quality of women with a pre-pregnancy BMI greater than 40 kg/m², while assessing the effects of a multidisciplinary team approach on maternal and fetal health outcomes. The main objectives include ensuring that weight gain aligns with IOM recommendations, incorporating low glycemic index foods, and reducing the intake of foods high in Fat, Salt and Sugar (HFSS).

Methods: Women with a pre-pregnancy BMI greater than 40 kg/m² who registered at a specialized clinic were included in the study. Those with conditions such as chronic kidney disease (CKD), liver disease, or cardiac disease were excluded. Participants who provided consent underwent a comprehensive nutritional assessment to evaluate their dietary quality. A standardized questionnaire with 24-hour dietary history and a food frequency form was used to gather their dietary pattern. Following the evaluation, mothers were provided with a customized diet plan and followed up till delivery. Categorical variables were presented as frequency and percentage, while continuous variables were reported as mean \pm SD. A p-value of less than 0.05 was considered statistically significant. Statistical analysis was conducted using R-Studio Desktop Version 4.3.0. **Results:** At conception, protein and fiber intakes were adequate, with 94% and 90% of participants meeting ICMR recommendations, respectively. However, inadequate intake was observed in whole grains (90% less), vegetables (90% less), and fruits (90% less). Furthermore, 60% of participants reported excessive salt consumption, while 62% had a high intake of fat from HFSS foods. Regular follow-ups at the clinic every four weeks, involving a multidisciplinary team (including an obstetrician, nutritionist, physiotherapist, and fetal medicine expert), were conducted. This approach

ensured that maternal weight gain aligned with IOM recommendations, with 64.86% of participants meeting the guidelines and only 35% exceeding them. Infants born to these mothers had birth weights ranging from 2.91 to 2.95 kg, indicating optimal fetal growth. **Conclusion:** A multidisciplinary team approach, coupled with effective communication, can enhance adherence to dietary recommendations, leading to better health outcomes.

Keywords: Pregnant Mother BMI>40, Multidisciplinary Approach

Abstract ID: 348

ABSTRACT TITLE: From grain to gut: The nutritional synergy of pearl millet and *Lactobacillus plantarum* DHCU70

Ms Kaila Nova Henna Jemimah, njems768@gmail.com, Research Fellow (UGC), CSIR- CFTRI, CSIR-Central Food Technological Research Institute, Mysuru

Background: Probiotic foods integrate food technology and microbiology with basic sciences exploring their potential to alleviate nutritional disorders. Probiotics are being extensively studied for their inter-host physiological benefits and interactions, like gut-brain axis, cell communication, immune system, pathogen interference and restoration of gut dysbiosis. Strains of *Lactobacillus* and *Bifidobacterium* were termed 'gerobiotics' for their antiaging potential in dealing with time-associated physiological changes in an organism at cellular to organ-system level, associated with neurological, musculoskeletal and metabolic disorders. **Material:** The study aimed at integrating pearl millet (PM) (a suitable prebiotic), with *Lactobacillus plantarum* DHCU 70, to observe physicochemical, nutritional and bioactive profile, sensory, microbiological parameters simultaneously observing in vitro antioxidant, anti-inflammatory and enzyme inhibition potential to observe the synergistic effect on oxidative stress, inflammation and non-communicable diseases. **Results:** The physicochemical parameters of the standardized beverage showed a gradual decline in total soluble solids (TSS) in pH post fermentation. The nutritional profiling showed the presence of macronutrients, with moderate carbohydrates, protein and ash, low fat, B and E vitamins and minerals showing its combating potential against malnutrition and vitamin deficiency disorders. The study highlights the presence of bioactives such as polyphenols, flavonoids, free disaccharides, short chain fatty acid (SCFA) in considerable amounts. The probiotic strain showed tolerance to harsh gut conditions, maintaining its effective CFU/ml while also inhibiting the growth of pathogenic strains. Integration of the PM and *L. plantarum* DHCU 70 showed to improve total polyphenol, total flavonoid and total antioxidant capacity while higher radical scavenging and anti-inflammatory potential was quantified using in vitro radical scavenging assays which show the protective effects against oxidative stress and inflammation. In vitro enzyme inhibition assays revealed higher inhibition of $\hat{1}\pm$ amylase, $\hat{1}\pm$ glucosidase and lipase enzymes showing its potential toward non communicable disorders like obesity, diabetes and hypertension. The cost dynamics study confirmed the product to be economical compared to other commercial vegan probiotic beverages. **Conclusion:** The study revealed the synergistic potential of PM and *L. plantarum* DHCU 70 on

alleviating malnutrition, oxidative stress, inflammation and enzyme inhibition all which promote healthy aging.

Keywords: Gerobiotics, oxidative stress, Probiotics, Pearl millet

Abstract ID: 366

ABSTRACT TITLE: BLUMARK Research-Based-Foods for T2DM/Obesity

Dr Jyoti Shiroadkar, ceo.blumark@gmail.com, DIRECTOR, DSHS Pvt. Ltd. (BLUMARK Foods), S2/11 Devideep Society, NDA Road, Bavdhan, Pune

Background: Wheat/Rice/Jowar/Bajra are Indian staple foods, but are partially/fully restricted in diabetic patients to achieve BSL control. In exponentially rising number of diabetic patients across India, there is a need of a staple diet, which will give satiety, taste, nutrition while controlling BSLs, Cholesterol and Body Fats. Ayurveda has given dietary guidelines for diabetic patients, which we explored. In a research project, funded by DST, Govt. of India, we developed 3 food products using cereals, select millets and pulses: Roti-Atta, Snack-Mix and Shake-Mix. They were systematically tested in diabetic patients in a clinical trial.

Material: Multiple combinations & processes during the research from 2009 to 2016 resulted in the developed products, which underwent sensory evaluation in healthy volunteers in the pharmacology department of Tilak Ayurved Mahavidyalaya. The standardized products were tested in NABL-accredited laboratories for nutritional contents, shelf-life & toxicity. Glycaemic Index (G.I.) was tested in-vivo as per ISO26642 (2010). To study the efficacy of the products, exploratory (n=18) and confirmatory clinical trials (n=60) were carried out in diabetic patients in Tara Chand hospital, Pune. BSLs before and after the trial were compared by using paired - t-test, after adjusting for the possible confounding factors. **Results:** Products were well accepted by 86% users. All the three products had the Lowest G.I. as compared to competing options to patients: Roti-Atta (30), Snack-Mix (26) and Shake-Mix (42). In the exploratory clinical trial of Rotis & Snacks, mean reduction in PP-BSL was 42 mg/dl. (SD: 21.88) ($P < 0.001$), after twice a day consumption of rotis and once-a-day consumption of snacks for 5 consecutive days. The confirmatory trial of once-a-day consumption for 5 days showed average reduction in BSL by 19 mg/dl (SD 47.63). There was reduction in the diabetic symptoms. Consumption of Shake-Mix for 1 month in 10 volunteers showed statistically significant change in PP-BSLs, cholesterol and waist circumference. **Conclusion:** Products developed with integration of Ayurved, Modern Dietetics, Modern Medicine. They conformed to USFDA/EFSA claim requirements about CVD/CAD risk-reduction. Their prebiotic properties were proven too. They showed statistically significant reduction in BSL, cholesterol, waist as well as gut/digestion related & other symptoms of Diabetes. So proven for Diabetes/Heart/PCOS/Obesity!

Keywords: Flavours / Artificial Colours / Chemicals / Drugs / Sweeteners / Added Sugar, Quick Filling, High Fibre, Gluten Free, No BSL Spikes, Reduce appetite for quick sugars / carbs , reduce insulin resistance, help reverse diabetes, Good for patients of piles / constipation / gluten allergies / celiac disease ,

Conforming to Ayurved Aahar Certification Guidelines of fssai, patented, clinically tested and proven, Integration of modern diet science, ayurved & modern medicine, Essential Micronutrients like Se, Mg, Cu, Zn, Ca, K, Na, P. Perfect balance of macro nutrients like carbs, fibre, good fats, proteins. Taste, Variety, Health Nutrition, Satiety, Affordability, Ease of Cooking

FREE COMMUNICATION ORAL PRESENTATIONS

HALL NO.5: SIDTM- Classroom 4 (Gargi)

15th November 2024

Time: 10:00 am to 11:30 am

SESSION 4- EXPERIMENTAL NUTRITION

No	Abstract ID	Presenter name	Affiliation	City	Email	Title of Presentation
1	2	Dr Bhagya D	St Josephs College for Women Alappuzha	Alappuzha, Kerala	bhagyasjcw@gmail.com	Effects of tender coconut water (Cocos nucifera) in high fructose fed hypertensive rats with and without L-NG-Nitroarginine methyl ester
2	77	Dr Pandarinath Savitikadi	ICMR- National Institute of Nutrition	Hyderabad	pandarina th12@gmail.com	A polyherbal formulation prevents obesity associated cardiac hypertrophy in a spontaneous obese rat model
3	86	Ms Aishwarya Kapare	Interactive Research School for Health Affairs, Bharati Vidyapeeth (Deemed to be University)	Pune	aishwarya.kapare@bharatividyaapeeth.edu	Influence of Assisted Reproductive Technology (ART) procedures on placental fatty acid status and their association with birth outcome
4	257	Ms K D Thaniya Poovamma	Yuvaraja college	Mysuru	thaniyapovamma16@gmail.com	Nutritional Innovation: The Development and Nutritional Evaluation of a Galactagogue rich sticks using pearl millet [Pennisetum glaucum]
5	367	Ms Puneeta Singh Yaduvanshi	ICMR- National Institute of Nutrition	Hyderabad	puneetas12@gmail.com	Modulation of Iron transporters by Zinc in Hepatocytes HepG2 cells
6	393	Anandita Ghosh	Symbiosis Skills & Professional University	Pune	aninditaghosh29@gmail.com	Dietary Patterns, Adherence, and Challenges in Chronic Kidney Disease Management: A Comprehensive Evaluation of Patient Profiles and Nutritional Education Needs

Abstract ID: 002

ABSTRACT TITLE: EFFECTS OF TENDER COCONUT WATER (COCOS NUCIFERA) IN HIGH FRUCTOSE FED HYPERTENSIVE RATS WITH AND WITHOUT L-NG-NITROARGININE METHYL ESTER

Dr Bhagya D, Assistant Professor, PG Department of Home Science, St Josephs College for Women Alappuzha, Kerala 688001, bhagyasjcw@gmail.com; **Dr.T Rajamohan**, Professor, Department of Biochemistry, University of Kerala, Kerala 688001

Background: Endothelial synthesis of nitric oxide is impaired in hypertension and inhibition of nitric oxide synthase by L-NG-Nitroarginine methyl ester seems to be involved in lipid metabolism alterations. Increased levels of haemostatic factors play a role in blood pressure. Thus, the present study was carried out using L-NAME to evaluate the role of L-Arginine and nitric oxide availability from Tender coconut water(TCW) on lipid levels and coagulation factors in fructose induced hypertension. **Materials and Methods:** Male albino rats (Sprague Dawley strain) weighing 150-170g, were used for the study. The rats were divided into 4 groups of six each and fed the following diet: Group 1 Control rats, Group 2 High fructose fed hypertensive rats (HFF 71%), Group 3 HFF+ TCW (4 ml/100g bodyweight), Group 4 HFF+ L-NAME (0.5 mg /kg/day), Group 5 HFF+ TCW + L-NAME. Rats of group 1 were fed standard starch diet and Groups 2, 3, 4 and 5 received high fructose diet for 5 weeks. After 2 weeks, rats of group 3 and 5 were given TCW (4 ml/100g body weight) by gastric intubation and Group 4 and 5 received L-NAME (0.5mg-1 kg-1 daily) dissolved in water. At the end of experimental period rats were sacrificed and blood and tissues were collected in ice cold containers and urine samples were collected for estimation of urinary nitrite. **Results:** Feeding TCW to hypertensive rats significantly reduced the blood pressure. Feeding TCW in hypertensive rats showed significant increase in the activity of nitric oxide synthase 1.012 ± 0.035 , WBC and platelet count and decreased activity of arginase 571.75 ± 5.5 in the liver, fibrinogen, fibrin, factor V and increased prothrombin time compared to hypertensive control rats and L NAME. Histopathological studies of liver and aorta shows degenerative changes and fatty infiltration in L-NAME treated rats. **Conclusion:** L-Arginine present in TCW increases NO availability and ameliorates the alterations in lipid levels and coagulation parameters in fructose induced hypertension. Administration of TCW without L-NAME increases urinary nitrite excretion which elevates NO leading to favourable changes in the lipid levels, coagulation factors and histopathology.

Keywords: High Fructose Diet, L-NAME, Hypertension, Tender Coconut Water, Lipid Levels, Coagulation Factors, Histopathology

Abstract ID: 77

ABSTRACT TITLE: A POLYHERBAL FORMULATION PREVENTS OBESITY ASSOCIATED CARDIAC HYPERTROPHY IN A SPONTANEOUS OBESE RAT MODEL

Dr Pandarinath Savitikadi, ICMR Research Associate, National Institute of Nutrition, Department of Biochemistry, NIN Tarnaka, Hyderabad, Telangana, 500007, pandarinath12@gmail.com

Background: Obesity is a global health problem and is associated many health complications including cardiac hypertrophy. Cardiac hypertrophy is a serious human concern, and warrants development of safe and effective intervention strategy for the prevention of obesity associated cardiac complications. The present study was aimed to develop and test its effectiveness of polyherbal formulation for obesity associated cardiac hypertrophy. **Materials and Methods:** A polyherbal formulation was designed by mixing amla, turmeric, black pepper, cinnamon and ginger in a specific proportion and tested on spontaneously developed obese rat model, WNIN-GR/Ob rat. Thirty-five-day old WNIN-GR/Ob rats were distributed into three groups: while untreated obese (Ob) group received standard AIN93G diet, the other groups received polyherbal formulation dose1 (Ob-PF1) and dose2 (Ob-PF2) in the diet for six months. A group of lean rats that received standard AIN93G diet served as control. Daily food intake and weekly body weights were measured. Rats were sacrificed after six months and collected blood and heart samples. **Results:** Levels of protein carbonyls and MDA, and activity of catalase and glutathione peroxidase were measured by spectrophotometric methods. Markers of cardiac hypertrophy, fibrosis, inflammation, ER stress, apoptosis were analyzed by immunoblotting. H&E staining for histology, SEM for morphology and Masson's trichrome staining for collagen deposition were used. **Conclusion:** Results showed that polyherbal formulation was effective in protecting the heart against obesity induced cardiac hypertrophy, through modulating/improving cardiac hypertrophy and inhibiting inflammation, oxidative stress, ER stress, fibrosis and apoptotic signaling pathways.

Keywords: Polyherbal Formulation, Synergistic Effect, Anti-obesogenic, Fibrosis, Inflammation, ER Stress.

Abstract ID: 86

ABSTRACT TITLE: INFLUENCE OF ASSISTED REPRODUCTIVE TECHNOLOGY (ART) PROCEDURES ON PLACENTAL FATTY ACID STATUS AND THEIR ASSOCIATION WITH BIRTH OUTCOME

Ms Aishwarya Kapare, Ph.D Student, Interactive Research School for Health Affairs, Bharati Vidyapeeth (Deemed to be University), Pune- Satara road, Maharashtra, 411043, aishwarya.kapare@bharatividyapeeth.edu; Dr. Deepali Sundrani Assistant Professor, Interactive Research School for Health Affairs Bharati Vidyapeeth Deemed to be University, Pune- Satara road, Maharashtra, 411043

Background: Fatty acids, especially polyunsaturated fatty acids (PUFAs), are crucial for placental growth and development. They are beneficial in oocyte maturation, embryo implantation and development, follicular development and improves quality of oocytes and embryo in pregnancies conceived through Assisted Reproductive Technology (ART). Altered fatty acids status can affect the placental growth and development. This study for the first time aims to investigate the influence of ART procedures on the placental fatty acid status and their association with placental weight and birth outcome. **Materials and Methods:** 64 ART and 93 Non-ART women were recruited at Gupte hospital, Pune, India. Placental fatty acids were analysed using a gas chromatograph. Comparison between two groups was carried out by using independent t-test. Association between fatty acid status and birth outcome was analysed using Partial correlation test after adjusting for maternal age, body mass index, income, and sex of the baby. **Results:** Placental Docosapentaenoic acid (DPA) and total omega-3 fatty acids were significantly lower ($p<0.05$) and omega-6:omega-3 PUFA ratio was higher ($p<0.05$) in ART group as compared to non-ART group. ART group further categorized based on the procedures like in vitro fertilization (IVF) and intrauterine insemination (IUI), showed similar results for placental fatty acids only in the IVF group ($p<0.05$) and not in the IUI group as compared to non-ART group. Based on sex of the baby, it was observed that placental DPA, Docosahexaenoic acid (DHA) and omega-3 fatty acids were lower ($p<0.05$) whereas omega-6 and omega-6:omega-3 ratio was higher ($p<0.05$) in male babies born through ART procedures as compared to male babies born by natural conception. This was not observed in female babies between ART and non-ART groups. Placental Arachidonic acid (AA), omega-6 and total PUFA levels were negatively associated with placental weight ($p<0.001$) and birth weight ($p<0.05$). **Conclusion:** ART procedures particularly IVF is associated with lower omega-3 and higher omega-6 fatty acid status that influences placental weight and thereby birth outcome. Our data also suggests sex- specific differences in the placental fatty acid status in women conceived by ART procedures.

Keywords: Fatty Acids, Assisted Reproductive Technology, ART, IVF, IUI, Placenta, Birth Outcome

Abstract ID: 257

ABSTRACT TITLE: NUTRITIONAL INNOVATION: THE DEVELOPMENT AND NUTRITIONAL EVALUATION OF A GALACTAGOGUE RICH STICKS USING PEARL MILLET [Pennisetum GLAUCUM]

Yashwanth G Naik, Lecturer, Department of Food Science and Nutrition, Yuvaraja's college (Autonomous), University of Mysore, Mysuru, Karnataka, India; **Skanda A G**, Lecturer, Department of Food Science and Nutrition, Yuvaraja's college (Autonomous), University of Mysore, Mysuru, Karnataka, India; **Shekhara Naik R**, Professor and Head, Department of Food Science and Nutrition, Yuvaraja's college (Autonomous), University of Mysore, Mysuru, Karnataka, India

Background: Galactagogues are substances that promote lactation and enhance milk production in nursing mothers, helping to prevent malnutrition in infants by fulfilling their nutritional needs. Pearl millet (*Pennisetum glaucum*) is a nutrient-rich grain known for its high protein content, dietary fibre, and essential minerals. Its health benefits, including potential galactagogue properties, make it an ideal ingredient for supporting lactation and maternal nutrition. This experimental research investigates the effects of product development through value-based formulation design, aiming to create functional foods that enhance breastfeeding success and improve nutritional outcomes for mothers and infants. **Materials and Methods:** This study investigates the development of a galactagogue-rich product through the strategic incorporation of nutrient-dense ingredients. The formulation includes pearl millet, gram flour, fenugreek flour and a blend of seeds: sunflower, sesame, and pumpkin along with traditional flavour enhancers such as ginger and garlic powder, fennel seeds, turmeric, pepper, ghee and organic jaggery. Various formulation of product was developed with pearl millet and gram flour in the ratio of [V1 – V4] (50:50, 60:40, 70:30, 80:20). The final mixture is baked to achieve an optimal texture and palatability. The developed product was compared to standard murukku made from rice and gram flour. The product was baked at 180°C for 30 – 35 minutes. The product's efficacy was evaluated through sensory evaluation by semi-trained panelist [n=30] scoring on 9-point hedonic scale. Subsequently, the chosen variation subjected to nutritional evaluation. **Results:** The results show significant improvements in nutrient content and sensory acceptance of the developed product. The 70:30 combination of pearl millet and gram flour scored highest for palatability and nutritional value, resulting in galactograin sticks enriched with galactagogue properties and protein. **Conclusion:** These findings highlight the innovative formulation's potential to support lactation and promote healthful eating among nursing mothers. By integrating traditional ingredients with modern processing techniques, this study underscores the importance of functional foods for maternal nutrition, enhancing breastfeeding success and positively impacting infant health during critical developmental stages. Incorporating galactagogue-rich foods into postpartum diets is strongly advocated.

Keywords: Galactagogue, Pearl Millet, Fenugreek, Pumpkin Seeds, Lactation.

Abstract ID: 367

ABSTRACT TITLE: MODULATION OF IRON TRANSPORTERS BY ZINC IN HEPATOCYTES HEPG2 CELLS

Ms Puneeta Singh Yaduvanshi, PHD SRF, ICMR-National Institute of Nutrition, ICMR-NIN, Tarnaka, Osmania Road, Hyderabad, Telangana 500007, <mailto:puneetas12@gmail.com>

Background: Iron and zinc deficiencies frequently coexist in populations worldwide, particularly in those consuming diets rich in phytates, which are abundant in plant-based foods. Consequently, populations with a high intake of phytate-rich diets and a significant prevalence of anemia are also at increased risk for zinc deficiency. Although co-supplementation of iron and zinc offers a straightforward therapeutic strategy,

studies investigating their combined supplementation have reported inconsistent and conflicting results. Zinc supplementation has been shown to induce erythropoiesis in rats, while zinc deficiency reduced the erythroid cell mass in mice. These observations together suggest that zinc interacts at multiple sites of iron metabolism including intestinal absorption and its utilization and storage in liver. In the present study, we explore the effects of zinc on iron transporters in hepatocytes to further elucidate these interactions. **Materials and Methods:** Liver cells, HepG2 were used for the Iron and Zinc interaction studies. Zinc, Ferric ammonium sulfate, Transferrin, TfR1 antibody and other Iron transporter antibodies such as DMT1, IRP2 and PI3K antibody Phospho -AKT were used for immunoblotting. Real time PCR was performed for gene expression studies. **Results:** Zinc treatment (100uM) in hepatocytes HepG2 increases the protein and gene expression of iron transporters TfR1, IRP2 and FPN1. Zinc also induces the storage and uptake of TBI whereas it decreases the uptake of NTBI. **Conclusion:** Zinc treatment increases uptake and transport of TBI.

Keywords: Zinc, Iron transporters, Gene, Protein, Transferrin Saturated Iron (TBI), Non- Transferrin Saturated Iron (NTBI)

Abstract ID: 393

ABSTRACT TITLE: DIETARY PATTERNS, ADHERENCE, AND CHALLENGES IN CHRONIC KIDNEY DISEASE MANAGEMENT: A COMPREHENSIVE EVALUATION OF PATIENT PROFILES AND NUTRITIONAL EDUCATION NEEDS

Ms Anindita Ghosh, Assistant Professor, Symbiosis Skills & Professional University, Pune, Maharashtra, aninditaghosh29@gmail.com; Dr. Arti Muley, Assistant Professor, Symbiosis International University, Pune, Maharashtra

Background: Chronic kidney disease (CKD) is a prevalent condition affecting millions worldwide, characterized by the gradual decline of kidney function over time. Dietary management is crucial in delaying CKD progression and reducing complications; however, patients often face challenges adhering to strict renal dietary guidelines required for effective disease management. This research investigates the dietary behaviors, adherence challenges, and educational needs of CKD patients to enhance understanding and management of dietary compliance in this population. **Methods and Materials:** The patient cohort (n=100 CKD patients not on dialysis) comprised individuals with a balanced gender distribution, primarily middle-aged adults (45-60 years), and notable diversity in educational background and body mass index (BMI) status. Dietary intake patterns were analyzed using a CKD diet score, focusing on animal- and plant-based protein sources, salt, sugars, cholesterol, fiber, and potassium. Patients' understanding of their prescribed diets and adherence levels were assessed through structured questionnaires. A correlation was established between the diet scores and adherence using pearson coefficient test. **Results:** Analysis revealed infrequent consumption of dietary proteins, with a negative correlation between animal-based

protein intake and dietary adherence ($r = -0.45$, $p < 0.01$). Conversely, higher intake of plant-based proteins positively correlated with adherence ($r = 0.55$, $p < 0.01$). Increased consumption of potassium-rich foods also correlated negatively with adherence ($r = -0.43$, $p < 0.05$). Higher intake of cholesterol-rich ($r = -0.35$, $p < 0.05$), sodium-rich ($r = -0.30$, $p < 0.05$), and sugar-rich foods ($r = -0.40$, $p < 0.05$) negatively affected adherence levels. Although 77% of patients reported moderate or partial knowledge of their renal diet, only 4% showed comprehensive understanding. Adherence varied, with 43% following their renal diet most of the time and 30% adhering intermittently. Key barriers included taste preferences (47%) and convenience (27%). **Conclusion:** The findings underscore a critical need for targeted educational interventions and practical support strategies to improve understanding and adherence to renal dietary guidelines. Enhanced patient education, personalized counseling, and continuous support mechanisms are recommended to optimize dietary management.

Keywords: Chronic kidney disease, Dietary adherence, Patient education

FREE COMMUNICATION ORAL PRESENTATIONS

HALL NO.6: SIU QMB Conference Hall

15th November 2024

Time: 10:00 am to 11:30 am

SESSION 5- NUTRITION EDUCATION AND COMMUNICATION

No	Abstract ID	Presenter name	Affiliation	City	Email	Title of Presentation
1	20	Ms Nirja Saikia	Punjab Agricultural University	Ludhiana	saikianirja@gmail.com	Development and Organoleptic Evaluation of Sprouted Pearl Millet Based Recipes and its Effect on KAP Score and Adaptability Among Adolescents
2	87	Ms Mansi Shukla	MAMT A HIMC	Delhi	mansishukla389@gmail.com	Evaluation of the Millet Intake Education (MILLIE) program, a unique and comprehensive initiative across 15 districts of India: a pre-post-test evaluation
3	158	Ms Bhavya Pande	The Maharaja Sayajirao University of Baroda	Vadodara	bhavyapande@ymail.com	Is India Experiencing a Shift Towards Clearer Nutrition Labels? A decadal transition and its implications for public health
4	259	Dr Bhavika Singhvi	ICMR National institute of Nutrition	Hyderabad	singhvibhavika@gmail.com	Impact of a multi-domain e-lifestyle intervention on cardiovascular risk factors of hypertensive individuals: Findings from CEEP-HYPE program
5	351	Mr Hrusikesh Panda	ICMR - National Institute of Nutrition	Hyderabad	hrusinin@gmail.com	Exclusive Breastfeeding in Telangana: An Exploration of Facilitators and Barriers in Rural and Urban Contexts
6	382	Ms. Simran Yadav	ICMR - National Institute of Nutrition	Hyderabad	yadavsimran076@gmail.com	Development and validation of an Indian Nutrition and Food Literacy Tool (INFOLIT) for adolescents

Abstract ID: 20

ABSTRACT TITLE: DEVELOPMENT AND ORGANOLEPTIC EVALUATION OF SPROUTED PEARL MILLET BASED RECIPES AND ITS EFFECT ON KAP SCORE AND ADAPTABILITY AMONG ADOLESCENTS

Ms Nirja Saikia, Research Scholar, Punjab Agricultural University, Ludhiana, Punjab; **Dr. Kanchan Sandhu**, Assistant Professor, Punjab Agricultural University, Ludhiana, Punjab

Background: Pearl millet is a cereal having macro and micro nutrients which are very helpful in combating malnutrition among adolescents. Pearl millet contains highest amount of iron and zinc as compared to other cereals. **Materials and Methods:** In this study sprouted pearl millet was studied for its nutrient composition, organoleptic evaluation, and Knowledge, Attitude and Practice (KAP) score and adaptability regarding pearl millet among adolescents. Pearl millet was sprouted by using two different techniques i.e. muslin cloth and sprout maker. The sprouted pearl millet was further dried and made into flour by using three different drying methods viz. open sun dry, oven dry and solar dryer. All different flours obtained from different drying methods were analyzed for its nutrient content. The prepared sprouted pearl millet flour and sprouted pearl millet grains were used for the preparation of various recipes to evaluate the organoleptic acceptability. The most accepted recipes were taught to the adolescents and their mothers of the intervention group with an intensive nutrition counselling programme regarding pearl millet for the period of three months. **Results:** The results of nutrient analysis showed a significant increase in the nutrient content of sprouted pearl millet by using any of the sprouting techniques. It was observed that sprouted pearl millet flour obtained from oven dry method had the highest nutrient content as compared to open sun dry and solar drier method. All the recipes prepared by using sprouted pearl millet were highly acceptable. A significant change in the food preferences, pearl millet consumption pattern, anthropometric profile, adaptability and KAP score regarding pearl millet of intervention group and their mothers was observed after the period of three months of study. **Conclusion:** Therefore, sprouted pearl millet-based recipes can be incorporated in daily diets of adolescents to combat various nutrient deficiencies and can serve as food and nutrition security to the nation.

Keywords: Pearl millet, sprouted pearl millet, recipes, solar dryer, nutrient analysis, organoleptic evaluation, adolescents, nutrition counselling, KAP score, adaptability.

Abstract ID: 87

ABSTRACT TITLE: EVALUATION OF THE MILLET INTAKE EDUCATION (MILLIE) PROGRAM, A UNIQUE AND COMPREHENSIVE INITIATIVE ACROSS 15 DISTRICTS OF INDIA: A PRE-POST-TEST EVALUATION

Ms Mansi Shukla, Research Associate, MAMTA HIMC, New Delhi, India; Ms. Priyanshu Rastogi, Senior Program Manager, MAMTA HIMC, New Delhi, India; Dr. Sunil Mehra, Executive Director, MAMTA HIMC, New Delhi, India; Dr. Shantanu Sharma, Deputy Director, MAMTA HIMC, New Delhi, India

Background: Millet consumption has declined despite its numerous health and environmental benefits. Millets are nutrient-dense with a low glycaemic index. They are environmentally sustainable and have the potential to promote livelihood for farmers. However, awareness and consumption practices regarding millet still need to be improved as they are replaced by rice and wheat. In the present study, we conducted a community-based education intervention to improve the knowledge and intake of millets among adults, pregnant women, and lactating mothers. The objectives of the present study included assessing changes in knowledge, perceptions, and practices about millet use in the daily routines of women and their families, as well as assessing the effectiveness of different campaign components in bringing change. **Materials and Methods:** We used a pre-post-test study design in which quantitative data was collected using a structured questionnaire before and after 1.5-2 months of intervention and qualitative data on the feedback of the intervention using an open-ended questionnaire. The study was carried out in 80 randomly selected villages/slums across 15 districts of India. The five key intervention components included role plays and education sessions, SMS, phone calls, stakeholder meetings, and recipe demonstrations. A total of 1,582 and 1,504 participants were surveyed during the pre-test and the post-test, respectively. **Results:** The median (Interquartile Range) age of the participants was 32 (25-40) and 34 (26-42) years in pre- and post-test, respectively. The findings indicated a 25-point percent average increase in knowledge and a 4-point increase in the positive attitude toward the health benefits of millet. Also, the consumption of millets increased, with Pearl Millet and Sorghum consumed commonly. Furthermore, 90% of the participants found the campaign useful. **Conclusion:** The intervention successfully improved knowledge and consumption of millet among women and their families. These findings suggest the need for continued nutrition education-based and community-based efforts focusing on promoting consumption of millets using different behavior change approaches.

Keywords: Millets, Nutrition, Community-based interventions, India

Abstract ID: 158

**ABSTRACT TITLE: IS INDIA EXPERIENCING A SHIFT TOWARDS CLEARER NUTRITION LABELS?
A DECADAL TRANSITION AND ITS IMPLICATIONS FOR PUBLIC HEALTH**

Ms Bhavya Pande, Ph. D Scholar, The Maharaja Sayajirao University of Baroda, Pratapgunj, Vadodara, Gujarat, bhavyapande@ymail.com; Dr Suneeta Chandorkar, Assistant Professor, The Maharaja Sayajirao University of Baroda; Dr Meenu Singh, Berlin (Germany).

Background: India is experiencing nutrition challenges like the rising prevalence of NCDs and an increase in the sales of processed packaged foods high in fat, sugar, and sodium. In response, FSSAI, alongside policymakers and experts, implemented more stringent regulations for food labeling and marketing for greater transparency for consumers to make healthier food choices. The current study examined the shift in food labeling of processed packaged foods over a decade. **Materials and Methods:** In 2013, a cross-sectional survey on processed packaged foods was conducted in supermarkets of Vadodara city to study nutrition labeling information. Those products (N=200) were re-examined in 2024 to assess the shift in labeling information using FSSAI regulation (2020). Following aspects were considered: ingredients/nutrients reported, number of ingredients added/reduced/replaced, alternate sources of ingredients/nutrients of concern, addition/reduction of nutrients of concern, nutrition/health claim, and allergen information. **Results:** Over the decade, the following prominent changes have been observed: greater compliance in reporting of allergen information (21% to 75%), an increase in reporting of food additives with the proportion of processed packaged foods reporting anti-caking agents has increased (6%), and a decline in artificial flavours (4%). While examining the top three ingredients, the position of sugar was in the top three, which remained largely unchanged; however, its presence decreased in breakfast-cereals (100% to 75%). The prominence of fat has increased in bakery wares (74% to 84%), and confectionery (76% to 81%), whereas the position of sodium decreased in breakfast-cereals (25% to 13%) and ready-to-cook foods (52% to 46%). There is a decrease in sodium content and no significant changes in energy, fat, and sugar content. Following changes in the ingredient list have been observed: cocoa butter in chocolates is partially replaced by hydrogenated vegetable oil and emulsifiers. Palm oil has replaced other vegetable oils, MSG is replaced with Disodium 5'ribonucleotides, and non-calorie sweeteners (stevia/sucrose) are partially substituted. **Conclusions:** Current labeling information exhibits increased transparency and comprehensiveness. Transdisciplinary collaborations among regulatory authorities, nutritionists, food scientists, and epidemiologists are essential to tackle ongoing nutrition challenges.

Keywords: Nutrition labeling, Processed packaged foods, FSSAI, NCDs

Abstract ID: 259

**ABSTRACT TITLE: IMPACT OF A MULTI-DOMAIN E-LIFESTYLE INTERVENTION ON
CARDIOVASCULAR RISK FACTORS OF HYPERTENSIVE INDIVIDUALS: FINDINGS FROM CEEP-
HYPE PROGRAM**

Dr Bhavika Singhvi: Field Project Manager, ICMR National institute of Nutrition, Hyderabad, Telangana, India, singhvibhavika@gmail.com; **Dr Vishakha Singh,** Hod, Associate professor, Maharana Pratap University of Agriculture and Technology, Udaipur, Rajasthan, India.

Background: Research indicates that individuals with hypertension often exhibit cardiovascular risk factors such as obesity and dyslipidaemia (Lipitension), which contributes to an increased risk of morbidity. A comprehensive intervention program is required to reduce the risk of progression of cardiovascular diseases. The current study aims to assess the impact of such a lifestyle intervention program in addressing these risk factors within the hypertensive population. **Materials and Methods:** This is an intervention-control study, a part of larger intervention trial. Hypertensive individuals without serious co-morbidities, who owned smartphone in the age group of 40-60 years were recruited (n=100) using purposive sampling from General Hospital and local clinics of Udaipur, Rajasthan. The participants completed a questionnaire consisting of demographic profile, height, weight, self-reported physical activity and a modified food frequency questionnaire. The blood samples were collected at an authorised laboratory at two time intervals. A multi-domain, comprehensive e-lifestyle intervention developed for hypertension (CEEP-HYPE) consisted of dietary counselling (weekly) using an e-book; inclusion of yoga (twice in a week); and cognitive and motivational cues sent through digital platforms for 17 weeks. The level of significance was kept $p < 0.05$. **Results:** The participants were randomly assigned to two groups: intervention (n=50) and control (n=50). The intervention group comprised of 50% males and 50% females; the control group included 42% males and 58% females. Most participants were literate, employed in private sector, and earned more than Rs 50000 per month. The intervention participants adhered to the CEEP-HYPE program, leading to significant health improvements: average weight loss of 4.02 kg, BMI reduction by 1.46 kg/m², total cholesterol by 9.34 mg/dl, triglycerides by 9.02 mg/dl, LDL cholesterol by 5.26 mg/dl, and an increase in HDL cholesterol by 2.28 mg/dl. The results were statistically significant ($p < 0.05$). **Conclusions:** A multi-dimension program, like CEEP-HYPE has demonstrated significant health benefits in improving cardiovascular risk factors and can reduce the mortality rate from cardiovascular diseases. Thus, reducing health care cost.

Keywords: Dyslipidaemia, Hypertension, Lifestyle program, cardiovascular risk factors, Digital intervention

Abstract ID: 351

ABSTRACT TITLE: EXCLUSIVE BREASTFEEDING IN TELANGANA: AN EXPLORATION OF FACILITATORS AND BARRIERS IN RURAL AND URBAN CONTEXTS

Dr Hrusikesh Panda , Technical Officer, ICMR National institute of Nutrition, Hyderabad, Telangana, India , hruinin@gmail.com

Background: In India, 63.7% of children (<6 months) are exclusively breastfed and Telangana has a prevalence of 68.2% (NFHS-5). However, compared to nationwide average of 41.8% children being breastfed within the one hour of birth, Telangana recorded only 37.1%. Despite knowing the benefits of Exclusive breastfeeding (EBF), many mothers are not practicing it. Although quantitative data on EBF is available, there is a lack of qualitative insights from individuals. Therefore, the aim of this study was to explore facilitators and barriers for exclusive breastfeeding in rural and urban areas of Telangana. **Materials and Methods:** This paper reports from the formative research of an ongoing cross-sectional study ‘Understanding Exclusive Breastfeeding practices among Mothers of Telangana state: a mixed method Study Using the Positive Deviance Approaches. A moderator guide was developed with five themes 1.Awareness, 2.Exclusive Breastfeeding Practice, 3.Myths/Misconceptions, 4.Facilitators, and 5.Barriers. Sixteen In-depth interviews with mothers 6-8 months children who were still breastfeeding their babies, and four focus group discussions with Anganwadi Workers (n=9) and ASHA workers (n=10) were conducted. The data were transcribed, and a thematic analysis was carried out using grounded theory approach to find common themes and inferences **Results:** The qualitative data revealed several key themes: facilitators such as family support, maternal education, and being multiparous; barriers including non- participation in ICDS activities, migration, poor social support systems, and being a primipara; myths and misconceptions, including traditional practices/beliefs and food restrictions for lactating mothers; Exclusive Breastfeeding practices, such as delayed initiation of breastfeeding and nonexclusive breastfeeding; and awareness of the importance of breastfeeding and colostrum **Conclusions:** The present study highlights the significance of active participation of pregnant and lactating women in ICDS activities to improve exclusive breastfeeding rates. The barriers and facilitators observed in study will help identifying the factors that promote some women of same economic and cultural background perform better than their counterparts have been identified and will be used as in intervention.

Keywords: Exclusive Breastfeeding, ICDS, Pregnant women

Abstract ID: 382

ABSTRACT TITLE: DEVELOPMENT AND VALIDATION OF AN INDIAN NUTRITION AND FOOD LITERACY TOOL (INFOLIT) FOR ADOLESCENTS

Ms. Simran Yadav, ICMR - National Institute of Nutrition Hyderabad, yadavsimran076@gmail.com

Background: Nutrition and Food literacy (NFL) are two linked, but separate concepts related to the ability to understand and apply knowledge about nutrition and food. NFL is a significant driver that shapes an individuals' diet. This is more so among adolescents whose dietary choices leave a lasting impact on nutritional and health outcomes in adulthood. Assessing NFL can help design tailored interventions to empower adolescents to make informed dietary decision. However, there is lack of standardized tools to assess NFL among adolescents, especially in India. This study aimed to develop and validate an Indian Nutrition and Food Literacy Tool (INFOLIT) for adolescents with a focus on key literacy domains. **Materials & Methods:** This five-phased cross-sectional study was conducted among adolescents (13-15y) in Hyderabad, Telangana. In Phase-1, an item-pool was created for tool development through literature review and it was tested for content validity in phase-2 by experts (n=5) using a Content Validity Index (CVI) and cognitive interviews with adolescents (n=15). In phase-3, Psychometric tests (Cronbach's α and factor analysis) were performed among 400 adolescents. In phase-4, test-retest reliability (n=30) using the Intra-class Correlation Coefficient (ICC) and Bland-Altman plot was tested and in Phase-5, the tool was graded using tertile-based stratification. **Results:** The initial item pool included 98 items into two domains - Cognitive and Skill-based for creating framework. The cognitive-domain had one dimension- Knowledge; whereas, the skill-domain had three dimensions-(i)functional, (ii)interactive and (iii)critical. Content validity and cognitive interviews eliminated 13 items. The item difficulty (p) and item discrimination (D) indices ranged 0.10-0.98 and 0.02-0.65 respectively with strong internal consistency (Cronbach's $\alpha = 0.81$). Due to sample size limitations, factor analysis was used only for item reduction. These steps further reduced 12 items, resulting in a 73-item pool. The ICC was 0.895, and Bland-Altman plots revealed negligible mean biases indicating good reliability. The scores were categorized as low (≤ 40), medium (41-55), and high (≥ 56) out of 73. **Conclusion:** The INFOLIT is a validated and culturally relevant tool for assessing adolescent NFL and can be adapted for use in various Indian regions and contexts after minor modifications.

FREE COMMUNICATION ORAL PRESENTATIONS

HALL NO.6: SIU QMB Conference Hall

15th November 2024

Time: 10:00 am to 11:30 am

SESSION 6- SPORTS NUTRITION

No	Abstract ID	Presenter name	Affiliation	City	Email	Title of Presentation
1	70	Ms Anuja Sunil Phalle	Symbiosis School of Culinary Arts and Nutritional Sciences	Pune	anujap015@gmail.com	Balancing Nutrition, Beyond the Court: Exploring Food Choices, Variety and its Determinants Among Young Badminton Athletes
2	112	Ms Bhargavi M	Department of Nutrition & Dietetics, School of Life Sciences JSS Academy of Higher Education and Research, Mysuru	Bengaluru	bhargavim390@gmail.com	Prospects of Agro - Byproducts using MUSA PARADISICIA in Exercise Induced Inflammation among Athletes
3	202	Mr Suhas S	University of Mysore	Mysuru	suhas1706s@gmail.com	Impact of Supplement Consumption on Body Composition in Male Gym-goers in Mysuru City: A Comparative Study Between Consumers and Non-consumers

Abstract ID- 070

ABSTRACT TITLE: BALANCING NUTRITION, BEYOND THE COURT: EXPLORING FOOD CHOICES, VARIETY AND ITS DETERMINANTS AMONG YOUNG BADMINTON ATHLETES

Ms. Anuja Sunil Phalle, JRF and PhD Scholar, School of Culinary Arts and Nutritional Sciences, Symbiosis Institute of Higher Education and Research, Lavale, Pune, Maharashtra, anujap015@gmail.com; Ms. Tushita Jain, Student, MSc. Nutrition and Dietetics, Symbiosis Institute of Health Sciences, Pune, Maharashtra.

Background: Adolescent athletes require a diversified diet and healthy food choices for optimal growth and development. Young athletes may make unhealthy food choices and consume less varied diets impacting their physical performance, health, and nutritional status. Therefore, this study aims to investigate food choices, food variety, and the determinants of food choices among adolescent badminton athletes. **Methods & Materials :** This cross-sectional study aimed to recruit 196 badminton athletes aged 13-19 using purposive sampling from 5 Badminton academies from Pune, India. A validated Athlete Food Choice Questionnaire (AFCQ) and Food Variety Scores (FVS) were used. Data

was obtained through face-to-face interviews with participants after seeking their consent. Descriptive (mean and standard deviation) and analytical statistics such as Chi-square, one-way ANOVA, and correlation were performed. The level of statistical significance was set at ≤ 0.05 . **Results:** Of 135 participants, the majority (53.3%) were males with a mean age of 14.5 ± 1.75 years and a BMI of 18.9 ± 2.68 kg/m². The mean AFCQ scores were higher for determinants such as performance (4.25 ± 0.83), nutritional attributes of food (3.78 ± 0.67), usual eating preferences (3.74 ± 0.79), and sensory appeal (3.55 ± 0.97). 48.1% of participants had FVS scores between 51-65 indicating moderate food variety levels. The most significant correlation was observed between individual FVS for nutritious foods and determinants including weight control, performance, health awareness, food beliefs, nutritional attributes, emotions, and usual eating practices ($p \leq 0.05$). Further, the individual FVS and its determinants were significantly associated with the athlete's level of competition ($p \leq 0.05$). Additionally, increased consumption of protein-rich foods was significantly associated with the level at which athletes competed. **Conclusions:** Adolescent athletes had moderately diverse food consumption mostly inclusive of nutritious and protein-rich foods. Their food choices were significantly influenced by weight control, performance, health awareness, food beliefs, nutritional attributes, emotions, usual eating practices, and competition level.

Keywords: Young Athletes, Food Variety, Food Choices, Badminton, Diet Diversity, Unhealthy foods

Abstract ID- 112

ABSTRACT TITLE: PROSPECTS OF AGRO - BY PRODUCTS USING MUSA PARADISICIA IN EXERCISE INDUCED INFLAMMATION AMONG ATHLETES

Ms. Bhargavi M, Research Scholar, JSS AHER, 163/18,1st Main,1st Cross Vinobha, Bengaluru, Karnataka, bhargavim390@gmail.com; **Dr. SUSHMA BV**, Assistant Professor, JSS AHER, Mysuru, Karnataka.

Background: Currently there is a need for using natural based regime in managing burden of disease. In recent sport sectors counter analgesics, such as anti-inflammatory drugs (NSAIDs) and paracetamol requisites to pursue successful pain relief during competitions has been inclined. Often NSAIDS could result adverse effects on health outcomes. Thereby there is a greater demand for natural based nutraceuticals. The study aims at understanding the cause and effect of inflammation on athletes and establishing the nutraceutical properties using MUSA PARADISICIA. **Methods & Materials:** Phase 1: Clinical study - Approximately 623 (428 boys and 195 girls) elite athletes 195(102 boys and 93 girls) and non-elite athletes aged between 15-25years athletes from sports academia residing at south part of Karnataka were investigated. By abiding ethical consideration and guidelines the incidence and intensity of inflammation among athletes were investigated. Parameters screened - Inflammation intensity, duration (pre, during, post events), and intensity of training; exercise-related muscle inflammation, clinical vitality, dietary and supplemental history and treatment for EIMD. Relevant information's were documented using a standardized tools technique. Phase 2: Experimental study: Ethanolic extracts of Musa paradisiaca peels were prepared using maceration a standardized operating

protocol. Proximate and Nutritional profiles were evaluated using AOAC methods. Phytochemical profiling involved assessing total phenolic content, flavonoid concentration, and other secondary metabolites. Antioxidant activity was evaluated using DPPH and radical scavenging assays. **Result :** The intensity of inflammation and Biomarkers found was seen higher in elite athletes. The inflammatory markers include (LDH 89%) and (CK76%). The Kin anthropometric measures were significant in elite athletes. The peel extract of Musa paradisiaca showed significant results in potent antioxidant activity and highest phytochemical screening. **Conclusion:** Proposed Clinical experimental investigation establishes the significant bioactive constituents including flavonoids, saponins in the Musa Paradisiaca peels. Evidently the flavonoids could be used as a promising key natural nutraceutical element in mitigating oxidative stress and inflammation noticed in sports injuries.

Keyword: EIMD, Nutraceuticals, Inflammation, Athletes, Musa Paradisiaca

Abstract ID- 202

ABSTRACT TITLE: IMPACT OF SUPPLEMENT CONSUMPTION ON BODY COMPOSITION IN MALE GYM-GOERS IN MYSURU CITY: A COMPARATIVE STUDY BETWEEN CONSUMERS AND NON-CONSUMERS

Mr. Suhas S-University of Mysore, Saraswathipuram Mysuru, Karnataka, suhas1706s@gmail.com;
Mrs. Veena Deepak Faculty, University of Mysore, Mysuru, Karnataka.

Background: With the rising number of young adults engaging in gym activities there has been a corresponding increase in the consumption of dietary supplements among gym-goers. Dietary supplements are concentrated sources of nutrients consumed in addition to a regular diet to increase nutrient intake. Supplements are consumed by gymgoers to enhance performance and body composition goals. Some studies have investigated the association of supplementation with body composition and certain types of physical activities, but there's lack of studies that have investigated the association between supplement consumption and body composition among gymgoers, with this as background the objective of our study is to assess the body composition of supplement consumers amongst male gym goers. **Methods and Materials:** The study was conducted in Department of Studies in Food Science and Nutrition, University of Mysore and involved purposive sampling, in which the subjects' body composition was determined using Inbody770 analyzer, a BIA technique. Total of 70 gymgoers (41 supplement-consumers, 29 non-consumers) in the age group of 18-30 years from various gyms of Mysuru city were included. Information on demographic characteristics, dietary practices, and supplementation was obtained using a self-reported questionnaire. Data obtained using the Inbody770 analyzer were subjected to statistical analysis using SPSS software version 21. **Results:** Protein was the majorly used supplement with 97.6% participants, followed by BCAA (36.6%) and Creatine (31.7%) among consumers. Surprisingly there was no significant difference between supplements consumers and non-consumers in body composition except for the waist-hip ratio ($P=0.041$ < 0.05). Visceral fat area and Inbody score of supplement consumers was better than that of non-consumers, which indicates supplement consumers had comparatively better body composition. **Conclusion:** Protein based was the most used supplement. Study revealed there was no statistically significant difference between supplement consumers and non-consumers except waist-to-hip ratio. Despite the lack of

statistical significance, the data suggests that comparatively supplement consumers exhibited better body composition. The statistical significance of waist-hip ratio and better Visceral fat area of supplement consumers suggests that supplement consumption might have positive effect on fat distribution in the body.

Keywords: Body composition, BIA, Supplements, Gym, Muscle mass

FREE COMMUNICATION ORAL PRESENTATIONS

HALL NO.7: SIU Conference Hall 1

15th November 2024

Time: 10:00 am to 11:30 am

SESSION 7- NUTRITION & HEALTH POLICY RESEARCH

No	Abstract ID	Presenter name	Affiliation	City	Email	Title of Presentation
1	28	Dr Pratibha Singh	Manav Rachna International Institute of Research and Studies	Faridabad	pratibha.fas@mriu.edu.in	Comparative study on Quality of Life, Diet Pattern and Lifestyle pattern among Female School Teachers with and without Workplace Complimentary Meal Facility
2	249	Ms Sonia Khwairakpam	Lady Irwin College	New Delhi	khwairakpamsonia3@gmail.com	Assessment of Diversity, Carbon footprint and Cost of diets of College-going students residing in Delhi
3	258	Ms Neelam Rathod	The Maharaja Sayajirao University of Baroda	Vadodara	neelam_rathod92@yahoo.com	Evaluation of different food classification systems and association of ultra-processed food consumption of different food classification systems with body composition, dietary intake and various biomarkers among people with Diabetes Type 2

Abstract ID: 28

ABSTRACT TITLE: COMPARATIVE STUDY ON QUALITY OF LIFE, DIET PATTERN AND LIFESTYLE PATTERN AMONG FEMALE SCHOOL TEACHERS WITH AND WITHOUT WORKPLACE COMPLIMENTARY MEAL FACILITY

Dr. Pratibha Singh, Professor, Manav Rachna International Institute of Research and Studies, Sector-43, Surajkund Road Faridabad, Haryana, India- 121004, pratibha.fas@mriu.edu.in; Ms. Pallavi Sharma, Student, MRIIRS, Faridabad, Haryana, India.

Background: Workplace nutrition plays a crucial role in teacher health and well-being, as teachers often struggle with demanding schedules and long hours, leading to suboptimal nutrition. Workplace complimentary meal facilities aim to encourage healthier eating habits, but their impact on lifestyle patterns and quality of life remains a subject of ongoing research. **Material and Methods:** Comparative study on Quality of Life, Diet Pattern and Lifestyle pattern among Female School Teachers with and

without Workplace Complimentary Meal Facility. **Results:** There was a significant difference in the quality of life, breakfast pattern and physical activity pattern of both the groups at $p < 0.05$. It proves that complimentary food facility can boost energy and improve focus, leading to higher productivity with better time management. **Conclusion:** The study found that teachers who receive complimentary meal facilities at school are healthier, physically fitter, and have better quality of life. By implementing a well-designed workplace meal facility, employer can reap benefits in terms of work efficiency, employee satisfaction and policy compliance.

Keywords: Complementary feeding, Quality of life, Meal pattern, Nutritional status

Abstract ID: 249

ABSTRACT TITLE: ASSESSMENT OF DIVERSITY, CARBON FOOTPRINT AND COST OF DIETS OF COLLEGE-GOING STUDENTS RESIDING IN DELHI

Ms. Sonia Khwairakpam, Nutritionist, Lady Irwin College, Mandi House, NewDelhi, India-110001, khwairakpamsonia3@gmail.com; Prof. Pulkit Mathur, Professor, Lady Irwin College, New Delhi, India.

Background: Consuming a sustainable diet that could provide better health for the people and planet is the need of the hour. This study aimed to assess diversity, carbon footprint and cost of the diets.

Material and Methods: This cross-sectional study was conducted in 2 colleges of the University of Delhi and included 100 college-going women in the age group of 18-22 years. The food and nutrient intake and dietary diversity were assessed using a one-day 24-hour recall and the Minimum Dietary Diversity for Women. A food frequency questionnaire was administered based on greenhouse gas emissions (GHG) of food items. The carbon footprint was estimated using the emission factors for carbon from published data. The cost of diet was calculated using software tool the Cost of a Healthy Diet using retail price data from the local stores in Delhi and online stores. **Results:** The percent adequacy of most nutrients and food groups was found to be low. The median dietary diversity score (DDS) was 4 and the average was 4.23 ± 0.93 with only 33% of the participants consuming a diverse diet. It was found that high GHG emission foods were regularly consumed by 74% (whole milk), 85% (butter or ghee) and 10% (mutton) participants. The carbon footprint of the consumed diet was 1816.72

± 810.27 gCO₂eq per capita per day (1177.42 ± 536.18 gCO₂eq per 1000 kcal per capita per day). About 79%, 18% and 3 % of the participants had small, medium and strong impacts, respectively based on the carbon footprint of the diets. Dairy foods contributed the highest GHG emissions of all the food groups. The carbon footprint of the non-vegetarian diet was 1.25 times the vegetarian diets of the participants. The cost of the recommended diet was 1.28 and 1.30 times the consumed vegetarian and non-vegetarian diet of the participants, respectively. **Conclusion:** The environmental impact of the

participants' diets met the planetary boundary for greenhouse gas emissions (1867 gCO₂eq per capita per day). However, the diversity of diet was poor and it should be improved.

Keywords: Dietary diversity, Sustainable diet, Cost of diet, Carbon footprint of diet

Abstract ID: 258

ABSTRACT TITLE: EVALUATION OF DIFFERENT FOOD CLASSIFICATION SYSTEMS AND ASSOCIATION OF ULTRA-PROCESSED FOOD CONSUMPTION OF DIFFERENT FOOD CLASSIFICATION SYSTEMS WITH BODY COMPOSITION, DIETARY INTAKE, AND VARIOUS BIOMARKERS AMONG PEOPLE WITH DIABETES TYPE 2

Ms. Neelam Rathod, PhD scholar Foods and Nutrition and UGC SRF, The Maharaja Sayajirao University Of Baroda, Fatehgunj, Vadodara, Gujarat, India- 390002, neelam_rathod92@yahoo.com ;
Dr. Suneeta Chandorkar, Assistant Professor (Foods and Nutrition), The Maharaja Sayajirao University of Baroda, Vadodara, Gujarat, India.

Background: Different food classifications might influence conclusions on the population's consumption of various foods of different processing levels and their association with health outcomes. The study; objectives were to compare food classification systems by food quality metrics, to assess the agreement of UPFs with FOPNL, food sustainability and association of UPFs consumption of different classification systems with various markers among people with diabetes type 2(PWDs).

Material and Methods: The novel approach was to apply the NOVA, ICMR-NIN and IARC classifications to the 530 foods in validated FFQ. Mean NRF 12.3(measure nutrition density), energy density and GI of each food item as per the classification system were compared using ANOVA. UPF% was compared across the three-classification using the discrepancy range. Pearson's correlation was used to assess the agreement of 284 Indian products by Open Food Facts database for Nutri score, Eco-score and carbon footprints. Around 8010 meals were assessed to analyse UPF consumption using different classifications of 445 people with diabetes according to quartiles of UPF consumption.

Results: Total UPFs were 254,119 and 139 as per IARC, NOVA and ICMR-NIN, respectively. The nutrient density of UPFs was lowest compared to moderate (MP) and unprocessed (UP) foods except for milk and milk products, non-vegetarian sources and oils classified by IARC. Energy density of UPFs was highest except for oils in NOVA and pulses in IARC. Eco-score of beverages was worst (10.71 ± 9.15). Carbon-footprint was greatest for chocolates (849.83 ± 542.4). Nutri score was the least for beverages (42.33 ± 12.21). Carbon-footprint of breakfast cereals and eco score of biscuits and fruit jam was significant with NOVA ($r=0.56^{**}$, $r=-0.12^{*}$, $r=-0.07^{*}$). Except for nut butters and beverages, UPFs had worse Nutriscore. Quartile-4 of UPF consumption had a higher intake of total energy SFA and sodium than those in the lowest quartile (Q1). Lower body muscle%, protein and fibre intake was observed in Q4 of NOVA and ICMR-NIN. Higher TG and glycaemic markers were observed in Q4 of IARC and ICMR-NIN. **Conclusion:** The association of different food classifications on the same dataset showed that UPF consumption might impact differently on various health markers.

Keywords: Ultra processed foods, Diabetes, Food processing classification

FREE COMMUNICATION - POSTER PRESENTATIONS

14th November 2024

Time: 1.00 pm to 1.45 pm

SESSION 1- COMMUNITY NUTRITION

No	Abstract ID	Presenter name	Affiliation	City	Email	Title of Presentation
1	1	Ms. Meera	Govt college for women	Thiruvananthapuram	meerasunil@gmail.com	Shift Work and Its Effects on Stress and Job Satisfaction Among Nurses in South India
2	2	Ms Samriddhi Manral	Lady Irwin College	Delhi	samriddhimanral98@gmail.com	Iron Content, Bioavailability from Traditional Iron Pot Cooking and implications for Anemia Management
3	3	Mrs Neha Khara	GIZ	Delhi	neha.khara@giz.de	Planting seeds of change in India-How community nutrition gardening and learning about nutrition improve nutrition security for women and young children in 2 states in India
4	17	Ms Vaishali Pathak	Institute of Home Economics, University of Delhi	New Delhi	vaishali131095@gmail.com	Prevalence of Metabolic syndrome in apparently healthy working adults: Comparative analysis between Delhi NCR and Bengaluru
5	18	Ms Barkha	University of Delhi	New Delhi	barkhasachdeva66@gmail.com	Reading practices and perceptions regarding nutrition labels among women of different socio-economic settings in Delhi.
6	23	Ms Karnika	CCS, HAU	Hisar	chaudhary.karnika12@gmail.com	From Byproducts to Essentials: Unlocking the Potential of Oilseed Meals
7	24	Ms Wareesha Anwar	University of Delhi & AIIMS	New Delhi	warieshaanwar@gmail.com	Understanding obesity among young adults in India: a focused group study
8	25	Mr Sudhir Ashta	UnLOAD	Mumbai	SUDHIRASHTA@GMAIL.COM	Sustainable Weight Loss Through Enjoyable Eating: A Revolutionary

						Approach Without Portion Control or Calorie Counting
9	26	Mrs Krishnaveni S	Avinashilingam Institute for Home Science & Higher Education for Women	Coimbatore	krishnavenisubburaj2568@gmail.com	Knowledge, Attitude, And Practices (KAP) Of Millet Consumption Among School Children Of 10-15 years : A Study In Virudhunagar District, Tamil Nadu, India
10	30	Ms Jyoti Verma	College of Community Science	Ludhiana	jyotiverma.jv007@gmail.com	Amaranthus caudatus: Unlocking the Potential of a Nutrient-Dense Pseudocereal for Global Health
11	35	Dr Amarjeet Kaur	Punjab Agricultural University	Ludhiana	sekhonamarjeet@pau.edu	Use of social media information and its impact on nutritional status of adolescent girls
12	38	Ms Ankita Sehgal	Manav Rachna International Institute of Research and Studies	Faridabad	ankita.fas@mriu.edu.in	Relation of Diet intake, Physical activity with Attention span among Adolescents
13	40	Mrs Sruti sanchayeeta tripathy	Berhampur university	Jeyapore	sillutripathy@gmail.com	Malnutrition among tribals in Koraput district
14	50	Ms Neelam	Department of Home Science	Varanasi	neelampaswan@bhu.ac.in	Malnutrition as a Hidden Hunger and Undernutrition among under Five Years Children in Varanasi
15	55	Ms Mansi Raghav	Manav Rachna International Institute of Research & Studies	Faridabad	vandanagarg.fas@mriu.edu.in	Impact of Hindu Religious Fasting (Ekadashi Vrat, Janamasthmi, Shivratri, Navratri, Karwachauth, Weekdays Fasting) on dietary intake and sleep pattern among 25 years and above.
16	59	Mrs Meenakshi J Surpande	P.G.T.D of Home Science	Nagpur	meenakshisurpande@gmail.com	Assessment of Nutritional Anthropometry of Tribal Adolescent Girls Using Z Scores: Correlations with Nutrition Adequacy Ratio
17	60	Ms Fitha N	St Josephs College for	Alappuzha	fitha17em@gmail.com	Quality of Life in Adults with

			Women Alappuzha			Metabolic Syndrome in Relation to Hyperuricemia
18	63	Ms Thanusha BN	JSS Academy of Higher Education and Research	Mysuru	thanushabn@jssuni.edu.in	Nutritional Status of Noolpuzha Panchayat Tribal Women, Wayanad District, Kerala
19	73	Ms Kamalish M	Sri Ramachandra Institute of Higher Education and Research	Chennai	kamalishm@sri ramachandra.edu.in	Sculpting Stronger Foundations: A Health Belief Model Approach to Osteoporosis Education" – A Concept for Community Nutrition Program
20	76	Mr Shaik Atheeb Abdullah A	PSG College of Arts & Science	Coimbatore	atheebabdullah@gmail.com	The Impact of "Foodie-Culture" on Gen Z's Health: A Dietary Analysis
21	82	Ms Stany Mariya Joji	Majlis Arts and Science College	Malapuram	stanymariyajoji1996@gmail.com	Uncovering the Hidden Costs of Poor Water Quality: Exploring Its Impact on Nutritional Status and Health Outcomes among College Students
22	88	Ms Gowri Bhatnagar	Manipal Academy of Higher Education	Bengaluru	gowri.b@sjri.res.in	Effect of vitamin-D supplementation during pregnancy on incidence of preterm-birth in South-India-Protocol for a Randomized Controlled Trial
23	90	Mr Guru Prasad P N	St Johns Research Institute and Manipal Academy of Higher Education, Manipal, India	Bangalore	guruprasad.pn@sjri.res.in	Impact of Erogocalciferol-Enhanced Mushrooms on Vitamin-D Concentration and Insulin Resistance: A Randomized, Single-Blind Study in Vitamin D Deficient Young Adults with Obesity or Overweight in Bangalore – Study Protocol
24	92	Ms Smruthi R	JSS AHER, Mysuru	Mysuru	smruthiramesh04@gmail.com	Influence of dietary patterns on anthropometric measurements and clinical manifestations in adolescent tribal and

						non-tribal boys and girls
25	93	Ms Srivarsha M	JSS AHER	Mysuru	mukkundivars ha@gmail.com	Physical and Mental Health Effects of Obesity on Women
26	96	Mr Jawahar Vel MVM	PSG College of Arts and Science	coimbatore	jawaharbujji@gmail.com	Health and Eating Disorders among TGD Population: A Systematic review
27	98	Mrs Niveditha J	PSG College of Arts & Science	Coimbatore	nivedithajaganathan@gmail.com	Prevalence of WMSDs among Female Spinning Workers: A Cross-Sectional study
28	99	Ms Rooba Nandhini	PSG college of Arts & Science	Coimbatore	krnnutritionpsg cas@gmail.com	Navigating the Gut-Brain connection: The role of Stress and Anxiety in the concurrence of Gastrointestinal symptoms among college students
29	102	Ms Akanksha Kagde	Symbiosis Institute of Health Sciences	Pune	akankshakagde27@gmail.com	Breastfeeding Patterns and Its Effect on Postpartum Depression, Anxiety and Stress Among Lactating Mothers
30	105	Dr Sujata Kapil Murarkar	Bharati Vidyapeeth (DTU) Medical College Pune	Pune	sujata.murarkar@bharativedyapeeth.edu	Assessment of dietary diversity (DD) among women of reproductive age group (15-49 years) from urban slums of Pune City, Maharashtra
31	107	Ms Manisha	Banaras Hindu University	Varanasi	manisha2016amu@gmail.com	Health Status of Transwomen living in Jahangirpuri, North Delhi
32	109	Dr Dattavardhan Murthy Kattaru	Sudha Memorial Hospital	Udgir	dattavardhan@rediffmail.com	Quantitative Food Frequency Questionnaire to Assess Iron and Energy Intake of Adolescents in Rural India
33	115	Ms Ghule Titiksha Indrajeet	SIHS	Pune	Titikshaghule84@gmail.com	Dietary Patterns and Mental Wellbeing : A Comparative Study of Non-Vegetarian, Vegetarian with Dairy and Vegan Diets.
34	116	Dr Sripriya Shaji	Srisha Counselling - A Centre for Nutritional &	Kozhikode	srishacounseling@gmail.com	The Influence of Social Media on Nutritional Habits

			Psychological well-being			and Health Anxiety in Women
35	123	Ms Chethana C	MGM School of Biomedical Sciences, MGM Institute of Health Sciences	Navi Mumbai	chethana.rd@gmail.com	Association of Dietary Diversity with Anemia and Iron Status among School-going Adolescent girls of age group 13-18years
36	126	Mr Jawahar Vel MVM	PSG College of Arts and Science	Coimbatore	jawaharbuji@gmail.com	The Silent Epidemic: Nutritional Interventions for Anemia in Modern Diets
37	136	Ms Mahak Sharma	National Institute of Public Cooperation and Child Development	New Delhi	MAHAKSHAR MA14@GMAIL.COM	Awareness and Practices of Beneficiaries of Umbrella ICDS Regarding Breastfeeding and Complementary Feeding: A Study on Mothers with Children Below Three Years
38	140	Ms Palak Baban Waykar	MGM college of Biomedical Science	Panvel	waykarpalak@gmail.com	Study on eating disorder amongst college going students
39	141	Ms Priyanka Nandi	Mgm college of biomedical health Science	Thane	priyankanandi482@gmail.com	Association between dietary iron intake and nutritional status of women of reproductive age
40	145	Ms Chaitra A Kilpady	Manipal Academy of Higher Education	Bengaluru	chaitra.ak@sjri.res.in	Dietary diversity and its association with nutritional status among infants of a rural South Indian population
41	149	Ms Sara Kupar Jyrwa	Avinashilingam Institute of Home Science and Higher Education for Women	Coimbatore	sarakuparj87@gmail.com	Prevalence of Nutritional Deficiencies among Adolescent Girls in East Khasi Hills of Meghalaya
42	153	Ms Madiha Ansari Shabbir Hussain Reshma	MGM Institute of Biomedical Sciences	Navi Mumbai	amadihasr3@gmail.com	Relationship Between Perceived Stress level and Nutritional Status of Female Domestic Workers
43	155	Ms Damandee p Kaur	Symbiosis school of culinary arts	Pune	damandeepkgrawal@gmail.com	Food insecurity among college students

			and nutrition sciences			
44	164	Ms Aaminah Kausar	St. Johns Research Institute	Bangalore	aaminah.k@sjri.res.in	Moderate to vigorous physical activity, association with cardiometabolic risk factors, and the barriers to physical activity in Indian children aged 6-19 years.
45	165	Ms Afreen Sultana	ITC Foods Business Division	Bengaluru	afreensultana821@gmail.com	Evaluation of community-based management of moderately acute malnourished children, through education and nutrition intervention in the Valsad district of Gujarat
46	166	Ms Swathilakshmi Venu	Amrita Institute of Medical Sciences and Research Centre	Kochi	swathilakshmi venu@medical.aims.amrita.edu	Nutritional Intake Among Overweight and Obese Adolescents in an Urban Area in Kerala: A Preliminary Report
47	169	Ms Gauri Sudhir Pol	MGM School Of Biomedical Sciences, Kamothe	Navi Mumbai	gauripol2001@gmail.com	Body Composition and Nutritional Adequacy of Hemodialysis Patients
48	172	Ms Payoshni Kulkarni	Symbiosis Skills and Professional University	Pune	payoshnikulkarni335@gmail.com	Evaluating Waist-to-Height Ratio as a Predictor of Obesity in children aged 5-10 years."
49	175	Dr Dr Priyanka Pareek	MGM School of Biomedical Sciences, MGMIHS	Navi Mumbai	priyankapareekcn1681@gmail.com	Association of Micronutrient related knowledge, attitude and practices with dietary diversity scores among school going adolescent girls.
50	177	Mr Bhaskar Bhushan Dey	Assam Agricultural University	Jorhat	bhaskar.dey.hmj22@aau.ac.in	A Study on Assessment of Nutritional Status of Pre-school Children attending Anganwadi centers of Bagchung block of Jorhat district, Assam
51	192	Mrs Arpita dutta	West Bengal State University	Kolkata	arpiarpu95@gmail.com	Importance of age-appropriate complementary feeding to combat

						malnutrition in 6-24 months of age children
52	193	Ms Madiha Tabraiz Kohati	MGM College of Bio medical Sciences	Panvel	madihakohati35@gmail.com	Dietary calcium consumption on school age children: A cross sectional study. Pareek Priyanka, Afsheen Khan, Kohati Madiha
53	195	Ms Mugdha Deshpande	Hirabai Cowasji Jehangir Medical Research Institute, Savitribai Phule Pune University	Pune	msdeshpande96@gmail.com	Investigating the Link Between, KAP, Nutrient Intakes and Maternal and Infant Health
54	198	Ms Aafreen Khan	Devi Ahilya Vishwavidyalaya	Indore	afrinscholar@gmail.com	Assessment of The Occurrence Of Menstrual Problems And Stress Among PCOS Patients In Relation To Their Body Weight Status
55	205	Ms Zainab Dodiya	Symbiosis Skills & Professional University	Pune	zainabdodiya12@gmail.com	High-Protein Millet Laddoo: A Nutrient-Rich Solution to Malnutrition
56	220	Ms Mayuri Yashodhra	MJB govt girls PG college, Indore	Dewas	mayupatidar229@gmail.com	To assess the relation of Depression, Anxiety and Stress and fast food intake among adolescence preparing for entrance exams
57	226	Ms Archana Garg	Lady Irwin College, University of Delhi	New Delhi	archana.garg@lic.du.ac.in	The Interplay of Weight, Eating behaviour, and Food Choices in Young Adults of Delhi/NCR
58	228	Mrs Parkavi K	Madras Diabetes Research Foundation	Chennai	parkavitvr@gmail.com	Effects of sunflower oil Vs groundnut oil consumption on glycaemic, lipid profiles and inflammatory markers in overweight and obese Asian Indian Adults: A Randomized Controlled Trial.
59	230	Ms Sunaina Thakur	Lady Irwin College	New Delhi	sunaina.thakur147@gmail.com	Exploring the interplay between the adolescents' home food

						environment and dietary choices
60	235	Ms Sambrama Patil H A	JSS AHER	Mysuru	sambramapatil@gmail.com	Exploring Nutritional Disparities in School Children: A Rural - Urban Comparison
61	244	Ms Roshini G	JSS AHER	Coimbatore	roshiniganesan64@gmail.com	Comparative Study on Nutritional Assessment and Mental Health Status Among Adolescent Population From Private and Government Schools
62	246	Mrs Kavita Kudtarkar	ITC Limited	Bangalore	kavitakudtarkar@gmail.com	Lifestyle Modifications and Diets of 40+
63	254	Dr Mrunal Deepak Barbhai	ICAR-Krishi Vigyan Kendra Gonikoppal Kodagu	Gonikoppal	mmrunal93@gmail.com	Establishment of nutrition gardens for enhanced dietary diversity: A successful case study in natives of Maldare cluster, Kodagu, Karnataka
64	272	Ms Rosy Lunghar	Tamil Nadu Physical Education and Sports University	Chennai	rosylunghar@gmail.com	Assessment of Nutritional Status among Menopausal Women of Manipur State
65	288	Ms Devanshi Gandhi	The Maharaja Sayajirao University of Baroda	Vadodara	devanshi.gandhi001@gmail.com	Perceptions of Patients on the Use of Ayurveda as a Complementary Strategy for the Management of Type 2 Diabetes Mellitus: A Comparative Cross-sectional Study from Urban Vadodara, Gujarat, India
66	289	Ms Sampada Agnihotri	The Maharaja Sayajirao University of Baroda	Vadodara	agnihotrisampada@gmail.com	Perceptions of Home Food Environment Among School-Going Children in Urban Vadodara
67	292	Ms Jennifer Sequeira	ICMR-National Institute of Nutrition	Hyderabad	sequeirajennifer1506@gmail.com	Dietary Intake and Diet Diversity Score Between Moderately Acute Malnourished and Healthy Children Under Five Years
68	294	Ms Ananya Mhatre	Dr. B.M.N College Of Home Science	Mumbai	ananyaum07@gmail.com	Smart Nutrition - Exploring the Impact of mHealth and

						Wearable Devices on Personal Wellness Management
69	299	Ms Rija Enas	JSS AHER	Mysore	rijasharief@gmail.com	Assessing Knowledge, Attitudes, and Practices of Food Allergy Management Across Restaurants, Hospitals, and Consumers: Implications for Improved Nutritional Education and Safety
70	311	Dr Harsha Vipin Chopra	Dr BMN College of Home Science	Mumbai	harshachopra@bmncollege.com	To compare body mass index (BMI) and Quality of Life (QoL) of females school teachers, aged 30-50 years teaching in primary and secondary schools of Mumbai suburbs
71	312	Ms Mukta Wani	Symbiosis Skills and professional university	Pune	wanimukta3@gmail.com	Consumption of malt based health drinks and its association with weight status of children aged 5-10 years.
72	315	Ms Sajani Mathew	Dr B.M.N. College of Home Science	Mumbai	sajani.r.mathe w@gmail.com	To assess the nutritional status of School Children (4-8 years old) studying in a Municipal School in the urban slum of Mumbai
73	318	Dr Vinaya Vaishampayan	Dr. B. M. N. College of Home Science	Mumbai	vinaya@bmncollege.com	Exploring the Jolly Fat Hypothesis: Impact of BMI, Nutritional status and Social Connectedness on Elderly Health in Mumbai
74	329	Mr Vaibhav Rai	Cyanohealth Research Division	Mumbai	vaibhavrai007@gmail.com	Assessing Malnutrition Among Women: A Nutritional and Lifestyle Analysis in Health Camp
75	330	Ms M Sahana	JSS Academy of Higher Education and Research	Mysuru	Sahanam9535@gmail.com	Evaluation of Consumption and Nutritional Awareness of Millets Among Household

76	331	Ms Sreenidhi B	Symbiosis School of Culinary Arts and Nutritional Sciences	Pune	sreenidhi.nbg@gmail.com	A Contextual Analysis of Selected Panchayats in Tamil Nadu: Insights from Participatory Rural Appraisal
77	335	Dr Sonali Shrikant Wagle	Kamalnayan Bajaj Diabetology Research Centre, Diabetes Unit, King Edward Memorial Hospital Research Centre	Pune	sonalishree@gmail.com	Healthy Lifestyle to Prevent Obesity-Adiposity and Diabetes in Young Offspring of Diabetic Mothers
78	337	Dr Pavitra Krishna KU	Subbalakshmi Lakshmipathy College of Science,	Madurai	ushpavi@yahoo.co.in	A study on Nutritional status of women faculty and impact of Nutrition Education
79	339	Dr Shivakumara C S	sri Devaraj Urs Academy of Higher Education and Research	Kolar	shivakumarc67@gmail.com	The Effects of Vitamin D3 gummies supplementation on Blood Glucose and Markers of Inflammation in Obese Adults.
80	349	Ms Harini P	Symbiosis School of Culinary Arts	Pune	harinipadmagirisan31@gmail.com	Assessing the Barriers of Healthy Eating Among Street Vendors in Urban Settings
81	357	Ms Hannah Mary Abraham	JSS Academy Of Higher Education and Research	Mysuru	hannahmaryabraham22@gmail.com	Effect Food Choices on The Dietary Consumption and Lifestyle Pattern Consumption Among College Students
82	369	Ms Jeevitha K	Vivekanandha College of Arts and Sciences for Women (Autonomous)	Namakkal	jeevithajazz@gmail.com	A Survey on Impact of Stress Related Eating Habits Among
83	370	Ms K K Shanmukapriya	Avinashilingam Institute for Home Science and Higher Education for Women	Nambiyur	shanmukapriya1807@gmail.com	A Study on Bone Health of Garment Workers in selected Garment Industries of Coimbatore and Tirupur
84	372	Ms Isha Singh	Superfoods Valley Pvt. Ltd.	Bengaluru	isha.singh11@hotmail.com	Enhancing Gut Health, Energy, and Micronutrient Status in Young Adults: The Role of Regular Add to Food Nutrition Mix Supplementation

85	401	Vahid Mwelema Mato	Breastfeeding Dynamics and its Impact on Child Well-being: A Narrative Review	Pune	vahidmato.mph2325@sihs.edu.in	Breastfeeding Dynamics and its Impact on Child Well-being: A Narrative Review
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Abstract ID: 001

ABSTRACT TITLE: SHIFT WORK AND ITS EFFECTS ON STRESS AND JOB SATISFACTION AMONG NURSES IN SOUTH INDIA

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2-College of Agriculture, Thiruvananthapuram, Kerala.

Background: The objective of the study was to determine how shift work affects occupational stress and job satisfaction among nursing staff who works on shifts rotation. **Materials and Methods:** This is a cross sectional, comparative study, using purposive sampling technique. The sample consisted of registered female nurses (N=500) aged 25-45 years working in government and private hospitals selected from rural and urban areas of Thiruvananthapuram city. The research tools used are Nursing Stress Scale (NSS) for assessing the level of stress and Job Satisfaction Scale (JSS) to measure job satisfaction. The association of different NSS scores and JSS scores with shift parameters was statistically analyzed using Pearson chi square test. **Results:** The results indicates that the stress score of nurses in government and private hospitals were medium. When we consider the high job satisfaction score, more number of nurses in government hospitals had high job satisfaction and low job satisfaction among nurses in the private sector. The present study identified that the occupational stress of nurses in government and private hospitals were medium. And majority of nurses in both sectors had average level of Job satisfaction level. **Conclusion:** Hospital administrators and decision-makers must act immediately to ensure that staff development and training initiatives result in high-quality nursing care.

Keywords: Occupational stress, Job satisfaction, Female nurses, Shift rotation, Government hospitals, Private hospitals

Abstract ID: 009

ABSTRACT TITLE: IRON CONTENT, BIOAVAILABILITY FROM TRADITIONAL IRON POT COOKING, AND IMPLICATIONS FOR ANEMIA MANAGEMENT

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Background: Iron deficiency anemia (IDA) is a significant public health challenge in India and globally. Traditional Indian cooking methods, specifically the use of iron pots has been used in Indian cooking in the form of kadai, tawa, handi etc. Iron pots may increase the iron content of foods cooked in them through the chemical process of leaching, potentially addressing IDA. This review aims to evaluate the impact of cooking with traditional iron pots on the iron content and bioavailability of food and its effects on iron status and anemia. **Materials & Methods:** Databases searched included PubMed, Web of Science, Scopus, ScienceDirect, and Google Scholar using keywords - "iron absorption", "iron content", "iron bioavailability" and "traditional iron pot cooking". Inclusion criteria were studies on iron pot cooking, primary research in English, and experimental designs such as RCTs, clinical trials, intervention trials, and in vitro studies. Exclusion criteria were animal studies, narrative reviews, secondary research, commentaries, unpublished theses/reports and conference abstracts. **Results:** 16 experimental studies were analysed and included. No difference in iron content was documented for food items like distilled water, saline water, legumes, liver with onions, cornbread when cooked in an iron pot. Some studies documented an increase in iron content in food items namely spinach, gooseberry, Lemon water, Pork soup, fish soup with maximum increase in applesauce (2535%). Iron leached was bioavailable in GLVs such as spinach, mustard leaves, amaranth, shepu, kilkeerai, fenugreek and chakotha with bioavailability increasing up to four times. However, no significant difference in bioavailability was found in foods like maize porridge, relish beans and potatoes. There was significant increase in haemoglobin (Hb) concentrations among children (< 5 years) and pregnant women consuming food from iron pots with some studies reporting an increase of up to 1.69 g/dL. Other studies involving adolescents, adults and children (6-24 months) showed no significant changes. **Conclusion:** There is biological plausibility about the effectiveness of iron pots in addressing anemia but studies have shown mixed results leading to inconclusive outcomes. Limited studies are available in this domain. Further research is needed to comprehend the efficacy of iron pot usage to address IDA. Implementing studies in various settings with larger sample sizes could offer more definitive evidence.

Keywords: Iron Deficiency Anemia, Iron pot cooking, Iron bioavailability, Iron content

Abstract ID: 015

ABSTRACT TITLE: PLANTING SEEDS OF CHANGE IN INDIA- HOW COMMUNITY NUTRITION GARDENING AND LEARNING ABOUT NUTRITION IMPROVE NUTRITION SECURITY FOR WOMEN AND YOUNG CHILDREN IN 2 STATES IN INDIA

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Background: The Indo-German project 'Securing Nutrition, Enhancing Resilience (SENU) – India' implemented in collaboration with the Indian Ministry of Women and Child Development (MWCD) is part of the special initiative "Transformation of Agricultural and Food Systems & quot; by the German Federal Ministry for Economic Cooperation and Development (BMZ). This project aims to improve the nutritional situation of women of reproductive age (15-49 years) and small children (6-23 months) in six districts across Madhya Pradesh and Maharashtra, India. **Materials & Methods:** SENU implements a Social Behaviour Change (SBC) driven integrated approach linking nutrition trainings and paid work in community nutrition gardens (CNGs). Over 10,000 Anganwadi workers are trained to counsel families on nutrition, food production, and hygiene practices through regular Nutrition Participatory Learning and Action (N-PLA) sessions. These sessions are linked with women-led CNGs to enhance access to nutritious food at both the household and community levels. The CNGs engage landless women from vulnerable communities, organized into self-help groups (SHGs) consisting of 10-15 women each. These SHGs develop and maintain the CNGs, receiving wages for their work through the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS). This initiative not only improves access to diverse and healthy foods but also provides additional income through paid work and the sale of surplus produce. **Results:** A significant outcome is the systematic scaling of women-led multi-sectoral CNGs through MGNREGS, one of the world's largest social protection schemes. The initiative has leveraged over 6.5 million EUR through MGNREGS, providing wages, fencing, and essential agricultural inputs like seeds, plant saplings, irrigation systems, and manure to SHGs. In Madhya Pradesh, the Department of Panchayat and Rural Development has scaled CNGs across all districts, facilitating systemic change. To date, 1,372 CNGs have provided nutritious food and livelihoods to 16,000 women and their families. **Conclusion:** Nutrition-sensitive integrated approach provides a comprehensive solution to community nutrition challenges. By focusing on systemic changes, this approach not only improves nutritional outcomes but also fosters resilient and sustainable agri-food systems transformation.

Keywords: Social Behaviour Change (SBC), Community nutrition gardens (CNGs), Integrated approach, Resilient and sustainable agri-food systems transformation

Abstract ID: 017

ABSTRACT TITLE: PREVALENCE OF METABOLIC SYNDROME IN APPARENTLY HEALTHY WORKING ADULTS: COMPARATIVE ANALYSIS BETWEEN DELHI NCR AND BENGALURU

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Background: Metabolic syndrome (MetS) is a cluster of symptoms that indicate a faulty metabolism, thereby predicting the risk of several NCDs. Working adults are at a higher risk of MetS due to faulty

lifestyle practices like high sedentary time and poor dietary intake. The present study aimed to determine the prevalence of MetS in working adults of Delhi NCR and Bengaluru (cities with a high number of private firms in the Northern and Southern regions of our country). **Materials & Methods:** This is a part of an ongoing cross-sectional study. Adults (30-50 years), employed with selected private sector offices were purposively enrolled for the study. A health camp was organized where the anthropometry blood pressure (BP) and biochemical parameters (fasting sugar & lipid profile) were assessed using standardized tools by trained technicians. The NCEP-ATP III criteria were used to assess MetS. Statistical analysis was conducted post entering data into MS-Excel using STATA (v15.1). **Results:** Data were collected for 390 subjects [Delhi (n=193, mean age 34.14± 4.98y); Bengaluru (n=197, mean age 33.99± 5.28y)] of which 124 (Delhi: n=61; Bengaluru n=63) were females and 266 (Delhi: n=132; Bengaluru n=134) were males. Bengaluru subjects had significantly higher income (p=0.02) and lived in nuclear families (p=0.001) than Delhi. A high prevalence (40.51%) of MetS (i.e. subjects with ≥3 MetS components) was observed in the sample. Prevalence was higher in Delhi (44.56%) than in Bengaluru (36.55%) (p=0.10). On studying the frequencies of each component of MetS, it was found that elevated fasting sugar was significantly higher in Delhi (p=0.008). Both cities had high prevalence of abdominal obesity (62.31%), elevated BP (38.21%), triglycerides (44.36%) and low HDL (50%) in apparently healthy individuals. **Conclusion:** Prevalence of MetS is increasing at an alarming rate. As working adults are strong pillars of our nation's economy, interventions are required to promote a healthy lifestyle for them. Promoting healthy diets, along with regular physical activity is the way to reduce the MetS prevalence and further the burden of NCDs in our country.

Keywords: Metabolic syndrome, Working adults

Abstract ID: 018

ABSTRACT TITLE: READING PRACTICES AND PERCEPTIONS REGARDING NUTRITION LABELS AMONG WOMEN OF DIFFERENT SOCIO-ECONOMIC SETTINGS IN DELHI

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Background: Food labels assist individuals in making informed food choices. Women are the key decision-makers for nutrition and food purchasing in Indian families. This study aims to understand the food label reading practices and perceptions regarding nutritional information on food labels among women of different socioeconomic settings (SES) in Delhi. **Materials & Methods:** This study is a part of ongoing cross-sectional research, conducted among 400 women (25 to 50 years), residing in high and low-income colonies of Delhi. It is mixed-method research. A pre-tested questionnaire-cum-interview schedule was used to collect information about reading practices and perception of food labels. Statistical analysis was done using STATA (v15.1SE). **Results:** The mean age of the women

was 36.5±7.17 years. In low-income colonies (LIC), 18% of women had a graduate degree or higher, compared to 76.5% in high-income colonies (HIC). Overall, 77 percent women read food labels, of which 91.50 percent were from HIC and 62.50 percent lived in LIC ($p < 0.001$). In both groups, majority women always looked for the expiry date (HIC- 87.50%, LIC-60%, $p<0.001$), while only 17 percent and 1.50 percent women of HIC and LIC, respectively, checked the nutritional data every time ($p<0.001$). Regarding the perception of health/nutrition claims, compared to HIC (18%), more LIC women (31%) believed that claims are reliable and would support healthier choices. The educational status of participants was significantly associated with reading food labels as only women with graduation or above noticed nutritional values ($p<0.001$). Compared to women who were illiterate or studied up to secondary school level, more women with high degrees (graduates and above) perceived health/nutrition claims as unreliable (53.51%) ($p=0.03$). **Conclusion:** The findings suggest that women do read food labels, but not the nutritional information provided. Higher education and income were associated with reading nutritional labels. Compared to LIC, women in HIC with better access to education and income are more skeptical of health/nutrition claims. Health literacy programs emphasizing on significance of reading food labels and practical training that focuses on the interpretation and critical evaluation of nutritional labels/claims are requisite.

Keywords: Food labels, Health Education, Delhi, Nutrition labels

Abstract ID: 023

ABSTRACT TITLE: FROM BYPRODUCTS TO ESSENTIALS: UNLOCKING THE POTENTIAL OF OILSEED MEALS

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Background: The 2023 Global Hunger Index ranked India 111th out of 125 countries, declining from 107th in 2022, which underscores the ongoing challenges with hunger. However, India continues to be the world's largest producer of oilseed meals, generating approximately 41 million metric tons in 2023. Following oil extraction, over half of these oilseeds become byproducts. Oilseed meals contain valuable nutrients like proteins, fats, fibers, vitamins, and minerals. While these byproducts present a significant nutritional resource, their potential remains largely untapped. **Materials & Methods:** Groundnut, sesame, and flaxseed meals were procured from local markets in Hisar, Haryana to produce value-added cookies. Foreign materials were removed from the oilseed meals, which were then ground into fine powders. Biscuits, Ladoo, and Cake containing 12%, 18%, and 24% of the powdered oilseed meals were produced and evaluated organoleptically. The cookies containing 24% of the oilseed meal powder were further analyzed for nutritional content and shelf life. **Results:** All thirteen kinds of products had their overall acceptability in the 'Liked very much' category and scores were almost the same for control and developed with the addition of all three meals significantly ($P\leq 0.05$). The incorporation of all three oilseed meals, either individually or in combination, led to significant ($P\leq 0.05$) improvements in the

levels of crude protein, fat, ash, crude fiber, and total phenol in the developed products. **Conclusion:** The utilization of oilseed meals that are commonly discarded could be improved through the promotion and popularization of value-added products derived from sesame, flaxseed, and groundnut meal. Incorporating these reasonably priced, nutrition-enriched products into daily diets has the potential to positively impact nutritional status and address malnutrition challenges by way of the identified recipes.

Keywords: Sesame meal, Flaxseed meal, Groundnut meal, Composite meal, Crude protein and total phenol

Abstract ID: 024

ABSTRACT TITLE: UNDERSTANDING OBESITY AMONG YOUNG ADULTS IN INDIA: A FOCUS GROUP STUDY

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Background: The rising prevalence of obesity among Young Adults (YAs) is raising significant concerns regarding their health outcomes, with potential implications for morbidity and mortality. The present study aims to assess the comprehensive lifestyles, barriers, and weight status among YAs.

Materials & Methods: A cross-sectional analytical study assessed the relationship between lifestyle factors such as diet, and physical activity with body mass index (BMI) and demographics among YAs in a tertiary health care center of India. **Results:** A total of 1071 participants were recruited with a mean age of 22.3±3.5 years and (17.5%) of participants were overweight, (25.2%) were obese. Dietary habits were mixed, with some adhering to regular meals (54.5%) and consuming whole grains (50.2%), but many struggled with overeating (35.2%) and cravings (41.83%). Physical activity faced barriers of time (34.08%) and discomfort (35.20%). Gender ($P<0.001$), urban residence ($P<0.001$), and employment ($P<0.001$) significantly impacted lifestyle and weight management. Risk factors for overweight/obesity included low education (OR1.79,[1.19-2.71], $P<0.01$), working (OR1.13[1.02-1.26], $P<0.05$), low intake of whole grains (OR1.11[1.00-1.22], $P<0.05$), consumption of HFSS foods (OR1.30[1.19-1.42], $P<0.001$) and low physical activity (OR1.41[1.08-1.82], $P<0.01$). **Conclusion:** Interventions for weight management in YAs should consider individual lifestyles and demographics and aim to promote tailored strategies, policy changes, and research-backed initiatives.

Keywords: Young Adults; Youth, Overweight; Obesity; Lifestyle

Abstract ID: 025

**ABSTRACT TITLE: SUSTAINABLE WEIGHT LOSS THROUGH ENJOYABLE EATING: A
REVOLUTIONARY APPROACH WITHOUT PORTION CONTROL OR CALORIE COUNTING**

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Background: This research paper explores a novel approach to Weight Loss that challenges conventional dieting methods by eliminating Calorie Counting, Portion Control, and Food Restrictions. The focus is on creating a sustainable, enjoyable eating Meal Plan that allows individuals to consume their favorite foods, such as Aloo Paratha, Pasta, Pizza, Hakka Noodles, Sandwich, Burger and everything else, to a full stomach without compromising Weight Loss goals. This study delves into the psychological and physiological impacts of traditional dieting and fasting, highlighting the stress and failure rates associated with restrictive diets and extreme exercise routines. **Materials & Methods:** The method integrated principles of balanced nutrition, meal planning, and mindful eating, supported by scientific research and data analysis. By encouraging several satisfying meals that included a variety of favorite foods, this approach improved adherence to healthy eating habits and promoted long-term weight management. The study also examined the role of gamification and community support in enhancing motivation and accountability, drawing on data from several 90-Day Weight Loss Challenge Programs spread over the last 7 years with over 7,000 active Women participants from 61 Nations. **Results:** Participants in the programs reported significant Weight Loss up to 20.500 kg in 90 Days, increased energy levels, and improved mental well-being without experiencing hunger or deprivation. The results suggest that a more holistic approach to Weight Loss, with No Portion Control or Calorie Counting, can lead to better outcomes, both physically and psychologically. This paper discusses the implications of these groundbreaking findings for the broader field of Weight Loss and Nutrition, proposing a shift in focus, from short-term restrictive diets to eating favorite meals to full stomach several times a day, leading to sustainable lifestyle changes that prioritize enjoyment and well-being. **Conclusion:** The study concludes by offering practical recommendations for integrating these strategies into everyday life and underscores the need for further research to validate and expand on these findings. By redefining how Weight Loss is approached, this revolutionary research aims to empower individuals to achieve their health and Weight Loss goals in a more positive, sustainable way.

Keywords: Weight Loss, Fat Loss, Gamified Weight Loss Challenge, Calorie-Free Weight Management, Holistic Nutrition

Abstract ID: 026

**ABSTRACT TITLE: KNOWLEDGE, ATTITUDE, AND PRACTICES (KAP) OF MILLET
CONSUMPTION AMONG SCHOOL CHILDREN OF 10-15 YEARS: A STUDY IN VIRUDHUNAGAR
DISTRICT, TAMIL NADU, INDIA**

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Background: Millets, a group of small-seeded cereal grasses, are a crucial food source in India, contributing 40.2% of global millet production. India is the leading producer, with eight species including foxtail, finger, barnyard, sorghum, kodo, proso, and pearl millet. These grains are resilient, requiring minimal irrigation, which makes them ideal for drought-prone regions. Nutritionally rich, millets offer high dietary fiber, are gluten-free and possess lower glycemic index, potentially reducing the risks of various chronic diseases such as diabetes, cardiovascular conditions and cancer. Despite their benefits, there is limited research on the knowledge, attitude, and practices (KAP) related to millet consumption, particularly among children. **Materials & Methods:** The study assessed millet consumption, knowledge, attitudes, and practices (KAP) among 600 children aged 10-15 years in Virudhunagar district, Tamil Nadu, India, from both private and government schools using purposive sampling. Questionnaires gathered data on demographics, socioeconomic status, millet consumption frequency, knowledge, attitudes and dietary practices before and after a three-month nutrition education program and weekly Millet Day follow-ups. **Results:** The results showed that while most children recognize the nutritional benefits of millets, actual consumption is infrequent. Government school children consumed millets slightly less often than private school children before nutrition education. Both groups consumed millets occasionally, with notable differences in perceptions of nutritional value and food costs. However, no significant differences were found in regular consumption or weight loss effectiveness. The summary compares government and private school children knowledge, attitudes, and practices regarding millets and healthy eating. **Conclusion:** Post-nutrition education on millet has improved, but consumption gaps persist. More efforts are needed to translate knowledge into dietary changes.

Keywords: Millets, School children, Consumption patterns, KAP study, Virudhunagar district, India.

Abstract ID: 030

**ABSTRACT TITLE: AMARANTHUS CAUDATUS: UNLOCKING THE POTENTIAL OF A
NUTRIENT-DENSE PSEUDOCEREAL FOR GLOBAL HEALTH**

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Background: Amaranth, a pseudocereal from the Amaranthaceae family, has garnered significant attention for its nutritional and agronomic benefits, positioning it as a promising solution to global food insecurity. *Amaranthus caudatus* L., commonly known as kiwicha, rajgira, or ramdana, stands out as a

versatile crop that yields nutrient-dense seeds in substantial quantities. Recognized for its potential in promoting cardiovascular health, managing diabetes, and supporting weight management, the health benefits of amaranth seeds are both diverse and compelling. **Materials & Methods:** This review utilized a systematic methodology, including comprehensive searches across academic databases to identify relevant studies on amaranth seeds. Papers were selected based on relevance and quality, followed by a critical analysis of their nutritional content, health impacts, and research methodologies. **Results:** The synthesis of these findings highlights emerging trends, knowledge gaps, areas of consensus, and directions for future research. *Amaranthus caudatus* is a rich source of proteins, β -carotene, vitamins, minerals, and dietary fiber. Notably, amaranth starch exhibits high solubility and digestibility, surpassing common grains like wheat, rice, and oats. Furthermore, amaranth seeds are gluten-free and contain 30% more protein, including a complete set of amino acids, offering new possibilities for applications in food processing, pharmacology, and cosmetics. Numerous studies have consistently emphasized the presence of biologically active compounds in amaranth with anti-diabetic, anti-hyperlipidemic, and anti-hypercholesterolemic effects, alongside antioxidant and antimicrobial properties. Despite these promising findings, further research is needed to clarify the mechanisms behind amaranth's health benefits and determine its optimal inclusion in dietary recommendations. This review underscores the potential of amaranth seeds as a valuable component of a nutritious diet, offering a wide range of health-promoting properties. **Conclusion:** Hence, it is concluded that *Amaranthus caudatus* seeds offer significant nutritional and health benefits, including high protein content, essential amino acids, and bioactive compounds with antioxidant, anti-diabetic, and antimicrobial properties. These qualities make them a promising option for food processing, pharmacology, and cosmetics. However, further research is needed to better understand the mechanisms behind these benefits and optimize their use in diets. **Keywords:** Amaranth, Health, Hyperlipidemia, Food insecurity, Protein

Abstract ID: 035

ABSTRACT TITLE: USE OF SOCIAL MEDIA INFORMATION AND ITS IMPACT ON NUTRITIONAL STATUS OF ADOLESCENT GIRLS

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Background: The study investigated the influence of social media usage on the nutritional status of adolescent girls. Impact of using social media information related to food, nutrition and health on nutritional status of adolescent girls will help in the development of nutritional intervention to inculcate healthy eating patterns to enhance their nutritional status. **Methods & Materials:** A sample of 300 students aged 16-18 years was randomly selected from rural and urban schools of Hoshiarpur district of Punjab. A detailed study on a sub-sample of 120 subjects was conducted, divided into social media users (more than 1.5 hours daily) and non-users (less than 1.5 hours daily), with equal representation from rural and urban areas. Data on demographics, family background, dietary habits, and medical

history were collected through interviews. Anthropometric measurements and BMI calculations were performed. Dietary intake was assessed using the 24-hour recall method and compared with recommended dietary allowances (RDA). **Results:** Results showed significant differences in waist-to-hip ratios between rural and urban participants but no significant differences in height, weight, or BMI. Social media users in both rural and urban areas were more likely to eat to relieve loneliness and anxiety. Nutrient intake analysis revealed higher fat consumption among rural users and higher iron intake among rural non-users. Fruit consumption was significantly higher among rural non-users compared to users, with no significant differences among urban subjects. Urban subjects exhibited higher social media engagement and a greater fear of weight gain compared to rural subjects. Both groups had insufficient nutrient intake, with urban subjects consuming more junk food. Despite dietary differences, both groups showed a high prevalence of anemia and sedentary lifestyles, highlighting the need for interventions to improve nutrition and physical activity among adolescent girls. **Conclusion:** The study concluded that social media significantly influences dietary habits, leading to food cravings and unhealthy eating patterns and hence, there is a need to regulate the use of social media as an effective tool for promoting core foods, healthy lifestyles for holistic development of adolescents.

Keywords: Social media users, Social media non-users, Adolescent girls, Nutrient intake, Dietary habits

Abstract ID: 038

ABSTRACT TITLE: RELATION OF DIET INTAKE, PHYSICAL ACTIVITY WITH ATTENTION SPAN AMONG ADOLESCENTS

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Background: Adolescents age (10-19 years) is the phase of dynamic changes including physically, socially and mentally. The adolescents diet intake, BMI, physical activity varies widely in this age group. The types of diet play a crucial role in our lives as they govern not only our physical health but also the mental and social health. This study intends to find the relation of dietary intake, BMI and physical activity with attention span of adolescents. **Materials & Methods:** A cross-sectional community-based study was conducted to investigate the relation between body mass index (BMI), diet intake, physical activity with attention span in adolescents. Total 100 adolescents of Faridabad region were recruited for the study. The study participants were randomly selected. The height, weight, 24-hour dietary recall, Global physical activity questionnaire and Stroop test were the tools used for data collection. Descriptive statistics, t-test, analysis of variance was used by SPSS version 24. **Results:** The study revealed that the attention span of adolescent's girls was 30.05+ 5.29 and 28.09+ 5.15 in case of boys but the differences were not statistically significant. The energy, protein, carbohydrates and fat intake computed

under diet intake showed that intake of macronutrients was higher among adolescents' girls with mean energy intake of 1333.8+155.8, protein intake of 45.9+7.18, carbohydrate intake of 213.2+ 37.4 and fat intake of 26.45+3.75 as compared to boys (1324.5+123.7, 44.12+7.76, 208.6+ 43.9 and 26.05+4.04 respectively) but the difference was not statistically significant. The diet intake had no impact on attention span of adolescents. Additionally, obesity does not affect the attention span of adolescents. **Conclusion:** It is concluded that attention span of adolescents was not associated with diet intake, BMI and physical activity. However, larger sample size may be examined to determine the significant association.

Keywords: BMI, GPAQ, Stroop test, Adolescence

Abstract ID: 040

ABSTRACT TITLE: MALNUTRITION AMONG TRIBALS IN KORAPUT DISTRICT

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Background: Malnutrition is state of nutrition in which a deficiency or excess of energy,protein remains a silent emergency. Odisha has the largest number of tribal communities.The state has a tribal population of 9.59million constituting 22.86% of total population. Tankua is a village which comes under jeypore block of Koraput district. Objective of the study is to study the severity of malnutrition among tribal children. **Materials & Methods:** Researcher has selected 100 numbers of sample for the study and prepared a set of questionnaire and open ended interview schedule to collect data. **Results:** Among 100 numbers of sample for the study overall prevalence of malnutrition found to be 51%, 41.3%were underweight, and 6.8%were severely wasted. **Conclusion:** The problem of low standard of living, hunger, starvation, malnutrition,poor sanitary and housing facilities etc has to be improved totally by implementation of policy that exists.

Keywords: Malnutrition, Wasting, Stunt

Abstract ID: 050

ABSTRACT TITLE: MALNUTRITION AS A HIDDEN HUNGER AND UNDERNUTRITION AMONG UNDER FIVE YEARS CHILDREN IN VARANASI

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Background: Malnutrition is present as a triple burden in under five years children remains a significant public health issue at globally. Triple burden consists overnutrition, undernutrition and hidden hunger or micronutrient deficiencies in children. Undernutrition present in the form of stunting and wasting as

an indicator of malnutrition. The objective of the study to observe the hidden hunger and assess the undernutrition among under five years children who are registered in Anganwadi centres of Varanasi. **Materials & Methods:** The present study was conducted in Anganwadi Centres in 10 wards of Varanasi. The study was taken on the basis of malnutrition reports of global, national and regional level. Sample size of the study was 448 under five years children. Height and weight were taken as well as compared with Indian Academic of paediatric classification, Gomez classification and Waterlow classification. Mid Upper Arm Circumferences, Head and Chest Circumferences were also taken. Moreover, malnutrition sign and symptoms also observe in children. **Results:** The outcomes of the study were most of the children found as stunted and wasted according to waterlow classification. In which 37.7 % of the children found wasted according to Indian Academic of paediatric classification and 46.4 % of the total children also found wasted according to Gomez classification. **Conclusion:** The study was concluded that malnutrition affects to children in different forms by which children found malnourished. There is need to awareness regarding child nutrition and balanced diet for under five years children among parents.

Keywords: Malnutrition, Anganwadi Centres, Under five years children, Undernutrition

Abstract ID: 055

ABSTRACT TITLE: IMPACT OF HINDU RELIGIOUS FASTING (EKADASHI VRAT, JANAMASTHMI, SHIVRATRI, NAVRATRI, KARWACHAUTH, WEEKDAYS FASTING) ON DIETARY INTAKE AND SLEEP PATTERN AMONG 25 YEARS AND ABOVE

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Background: Hindu religious fasting sometimes referred to as “Vrat” or “Upvaas,” is a disciplined spiritual practice that involves abstaining from specific meals or activities for a predetermined period. The present study aimed to assess the impact of Hindu religious fasting on dietary intake and sleep patterns among 25 years and above age group. **Materials & Methods:** A cross-sectional study was conducted among Hindu people residing in Gurugram, Haryana. People who are frequently fasting were included in the study (frequent faster defined as the people who keeps one or two fast in weekdays and keeping other occasional fasts also). Data was collected using self-administered questionnaire on socio demography profile of the participants, Sleep pattern and 24-hour dietary recall of three days (before; during; and after the day of fasting). Anthropometric data was collected on height (cm) and weight (kg) using standardised tools to calculate the body mass index (BMI). **Results:** The mean age of the participants was 38.8 ± 10.29 years. A total of 100 participants were selected for the study, of whom 61% were female and 39% were male. None of the participants were illiterate; 70% were either graduates or postgraduates. There was no significant difference in the Pittsburgh Sleep Quality Index scores of the participants (2.8 ± 1.18) across all three days (before, during, and after the fasting day).

However, their nutrient intake for macro- and micronutrients differed significantly across all three days (before, during, and after the fasting day) ($P < 0.001$). Their dietary intake was significantly lower than the Estimated Average Requirement (EAR) for their age group, especially during the fasting period.

Conclusion: Fasting in all religions has a beneficial effect on overall health. However, the current study have shown poor nutrient intake among participants, which may lead to macro- and micronutrient deficiencies. Therefore, a targeted nutrition awareness campaign should be planned to guide people who frequently fast, ensuring they derive maximum benefits from fasting.

Keywords: Upvaas, Religion, Sleep, Dietary intake, Nutrition campaign

Abstract ID: 59

ABSTRACT TITLE: ASSESSMENT OF NUTRITIONAL ANTHROPOMETRY OF TRIBAL ADOLESCENT GIRLS USING Z SCORES: CORRELATIONS WITH NUTRITION ADEQUACY RATIO

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Background: The tribal societies in India are undisputedly considered to be the weakest sections of the population in terms of common socioeconomic and socio-demographic factors such as poverty, illiteracy, lack of developmental facilities, lack of adequate primary health facilities etc. The present investigation was undertaken to study the nutritional anthropometry of tribal adolescent girls using the Z score and its association with socioeconomic status. **Methods & Materials:** About 387 tribal adolescent girls (13 to 18 years old) were purposively selected from four Ashram shalas of tribals located at Higna, Ramtek, Deolapar and Navegaon taluka places of Nagpur District. The anthropometric measurements viz., height and weight were recorded using standard procedures. BMI was computed. The Z scores of height, weight and BMI were computed and classified according to the Indian Academy of Paediatrics (IAP) 2015 Standards. The diet intake was assessed using the 24-hour recall method. The nutrient intake was computed according to IFCT (2017) and compared with EAR/RDA 2024 (ICMR-NIN). Nutrient Adequacy Ratio was computed and classified as low, moderate and adequate intake and compared with Z scores of height, weight and BMI. **Results:** The study showed that according to the height Z score classification, 91.99% of girls were normal, 6.46% were stunted and 1.55% were severely stunted. As per the Weight Z Score classification, 96.90 % of girls were normal, 2.84% were wasted and 0.26 % were severely wasted. The BMI Z score classification showed 90.44 % normal whereas 0.78%, 2.33%, 5.94% and 0.52% as severe underweight, underweight, overweight, and obese respectively. The Nutrient Adequacy ratio of all the nutrients were low except for protein, folic acid, and magnesium. The Z scores of height, weight and BMI showed significant correlations ($p < 0.01$) with the Nutrient Adequacy Ratio of all the nutrients except for Vitamin C. **Conclusion:** It can be concluded that there is a dire need for intervention programmes based on nutrition awareness among tribal adolescent girls to achieve the SDG goals for zero hunger.

Keywords: Z scores, Tribal adolescent girls ,Nutrient Adequacy Ratio ,Nutritional status

Abstract ID: 060

ABSTRACT TITLE: QUALITY OF LIFE IN ADULTS WITH METABOLIC SYNDROME IN RELATION TO HYPERURICEMIA

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Background: Hyperuricemia, characterized by elevated serum uric acid, is linked to gout, kidney disease, and cardiovascular issues. It shares common risk factors with metabolic syndrome, such as obesity and insulin resistance. The rising prevalence of both conditions highlights their interconnectedness. This study aims to determine the prevalence of hyperuricemia in adults with metabolic syndrome and assess its impact on quality of life. **Materials & Methods:** This study included 100 adults aged 30 years and above, selected through purposive sampling from Alappuzha district, Kerala. Data collection involved a pre-structured questionnaire covering socio-demographic details, anthropometric measurements, biochemical parameters, clinical assessments, and dietary habits. The WHOQOL-BREF tool was used to assess quality of life, and metabolic syndrome was identified using the NCEP ATP III criteria. **Results:** The prevalence of metabolic syndrome was highest in individuals over 60 years, affecting 13% of females and 12% of males. Overall, 70% of males and 58% of females had metabolic syndrome, with males exhibiting higher uric acid levels and cardiovascular risk. The Atherogenic Index of Plasma (AIP) indicated 30% of males were at very high cardiovascular risk, compared to 6% of females. Lifestyle factors such as smoking (72% of males) and elevated BMI contributed to hyperuricemia. About 66-75% of participants regularly consumed high-purine foods. Awareness on dietary factors, particularly caffeine and salt, was inconsistent. Quality of life assessment revealed statistically significant differences in psychological, social, and environmental domains, with males having higher quality of life. **Conclusion:** The study reveals a significant burden of hyperuricemia and metabolic syndrome, especially among males. Early identification, lifestyle changes, and reducing high-purine food and caffeine intake are critical in managing these conditions. These findings emphasize the need for targeted public health strategies to address this growing issue.

Keywords: Hyperuricemia, Metabolic Syndrome, NCEP ATP III Criteria, Atherogenic Index of Plasma, Dietary Changes, Quality of Life.

Abstract ID: 063

ABSTRACT TITLE: NUTRITIONAL STATUS OF NOOLPUZHA PANCHAYAT TRIBAL WOMEN, WAYANAD DISTRICT, KERALA

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Background: Tribal communities are socially, economically, and culturally different from other communities and are highly vulnerable to malnutrition due to inadequate health facilities, social isolation and inadequate nutrient intake. However, modernization, changing life style and beliefs has brought the reformation in their cultural, economic and nutritional status. Nevertheless, some of the customs and dietary habits followed by their ancestors still persist among the community and are typically different. The present study was undertaken to understand the nutritional status of tribal communities. **Materials & Methods:** A community-based study was carried out in Noolpuzha Panchayat of Wayanad district, Kerala with a study population of 100 tribal women in the age group of 18-50. Anthropometric and clinical parameters of tribal women were assessed by the usage of appropriate tools and techniques. The collected data was statistically analyzed. **Results:** Present study revealed the higher percent (63%) prevalence of under nutrition prevalence among the screened subjects. The mean weight, height and body mass index of the screened tribal women were lesser than the reference Indian women. Among the screened subjects 46 per cent of them had sparse hair which indicates they may have nutrient deficiencies. Tiredness was seen among 22 per cent of the women. None were found to have scaly skin. 60 per cent tribal women reported to have brittle nails. **Conclusion:** The prevalence of undernutrition is still one of the major problems among the tribal population, providing nutritional education and promoting dietary diversification can help improve their nutritional status.

Keywords: Tribal Women, Undernutrition, Anthropometry

Abstract ID: 73

**ABSTRACT TITLE: SCULPTING STRONGER FOUNDATIONS: A HEALTH BELIEF MODEL
APPROACH TO OSTEOPOROSIS EDUCATION" – A CONCEPT FOR COMMUNITY NUTRITION
PROGRAM**

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Background: The prevalence of osteoporosis in Indian women has been reported in various studies, with rates ranging from 8% to 62%. The health belief Model examines how individuals' beliefs shape health behaviours, considering factors like perceived susceptibility, severity, benefits, barriers, cues to action and self-efficacy. It informs the design of interventions aligning with these perceptions to promote health behaviours. **Aim:** To develop an education intervention model to educate rural women about prevention of osteoporosis. **Materials and Methods:** A focus group discussion was conducted among

the subjects to identify common misconceptions or knowledge gaps that existed among the target audience. An educational intervention was then planned for 3 months, consisting of 6 phases, including cooking demonstrations, dance, drama, music, pamphlets, posters, a speech by a familiar person, and a quiz competition. A Health Belief Model questionnaire was administered before and after the educational intervention to assess its impact. Additionally, the Cornell Musculoskeletal Discomfort Questionnaire and Visual Analogue Scale were used to assess the intensity of pain before and after the intervention. **Result:** The results revealed that the subjects had limited knowledge of musculoskeletal discomfort and poor practices regarding anti-inflammatory foods. We expect an improvement in their knowledge and practices related to musculoskeletal discomfort following the intervention. **Conclusion:** Through tailored educational interventions that target perceived susceptibility, severity, benefits of preventive actions, barriers to adherence, and cues to action, this program has the potential to effectively promote bone health awareness and empower individuals to adopt healthier lifestyle choices. The education module that has been developed will be disseminated to both non-governmental and governmental organizations for implementation on a broader scale, aiming to prevent osteoporosis within a larger population.

Key words: Community nutrition, Health belief model, Nutrition Program and education Intervention.

Abstract ID: 076

ABSTRACT TITLE: THE IMPACT OF “FOODIE-CULTURE” ON GEN Z’S HEALTH: A DIETARY ANALYSIS

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Background: The rise of social media has significantly influenced food consumption habits, particularly among younger generations like Gen Z. The "Foodie Culture," characterized by a focus on aesthetic appeal, novelty, and sharing food experiences, has become a prominent trend. While this culture has promoted experimentation and appreciation for diverse cuisines, its potential impact on Gen Z's health remains unexplored. This study aims to investigate the dietary habits of Gen Z individuals within the context of the "Foodie Culture" and assess its implications for their overall health. **Materials & Methods:** A cross-sectional study was conducted among Gen Z individuals (aged 17 - 27) residing in Coimbatore, Tamil Nadu. Participants were assessed using a questionnaire including questions about dietary habits, food preferences, social media usage related to food, information on their physical activity levels, body mass index (BMI), and self-reported health status. Additionally, a 24-hour dietary recall was administered to assess nutrient intake. Descriptive statistics were used to analyze the data, and correlations were examined between dietary habits, social media engagement, and health indicators. **Results:** The analysis revealed that a significant proportion of Gen Z individuals, influenced by the foodie culture, often prioritize aesthetic appeal and novelty over nutritional value. While many

participants expressed interest in healthy eating, their diets frequently fell short of recommended guidelines. Common patterns included excessive consumption of processed foods, sugary beverages, and high-calorie meals. Micronutrient deficiencies were prevalent, especially for essential vitamins and minerals. Furthermore, social media engagement with food content was found to correlate with unhealthy dietary choices. **Conclusion:** The "Foodie Culture" has a substantial influence on Gen Z's dietary habits, which can have negative consequences for their health. While the culture promotes exploration and appreciation of diverse cuisines, it often leads to choices that are high in unhealthy components. Addressing these issues requires a multifaceted approach, including education on healthy eating habits, promoting mindful consumption, and encouraging sustainable food choices. By understanding the impact of the "Foodie Culture" on Gen Z's health, policymakers, healthcare professionals, and educators can develop strategies to promote healthier eating behaviors among this vulnerable population.

Keywords: Gen Z, Foodie culture, Dietary habits, Social media, Nutrition, Unhealthy eating, Sustainable food choices

Abstract ID: 82

**ABSTRACT TITLE: UNCOVERING THE HIDDEN COSTS OF POOR WATER QUALITY:
EXPLORING ITS IMPACT ON NUTRITIONAL STATUS AND HEALTH OUTCOMES AMONG
COLLEGE STUDENTS**

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Background: Wells always stood as a crucial water source in Kerala for centuries. It has always played a significant role in the daily lives of every individual. The state known for its water resources with abundant rainfall, rivers and backwaters has traditionally relied on well water as a primary source of groundwater access. It is always an enduring symbol of Kerala's Water Culture which is closely related to every individual's societal and individual well-being. **Methods & Materials:** The study employed a mixed-methods approach. A comprehensive assessment was conducted at Vimala College, Thrissur, Kerala, where well water samples were analyzed for key parameters including iron, calcium, pH, turbidity, total dissolved solids (TDS), and microbial contamination. In parallel, a dietary survey was administered to 125 students to evaluate their consumption patterns across various food groups by using Food Frequency Questionnaire. **Results:** The water quality assessment revealed below detection limits for iron, calcium levels at 9.6 mg/L, and a slightly acidic pH of 6.6. The water showed low turbidity and total dissolved solids, indicating good quality and no microbial contamination. However, elevated nitrogen levels raised concerns about agricultural runoff. Dietary data indicated high consumption of cereals (75.76%) and sugars (60.88%), with low intake of iron-rich foods like pulses (38.4%) and green

leafy vegetables (15.84%). Correlation analysis identified significant relationships among BMI, anemia, obesity, underweight, osteoporosis, and prediabetes, notably a strong correlation between obesity and anemia (0.519). **Conclusion:** These findings underscore the importance of ensuring adequate dietary intake of essential nutrients, particularly iron and calcium, to mitigate the risks of nutritional deficiencies among college students. The impact of wells and addressing the issues related to water quality are crucial steps towards ensuring safe and sustainable access to this vital resource.

Keywords: Well Water, Water Quality, Nutrition, Nutritional Deficiencies

Abstract ID: 88

**ABSTRACT TITLE: EFFECT OF VITAMIN-D SUPPLEMENTATION DURING PREGNANCY ON
INCIDENCE OF PRETERM-BIRTH IN SOUTH-INDIA- PROTOCOL FOR A RANDOMIZED
CONTROLLED TRIAL**

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Background: Preterm-birth (live-birth less than 37-weeks of gestation) is a leading cause of maternal and infant adverse outcomes, with a prevalence of 10-18% in India. Evidence suggests a pivotal role of vitamin-D in pathophysiology of preterm-birth, inflammation and infections. Increasing prevalence of vitamin-D deficiency(VDD) in Indian pregnant women (34-96%) is concerning. Although, vitamin-D supplementation has shown to improve maternal-foetal outcomes, guidelines for a dose to prevent preterm-birth remain unspecified. Thus, this study aims to compare the effect of a higher dose of vitamin-D3(2000IU per day) with current standard-of-care(500IU per day) during pregnancy on incidence of preterm-birth in South-India. **Methods & Methods:** This double-blind parallel randomized controlled trial will recruit 902 healthy, pregnant women(18-40years) with VDD(less than 20ng per ml) from tertiary hospitals, Bangalore. Participants will receive either 500IU or 2000IU vitamin-D3 per day, with 1g elemental calcium, from 14-weeks of gestation until delivery. At recruitment, information on demography, diet, anthropometry, physical activity, sun exposure and ultrasound dating will be collected. Along with supplement adherence details, aforementioned measurements will be repeated at monthly follow-up visits. Safety will be monitored using serum total 25(OH)D levels and urinary calcium-creatinine ratio in second and third trimesters. Descriptive and inferential statistics for categorical and continuous variables, respectively, will be assessed at baseline and endline. The study funded by Department of Biotechnology(BT.PR41941.MED.97.548.2021), approved by St Johns Medical-College Institutional Ethics Committee(Ref.No.344.2021) is registered at Clinical-Trials

Registry-India(CTRI.2021.10.037658). **Results:** Incidence of preterm-birth, through accurate calculation of gestational age at delivery will be reported. Effect of vitamin-D3 supplementation between the two groups on maternal-foetal outcomes and in cord-blood will be assessed. Pregnancy related significantly different factors at baseline between the groups at 10% level of significance with intervention will be adjusted for preterm delivery using log-binomial regression analysis. Univariate and adjusted risk-ratios will be represented as measures of association. **Conclusion:** This trial will provide critical insights on the role of vitamin-D in reducing the incidence of preterm-birth. The findings are expected to guide future clinical recommendations for vitamin-D3 supplementation during pregnancy to improve maternal and neonatal health outcomes.

Keywords: Preterm birth, Vitamin D, Pregnancy, Randomized controlled trial, Supplementation

Abstract ID: 90

ABSTRACT TITLE: IMPACT OF EROGOCALCIFEROL-ENHANCED MUSHROOMS ON VITAMIN-D CONCENTRATION AND INSULIN RESISTANCE: A RANDOMIZED, SINGLE-BLIND STUDY IN VITAMIN D DEFICIENT YOUNG ADULTS WITH OBESITY OR OVERWEIGHT IN BANGALORE – STUDY PROTOCOL

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Background: Globally, Vitamin-D deficiency(VDD) is recognized as pandemic and affects 70-100% of Indians, despite India's tropical climate. Despite sunlight being the main source of vitamin-D, efforts to reach the Recommended Dietary Allowance(RDA) through vitamin-D fortification of staple-foods have not proven successful so far. Growing evidence suggests low serum vitamin-D concentration is linked to morbidities like diabetes and obesity. Emerging literature indicates ergocalciferol-enhanced mushrooms may help combat VDD. This study aims to assess if food-based snacks, supplemented with ergocalciferol, may increase vitamin-D levels and improve insulin sensitivity in obese/overweight young adults with VDD. **Materials & Methods:** This randomized, single-blind study of 150 young adults aged 18-25 years with VDD (<20ng/ml), with obesity/overweight (BMI>24.9kg/m²) consented and grouped to receiving either 5g of unenhanced mushroom powder (Oyster) or vitamin-D2(600IU/d) or vitamin-D2(2000IU/d) enhanced-mushroom through food-based snacks (cookies/cutlets) for 12-weeks. At recruitment, information on socio-economic status, allergy will be collected. Anthropometry, dietary intake, sun-exposure and physical-activity will be obtained through validated questionnaire at baseline and endline. Extensive biochemical panel of glucose, insulin, vitamin-D(total, vitamin D2, D3; using LC-MS-MS), and obesity biomarkers(lipid-profile) will be conducted before and after intervention. The food-based snacks will be provided daily for a period of 3-months. Supplement compliance will be recorded everyday according to the standard method. We have received Institutional Ethical Committee approval from the St. John's Medical College(Ref.No.62.2024). **Results:** Vitamin-D parameters and insulin

resistance through Homeostatic Model Assessment of Insulin Resistance(HOMA-IR) calculation will be compared between the groups at baseline and endline. The associations between baseline and endline changes will be conducted by simple linear regression. P-value will be considered significant at 5% level of significance for all comparisons. **Conclusions:** The findings from this study may hold significant implications for health workers and policy makers, indicating that vitamin-D-enhanced mushrooms could play a substantial role in addressing the global public health challenge related to VDD and the impact of vitamin-D2 on insulin sensitivity in young adults with obesity or overweight.

Keywords: Vitamin D, Vitamin D2, Insulin resistance, Young adults, Obesity

Abstract ID: 92

ABSTRACT TITLE: INFLUENCE OF DIETARY PATTERNS ON ANTHROPOMETRIC MEASUREMENTS AND CLINICAL MANIFESTATIONS IN ADOLESCENT TRIBAL AND NON-TRIBAL BOYS AND GIRLS

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Background: Following the first year of life, adolescence is the only phase when children experience significant developmental milestones. Dietary routines are established during this vital period these behaviors can significantly affect individual's lifetime nutritional requirements and health. **Methods & Methods:** A community-based survey was conducted among tribal and non-tribal adolescent boys and girls between the age group of 10-19 years in Noolpuzha Panchayath, Wayanad district, Kerala using a standardized questionnaire. **Results:** The insights obtained, showed that undernutrition is still a prevalent issue among the indigenous community, with 48% of the subjects being underweight in boys and with 20% of the subjects being underweight in girls. Tribal respondents reported a higher percentage of health issues because of their poorer socioeconomic status, insufficient nutrient intake, inadequate knowledge of nutrition, ignorance of nutrition, and irregular eating schedules. Comparatively more non-tribal subjects than tribal subjects participated in a variety of physical activities. Tribal groups'; eating habits were unsatisfactory in both boys and girls. Boys from tribal communities skipped more meals than boys from non-tribal communities i.e. 73% and 37%, respectively. Tribal girls were more likely to skip meals than non-tribal girls, 35% and 17%, respectively. Tribal subjects had lower mean heights, weights, and BMI than non-tribal subjects. This frequently results in large BMI differences between the tribal and non-tribals. **Conclusion:** From this investigation, it can be inferred that the dietary pattern, and meal frequency of the subjects were associated with changes in BMI. Higher BMI respondents were found to be consuming more than three meals a day, whereas lower BMI subjects were found to consume fewer than three meals a day.

Keywords: Dietary Patterns, Meal Frequency, Tribals, & Non-tribals

Abstract ID: 93

ABSTRACT TITLE: PHYSICAL AND MENTAL HEALTH EFFECTS OF OBESITY ON WOMEN

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Background: The prevalence of obesity among women has reached alarming levels worldwide. According to WHO approximately 39% of women globally were classified as obese or overweight in 2022. Factors such as pregnancy, menopause, and hormonal disorders like PCOS contribute to higher obesity prevalence in women. Mental health issues, including low self-esteem, depression, and anxiety, are also more prevalent among obese women, further complicating the issue. **Methods & Materials:** A cross-sectional study was conducted among obese women aged 25 to 40 years using a standardized questionnaire. **Results:** The present study showed that, out of 30 obese subjects, 60% had joint pains, 56.6% had diabetes, 36.6% had thyroid, and 46.6% had gastrointestinal problems. In terms of mental health, 60% of the participants were having public distress, and 40% had low self-esteem. Overall, the findings suggested that the majority of participants had both physical health and mental health complications due to obesity. **Conclusion:** Obesity is a serious public health problem with significant mental health and physical health impacts. The incidence of public distress and low self-esteem in obese individuals has numerous mental and physical repercussions beyond encumbering psychological well-being. Urgent public health measures are necessary to reduce its impact. The findings suggest that obesity not only affects physical well-being but also has a profound impact on mental health. This emphasizes the need for a holistic approach that addresses both the physical and psychological aspects of obesity in women, offering tailored support for long-term health management.

Keywords: Obesity, Physical health, Mental health, Women

Abstract ID: 096

**ABSTRACT TITLE: HEALTH AND EATING DISORDERS AMONG TGD POPULATION: A
SYSTEMATIC REVIEW**

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Background: There is growing evidence that Transgender and Gender Diverse (TGD) population face at least 2–5 times greater risk of disordered eating behaviours, health issues, psychological distress, and other signs of low life satisfaction than their cisgender peers. This systematic review literature explores evidence based data regarding health and eating disorders among TGD population. **Materials & Methods:** The search was conducted using databases from PubMed and Journal of Eating Disorders for articles pertaining to eating disorders among TGD population to present review of recent

publications. Ten articles published from 2020 to 2024 had been used for full text review. **Results:** The articles selected for review varied in methodology for screening possible health outcomes. Most commonly, researches highlighted that TGD population was at high risk of developing STDs like syphilis, human papillomavirus infections, cancers, cardiovascular diseases, obesity, anxiety, depression, and suicide compared to general population. Gender stigma had also been found to be a fundamental cause of adverse health in transgender population as it works directly to induce stress (a key driver of morbidity and mortality) and indirectly by restricting access to health protective resources like knowledge, money, power. Prevalence rates of Eating Disorder and Disordered Eating Behaviour (ED/DEB) among TGD communities are estimated between 2 and 18%. Till date, the extant body of literature ascertained few potential contributing factors for the development ED/DEB pathology, which include 1. Gender dysphoria 2 Negative body image and 3. Barriers to access gender affirming healthcare 4. Bullying 5. Peer victimization and isolation. **Conclusion:** Since, the TGD population struggle with significant health care issues, in terms of increased disease prevalence as well as the lack of appropriate physicians' training and health care facilities, all the stakeholders in the community need to take crucial steps to develop a cohesive plan to deal with disparities and challenges faced by this community.

Keywords: Transgender and gender diverse (TGD) population, Eating disorder, Health outcomes

Abstract ID: 098

ABSTRACT TITLE: PREVALENCE OF WMSDs AMONG FEMALE SPINNING WORKERS: A CROSS-SECTIONAL STUDY

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Background: Work related Musculo-Skeletal Disorders (WMSDs) associated with repetitive and strenuous working conditions continue to represent one of the biggest occupational problems and a major cause of disability among workers in textile industry. This study was aimed at assessing the prevalence of WMSDs and its associated factors among female spinning workers. **Materials & Methods:** A Community-based cross sectional study was conducted among female spinning workers in Tiruppur district. By purposive sampling technique, 130 female spinning workers in the age group of 18-35 years working in shift basis were included in the study. Data was collected using a structured questionnaire consisting of demographic details and medical history checklist developed by Canadian Centre for Occupational Health and Safety for WMSDs assessment. The data collected were systematically and statistically analysed using SPSS 20. **Results:** The study revealed the prevalence of WMSDs as 77%. Out of 130 respondents, 70 respondents who were working in shift basis for >8 hours had the common complaint of lower back pain (54%). Other musculo-skeletal symptoms including

pain in arms and legs, upper back pain and joint pain were found to be at 10%, 8 % and 5 % respectively. Statistically significant relationship was found between duration of work and development of musculo-skeletal symptoms ($p < 0.01$). High physical demands, performing repetitive tasks in static and awkward postures and prolonged duration of work with inadequate rest pause were found to be other contributing factors for the development of WMSDs. **Conclusion:** Hence, the present study signifies immediate modification in work ergonomics and improved work stations to minimize the occurrence of occupational health hazards as it could pose a great problem to family, community and country as a whole.

Keywords: Female spinning workers, WMSDs, Prolonged duration, Static position

Abstract ID: 099

ABSTRACT TITLE: NAVIGATING THE GUT-BRAIN CONNECTION: THE ROLE OF STRESS AND ANXIETY IN THE CONCURRENCE OF GASTROINTESTINAL SYMPTOMS AMONG COLLEGE STUDENTS

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Background: The student population represents the healthiest demography of the society. However, the rate of chronic illness and health issues among students due to academic stress and anxiety has been steadily rising in recent years. Stress can lead to long term repercussions such as Gastro intestinal problems, which are becoming more common among stressed individuals. Perceived stress and visceral sensitivity index has been found to impact the severity of symptoms contributing to the incidence of Irritable Bowel Syndrome (IBS). **Materials & Methods:** A pilot cross sectional survey was conducted with a sample of 50 college students, using self-administered and standardized questionnaires such as Gastro intestinal symptom rating scale (GSRS), Perceived Stress Scale (PSS), Visceral sensitivity index (VSI) to assess the frequency of gastro intestinal symptoms along with perceived stress and visceral hypersensitivity. Statistical analysis were performed using SPSS 20.0. **Results:** The findings show that Gastro intestinal symptoms are quite common with irregular bowel movements. The VSI and perceived stress scores with Gastro intestinal symptoms were found to positively correlate, indicating that a stronger VSI is linked to higher risk of experiencing discomfort. These results emphasize the critical need for increased awareness of GI health among college population. **Conclusion:** The findings suggest that interventions reducing VSI and managing stress could be beneficial in alleviating Gastro intestinal symptoms among students. It also highlights the importance of considering both physiological and psychological factors in the evaluation and management of GI health in young adults.

Keywords: Gastrointestinal symptoms, Visceral hypersensitivity, Stress, Irritable Bowel Syndrome

Abstract ID: 102

ABSTRACT TITLE: BREASTFEEDING PATTERNS AND ITS EFFECT ON POSTPARTUM DEPRESSION, ANXIETY AND STRESS AMONG LACTATING MOTHERS

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Background: Breastfeeding is essential for infant health and maternal well-being. Despite its known benefits, challenges such as societal pressures and lack of support often hinder exclusive breastfeeding practices. Postpartum depression, anxiety, and stress affect lactating mothers, influencing breastfeeding habits and maternal mental health outcomes. This study aimed to assess the association between breastfeeding patterns and postpartum depression, anxiety, and stress among lactating women in Mumbai with infants aged 12 months or younger. **Methods & Materials:** Based on an estimated prevalence rate of postpartum depression, a power analysis determined a sample size of 125 participants. The study conducted was cross-sectional in nature and was carried out in the urban areas of Mumbai through a questionnaire survey method via one-on-one interviews. Participants provided their consent for the study. Women who have a history of multiple births or those who are unable to provide consent were excluded from the study. The Edinburgh Postnatal Depression Scale (EPDS) was used to screen for postpartum depression. Statistical analysis was performed using MS Excel and SPSS Version 26. Data were entered, cleaned, and coded in Excel before being analyzed using SPSS. The study received approval from the Institutional Ethics Committee of Symbiosis International University (SIU), Pune (No. SIU/IEC/739). **Results:** Among the 125 participants, 96.8% were breastfeeding, with 83.2% practicing exclusive breastfeeding. Postpartum depression affected 40.8% of mothers, with most cases being moderate. Mothers of preterm infants had significantly higher rates of depression. Despite the high prevalence, none of the participants received mental health counseling, highlighting a critical gap in care. No significant association was found between breastfeeding patterns, duration, and depression. However, significant link was observed between gestational term and depression ($p < 0.001$), with preterm births more frequent among depressed mothers. **Conclusion:** The findings highlight the high prevalence of postpartum depression among breastfeeding mothers and emphasize the need for integrated mental health support in postpartum care. Special attention is required for mothers of preterm infants, who are at a higher risk of depression. Strengthening mental health interventions alongside breastfeeding support could improve overall maternal and infant health outcomes.

Keywords: Maternal Mental Health, Breastfeeding Support, Infant Health, Exclusive Breastfeeding

Abstract ID: 105

ABSTRACT TITLE: ASSESSMENT OF DIETARY DIVERSITY (DD) AMONG WOMEN OF REPRODUCTIVE AGE GROUP (15-49 YEARS) FROM URBAN SLUMS OF PUNE CITY, MAHARASHTRA

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Background: Low diet quality of women of reproductive age group(WRA) may lead to deficiency of important micronutrients which will have an impact on their health. One of the indicator of assessing diet quality is Minimum Dietary Diversity for Women (MDD-W). Present study was conducted among women of reproductive age group in the urban slums of Pune with the objectives Primary Objective – To assess dietary diversity among women of reproductive age group from urban slums Secondary Objective to determine association between dietary diversity with malnutrition and different socio-demographic factors like age, education, occupation, socio- economic status. **Materials & Methods:** A Community based cross sectional study was conducted among Women of reproductive age group (15-49 years) of urban slums field practice area of a private medical college of Pune city. Data were collected by house to house survey in the urban slum. Information was collected about socioeconomic and demographic profile of participants. Data on all food items eaten by the participant, consumed inside or outside the home, irrespective of where they were prepared was collected by 24hour recall method. Minimum dietary diversity score(MDDs) was calculated by allocating food items into 10 food groups. Data were analysed using SPSS version 29. Association between independent and dependent variable was assessed by chi square test. **Results:** Maximum (25.9%) participants were in the age group of 30-34 years. About 83.5% participants were Hindu and 69.4% were from Nuclear family and 40% participants were studied up to high school. About 56.5% participants were underweight(BMI<18.5) and 68.2% participants had waist to hip ratio (WHR) more than or equal to 0.8 (≥ 0.8). Maximum participant i.e. 78.8% were having inadequate dietary diversity (MDD score <5). There was a statistically significant association between age and dietary diversity ($p<0.05$) and also between waist to hip ratio and dietary diversity ($p<0.05$). **Conclusion:** Majority participants were having inadequate dietary diversity. Among the participants dietary diversity was significantly associate with age and waist to hip ratio.

Keywords: Women of reproductive age group, Dietary diversity, Urban slum

Abstract ID: 107

ABSTRACT TITLE: HEALTH STATUS OF TRANSWOMEN LIVING IN JAHANGIRPURI, NORTH DELHI

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Background: Transwomen or Transgender has been part of Indian Culture from Vedic period commonly known as Kinnar, Hijars in local language. In 2014, Indian law identified Transgender as Third Gender but still facing identity crises, Healthcare Services, Psychological problems. Bone health is a critical aspect of overall well-being, yet limited research has been conducted on the specific challenges faced by the transgender community. Scanty data was available on this primary health issue. This paper majorly focuses on parameters of optimal bone mineral homeostasis, BMI and the relationship between exposure to sunlight, type of work to Vitamin D status of community. **Materials & Methods:** Descriptive study was conducted from May 2024 to July 2024 in which 56 Transwomen associated with Aident- Social Welfare Organisation located in Jahangirpuri, North Delhi were randomly selected. Out of recruited participants only 43 given consent for blood sampling. The extracted serum analysed in Endocrinology Laboratory, Sir Sunderlal Hospital, Banaras Hindu University. Bone Health Biomarkers were tested following the methods Immunoassay and ELISA. The demographic details were collected using self-structured questionnaire. BMI measured using Weight Scale (EQUINEX) and Stadiometer (HOSPIGUARD). **Results:** SPSS 16.0 Version was used for descriptive statistics analysis. The mean value of Vitamin D, Calcium Serum, Alkaline Phosphatase were 17.5 ± 7.6 ng/ml, 8.4 ± 0.9 mg/dl, and 213.7 ± 41.1 IU/Lt respectively. There was no significant association between Sunlight Exposure and Vitamin D ($p > 0.05$). Sunlight exposure, Hormone balance and poor dietary practices affecting the Vitamin D level. The specific result was 65.1 % population deficient of Vitamin D (>20 ng/ml). Sex work was job for 51.1% population. **Conclusion:** The Present Study highlights the current health status of Transwomen with respect to bone mineralization. Those having full sunlight exposure also deficient of Vitamin D due to several limitations like using sunlight protective or no exposure to sunlight in peak time. Another important variable includes role of steroids in maintaining bone health in Transwomen, is less studied in India. Further Studies can be done to explore the complete health status of Transgender and improve lifestyle the community.

Keywords: Bone Health, Transgender, Vitamin D, Sunlight

Abstract ID: 109

ABSTRACT TITLE: QUANTITATIVE FOOD FREQUENCY QUESTIONNAIRE TO ASSESS IRON AND ENERGY INTAKE OF ADOLESCENTS IN RURAL INDIA

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Background: India is a country in which overall energy and iron deficiency is quite common among adolescents and other age groups. Deficiency may be more prevalent in rural areas and in energy deficient diets. This study was conducted in 2008-2009 in Udgir located in the state of Maharashtra.

Methods & Materials: Male and female students, between the ages of 13 to 17 attending rural schools and colleges were selected opposed to other age groups because the need for energy and iron is increased due to increased physiological needs at this age. A food frequency questionnaire and recipes for preparing the typical Indian foods were developed in collaboration with the student's parents and featured 48 commonly consumed foods divided among ten food groups. A detailed data set was developed that included the gram weight of each of the serving sizes of the cooked food items considering consistency and texture as well as quantity of food in each of five portions found on the questionnaire. **Results:** Males ($m=3174$ kcal) but not females ($m=2164$ kcal, $p=0.044$) met the Food Agricultural Organization recommendations for kcal, 3109 and 2418, respectively. Considering that the iron in the diet was plant based and 5% available, males significantly exceeded the FAO recommendations (34.8 mg/day) with a mean intake of 63.8 mg/day ($p=0.001$). However, females with an intake of 45.4 mg of iron/day were significantly below the FAO recommendations of 63 mg/day ($p=0.001$). Recent studies on anemia prevalence among adolescent women in India (2015–2021) revealed an increase from 54.2% to 58.9% with 99% CI with rural regions particularly affected due to inadequate nutritional intake in 21 out of 28 states. **Conclusion:** These data have implications for nutrition of female adolescents. Results indicate the need to educate adolescent females regarding good sources of iron to meet the increased iron needs of adolescence that would prepare the females for future childbearing and would increase the economic contribution of an inadequately nourished female population.

Keywords: Food Frequency, Iron Intake, Energy Intake, Rural India

Abstract ID: 115

ABSTRACT TITLE: DIETARY PATTERNS AND MENTAL WELLBEING : A COMPARATIVE STUDY OF NON-VEGETARIAN, VEGETARIAN WITH DAIRY AND VEGAN DIETS

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Background: New studies reveal a connection between diet and mental health, with eating patterns influencing wellbeing and potentially leading to anxiety, stress and depression, proper diets stabilize emotions and enhance cognitive abilities. Proper diets rich in essential nutrients stabilise emotions and enhance cognitive abilities. **Methods & Materials:** The study aims to assess the relationship between

dietary patterns and mental well-being among 25-50-year-olds using the DAAS 21 Stress Assessment Scale. The study involved 150 Pune-based adults, including non-vegetarians, vegetarians with dairy and vegans without dairy. The participants were married adults and excluded those with chronic diseases, mental disorders or pregnancy. All participants signed written informed consent and the Institutional Ethics Committee granted the ethical approval (IEC No SIU/IEC/777). Data on mental well-being was analysed using SPSS, ANOVA, and Pearson correlation. **Results:** About 51.3% were males and 48.5% females, with an average age of 34.87 years (SD = 7.11). The average percentage of educational status was 48.7% with a graduation degree and 49.3% with a postgraduate or PhD degree. Significant differences in DASS-21 scores were observed between dietary groups according to an ANOVA ($F = 10.269$, $p < .001$). In comparison to non-vegetarians (13.56, SD = 8.529) and vegetarians with dairy (12.38, SD = 6.773), vegans without dairy had the highest mean DASS-21 score (18.90, SD = 7.595). Dietary patterns and anxiety ($r = 0.181$, $p = 0.027$) and depression ($r = 0.179$, $p = 0.028$) showed a significant positive link, according to Pearson correlation, but not stress ($r = 0.077$, $p = 0.348$). **Conclusion:** The findings of this study highlight the significance of dietary habits in influencing mental health, since vegans who do not consume dairy products report greater levels of anxiety and depression than non-vegetarians and vegetarians who do. Diets high in nutrients and balanced, as suggested by recent studies by Wang et al. (2023) and Radkhah et al. (2023), are important in reducing psychological distress. Therefore, integrating dietary guidance within mental health interventions may offer improved treatment outcomes for individuals suffering from mood disorders.

Keywords: Diet, Mental Health, Depression, Anxiety, Stress, Adults, Dietary Patterns, Psychological Well-being.

Abstract ID: 116

ABSTRACT TITLE: THE INFLUENCE OF SOCIAL MEDIA ON NUTRITIONAL HABITS AND HEALTH ANXIETY IN WOMEN

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Background: Social media has become a dominant platform for disseminating health and nutrition-related content, influencing both behaviour and mental well-being. This study investigates the relationship between social media usage, nutritional habits, and health anxiety in women. With the rising popularity of wellness influencers and dietary trends, concerns regarding the impact of this content on women's nutritional choices and mental health have grown. Specifically, this research examines how social media platforms contribute to changes in diet and the development of health anxiety, a condition characterized by excessive worry about health and illness. **Materials & Methods:** A cross-sectional study was conducted with 300 female participants aged 18-45, recruited through online platforms. The

participants completed an online survey that assessed their social media usage patterns, including the type of content consumed (nutrition, fitness, wellness), changes in nutritional behaviour, and health anxiety levels using the validated Health Anxiety Inventory (HAI). The survey also included questions about body image satisfaction, the frequency of diet changes influenced by social media, and engagement with wellness influencers. **Results:** Preliminary results show a significant correlation between high social media engagement and increased health anxiety in women, particularly among those who follow wellness and fitness influencers. Women exposed to frequent diet-related content reported more frequent dietary changes, including adopting restrictive diets and experimenting with supplements. These participants also displayed higher levels of health anxiety, manifesting as concerns over their dietary choices, fear of illness, and obsessive health monitoring behaviours. However, some participants reported positive outcomes, such as increased health consciousness and healthier food choices. **Conclusion:** This study highlights the dual impact of social media on nutritional habits and mental health, suggesting the need for media literacy and mental health interventions to help women navigate the overwhelming wellness content. The findings contribute to the growing body of research on social media's influence on health behaviours and call for further exploration of strategies to mitigate the negative impacts of social media on health anxiety.

Keywords: Social media, Health anxiety, Nutritional habits, Women, Wellness influencers, Body image

Abstract ID: 123

ABSTRACT TITLE: ASSOCIATION OF DIETARY DIVERSITY WITH ANEMIA AND IRON STATUS AMONG SCHOOL-GOING ADOLESCENT GIRLS OF AGE GROUP 13-18YEARS

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Background: India has one of the largest anemia burdens in the world and has been reported that anemia rates are rising in all demographic categories. Iron deficiency is a significant cause of anemia among adolescent girls while other factors also play a role. One of the crucial strategies to manage anemia and iron deficiency is diversifying the diet. The purpose of this study was to investigate the dietary diversity and its relationship with anemia and iron status among school going adolescent girls.

Materials & Methods: This cross-sectional study was conducted in a private school in Navi Mumbai. About 100 adolescent girls of age group 13-18years were randomly selected and included in the study after obtaining informed consent. Investigator administered semi-structured questionnaire was used to collect sociodemographic profile and menstrual cycle details. Anthropometric parameters were measured through standardized methods. Haemoglobin and Ferritin were estimated through

standardized methods. The 24-hour dietary recall data was used to obtain the Dietary Diversity Score (DDS). The diet quality was assessed by Women's Dietary Diversity Score (WDDS) the global indicator given by FAO. SPSS software was used to perform logistic regression analysis to examine the associations of dietary diversity with anemia and iron status. **Results:** Of the 100 participants 15% belonged to lower middle-class and 85% were from upper lower economic status. About 57% of the participants were non-anemic and 43% were anemic and mean hemoglobin level was 11.92 ± 1.39 . Fifty nine percent of the participants had iron deficiency with mean ferritin level 17.07 ± 14.99 . Mean DDS was 4.07 ± 1.19 . The dietary diversity score was not associated with sociodemographic factors and iron status of the adolescent girls. A $DDS \geq 5$ was associated with lower odds of being anemic ($p=0.026$ and OR of 0.267 at 95% Confidence Interval). **Conclusion:** The study results prove that improving the dietary diversity can be helpful in preventing anemia. Thus, public health initiatives and nutrition programs stringently focusing on promoting dietary diversification can help in preventing and controlling anemia in the adolescent age group.

Keywords: Anemia, Iron Deficiency, Diet diversity score, Adolescent girls

Abstract ID: 126

ABSTRACT TITLE: THE SILENT EPIDEMIC: NUTRITIONAL INTERVENTIONS FOR ANEMIA IN MODERN DIETS

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Background: A "silent epidemic," anemia affects more than 25% of the world's population and has a major negative influence on health and wellbeing. Iron-deficiency anemia, the most prevalent kind, is caused by a diet low in iron, vitamin B12, and folate, among other necessary elements. This problem is made worse by modern dietary habits, which are marked by a high intake of processed meals and a low intake of nutrient-rich foods. This article examines the connection between anemia and nutrition, highlighting the need of dietary changes for both management and prevention. **Materials & Methods:** In order to identify the key nutrients associated with anemia, this study conducted a thorough literature review of previous research on the topic. Data from peer-reviewed journals and health organizations were analyzed, and the review focused on the following areas: nutritional analysis (looking at sources of iron, vitamin B12, and folate in modern diets); dietary patterns (evaluating common dietary practices and their implications for nutrient deficiencies); at-risk populations (identifying those who are particularly susceptible to anemia, such as pregnant women and vegetarians); and practical dietary recommendations. **Results:** Major findings show that a large fraction of the population, particularly in low-income areas, shows inadequate intake of iron and other essential nutrients. High processed food consumption is associated with lower nutrient density in diets, which contributes to the rise in cases of anemia. Strategies like pairing foods high in vitamin C with iron sources greatly improve absorption, but

many people are not aware of these practices. Furthermore, pregnant women and vegetarians have special nutritional needs that must be met, emphasizing the need for specialized dietary interventions. **Conclusion:** Anemia is a serious worldwide health concern that has to be addressed immediately. Encouraging people to know about nutrient-dense foods and practical eating habits will enable them to make wise decisions.

Keywords: Anemia, Dietary changes, Iron

Abstract ID: 136

ABSTRACT TITLE: AWARENESS AND PRACTICES OF BENEFICIARIES OF UMBRELLA ICDS REGARDING BREASTFEEDING AND COMPLEMENTARY FEEDING: A STUDY ON MOTHERS WITH CHILDREN BELOW THREE YEARS

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Background: Breastfeeding and complementary feeding play crucial roles in child nutrition and development, particularly during the early years of life. Adequate knowledge and practices in these areas are vital to prevent malnutrition and promote optimal child growth. This study aimed to assess the awareness and practices of mothers regarding breastfeeding and complementary feeding, focusing on two groups: mothers with children below six months and those with children between six months and three years. The primary objective of this study was to evaluate mothers' awareness and practices related to breastfeeding initiation, exclusive breastfeeding, and the introduction of complementary feeding. The study also sought to identify gaps in knowledge and areas for improvement in maternal education related to these practices. **Materials & Methods:** A cross-sectional survey was conducted among 150 mothers with children under three years of age from all 9 districts of Delhi attending Umbrella ICDS. Data were collected through structured interviews schedule cum questionnaire focused on breastfeeding initiation, exclusive breastfeeding, pre-lacteal feeding, and complementary feeding practices. The sample comprised two groups: mothers with children below six months and mothers with children between six months and three years. The responses were analyzed to assess awareness and practices. **Results:** The findings revealed that 83.0% of mothers with children below six months initiated breastfeeding within one hour after birth, reflecting good adherence to early breastfeeding practices. Among mothers with children between six months and three years, 91.0% were aware of exclusive breastfeeding for the first six months. However, certain practices showed room for improvement: 26.0% of mothers reported giving pre-lacteal feeds, and only 46.0% breastfed their children eight times or more. Night feeding was common, with 94.0% reporting feeding at night. Complementary feeding was initiated by 69.0% of mothers after six months. **Conclusion:** While awareness of key breastfeeding practices was generally high, gaps in adopting recommended practices suggest a need for enhanced

educational efforts. Strengthening maternal knowledge on breastfeeding frequency and timely complementary feeding could improve child health outcomes.

Keywords: Breastfeeding, Complementary feeding, Child nutrition, Maternal awareness, ICDS (Integrated Child Development Services), Exclusive breastfeeding, Pre-lacteal feeding, Breastfeeding initiation, Maternal education, Malnutrition prevention, Child development, Cross-sectional survey, Early breastfeeding practices, Child health outcomes, Beneficiaries, Feeding frequency, Awareness gaps

Abstract ID: 140

ABSTRACT TITLE: STUDY ON EATING DISORDER AMONGST COLLEGE GOING STUDENTS

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Background: Eating disorders have various physical and mental effects on an individual. They tend to lose control over eating or they might skip meals to reduce their weight which might take a toll on their health. It may also lead to anxiety, depression, or lethargy which may lead to decline in academic performance. The objective of the study was to study the prevalence of eating disorders among college going students. **Materials & Methods:** This cross-sectional study was conducted amongst 300 students between age group of 17 - 25 years studying at MGM School of Biomedical Science, Navi Mumbai. Their demographic information was taken by personal interview using pre-validated questionnaire. Their socio-economic status was assessed by Kuppuswamy socio-economic scale (2021). Eating disorder questions were asked through standard questionnaire (EDE-Q - 2008 Christopher G Fairburn and Sarah Beglin). Anthropometric measurements such as height and weight were measured from which BMI was calculated. 24 Hour Dietary Recall was taken through personal interview after which their nutrient intake was calculated. Food frequency table was also included. Data was analyze using SPSS software (28 version). **Results:** In the study, mean BMI was 24.84 ± 2.81 . Most of the students (46.3%) were normal on basis of BMI followed by 37.4% who were overweight. Majority 54.3% students were vegetarians. Majority 62% students were from upper socio-economic status. There are four subscale of EDE-Q that are restraint, eating concern, weight and shape subscale. The means value of four subscale were 0.81 ± 0.42 in boys and 0.730 ± 0.36 in girls, 0.72 ± 0.33 in boys and 0.73 ± 0.32 in girls, 0.8 ± 0.43 in boys and 0.79 ± 0.39 in girls, 0.75 ± 0.34 in boys and 0.77 ± 0.32 in girls respectively. The overall mean scale was 0.77 ± 0.25 in boys and 0.75 ± 0.22 in girls. As observed in the study, the results indicate that there was significant negative correlation between eating disorder and BMI ($p < 0.05$). **Conclusion:** The eating disorder affects the BMI; In the present study eating disorder lead to low BMI. Eating disorders lead to malnutrition in the students, hence can discuss with the college going students by different intervention programs.

Keywords: Eating disorder, Restraint, Eating concern, Weight, Shape, BMI, GPA

Abstract ID: 141

ABSTRACT TITLE: ASSOCIATION BETWEEN DIETARY IRON INTAKE AND NUTRITIONAL STATUS OF WOMEN OF REPRODUCTIVE AGE

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Background: Anemia results from a lack of red blood cells or dysfunctional red blood cells in the body. Among women, iron deficiency anaemia is also associated with adverse reproductive outcomes such as low-birth-weight infants, and They decreased iron store , females with iron-deficiency anemia also have amenorrhea. **Materials & Methods:** Sample of 100 reproductive age women belongs to lower socioeconomic status were selected purposively from the general medicine ward OPD MGM Hospital, Kamothe, Navi Mumbai. A structured questionnaire was used to collect the general profile of the participants. The height, weight, waist and hip circumference were measured by standardized methods and BMI was calculated and compared by the WHO standards (2004). The haemoglobin level of the participants were recorded through their latest CBC report. Participants were classified by grading of anaemic as per WHO (2011) cut offs. A food frequency questionnaire and 24 hours diet recall for 3 days (including one weakened) were taken in order to determine the dietary pattern and dietary iron intake of the participants. The nutrient intake was calculated through Diet Cal software. **Results:** The results revealed that 34% of the women were suffering from mild or moderate form of anemia. As per the food frequency table and mean nutrient intake of the participants. Dietary assessment of reproductive age women RDA% Energy -55. 6% , Dietary iron (mg)- 18. 1% vitamin C – 37.9% these were on the lower sides The significant positive correlation was found between haemoglobin and dietary iron, vitamin C, zinc, calcium, folic acid and fibre at ($p \leq 0.01$) level whereas, for protein it was significant at ($p \leq 0.05$) level. Hence, there is a need to give knowledge about the inclusion of iron rich food stuffs in daily diet to improve the haemoglobin status. **Conclusion:** In this study dietary iron was on lower side among all the women of reproductive age. It was affecting hemoglobin level hence there is need to plan an effective nutrition intervention program to improvise their hemoglobin status

Keywords: Iron, Hemoglobin, Amenorrhea, Anemia

Abstract ID: 145

ABSTRACT TITLE: DIETARY DIVERSITY AND ITS ASSOCIATION WITH NUTRITIONAL STATUS AMONG INFANTS OF A RURAL SOUTH INDIAN POPULATION

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Background: Infancy marks a crucial period of rapid growth and development, where adequate nutrition plays an essential role. Infant and young child feeding(IYCF) indicators emphasized by WHO-UNICEF help in achieving optimal complementary feeding for promoting growth and long-term well-being. However, in low-middle-income countries, poor dietary practices including low dietary diversity remain common, contributing to linear growth faltering. Karnataka's National Family Health Survey-5 found that only 21% of infants(6-8months) met their minimum dietary diversity(MDD), 33.3percent met minimum meal frequency(MMF) and 8.2percent had a minimum acceptable diet(MAD). In this study, we aimed to test the association of IYCF indicators with growth parameters and body composition of infants registered as Anganwadi beneficiaries from Chitradurga, Karnataka. **Methods & Materials:** A cross-sectional analysis was conducted among rural Anganwadi beneficiaries aged 6-9 months in two talukas of Chitradurga district. The following data were collected: socio-demographics, IYCF practices(using questionnaire adapted from WHO-UNICEF IYCF indicators), anthropometry(length, weight, mid-upper-arm-circumference and head-circumference). Length-for-age(LAZ), weight-for-age(WAZ) and weight-for-length(WLZ)z-scores were computed using WHO Anthro software. Saliva samples were collected to assess body composition using deuterium dilution technique. Descriptive statistics were used to summarize data, Spearman's correlation to assess associations, followed by linear regression analysis. **Results:** A total of 133 infants(7.8 ± 0.5 months old) were included. Prevalence of stunting, wasting, underweight were 19.4percent, 5.3percent and 16.5percent, respectively. Mean fat-free mass(FFM),fat mass and fat percent were 5.8 ± 0.6 kg, 1.6 ± 0.7 kg and 21.4 ± 7.5 percent respectively. All infants were breastfed, with complementary food initiated at a mean age of 6.4 ± 1.0 months. The mean dietary diversity score(DDS) was 2.5. Commonly consumed food groups were breastmilk-100%, cereals, roots, tubers-97%, and other fruits and vegetables-25%. The percentage of infants meeting MDD, MMF and MAD were 4%, 86% and 4%, respectively. DDS was positively correlated with LAZ($\rho=0.2$, p-value=0.037), FFM(kg)($\rho=0.25$, p-value=0.027) but not with FFMpercent($\rho=-0.009$, p-value=0.939). In linear regression, association between DDS and FFM(kg) remained significant(p-value=0.027) after adjusting for sex and age. **Conclusion:** DDS showed significant positive association with LAZ but no association with FFMpercent, suggesting that a diverse diet would enhance linear growth. Efforts are needed to educate caregivers on IYCF and implement interventions during complementary feeding.

Keywords: Dietary diversity, Body composition, IYCF, Anthropometry, Anganwadi beneficiaries

Abstract ID: 149

ABSTRACT TITLE: PREVALENCE OF NUTRITIONAL DEFICIENCIES AMONG ADOLESCENT GIRLS IN EAST KHASI HILLS OF MEGHALAYA

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Background: In Meghalaya, tribal adolescent girls suffer from high nutritional deficits due to continuous neglect. The data obtained will facilitate the targeting of public health initiatives towards the at-risk population. **Methods & Materials:** The objective of the study aimed to assess the body weight, height, and clinical symptoms of girls aged 13 to 18 years in the East Khasi Hills of Meghalaya, using nutritional anthropometry and clinical examination protocols. Two stages of sampling were used in this cross-sectional study. Stage 1 involved cluster sampling to identify eight clusters in the four tehsils of the district east Khasi hills, Meghalaya. In the second stage, 476 adolescent girls were screened from 13 schools using simple random sampling within each cluster. After obtaining permission from schools and consent from parents, anthropometric measurements were recorded using calibrated equipment. Using WHO evaluation protocol, the adolescent girls were clinically examined by a trained clinician, from head to toe. SPSS 25 was used to analyse the data. **Results:** The average age of the participants was 16.58 ± 1.53 years. Body weight was significantly below the corresponding WHO South Asian-Pacific (BMI) standard values, with 20.5% having an average BMI of 17.68; 72% were within the normal range (18.5 to 22.9 kg/m²); (6.09%) were overweight (23-24.9kg/m²), whereas 1.26% were obese (≥ 25 kg/m²). Results of the prevalence study showed that 35.5% of adolescent girls had Iron Deficiency Anaemia (IDA) which is a problem of moderate public health significance, according to WHO cut off levels (of 20.0 – 39.9 %); 19.6% had vitamin C deficiency which according to WHO cut off levels of (10-29%) indicates that it is a problem of mild public health significance; 5% had VAD which is a mild public health problem according to WHO (cut off of 2-9%); 33.3% had Vitamin D deficiency. **Conclusion:** The high prevalence of nutritional deficiencies among adolescent girls highlights a significant public health concern. There's a need for targeted micronutrient interventions to address the deficiencies and improve overall nutritional status.

Keywords: Adolescent girls, Nutritional status, Clinical examination, Anthropometric measurements, Meghalaya

Abstract ID: 153

ABSTRACT TITLE: RELATIONSHIP BETWEEN PERCEIVED STRESS LEVEL AND NUTRITIONAL STATUS OF FEMALE DOMESTIC WORKERS

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Background: Domestic workers often face significant stress due to demanding work conditions, low wages, job insecurity, and lack of social support. This perceived stress refers to the individual's subjective experience of stress related to these factors. The study aimed to determine how perceived stress impacts the nutritional status of female domestic workers, considering the potential for stress to influence dietary habits, nutrient intake, and overall health. **Materials & Methods:** A sample of 210

female domestic workers was selected purposively. The perceived stress scale (PSS-10) was used to assess stress levels. Anthropometric measurements, including height, weight, and BMI, were recorded using standardized methods. Nutrient status was assessed using 24-hour diet recall for three days, including weekends, and a food frequency questionnaire. Nutrient intake was calculated through Diet Cal software. Data analysis involved one-way ANOVA, F-tests, and correlation analysis using IBM SPSS software. **Results:** The age-wise distribution of female domestic workers showed that the majority (38.09%) were in the age group of 35-40 years, followed by 28.57% in the 30-35 age group. Regarding body mass index (BMI), 64.28% of female domestic workers fell within the normal range, 30.47% were overweight, and 5.2% were obese. In terms of perceived stress, 97.61% experienced moderate stress, while only 2.38% experienced low stress. An insignificant difference in stress levels was noted across all age groups. The data suggests that the majority of female domestic workers, regardless of age, have moderate perceived stress levels. A positive correlation was found between weight and perceived stress in the 45-50 age group. Additionally, a positive correlation was observed between fat intake and stress levels in the 40-45 age group. **Conclusion:** There is a need for nutrition intervention programs and educational initiatives to improve the health of female domestic workers and help them cope with stress.

Keywords: Domestic workers, Perceived stress, Nutritional status, Dietary habits

Abstract ID: 155

ABSTRACT TITLE: FOOD INSECURITY AMONG COLLEGE STUDENTS

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Background: The purpose of this study was aimed to assess the prevalence of food insecurity (FI) among college students in India and to examine its association with mental and psychosocial health indicators. Food insecurity, defined as insufficient access to safe and nutritious food, has been linked to adverse mental health outcomes. As young adults navigate academic, financial, and social challenges, the impact of food insecurity on their well-being remains underexplored, particularly in low- and middle-income countries like India. **Materials & Methods:** A cross-sectional online survey was conducted among college students from various universities in India in September 2024. The total of 131 students participated in the survey. Food insecurity was assessed using the validated eight-item Food Insecurity Experience Scale. Mental health indicators such as depression, anxiety, and well-being were measured using the Patient Health Questionnaire (PHQ-9), the Generalized Anxiety Disorder-7 (GAD-7), and the WHO-5 Well-Being Index. **Results:** Among the 131 students who completed the survey, approximately 74.8 % of students in the sample were experiencing food insecurity of which 42,

22.1, and 10.7 % were experiencing mild, moderate and severe food insecurity, respectively. In addition, 10.6 and 6.8 % of students showed severe symptoms of depression and anxiety, respectively. **Conclusion:** In conclusion, a remarkable proportion of college students reported experiencing different forms of food insecurity, which was associated with deteriorated mental health and well-being. Targeted public health interventions are urgently needed to alleviate food insecurity and improve mental health outcomes in this population.

Keywords: College students, Food insecurity, Mental health

Abstract ID: 164

ABSTRACT TITLE: MODERATE TO VIGOROUS PHYSICAL ACTIVITY, ASSOCIATION WITH CARDIOMETABOLIC RISK FACTORS, AND THE BARRIERS TO PHYSICAL ACTIVITY IN INDIAN CHILDREN AGED 6-19 YEARS

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Background: Childhood obesity and metabolic disorders are rising rapidly in India. The World Health Organization recommends 60 minutes of moderate to vigorous physical activity (MVPA) daily for children. However, <38% of Indian children currently meet this recommendation. This study aimed to determine the duration of MVPA, examine its association with cardiometabolic risk factors, and identify the barriers to physical activity in Indian children aged 6-19 years. **Methods & Materials:** Data on sociodemographic, physical activity patterns, diet and barriers to physical activity were collected using questionnaires from children in Bengaluru between 2016-2018. Anthropometry, blood pressure, glycated haemoglobin (HbA1C), lipid profile, and body composition (using Air Displacement Plethysmography) were assessed following standard protocols. The frequency and duration of games played on both weekdays and weekends, along with sedentary activities, were recorded. Children were categorised into three groups: (1)No MVPA, (2)<60 minutes of MVPA, and (3)>60 minutes of MVPA. Statistical analyses included Chi-square tests, ANOVA, ANCOVA, and multinomial regression. Odds ratios with 95% confidence intervals were reported, with statistical significance set at $p \leq 0.05$. **Results:** The mean age of the children ($n=4004$) was 13.1 ± 2.5 years, 44.2% were males and 17.8% were overweight or obese. Females had significantly higher body fat percentages ($p \leq 0.001$). The mean MVPA duration was 29.6 ± 44.8 minutes/day, with males engaging in more physical activity ($p \leq 0.001$). About 81.2% of the children did not meet the recommended MVPA duration: 40.9% participated <60 minutes of MVPA/day, while 40.3% did not engage in any MVPA. Age-adjusted analysis showed that children who did not engage in MVPA were older, had higher body weight, total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), and diastolic blood pressure (DBP) compared to children who engaged in MVPA ($p \leq 0.01$). Barriers to MVPA included limited time due to

academics, lack of friends, space to play and, lack of interest in physical activity. **Conclusion:** Indian children, particularly females, failed to meet MVPA guidelines. Innovative strategies involving multiple stake holders such as schools, parents, community leaders and policymakers, are needed to create sustainable strategies to promote physical activity.

Keywords: Physical activity, Cardiometabolic risk factors

Abstract ID: 165

ABSTRACT TITLE: EVALUATION OF COMMUNITY-BASED MANAGEMENT OF MODERATELY ACUTE MALNOURISHED CHILDREN, THROUGH EDUCATION AND NUTRITION INTERVENTION IN THE VALSAD DISTRICT OF GUJARAT

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Background: India bears a significant burden of under-5 malnutrition, with 35.5% of children experiencing stunting, 19.3% facing wasting, and 32.1% being underweight. While the policies and guidelines overemphasize severe acute malnutrition (SAM) management, considering its mortality risk, moderately acute malnutrition (MAM) gained little focus for its identification and early management. Hence, our present study aimed to evaluate the effectiveness of community-based management strategies in mitigating moderately acute malnutrition rates among children under five years old in the Valsad block of Gujarat. **Materials & Methods:** It was a longitudinal study conducted across 63 villages. Out of 2649 children screened for acute malnutrition, 316 were MAM, and 22 were SAM. The baseline data collection included structured quantitative questions on sociodemographic, nutritional, and immunization status, as well as 24-hour dietary intake. The malnourished children were followed for six months with nutritional education intervention, anthropometric assessment, and food supplementation to MAM only. SAM children were referred for further management. The supplementary food included millet-based, nutrient-dense cookies, khichdi, and bars. The food acceptability of the items was performed beforehand. At the endline, focus discussions and interviews were also conducted with mothers. **Results:** The success rate was around 80% in 6 months. There was a 5% increase in dietary diversity from baseline. Mothers observed positive changes in their children's behavior, increased appetite, and activity levels. Children showed increased demand for food at home. There was a significant increase in awareness and knowledge among mothers regarding their child's immunization status from baseline to the endline. Cereals and millet like wheat, rice, jowar, bajra, and nagli were consumed in various forms in the community. **Conclusion:** The community-based strategies implemented in the project Balposhan have effectively reduced malnutrition rates among children under

five years in the Valsad block. Catching malnourished children early during the moderately acute stage may limit the progression to the severe stage.

Keywords: Malnutrition management, Millet nutrition intervention, Nutrition education, Under-5 children

Abstract ID: 166

ABSTRACT TITLE: NUTRITIONAL INTAKE AMONG OVERWEIGHT AND OBESE ADOLESCENTS IN AN URBAN AREA IN KERALA: A PRELIMINARY REPORT

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Background: Obesity is a global pandemic which is a rising health concern. According to a recent meta-analysis, the pooled prevalence of childhood obesity (aged 3 to 18 years) is 8.4% and that of overweight is 12.4% in India. Obesity is linked to numerous lifestyle disorders, including diabetes, hypertension, and chronic liver disease. There is a scarcity of studies examining the nutritional intake of this population. **Materials & Methods:** A screening camp was conducted at a school for children aged 13 to 18 years. A total of 100 participants were assessed, consisting of 45 with a normal BMI and 55 who were overweight or obese. We conducted anthropometric measurements, including height, weight, and body mass index (BMI). Dietary intake was analyzed using a two-day 24-hour dietary recall method (one weekday and one weekend day). Participants were categorized into two groups—normal BMI and overweight/obese—based on the revised growth charts from the Indian Academy of Pediatrics, with obesity defined as a BMI above the 95th percentile and overweight as above the 85th percentile. Statistical analysis was carried out using an independent t-test, applying Welch's test in cases of unequal variances. **Results:** Our findings indicate that adolescents classified as overweight or obese exhibited a significantly higher intake of total fats as compared to their normal weight counterparts (62.47 ± 33.53 g vs. 48.12 ± 23.76 g, $p = 0.006$). Saturated fat intake was significantly greater in the overweight/obese group (20491.63 ± 4788.49 mg vs. 10779.52 ± 6718.58 mg, $p < 0.001$). Protein consumption was significantly higher among overweight/obese adolescents (50.16 ± 35.00 g vs. 38.44 ± 13.60 g, $p = 0.025$), with meat products being the primary source of protein in this group. Although total energy intake was higher in the overweight/obese group, this difference did not reach statistical significance. **Conclusion:** Overweight/obese adolescents have a significantly higher intakes of fats, especially saturated fatty acids. These findings highlight the need for targeted nutritional interventions and public health strategies to address obesity in this population.

Keywords: Obesity, Overweight, School health, Nutrition, Public health, Saturated fats.

Abstract ID: 169

ABSTRACT TITLE: BODY COMPOSITION AND NUTRITIONAL ADEQUACY OF HEMODIALYSIS PATIENTS

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Background: The prevalence of chronic kidney disease is gradually increasing. The present study assesses and associates the dietary pattern, nutritional status, body composition, and biochemical parameters of patients with chronic kidney disease undergoing maintenance hemodialysis. **Materials & Methods:** A prospective observational was conducted on 70 patients undergoing hemodialysis maintenance. The questionnaire included a general profile, anthropometric measurements, 24-hour diet recall, Socioeconomic status, body composition, and biochemical parameters collected from the Dialysis unit of MGM Hospital, Kamothe, Navi Mumbai. **Results:** The results showed that a maximum number of patients suffered from hypertension 62(88.5%) and 39 (55.7%). Among the study participants, 27.1% of the subjects had chronic energy deficiency and 15.7% of the subjects were overweight. The body composition of hemodialysis patients showed a highly significant difference in the Fat and Lean mass percentages ($p \leq 0.01^{**}$) of male and female patients. **Conclusion:** Poor choices of food products and lack of nutritional intake were found commonly among the subjects. Physical activity was also found low in the patients. The study also found associations between dietary intake, body composition, and biochemical parameters of the subjects. More research is needed to determine optimal dietary patterns for preventing and/or managing patients with renal failure.

Keywords: Hemodialysis, Dietary pattern, Body composition, Nutritional status, Hypertension, Body composition, Body mass index

Abstract ID: 172

ABSTRACT TITLE: EVALUATING WAIST-TO-HEIGHT RATIO AS A PREDICTOR OF OBESITY IN CHILDREN AGED 5-10 YEARS

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Background: Childhood obesity is a growing public health concern globally as well as in India with obesity prevalence at 8.4% and overweight prevalence at 12.4%. Traditional methods of assessing obesity are BMI percentile for children. However, this method has potential limitations. This study evaluates the Waist to Height Ratio (WHtR) as the potential predictor of childhood obesity in 5-10-year-old children in Maharashtra. **Materials & Methods:** A total of 210 children (119 boys, 91 girls) from

upper and upper-middle-class socioeconomic backgrounds were assessed using the revised Kuppaswamy scale for socioeconomic status (SES). Parents completed the questionnaires after giving consent. The forms included anthropometric data like height, weight, birth weight, and waist circumference to calculate BMI percentile and WHtR. The form further also included other sections like food frequency, physical activity, stool pattern, sleep, and deworming of the child. BMI percentiles were determined using WHO Anthroplus software and results were compared with WHO BMI percentile cutoffs and Waist-to-Height Ratio (WHtR) calculated from waist divided by height measurements. Data analysis involved multiple regression models used to measure the relationship between the WHtR and obesity. **Results:** The BMI percentile analysis revealed that 9% children were classified as obese, 10% as overweight, 48.1% children had normal weight, and 22.9% as underweight. The p-value came to 0.049. On the contrary, the Waist-to-Height-Ratio (WHtR) indicated that around 93 children had a WHtR greater than 0.5 and while 117 children had a WHtR below 0.5. This implies that 44.2% of the children had a high WHtR while 55.7% had a WHtR below 0.5. The p-value for this was coming to 1.72E-58, which indicated a strong statistical significance. **Conclusion:** This study highlights the limitation of BMI percentile as an indicator for assessment of childhood obesity while demonstrating that WHtR is a more accurate indicator as it is correlated better with health outcomes. With 44.2% of children showing high WHtR, interventions targeting waist circumference may be crucial for combating childhood obesity in Maharashtra.

Keywords: Waist-to-Height ratio(WHtR), BMI percentile, Childhood obesity

Abstract ID: 175

ABSTRACT TITLE: ASSOCIATION OF MICRONUTRIENT RELATED KNOWLEDGE, ATTITUDE AND PRACTICES WITH DIETARY DIVERSITY SCORES AMONG SCHOOL GOING ADOLESCENT GIRLS

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Background: Adolescent represent a high priority lifecycle stage for dietary needs and intervention. Nutritional deficiency, including micronutrients, hinders their normal growth and development. Lack of knowledge and awareness is one of major reason of malnutrition. Assessment of knowledge, attitude and practices can be utilized in developing nutrition education intervention programs to improve the micronutrient status of the target population. The objective of this study was to assess the association between micronutrient related knowledge, attitude, practices (KAP) with Dietary Diversity Scores (DDS) among school going adolescent girls. **Materials & Methods:** This was cross sectional study conducted on 181 adolescent girls (13-18 years) studying in private school at Nerul, Navi Mumbai. A structured questionnaire was used to collect sociodemographic profile of the participants. Anthropometric measurements were taken by standardised method. Dietary Diversity Score was assessed by taking

their diet history through 24-hour recall and scores were assigned as per FAO guidelines. Pre validated questionnaire was used to assess KAP towards micronutrients. Chi-square, Independent t test, Pearson correlation tests were used to find the association between independent factors with DDS. Further, multiple regression analysis was used to confirm the association between KAP scores with DDS. **Results:** This was cross sectional study conducted on 181 adolescent girls (13-18 years) studying in private school at Nerul, Navi Mumbai. A structured questionnaire was used to collect sociodemographic profile of the participants. Anthropometric measurements were taken by standardised method. Dietary Diversity Score was assessed by taking their diet history through 24-hour recall and scores were assigned as per FAO guidelines. Pre validated questionnaire was used to assess KAP towards micronutrients. Chi-square, Independent t test, Pearson correlation tests were used to find the association between independent factors with DDS. Further, multiple regression analysis was used to confirm the association between KAP scores with DDS. **Conclusion:** The higher KAP scores indicated more knowledge regarding micronutrients, positive attitude, having good practices among adolescents. Individuals with high KAP scores had good diet quality. Thus, the study advocates the nutrition education intervention to enhance the knowledge about micronutrients.

Keywords: Micronutrient, Knowledge, attitude, practices, Adolescent girls, dietary diversity score

Abstract ID: 177

ABSTRACT TITLE: A STUDY ON ASSESSMENT OF NUTRITIONAL STATUS OF PRE-SCHOOL CHILDREN ATTENDING ANGANWADI CENTERS OF BAGHCHUNG BLOCK OF JORHAT DISTRICT, ASSAM

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Materials and Methods: The present study has been undertaken to assess the nutritional status of pre-school children attending Anganwadi centers of Baghchung block of Jorhat district, Assam. 200 children in the age group of 2-5 years were selected by random sampling method. **Results:** The results of the study revealed that the mean height of the 2-5 years children was significantly lower than the 95th centiles values of height (ICMR)($p>0.05$). The mean weight of the 2-5 years children was significantly lower than the 95th centile values of weight (ICMR)($p>0.05$). According to WHO (2007) Z-scores of height-for-age revealed that 75% of the 2-5 years children were in the normal range of nutritional status whereas 25% were stunted. While the nutritional status was assessed in terms of WHO (2007) Z-scores of weight-for-age, it was revealed that 70% of the 2-5 years children were in the normal range of nutritional status while 30% were underweight. **Conclusion:** The study revealed that there was prevalence of undernutrition among the target children. Nutrition intervention programmes should be carried out to create awareness on importance of balanced diet and adequate nutrition as well as the importance of growth assessment during the early childhood years to overcome the problem of childhood malnutrition.

Key words: Assessment, Nutritional status, pre-school children, Anganwadi centers

Abstract ID: 192

ABSTRACT TITLE: IMPORTANCE OF AGE-APPROPRIATE COMPLEMENTARY FEEDING TO COMBAT MALNUTRITION IN 6-24 MONTHS OF AGE CHILDREN

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Background: Long-term and exclusive breastfeeding is one of the most effective interventions to improve child health status and survival throughout the world. However, the complementary feeding period is also significant for a child's growth and development. So, this study was conducted to 1) determine the breastfeeding and complementary status 2) find out the prevalence of under-nutrition and 3) evaluate the association between complementary feeding practices and malnutrition status among the children. **Materials:** This is an observational cross-sectional study using a self-structured questionnaire containing anthropometric parameters and feeding practices. 420 children were selected from Gaighata block through simple random sampling method. YAMANE (1967) formula was used for the selection of the sample size. 30 anganwadi centers were visited for this survey. z-score of BMI was calculated using WHO ANTHRO software and z-BMI value < -2 were categorised as underweight. Minimum dietary diversity (MDD), minimum meal frequency (MMF) and minimum acceptable diet were observed for the evaluation of complementary feeding statuses. Statistical analysis was done using SPSS 23.0 (Statistical Package for the Social Sciences). Chi-square test was performed for the analysis of the data. p-value of < 0.05 was accepted as statistically significant. **Results:** Result: Though 52.62% of children were exclusively breastfed (EBF) and 47.38% of children were non-exclusively breastfed (NEBF) but 85% of children were continued their breastfeeding. The prevalence of under-nutrition was higher in NEBF children (4.52%) than in EBF children (4.07%). Significantly, a higher percentage of EBF children achieved MMF than NEBF children (p-value=0.04) who were continued their breastfeeding. Prevalence of under-nutrition was higher in NEBF group than BEF group among the children who had achieved all the complementary feeding practices (MDD, MMF, and MAD) and also continued the breastfeeding. **Conclusion:** Conclusion: This study infers that exclusively breastfeeding with proper complementary feeding practices may have a major positive health effect in combating malnutrition after the first six months of life.

Keywords Anthropometric status, Complementary feeding, Exclusive breastfeeding, Non-exclusive breastfeeding

Abstract ID: 193

ABSTRACT TITLE: DIETARY CALCIUM CONSUMPTION ON SCHOOL AGE CHILDREN: A CROSS-SECTIONAL STUDY

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Background: Childhood is a critical period to be consuming adequate amounts of calcium for bone health. The consequences of inadequate calcium consumption include reduced bone mass and increased possibility of rickets, a disease in which soft and weakened bones, fractures, bone and muscle pain, and bony deformities. In India, calcium intake among children is low with a high prevalence of inadequacy in calcium deficiency is also highly prevalent in India(59.9%). The purpose of the study was to assess the dietary calcium intake of the school going children. **Materials & Methods:** This study is a cross-sectional study, involving 200 participants, aged 8- 12 years old, from private primary and secondary school, located in Kurla, Mumbai. Sociodemographic data was collected using General profile questionnaire and Kuppuswamy socioeconomic status scale. Anthropometric assessment, 24-hour dietary recall and Food frequency questionnaire was used to assess nutritional status and dietary intake. The dietary assessment software Diet Cal was used to calculate calcium intake of each participant. SPSS software 18 (version 25) had been used for statistical analysis. **Results:** Out of all the participants 81 percent were underweight and remaining were overweight and obese. The mean dietary calcium intake of boys was 499 ± 164.8 mg/day, whereas for girls it was 483 ± 182 mg/day. The study population had inadequate calcium intakes, as the mean calcium of both the subjects was low from the recommended value. The most common food source that contributed to calcium intake of the study was milk. Distribution of nutritional status by mid upper arm circumference (MUAC); 59% subjects were under moderate acute malnutrition; 4% were under severe acute malnutrition while remaining were normal. No significant difference was seen in calcium intake between the genders. **Conclusion:** A study found that many children lack sufficient calcium in their diets, increasing the risk of calcium deficiencies in adulthood. Targeted strategies are needed to boost calcium intake, such as nutritional education and children's awareness to prevent related health issues in both childhood and adulthood.

Keywords: School going children, Calcium deficiency

Abstract ID: 195

**ABSTRACT TITLE: INVESTIGATING THE LINK BETWEEN, KAP, NUTRIENT INTAKES AND
MATERNAL AND INFANT HEALTH**

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Background: Poor nutrient intake, knowledge, attitudes, and practices-KAP regarding maternal nutrition during pregnancy might lead to adverse outcomes. Assessing nutrient intake in line with KAP is good tool to prevent adverse pregnancy outcomes. Therefore, this study aimed to longitudinally assess nutrient intake and KAP of Indian rural and urban pregnant mothers and to observe their association with GWG and infant anthropometry. **Materials:** Data were collected from 268 dyads of pregnant mothers and their infants enrolled in prospective longitudinal cohort-MAI(Mother and Infant) from August 2020-September 2023 in and around Pune, Maharashtra. Anthropometry of mothers and infants was measured while mothers were interviewed for nutrient intake and KAP regarding nutrition using standardized tools. Nutrient intake was compared with EAR (NIN, ICMR 2020). T-test and Pearson's correlation were used to derive results (SPSS v.27). $p < 0.05$ was considered statistically significant. **Results:** Rural mothers were younger (23.4 ± 3.7 vs. 30.9 ± 3.8 years), shorter (153.6 ± 5.6 vs. 155.9 ± 5.3 cm), and lighter (48.6 ± 10.1 vs. 61.8 ± 11.7 kg) as compared to urban counterparts. Pre-pregnancy BMI (20.5 ± 4.0 vs. 25.5 ± 4.7 kg/m²), GWG (9.9 ± 3.7 vs. 11.9 ± 4.5 kg), KAP scores ((20.2 ± 3.4 vs. 26.8 ± 3.6), knowledge: 5.5 ± 2.1 vs. 8 ± 2.4 , attitude: 3.7 ± 0.9 vs. 4.6 ± 0.7 , practice: 11 ± 2.0 vs. 14.2 ± 2.4) and infant weight (2.6 ± 0.4 vs. 2.8 ± 0.5 kg) and length (48.7 ± 2.6 vs. 49.4 ± 3.1 cm) of rural mothers was lower than urban mothers. None of the mothers consumed sufficient dietary protein, iron, folic acid, zinc, or calcium; the majority consumed excess dietary carbohydrates and fats throughout pregnancy. Dietary energy($r=0.305$), calcium ($r=0.173$), zinc($r=0.122$), beta-carotene($r=0.122$), iron($r=0.137$), KAP($r=0.238$) were correlated with pregnancy outcomes (GWG and infant anthropometry). A cyclical relationship was observed between the KAP and nutrient intakes($r=0.380$). Food taboos such as Jackfruit (14.6%), dark fruits and vegetables (40.1%), eggplant (38.6%), bananas (44.2%), papaya (67.3), and red chilies (15.8%) were avoided due to fear of spontaneous abortions. **Conclusion:** The dual burden of inadequate nutrient intake (macronutrient oversufficiency and micronutrient deficiency) and inappropriate KAP have been emphasized, which constitutes a significant risk factor for adverse pregnancy outcomes. Knowledge dissemination and behavior change communication strategies should be implemented to correct KAP, thus improving nutrient intake and avoiding adverse pregnancy outcomes.

Keywords: Nutrient intakes; Gestational weight gain; Maternal nutrition; Knowledge, attitude, practices; Infant anthropometry

Abstract ID: 198

ABSTRACT TITLE: ASSESSMENT OF THE OCCURRENCE OF MENSTRUAL PROBLEMS AND STRESS AMONG PCOS PATIENTS IN RELATION TO THEIR BODY WEIGHT STATUS

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Background: Polycystic Ovary Syndrome (PCOS) is a prevalent endocrine disorder affecting women of reproductive age, often leading to both physical and psychological challenges. This study aims to

evaluate the prevalence of menstrual irregularities and elevated stress levels among PCOS patients, while examining their potential correlation with body weight status. We hypothesize that patients who are overweight or obese are more likely to experience disruptions in their menstrual cycles and exhibit increased stress levels compared to those with normal weight. **Methods & Materials:** This cross-sectional study was conducted across three tertiary care hospitals in Indore, India, involving 50 women aged 18-45 years diagnosed with Polycystic Ovary Syndrome (PCOS). Participants were recruited from the Obstetrics & Gynaecology outpatient departments of these hospitals. Data collection involved a structured questionnaire capturing demographic information, anthropometric measurements, menstrual health, and perceived stress levels. Stress was assessed using the Depression, Anxiety, and Stress Scale (DASS-42). Appropriate statistical analyses were conducted to determine significant correlations between body weight, menstrual irregularities, and stress levels in the study population. **Results:** Results indicated that a substantial proportion of PCOS patients experienced moderate to high levels of stress. The study found that a majority of the participants were aged between 20-30 years, with a significant proportion being unmarried. Findings reveal a significant correlation between body weight status and the severity of menstrual problems, with overweight and obese patients reporting higher incidences of irregular cycles and dysmenorrhea. Additionally, stress levels were notably elevated in these groups, which indicates a potential interplay between body weight, hormonal dysregulation, and psychological well-being. A significant proportion of patients reported menstrual irregularities and obesity which had a relation with increased stress levels. **Conclusion:** This study demonstrates that overweight and obese PCOS patients are at higher risk of experiencing both menstrual irregularities and elevated stress levels, highlighting the interplay between body weight, hormonal imbalance, and mental health. Addressing weight management and stress reduction as part of the treatment plan for PCOS may improve both physical, psychological outcomes, ultimately enhancing overall patient care and quality of life.

Keywords: Polycystic Ovary Syndrome (PCOS), Body Mass Index (BMI), Stress, Obesity

Abstract ID: 205

ABSTRACT TITLE: HIGH-PROTEIN MILLET LADDOO: A NUTRIENT-RICH SOLUTION TO MALNUTRITION

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Background: Malnutrition among adolescents has emerged as a significant factor contributing to adult health issues. Urbanization has increased the consumption of more processed foods and adopted sedentary lifestyles, leading to a range of health problems. Many adolescents tend to choose fast foods that are high in calories, fat, and sodium while lacking vital nutrients like fiber, vitamins, calcium, and iron. Proper nutrition during adolescence is vital for supporting growth and preventing future health complications. During puberty, females specifically need iron-rich foods to compensate for menstrual

losses, while both genders require additional nutrients for their growth and development. This study addresses the urgent need for a product aimed at addressing malnutrition and raising awareness. **Materials:** The study involved the formulation of a nutritious product using millet, pulses, seeds and nuts and natural sweeteners. The product can serve as a premix for milk and laddoos. The market survey was conducted to identify existing products and to proposed a product differ in pricing and offer nutrient dense product compared to others. Three different combinations were prepared and evaluated through sensory analysis, focusing on attributes such as color, texture, taste, appearance, and overall acceptability using a 5-point Hedonic Scale. The analysis of participant responses revealed a mean score of 4.3 [EXPECTATION- 4.1] in sample 3 which exceeds the expectation among all the attributes. The product was evaluated for its nutritional composition and both proximal and microbial analysis were also conducted. **Results:** Sensory evaluation identified a Cardamon- flavoured laddoo as the best combination. The final product, rich in protein, calcium, and iron, offers a nutrient-dense, low-cost product for addressing both undernutrition and overnutrition. Its nutritional content per 100 grams includes 10.9 g of protein, 25.1 mg of calcium, and 4.30 mg of iron. **Conclusion:** The developed laddoo provides an accessible and economical solution to address malnutrition in adolescents, contributing positively to nutritional health. It provides a healthier and more cost-effective alternative than compared to product currently available in the market.

Keywords: Malnutrition, Millet, High protein laddoo, Adolescent, Product Development, Sensory Analysis

Abstract ID: 220

ABSTRACT TITLE: TO ASSESS THE RELATION OF DEPRESSION, ANXIETY AND STRESS AND FAST-FOOD INTAKE AMONG ADOLESCENCE PREPARING FOR ENTRANCE EXAMS

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Background: Intense academic pressure and unhealthy competition with repeated attempts for entrance in technical education is presently a common phenomena at the one end and gut – brain connection at the other end plays a vital role in altering food habits of the students so present study has aimed to find out prevalence of depression, anxiety and stress and dietary intake of commonly consumed fast food have been studied and assessed to know their link and extend. **Materials:** Hundred participants (50 JEE/NEET and 50 other exams) have been selected by random purposive sampling method from coaching institutes of JEE, NEET & other classes from Indore city and data was collected through food frequency questionnaire and DASS - 42 (Depression, anxiety and Stress Scale - 42) Collected data were statistically. **Results:** Obtained results shows that among 50 participants of JEE & NEET group 70% found normal (no depression), 19% found mildly, 7% moderately and 4% severely depressed. 44% normal (no anxiety), 7% mildly, 33% moderately and 7% severely anxious. 70% found normal (no stress), 19% mildly, 22% moderately and 7% severe stressed respectively. Among

participants of other exams 56% normal (no depression), 22% mildly, 7% moderately, 11% severely & 4% extreme sever depressed. 19% found normal (no anxiety), 7% mildly, 41% moderately, 7% Sever and 19% extremely sever anxious. 33% found normal (no stress), 30% mildly, 22% moderately, 11% severe and 4% extremely sever stressed respectively. With the occurrence of these mental health problems they were similarly found to consume fast foods in higher frequencies as 20 - 80% of students eat samosa, patties, cakes, pastries etc. sometimes while 4-15% students consume these fast food always. **Conclusion:** Present study supports the conclusion that consumption of fast food that are high in fat and sugar content and low nutritive value are associated with poorer mental health in students. Further studies utilizing a cross-sectional study are needed to better determine the directionality and effect of Depression, Anxiety and Stress on fast food consumption.

Keywords: Depression, Anxiety, Stress, Fast food

Abstract ID: 226

**ABSTRACT TITLE: THE INTERPLAY OF WEIGHT, EATING BEHAVIOUR, AND FOOD CHOICES
IN YOUNG ADULTS OF DELHI/NCR**

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Background: Eating behaviour is complex interplay of physiological, psychological, social, cultural, environmental, and economic factors that influence meal timing, quantity of food intake, and food preference. Individuals interact in a variety of micro-environments (e.g. schools, workplaces, homes, restaurants) which in turn are influenced by the macro-environments (e.g. food industry, government, society's attitudes and beliefs). Young adults starting independent life are particularly vulnerable to developing unhealthy eating behaviour, which can lead to eating disorders and/or becoming overweight. Many people use food as a coping mechanism to deal with such feelings as stress, boredom or anxiety, or even to prolong feelings of joy. Unhealthy diets are a key modifiable behavioural risk factor for non-communicable diseases. This study was conducted in Delhi/NCR on 150 Young adults of age 19-30years. Weight was estimated using "Tanita" digital scale and height using "Seca" stadiometer. To assess eating behaviour "Emotional eating questionnaire", "Self-regulatory eating behaviour questionnaire" and "Food choice questionnaire" were administered. **Methods & Materials:** This study was conducted in Delhi/NCR on 150 Young adults of age 19-30years. Weight was estimated using "Tanita" digital scale and height using "Seca" stadiometer. To assess eating behaviour "Emotional eating questionnaire", "Self-regulatory eating behaviour questionnaire" and "Food choice questionnaire" were administered. **Results:** Approximately half of the participants were classified as overweight or obese (50.66%, n=76). More than half of the participants (65.33%) identified as either emotional eaters or very emotional eaters, with about 30% (n=45) exhibiting low self-regulation in their eating behaviors. The Chi-square test of independence revealed a significant association between being obese and emotional eating ($p=0.039$). The participants' food choices were primarily influenced by factors

such as the “nutritional content” of foods, their “price,” “mood,” while “sensory appeal” and “ethical concerns” of food played a lesser role in their decisions. **Conclusion:** This study highlights the relation between weight categories and eating behaviour in young adults. The findings suggest the necessity for tailored interventions that incorporate psychological and emotional aspects of eating to effectively address unhealthy eating patterns and reduce the risk of non-communicable diseases.

Keywords: Eating behaviour, Obesity, Food choice, Emotional eating

Abstract ID: 228

ABSTRACT TITLE: EFFECTS OF SUNFLOWER OIL VS GROUNDNUT OIL CONSUMPTION ON GLYCAEMIC, LIPID PROFILES AND INFLAMMATORY MARKERS IN OVERWEIGHT AND OBESE ASIAN INDIAN ADULTS: A RANDOMIZED CONTROLLED TRIAL

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Background: Cooking oils are a key source of dietary fats and have a significant influence on metabolic health. Previous research comparing the effects of different oils has yielded conflicting results, particularly regarding glycemic control, lipid profiles, and inflammation. This study aimed to evaluate the comparative effects of sunflower oil and groundnut oil, the popular and traditional cooking oils on the above-mentioned metabolic risk factors among overweight /obese Asian Indian adults. **Methods & Materials:** A randomized controlled trial was conducted over a 12-week period with 120 Asian Indian adults (BMI ≥ 25 kg/m²). Participants were randomly assigned to consume either sunflower oil /groundnut oil as their primary cooking oil for 12 weeks. Fasting blood glucose, HbA1c, lipid profiles (total cholesterol, LDL-C, HDL-C, triglycerides), and inflammatory markers (adiponectin and interleukin-6) were measured at baseline and at the end of the 12 weeks using standard protocols. Insulin resistance was

measured using homeostasis assessment model-HOMA IR) using the formula $HOMAIR = \text{fasting insulin}(\mu\text{U/L}) / (\text{nmol/L}) / 22.5$. Statistical analysis was done using the SAS software. The difference between groups was tested using a general linear model. **Results:** The groundnut oil group demonstrated a significantly greater reduction in fasting blood glucose (Test Vs Control: (mean \pm SD)- 3.5 ± 8.6 vs 0.2 ± 7.9 ; $p=0.02$) and insulin resistance (HOMA-IR) (Test Vs Control: -0.3 ± 1.8 vs 0.3 ± 1.4 ; $p=0.02$) thereby indicating better blood glucose regulation. The groundnut oil group further exhibited a significant increase in HDL cholesterol by 5% compared to sunflower oil -0.7% (Test Vs Control: 4.7% Vs -0.7% ; $p=0.03$). Other lipid parameters, including total cholesterol, LDL-C, and triglycerides, showed no significant differences between the two groups. The inflammatory marker IL-6 ($p=0.002$) demonstrated a significant decrease within the groundnut oil group. However, no significant changes in pro-inflammatory markers adiponectin between the groups. **Conclusion:** The results indicate that groundnut oil may offer advantages over sunflower oil in terms of glycemic control and HDL cholesterol improvement in overweight and obese Asian Indian adults. However, further studies are needed to elucidate the mechanisms driving the potential role of groundnut oil's on glucose metabolism and cardiovascular protection.

Keywords: Sunflower oil, Groundnut oil, Glycemic control, Serum lipids, Inflammatory markers, Overweight, Obesity, Asian Indian adults, Randomized controlled trial.

Abstract ID: 230

ABSTRACT TITLE: EXPLORING THE INTERPLAY BETWEEN THE ADOLESCENTS' HOME FOOD ENVIRONMENT AND DIETARY CHOICES

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Background: Food choices are influenced by the food environment. This study aims to understand adolescents' perceptions of their home food environment and its relationship with their consumption of both nutritious foods and foods high in fat, salt, and sugar (HFSS). **Materials & Methods:** This cross-sectional observational study involved 632 adolescents aged 10-19 years from four private schools in Delhi, selected through purposive sampling. Participants completed a questionnaire in school, covering home food availability, accessibility, involvement in cooking, food liking, dietary habits, and self-reported intake. Data analysis was conducted using Chi-square/Fisher's exact test and linear regression analysis. **Results:** The study found that the frequent availability of unhealthy foods and beverages (more than three times a week) significantly increased their consumption among adolescents ($p<0.001$). However, no significant relationship was observed between availability of fruits and vegetables and their consumption. When fruits or vegetables were cut and made accessible by parents as snacks more than three times a week, consumption increased by 0.63 units ($p<0.001$). Adolescents who regularly assisted in food preparation at home (>3 times per week) showed a 0.37 unit increase in fruit and vegetable intake ($p<0.01$), but also a 0.29 unit increase in HFSS food and sugar sweetened beverages

(SSBs)consumption($p=0.011$). Furthermore, adolescents who ate breakfast more than three times a week consumed 0.28 units more fruits and vegetables ($p=0.019$). Conversely, eating in front of a screen more than three times a week reduced fruit and vegetable consumption by 0.27 units ($p=0.002$) but increased HFSS foods and SSBs consumption by 0.63 units ($p<0.001$). Regularly ordering fast food increased HFSS foods and SSBs consumption by 2.27 units ($p<0.001$), while eating out raised it by 1.98 units ($p<0.001$). Additionally, adolescents' liking for different HFSS foods and SSBs was significantly linked to higher consumption ($p<0.05$).. **Conclusion:** The findings suggest that intervention strategies should focus on promoting healthier food choices among adolescents by increasing the household availability and accessibility of nutritious foods while limiting the availability of unhealthy foods. Encouraging adolescents to participate in the preparation of healthy meals with parents may foster better dietary decisions.

Keywords: food environment, obesity, dietary behaviour, healthy eating, food choices

Abstract ID: 244

ABSTRACT TITLE: "COMPARATIVE STUDY ON NUTRITIONAL ASSESSMENT AND MENTAL HEALTH STATUS AMONG ADOLESCENT POPULATION FROM PRIVATE AND GOVERNMENT SCHOOLS"

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Background: Adolescence signifies a period characterized by significant developmental strides. The dietary requirements of juveniles and teenagers throughout this stage are recognized as pivotal elements that shape their physical advancement and impact their future health status. This stage is pivotal for the cultivation of social and emotional well-being. Various determinants influence mental health, encompassing stress, parental and societal expectations, media impact on body image perceptions, as well as the quality of familial relationships and friendships, authoritarian parenting styles, and socioeconomic challenges. **Methods & Materials:** Survey conducted within the community focused on adolescent students from both Government and Private schools, aged between 10-19 years, in Srinivaspur, Kolar District. This particular cross - sectional analysis aimed to evaluate the Nutritional and Mental Health statuses through the utilization of Anthropometric assessments, Dietary patterns, Food Frequency questionnaires. The assessment of Mental Health status involved the implementation of the DASS (Depression, Anxiety, and Stress Scale) questionnaire, with subsequent evaluation of the results. **Results:** The examination highlights significant differences in health and lifestyle factors between children enrolled in government and private educational institutions. Among male students aged 11-13 in government schools, growth criteria are typically met, whereas female students in the same age group often display inferior height and weight compared to those in private schools.

Nutritional deficiencies appear more prevalent in public school students, as indicated by lower skinfold thickness and higher rates of anemia. In contrast, private school pupils tend to exhibit more consistent eating habits, better sleep patterns, reduced stress levels, and fewer instances of depression. **Conclusion:** These results emphasize the necessity for specific interventions in government-run schools to tackle nutritional deficiencies, improve growth parameters, and promote positive mental health, with the goal of enhancing the overall well-being and academic performance of students.

Keywords: DASS, Adolescent, Nutritional status, Mental health, Dietary patterns.

Abstract ID: 246

**ABSTRACT TITLE: TO UNDERSTAND LIFESTYLE MODIFICATIONS AND DIETS OF
POPULATION 40 YEARS AND ABOVE**

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Background: Aging is a natural consequence of metabolic processes. As life expectancy increases, there may be a decline in the quality of life during the later years. While the biological changes that accompany aging are inevitable, lifestyle-related risk factors can be addressed to plan for healthier interventions. **Materials & Methods:** Approximately 4,000 individuals aged 40 to 70 years were interviewed using a house-to-house, computer-assisted questionnaire. The study focused on three key areas: (i) health, (ii) lifestyle, and (iii) food. Conducted across eight locations in India—Delhi, Mumbai, Lucknow, Bhopal, Kolkata, Bangalore, Chennai, and Trichy—the survey took place between January 2024 and March 2024. The male-to-female ratio was maintained at 1:1, with around 30% of participants allocated to each age group: 40-49 years, 50-59 years, and 60-70 years. **Results:** The data indicated that the primary factors affecting health were reduced energy, strength, and digestion. Key contributors to a lower quality of life included decreased employment, declining physical health, and financial dependence. In terms of diet, over 70% of respondents did not meet the recommended intake of at least two servings of fruits, vegetables, or legumes. Additionally, lower supplement consumption was observed. Other aspects, such as stress management, sleep, hydration, and physical activity, were also evaluated. **Conclusion:** The findings of this survey are expected to have significant implications for future interventions and initiatives aimed at the aging population.

Keywords: Ageing, Survey, Intervention

Abstract ID: 254

**ABSTRACT TITLE: ESTABLISHMENT OF NUTRITION GARDENS FOR ENHANCED DIETARY
DIVERSITY: A SUCCESSFUL CASE STUDY IN NATIVES OF MALDARE CLUSTER, KODAGU,
KARNATAKA**

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Background: Malnutrition and micronutrient deficiency are present day public health issues majorly due to lower consumption of protective foods such as vegetables and fruits. Nutrition garden is an effective strategy to address these issues by cultivating nutrient-dense crops. This study evaluated the impact of nutrition gardens on the dietary diversity score (DDS) of participants by encouraging regular consumption of home-grown produce. **Methods & Materials:** On- and off-campus training programmes by ICAR- Krishi Vigyan Kendra, Gonikoppal, Kodagu on importance of nutrition garden for balanced diet and healthy lifestyle were conducted for 50 tribal participants at Maldare cluster, Virajpet taluk, Kodagu. From this pool, ten participants interested in developing nutrition garden were identified. These participants living near forest fringes were provided with seeds, tools, and detailed training on establishing nutrition gardens. Data on types of vegetables grown, yield and income generated by selling surplus produce was collected through interviews, semi-structured questionnaire and field visits. Dietary information using 24-hour recall method was also collected at baseline and after the nutri-garden intervention, followed by measurement of DDS and data analyses using paired t-test. **Results:** Nutrition garden establishment successfully resulted in home-cultivation of vegetables including tomato, chilli, brinjal, radish, ridge gourd, okra, amaranthus, spinach, coriander, and drumstick by the participants. The intervention also encouraged participants to cultivate indigenous vegetables like Colocasia, Ganike soppu, bird's eye chillies, and native coriander. This led to significant improvements in DDS of the participants from moderate (7.20) to high (9.10) with regular consumption of leafy vegetables. Participants expressed reduction in expenditure on purchase of vegetables from markets, with additional income generation (Rs.1300 - Rs.1800) by selling surplus produce. It was observed that these advantages also encouraged neighboring households to establish nutrition gardens. **Conclusion:** The establishment of nutrition garden by tribal participants coupled with technical support by KVK, Gonikoppal effectively increased access to sustainable, safe and nutritious food with improved dietary diversity, particularly by increased vegetable consumption. The success of this study highlights its scalable potential for implementation in resource-limited communities to promote sustainable nutrition and improved health.

Keywords: Dietary diversity, Native vegetables, Nutrition garden, Sustainability

Abstract ID: 272

**ABSTRACT TITLE: ASSESSMENT OF NUTRITIONAL STATUS AMONG MENOPAUSAL WOMEN
OF MANIPUR STATE**

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Background: Menopause is a significant transition in a woman's life, marked by the cessation of menstruation and various physiological and hormonal changes that can impact overall health. Adopting a balanced diet and healthy lifestyle during this phase is crucial for managing menopause-related symptoms and preventing long-term health complications such as osteoporosis, cardiovascular diseases, and obesity. The objective of the study was to assess the nutritional status of menopausal women in Manipur State, India. **Materials & Methods:** a cross-sectional survey was conducted among 100 menopausal women aged 45-65 years, and the study period was from March to June 2023. Anthropometric variables included (BMI = weight/height²), waist circumference (WC), and waist-to-hip ratio (WHR). Weight and body mass index (BMI) were assessed by using a device bioelectrical impedance analysis (BIA). To determine dietary intake information on 24-hour dietary food recall was collected. Data was gathered with informed consent, and descriptive statistics were used to analyse the findings. **Results:** the BMI of the study population showed that 23.2 % were overweight and 39.4 % had grade I obesity. The average daily nutrient intake of carbohydrates, protein, fats, and fiber was found to be higher than the recommended dietary allowances, whereas the nutrient intake of calcium, vitamin D, and iron was significantly lower. **Conclusion:** the findings highlighted that the nutritional status among the participants shows a significant percentage of risks leading to obesity, cardiovascular diseases, and metabolic disorders. This study proves that a nutrition education program was needed to explain the role of food in the menopausal period and the nutrient requirements for calcium, iron, and vitamin D, as well as to encourage participants to include these foods in their daily diets to improve their general health issues and the quality of life. Further research is recommended to explore long-term health repercussions and provide region-specific dietary advice.

Keywords: Menopause women, nutritional status, anthropometric

Abstract ID: 288

ABSTRACT TITLE: PERCEPTIONS OF PATIENTS ON THE USE OF AYURVEDA AS A COMPLEMENTARY STRATEGY FOR THE MANAGEMENT OF TYPE 2 DIABETES MELLITUS: A COMPARATIVE CROSS-SECTIONAL STUDY FROM URBAN VADODARA, GUJARAT, INDIA

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Background: With rising prevalence of Type 2 diabetes (T2DM) in India, patients are looking at alternatives to the modern system of medicine for its management. This study seeks to understand how patients compare ayurvedic and allopathic systems of medicine in diabetes management and to assess their preference of ayurveda in case of common ailments and medical emergency. **Materials & Methods:** A comparative cross-sectional study was conducted on 310 patients with T2DM attending the outpatient department at a district general hospital in Vadodara, Gujarat, for

allopathic (Group A) and ayurvedic (Group B) treatment. Their anthropometric (weight, height, waist, hip circumference) and biophysical (blood pressure, body fat percentage) assessment was done and their random blood sugar levels were recorded. A pretested structured questionnaire was administered with questions regarding use of ayurveda as a complementary strategy along with allopathy and their preference. **Results:** The mean age of the patients in group A (n = 209) and group B (n = 101) was 59 and 57 years respectively. The mean BP (mmHg) and RBS (mg/dl) levels of groups A and B were 145/83, 141/86 and 199, 223 respectively. In group A, 81%, felt that allopathy was better for rapid relief while 61% in group B preferred ayurveda more. In case of medical emergency, 99% (group A) and 97% (group B) preferred allopathy whereas all patients in both groups agreed that ayurveda was safe and allopathic medications may have harmful side effects. As the duration of diabetes increased, the use of ayurvedic medicines was found to be lower in both the groups. **Conclusion:** Although, people are aware of the safety of common herbal drugs, the allopathic system still remains the primary choice in state of medical emergency. For early prevention, diagnosis, treatment and management of diseases like diabetes, there is a dire need to develop an efficient healthcare system with focus on an integrated approach with both systems which may prevent the progression of diabetes and associated comorbidities in later stages.

Keywords: Ayurveda, Allopathy, CAM, Type 2 Diabetes Mellitus

Abstract ID: 289

ABSTRACT TITLE: PERCEPTIONS OF HOME FOOD ENVIRONMENT AMONG SCHOOL-GOING CHILDREN IN URBAN VADODARA

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Background: During early adolescence, socio-environmental factors and greater autonomy over food choices significantly impact eating habits, making it a critical nutritional phase where the home food environment plays a key role. This study aimed to explore school children's perceptions of their home food environment and its impact on their eating behaviour. **Materials & Methods:** A cross-sectional study of 1,751 students (ages 10-15) from 5th to 10th grades in eight randomly selected urban Vadodara schools (private and government) assessed socio-economic status and perceptions of the home food environment (family food rules, food availability and accessibility, and domestic cooking responsibilities). Responses were compared through descriptive and cross-tabulation analyses. **Results:** A higher percentage of government school students (68%) had the freedom to buy from fast-food outlets compared to private school students (62%) ($p < 0.05$). Nearly 70% of government school children could watch television during meals, versus 57.1% of private school children ($p < 0.001$). Private school students (51%) were more likely to follow mealtime rules than government students (37%)

($p < 0.001$). In government schools, 67% of students had chocolates, sweets, and biscuits readily available at home, compared to 60% in private schools ($p < 0.05$). About half of all students (private and government schools) could easily access salty snacks like potato chips, while most had fruits and vegetables at home. Most respondents (96%) identified mothers as primary meal providers, with only 4% involving fathers in preparation. Around 69% of students participated in home cooking, while 29% could only make instant foods like noodles or pasta ($p < 0.001$). Mother's education was significantly associated with watching TV during meal times (OR 0.67, 95% CI 0.47-0.94, < 0.05), following rules at meal times (OR 2.13, 95% CI 1.52-2.98, < 0.001) and availability of chocolates and sweets at home (OR 1.53, 95% CI 1.12-2.09, < 0.05) among students attending government schools. **Conclusion:** The results highlighted that private and government school students have different dietary environments and food-related practices, with government students having more autonomy in food choices and different food accessibility patterns. To enhance adolescents and family health, health and education experts should offer guidance on establishing a healthy home eating environment.

Keywords: Home food environment, Early adolescents, Eating behaviour

Abstract ID: 292

ABSTRACT TITLE: DIETARY INTAKE AND DIET DIVERSITY SCORE BETWEEN MODERATELY ACUTE MALNOURISHED AND HEALTHY CHILDREN UNDER FIVE YEARS

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Background: Moderate acute malnutrition (MAM) is a significant risk factor for severe acute malnutrition and childhood mortality and affects more than 20% of hospitalized under-five children in India. The study aimed to assess the nutrient intake and diet diversity score (DDS) of MAM children

and compare them with apparently healthy children. **Materials & Methods:** This cross-sectional study was conducted in two sectors of Hyderabad among children aged 18 to 59 months using purposive sampling. Inclusion criteria included newly diagnosed MAM (WHZ -2 to -3) and healthy children with no prior undernutrition diagnosis. Exclusion criteria were congenital disorders, severe anemia (Hb <8 g/dl), and chronic illness medication. The sample size was 120 (60 healthy, 60 MAM), and the study lasted six months. Background data were collected via telephone, dietary intake via a single 24-hour recall, and diet diversity was assessed using FAO guidelines. Data analysis was conducted using Stata 15.0. **Results:** Significant differences were observed in paternal education with 50% of the fathers of healthy children having high school or higher education compared to only 42.3% in the MAM group. The results showed differences in dietary intake and DDS between the two groups. MAM children consumed significantly less energy, protein, fat, and fiber compared to healthy children. Adequate intake of carbohydrates (11.7% vs. 28.3%), proteins (3.3% vs. 18.3%), and fats (8.3% vs. 28.3%) was lower in the MAM group as compared to the healthy group. Diet diversity scores were also lower in MAM children (21.7% vs. 40%, $p=0.045$). Grains/roots/tubers were the most consumed food group (92.5%), while flesh foods were the least consumed (10%). Both healthy and MAM children showed nutrient inadequacies but they were more pronounced in the MAM group. **Conclusion:** The study showed that healthier dietary intakes were associated with higher paternal education. While both groups showed nutrient inadequacies, the severity in MAM children underscores the need for targeted interventions to address their higher nutritional needs, regardless of initial health status. These findings can guide educational programs and interventions to improve health outcomes in vulnerable, low-income communities.

Keywords: Moderate Acute Malnutrition, Nutrient intake, Diet diversity, Nutrient adequacy

Abstract ID: 294

ABSTRACT TITLE: SMART NUTRITION - EXPLORING THE IMPACT OF MHEALTH AND WEARABLE DEVICES ON PERSONAL WELLNESS MANAGEMENT

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Background: With the rapid emergence of mobile health (mHealth) and wearable devices, technology is increasingly being utilized to monitor nutrition and health. These innovations provide users with tools to track their dietary habits, physical activity, and overall wellness. This study aimed to explore how individuals leverage smart gadgets, mobile apps, and wearable devices to manage their well-being effectively. The primary objective was to analyse usage frequency, purposes for utilizing these technologies, and their effectiveness in managing health conditions. **Materials & Methods:** An online survey was conducted using a Google form through snowball sampling technique. The survey

questionnaire included several sections focusing on demographics, health goals, usage patterns, and user experiences with smart nutrition technologies. Participants were asked about their frequency of use, the primary reasons for utilizing these devices, and their perceived effectiveness in health management. The survey also captured data on whether users had medical conditions that influenced their decision to use these technologies. **Results:** 105 responses were received out of which majority were females (69.5%). The findings revealed that 68.6% of respondents had used a smart gadget or an app for health monitoring, with wearable devices (35.4%) being the most preferred tool. 47.4% respondents reported using these technologies for more than a year. The main reasons for adopting smart devices included monitoring physical activity (61.2%) and improving overall health and fitness (43.5%). Interestingly, 83.9% of participants did not have a medical condition requiring the use of these devices, indicating their widespread use for general health improvement rather than specific medical needs. In terms of effectiveness, 79.8% of users found these devices helpful, with 8.3% rating them as “very effective” in supporting their health goals. **Conclusion:** Smart technology is emerging as an effective tool for personal health management, offering significant benefits in monitoring health and physical activity. However, to ensure long-term engagement, improvements in usability and data accuracy are necessary. This study provides valuable insights into the growing impact of smart nutrition technologies on health management and emphasizes the need for ongoing development in this area to maximize their benefits.

Keywords: Mobile Health (mHealth), Wearable devices, Nutrition monitoring, Health management, Smart technologies

Abstract ID: 299

ABSTRACT TITLE: ASSESSING KNOWLEDGE, ATTITUDES, AND PRACTICES OF FOOD ALLERGY MANAGEMENT ACROSS RESTAURANTS, HOSPITALS, AND CONSUMERS: IMPLICATIONS FOR IMPROVED NUTRITIONAL EDUCATION AND SAFETY

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Background: Food allergy is an increasing concern, as it involves the immune system's adverse reaction to specific foods or food components. Dining outside presents unique challenges for individuals with food allergies, who depend on restaurant staff to prepare allergen-free meals. Based on this background a survey was conducted with the following objectives (i) Assess the knowledge, attitude, and practices (KAP) regarding food allergies in restaurant settings, (ii) Compare the KAP of food allergy management between restaurants, hospitals, and consumers, and (iii) Evaluate the impact of nutritional education on restaurant managers with respect to their knowledge, attitudes, and practices. **Methods & Materials:** The study was conducted from March to May 2022 across various cities in Jharkhand. Data were collected from three distinct settings—restaurants, hospitals, and consumers using structured questionnaires. The responses were analyzed to understand the current state of food allergy

awareness and management practices in each setup. **Results:** The study identified significant gaps in food allergy knowledge and practices among restaurant staff, underscoring the need for better education and training. While hospitals showed stronger awareness due to the role of dietitians, there remains a need for further support in managing food allergies. **Conclusion:** Targeted educational programs for both restaurant staff and consumers are essential to improve food allergy management and ensure safer dining experiences.

Keywords: Food allergy, Awareness, Nutrition education, Restaurant, Hospital

Abstract ID: 311

ABSTRACT TITLE: TO COMPARE BODY MASS INDEX (BMI) AND QUALITY OF LIFE (QOL) OF FEMALES SCHOOL TEACHERS, AGED 30-50 YEARS TEACHING IN PRIMARY AND SECONDARY SCHOOLS OF MUMBAI SUBURBS

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Background: Teaching is a noble profession, involving multiple duties. Lack of physical activity is one of the contributing factors to obesity and decreased QoL. Therefore, it is essential to investigate the BMI and QoL of teachers for developing strategies to support their overall health and well-being.

Materials & Methods: This cross-sectional study included female school teachers, who consented to participate in the study. Demographic details, lifestyle data of the teachers were collected using a questionnaire, and anthropometric measurements were recorded using standard procedure. WHOQOL-BREF questionnaire was used to assess QOL, consisting of 4 domains such as physical health, psychological health, social health, and environment; indicating the overall health of an individual. Data were analyzed using SPSS software version 20, with $p < 0.05$ considered significant.

Results: A total of 181 female teachers enrolled in this study, comprising 89 primary and 92 secondary school teachers. The mean (SD) age of the participants was found to be 38.9 ± 6.5 years and 39.8 ± 6.03 years, respectively. Although secondary school teachers exhibited slightly higher BMI ($p=0.60$) and waist-to-hip ratio ($p=0.81$) than primary school teachers, no statistical difference was found between them. Secondary school teachers reported comorbidities such as diabetes and high blood pressure (BP), while primary school teachers reported polycystic ovary syndrome, thyroid disease, diabetes, and high BP. Positive correlation was observed between diseases and BMI among teachers ($r=0.186$, $p=0.012$). QoL results showed that primary school teachers had better physical and psychological domains compared to secondary school teachers ($p=0.00$). The study also found a significant negative correlation between BMI and the physical and psychological domains of QoL among teachers.

Conclusion: This study highlights the importance of maintaining a healthy lifestyle among teachers, especially secondary section teachers who are at a higher risk of developing health problems. Improving physical activity levels can help promote better QoL and overall health. Thus, it is essential to develop strategies to support teachers in maintaining a healthy lifestyle, reducing their workload and stress.

Keywords: Female, School teacher, Anthropometry, Body mass index, Quality of life

Abstract ID: 312

ABSTRACT TITLE: CONSUMPTION OF MALT BASED HEALTH DRINKS AND ITS ASSOCIATION WITH WEIGHT STATUS OF CHILDREN AGED 5-10 YEARS

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Background: The prevalence of obesity and overweight among children is rising worldwide with one in ten school going children now classified as obese. In India, 5.3% of children are obese, while 18.5% are overweight. Dietary intake is a crucial factor influencing weight gain, and, as per the current research the routine consumption of Malt based health drinks (MHDs) may be a contributing factor. MHDs are beverages or powders mixed with milk in order to increase the nutrient content and palatability. However, these drinks often contain high levels of added sugars, which have been linked to weight gain. This study aims to explore the potential correlation between consumption of MHDs and the weight status of children. **Materials & Methods:** A cross-sectional study was conducted with a sample of 180 school going children (90 girls and 90 boys), aged 5 to 10 years. A semi structured questionnaire was constructed covering demographic, weight, height, consumption pattern, food frequency and lifestyle habits. Ethical consent was obtained from schools and respective parents. Weight status was determined using the BMI percentile based on WHO standards. Statistical analysis, including the correlation analysis, was performed to examine associations between MHDs consumption and children's weight status. **Results:** Bournvita was the most frequently consumed brand followed by others. Among MHD consumers, the prevalence of overweight was 11.11% and obesity was 20.74% . The study found that children consumed all the food groups at moderate levels, with vegetables and fruits consumed on the higher end. Gender comparison showed that 22.73% boys and 18.84% girls consuming MHDs fell in obese category. **Conclusion:** The study revealed that 75% of young children regularly consume MHDs, with over 30% of these children falling into the above-normal weight range. The results highlight the need for further, detailed research particularly with a larger population size. Addressing the consumption of sugar-added MHDs could be a critical step in managing the burden of childhood weight gain.

Keywords: Weight status, Malt-based health drinks (MHDs), Dietary intake, BMI percentiles, Food frequency

Abstract ID: 315

ABSTRACT TITLE: TO ASSESS THE NUTRITIONAL STATUS OF SCHOOL CHILDREN (4-8 YEARS OLD) STUDYING IN A MUNICIPAL SCHOOL IN THE URBAN SLUM OF MUMBAI

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Background: Malnutrition during the formative years in children delays their growth and cognitive development. Growth monitoring is a key tool for evaluating children's nutritional status and overall well-being. This RUSA-sponsored study aimed to evaluate the nutritional status of children studying in a Municipal School located in the slums of Mumbai suburbs. **Materials & Methods:** 601 children between the age group of 4 to 8 years studying in the Municipal School located in the slums of Mumbai's western suburbs participated in the study. The school authorities obtained permission from parents or guardians before the nutritional assessments were conducted. The anthropometric assessment included weight, height, and mid-upper arm circumference (MUAC) which were measured using a digital weighing scale, stadiometer, and MUAC measuring tape. A structured demographic questionnaire was designed to gather data on socioeconomic background from the parents. Growth and Nutritional status were determined based on World Health Organization (WHO) growth standards for children. Standard deviation (SD) scores for height-for-age and weight-for-age were used to identify stunting and underweight in children. WHO Anthroplus software was used to calculate the SD scores. **Results:** Out of 601 participants aged 4-8 years, 52% (n=314) were girls. The mean weight was 16 kg, with 49% (n=298) of participants classified as underweight (low weight for age). Severe underweight (SD scores < -3) was highly prevalent in 45% (n=133) of participants out of which 62% were girls (n=82). Stunting (low height for age) was prevalent in 32% (n=191), with 50% (n=96) being boys. Out of the 191 participants found to be stunted (SD scores < -2), 25% (n=48) were severely stunted (SD scores < -3), of which 52% were girls (n=25). **Conclusion:** Stunting indicates chronic undernutrition whereas underweight is a combined indicator of acute and chronic undernutrition. This study highlights the prevalence of underweight and stunting among children aged 4-8 years, particularly severe undernutrition. Girls were slightly more affected by severe underweight while stunting affected both genders equally. This is an ongoing project.

Keywords: Malnutrition, Severe Underweight, Growth Monitoring, Stunting, Nutritional Status, School Children

Abstract ID: 318

ABSTRACT TITLE: EXPLORING THE JOLLY FAT HYPOTHESIS: IMPACT OF BMI, NUTRITIONAL STATUS AND SOCIAL CONNECTEDNESS ON ELDERLY HEALTH IN MUMBAI

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Background: As the world silvers, studying the effect of diverse factors on the health of the elderly is important. Some Studies testing the “jolly fat hypothesis” suggest that a higher-than-normal body mass index (BMI) with increased social support may be associated with better health outcomes in the elderly. This study explored the impact of BMI, Nutrition, and Social connections on the well-being of the elderly in Mumbai who face challenges daily. The primary objective was to find evidence, if any of the “jolly fat hypothesis. **Materials & Methods:** The cross-sectional study included 409 elderly more than 60 years of age, living in Mumbai. Height and weight measurements were used to compute the BMI. Asian cut-offs were used to assess the nutritional status along with an international scale- Mini Nutritional Status Assessment (MNA). A structured questionnaire was used to collect sociodemographic data. Self-perception of health was assessed and the Geriatric depression scale (GDS) evaluated their emotional well-being. A specially formulated scale measured their social connectedness. **Results:** Out of 409, 299 participants categorized as normal (25.08%), pre-obese (49.4%), and obese (25.4%) were included to explore the ‘jolly fat hypothesis’. 50% were females. Participants with normal BMI had only 20 % graduates. 38.6% had no comorbidity, 26.6% self-perceived their health as very good but 49.3% were at risk using the MNA scale. 33.3% had poor emotional health and were not socially well-connected as compared to other groups. The pre-obese group fared the best. 29.7% were graduates. 25 % did not suffer from any comorbidity and 31.08 % perceived their health as very good. MNA classified 17.5% as ‘at risk’ and 31.08% were socially well-connected. In the obese group, 25% were classified as ‘at risk’ by the MNA scale. 32.8% perceived their health to be good. 26.3 % had lower GDS scores but more were socially active.. **Conclusion:** Being ‘jolly’ and having slightly higher-than-normal BMI seemed to positively impact the health of the elderly, although more research is required before recommendations can be made.

Keywords: Jolly fat hypothesis, MNA, GDS, BMI

Abstract ID: 329

ABSTRACT TITLE: ASSESSING MALNUTRITION AMONG WOMEN: A NUTRITIONAL AND LIFESTYLE ANALYSIS IN HEALTH CAMP

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Background: Key parameters included age, height, weight, Body Mass Index (BMI), and lifestyle factors, alongside nutritional intake metrics such as caloric intake, protein, fat, and carbohydrate consumption. These indicators were measured against Recommended Daily Allowance (RDA) standards to identify deviations and potential malnutrition. **Method & Materials:** Respondents were made samples when individuals visited the health camp. Data collection involved standardized

measurement tools for height, weight, and BMI, and structured dietary recalls to assess nutritional intake. BMI was calculated using the standard formula (weight in kilograms divided by height in meters squared) and categorized according to World Health Organization (WHO) standards. Lifestyle data were collected through interviews to understand the correlation between daily habits and malnutrition. Nutritional intake was calculated and compared with RDA guidelines to determine deficits or excesses in caloric and macronutrient consumption. Blood parameters were assessed and clinical correlations were established in some of these volunteers. **Results:** Preliminary analysis revealed a significant prevalence of malnutrition, with nearly 35% of participants classified as undernourished based on BMI calculations. Nutritional intake assessments highlighted that over 40% of women had caloric intake below the recommended levels, while protein deficiencies were observed in 50% of the sample. Despite lower caloric intake, fat consumption often exceeded RDA guidelines, suggesting imbalances in dietary composition. Lifestyle factors, such as sedentary behaviour, further exacerbated the risk of malnutrition, particularly among older women. **Conclusions:** The study highlights the need for improved follow-up of government nutrition programs like MDM and ICDS, which often lack proper implementation and oversight. It recommends that the government establish standardized formats for research organizations to ensure uniform data collection. This uniform database would enhance the quality and utility of information for policymaking, ultimately improving intervention outcomes and better serving vulnerable populations, thereby promoting health equity and sustainability.

Keywords: Malnutrition, protein deficiency, nutritional interventions, public health policy, women nutrition, rural communities, food security

Abstract ID: 330

ABSTRACT TITLE: EVALUATION OF CONSUMPTION AND NUTRITIONAL AWARENESS OF MILLETS AMONG HOUSEHOLD

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Background: Millets are highly nutritious, offering a rich source of vitamins, minerals, antioxidants, fiber, and protein. They contain essential minerals like calcium, iron, zinc, and potassium, as well as B vitamins and vitamin A. This survey aims to assess millet consumption and nutritional awareness among the adult population. **Methods & Materials:** The study evaluated millet consumption among households in Nandikotkur, Andhra Pradesh, focusing on female homemakers responsible for buying and cooking food. A questionnaire was administered to gather information on age, gender, occupation, health status, consumption patterns, purchasing practices, and knowledge about millets. Dietary patterns were assessed using a Food Frequency Questionnaire and a 24-hour dietary recall. **Results:** Responses from 50 individuals showed that 90% consume millets regularly, with jowar, ragi, and foxtail millet being the most popular. Specifically, 26% consume all three, 46% prefer jowar and ragi, and 16%

include bajra. Awareness of millet's nutritional quality was noted in 66% of respondents. When asked about millets' benefits for osteoporosis, 64% supported ragi, while lower percentages endorsed foxtail (12%), jowar (10%), kodo (8%), and bajra (6%). Additionally, 74% believed that millets can reduce iron deficiency, while 26% disagreed. **Conclusion:** Majority of individuals consume jowar and ragi (46%) along with foxtail millet(26%) . While most regularly consume millets and aware about their benefits for osteoporosis and iron deficiency, there is a need to increase awareness of other millets and their nutritional advantages. Efforts should focus on promoting the overall consumption and nutritional qualities of millets.

Keywords: Millets, Consumption pattern, Nutritional quality

Abstract ID: 331

**ABSTRACT TITLE: A CONTEXTUAL ANALYSIS OF SELECTED PANCHAYATS IN TAMIL NADU:
INSIGHTS FROM PARTICIPATORY RURAL APPRAISAL**

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Background: This study conducts PRA in order to reach a deep understanding of the selected panchayats, thereby exploring their socio-economic dynamics and governance structures. Exploring rural Tamil Nadu through local communities as a way of research is, therefore, aimed at contributing to the 2030 goals for sustainable development. **Method & Materials:** The PRA methodology was implemented in five chosen panchayats of Tamilnadu, focusing on a community-driven approach to assess local needs and identify sustainable development solutions. NGO facilitators engaged with residents through group discussions, interviews, and various participatory activities to encourage broad community involvement. Mapping exercises allowed participants to visualize essential resources and infrastructure, while transect walks offered valuable insights into land use patterns, environmental conditions, and social dynamics. Village meetings were convened to validate the information collected and to actively involve community members in collaboratively developing actionable development plans. **Results:** Three out of every five villages participating in this study indicated having a high rate of child malnutrition, requiring greater awareness and cooperation. While anemia and hunger were at low levels, gender-based violence was seen in three of the villages. All the villages admitted that they practiced open defecation, which brings out the critical need for sanitation facilities to be increased.

There was substance abuse and significant populations of mosquitoes, which would be health risks. Short hours and denying of services are the low marks for Ration Shop. Here, the user inputs have rightly highlighted a weakness in staffing level. Mid-day meal services have received high marks as they do help with child nutrition, and waste collection services did meet performance expectation. **Conclusions:** This research highlights the importance of targeted interventions and community engagement in addressing local challenges, such as child malnutrition and sanitation issues. By fostering collaboration and implementing effective programs, the villages can enhance overall well-being and work towards achieving sustainable development goals in 2030.

Keywords: Undernutrition, WASH, Immunization, Hunger, Mid day meal, SDG 2030

Abstract ID: 335

**ABSTRACT TITLE: HEALTHY LIFESTYLE TO PREVENT OBESITY-ADIPOSIY AND DIABETES
IN YOUNG OFFSPRING OF DIABETIC MOTHERS**

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Background: It's well known that maternal diabetes increases risk of obesity-adiposity and hyperglycemia in children. Few studies have explored the modifying influence of child's lifestyle (nutrition and physical activity, PA). Intensive treatment of GDM have not shown any protection against adiposity in the child. We assessed the current lifestyle in offspring of diabetic mothers (ODM) 2-26 years after birth and investigated its association with obesity-adiposity and hyperglycemia.. **Method &**

Materials: We studied 200 ODM and 177 offspring of nondiabetic mothers (ONDM, age and gender matched). Anthropometry, body composition (DXA) and blood glucose (capillary in <10y, 1.75g/kg OGTT in >10y) were measured. Overweight + obesity was classified by international standards [IOTF ($\leq 18y$), WHO ($>18y$)], glucose intolerance (ADA 2014). Dietary intake was assessed using food frequency questionnaire (preceding 6 months) and PA by recording time and frequency of vigorous, moderate, and sedentary activities. We studied the influence of diet and activity on risks of obesity-adiposity and hyperglycemia. **Results:** ODM consumed sweets, milk and milk products, vegetables and salads more frequently and cereals less frequently than ONDM. Frequent consumption of 'healthy foods' and infrequent consumption of 'unhealthy foods' were associated with decreased risk for obesity-adiposity. Higher level of moderate PA ($>60\text{min/day}$) and lower sedentary PA ($<480\text{ min/day}$) were associated with lower obesity-adiposity in both the groups. Hyperglycemia was not affected. These effects worked across both groups, there was no interaction with maternal diabetes. **Conclusions:** Healthy lifestyle (food and activity) is protective against obesity-adiposity but not against hyperglycemia in young Indian children (both ODM & ONDM). Our results suggest a need for a formal lifestyle intervention in children born in diabetic pregnancies for reduction in obesity-adiposity and hyperglycemia.

Keywords: obesity-adiposity, hyperglycemia, ODMs, lifestyle, diabetes in pregnancy

Abstract ID: 337

ABSTRACT TITLE: A STUDY ON NUTRITIONAL STATUS OF WOMEN FACULTY AND IMPACT OF NUTRITION EDUCATION

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Background: Workload increases a working woman's domestic duties. Studies concerning the well-being of them are equally crucial, particularly concerning anthropometric metrics that may be impacted by their rigorous work schedules. Good health requires wholesome meals and a well-balanced diet. The study aims to enhance awareness of health and wellbeing, identify high-risk health variables, promote lifestyle adjustments, and lay the groundwork for future research. Given this, a nutritional assessment of fifty female faculties at Madurai is carried out in order to provide nutrition education and measure its efficacy. **Methods & Materials:** In this regard, the Omron Karada scan body composition monitor was used to assess the aspects of body composition such as subcutaneous fat, skeletal percentage, body fat, visceral fat, resting metabolism, and body age. Blood hemoglobin, were also estimated. A healthy diet, lifestyle modification, and stress-free living using various modes were imparted, and the impact was evaluated using KAP. **Result:** The findings showed that the majority of them were in the 35-44 age and belonged to nuclear families. They spend a large portion of their income on food. Due to a lack of time, about 34.3% of people did not exercise. There were signs of exhaustion, dyspnea, back pain, and weakness. Majority of them ate three meals a day. It was noted

that there were insufficient intakes of fruits, green leafy vegetables, lentils, milk, and dairy products. Consuming lot of fat- and carb-containing foods but not enough protein, vitamins, or minerals. They have an overweight BMI. In terms of excessive body fat risk as well as healthy levels of visceral fat, the waist-hip ratio is rather near to optimal. Near the standard values were the mean blood hemoglobin levels. Overall, 22% had mild and 4% had moderate anemia. Knowledge and attitude ratings have improved following nutrition instruction, outpacing practice scores. **Conclusion:** The study group consumed unhealthy food. As a result, KAP ratings increased, and the usefulness of nutrition education was evaluated using these scores. The health of female faculty members necessitates a transformation in lifestyle.

Keywords: Women faculty, Body Composition, KAP

Abstract ID: 339

ABSTRACT TITLE: THE EFFECTS OF VITAMIN D3 GUMMIES SUPPLEMENTATION ON BLOOD GLUCOSE AND MARKERS OF INFLAMMATION IN OBESE ADULTS

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Background: Obesity is associated with increased risks of insulin resistance, inflammation, and metabolic disorders. Vitamin D deficiency is prevalent in obese individuals and may exacerbate these health issues. This study investigated the effects of Vitamin D3 gummy supplementation on blood glucose levels and inflammation markers in obese adults, with the goal of assessing the potential benefits of Vitamin D3 for improving metabolic health. **Methods & Materials:** A total of 400 obese adults (aged 21-60 years, BMI ≥ 25 kg/m²) were screened, and 80 participants were randomly assigned to either an experimental group receiving Vitamin D3 gummies (600 IU per gummy, 4 gummies/day for 3 months) or a placebo group. Both groups were instructed to maintain their usual diets, avoiding additional vitamin D or calcium supplementation. Nutritional assessments included anthropometric measurements, dietary habits, and biochemical analyses. The study evaluated fasting plasma glucose, HbA1c, serum vitamin D levels, insulin sensitivity, and inflammatory markers (hs-CRP, IL-6, TNF- α) at baseline and post-intervention. **Results:** At baseline, significant differences in nutritional status were observed between genders, with a higher prevalence of vitamin D deficiency in females. Post-intervention, the experimental group receiving Vitamin D3 supplementation demonstrated significant improvements in fasting plasma glucose and reductions in HbA1c levels compared to the control group. Additionally, inflammatory markers (hs-CRP, IL-6, TNF- α) were significantly reduced in the experimental group, indicating a decrease in systemic inflammation. Serum vitamin D levels increased substantially in the Vitamin D3 group, while the control group showed no significant changes. **Conclusion:** Vitamin D3 gummy supplementation significantly improved blood glucose levels and reduced inflammation in obese adults. These findings suggest that addressing vitamin D deficiency in obese individuals may be beneficial for managing blood glucose and inflammation, contributing to better

metabolic health. The results underscore the need for further research to explore Vitamin D's role in therapeutic applications for obesity-related conditions.

Keywords: Vitamin D3, Gummies, Obese, Biomarkers, Supplementation, Blood glucose

Abstract ID: 349

ABSTRACT TITLE: ASSESSING THE BARRIERS OF HEALTHY EATING AMONG STREET VENDORS IN URBAN SETTINGS

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Background: Nutrition remains an issue for India's urban informal sector despite 14% street vending. Long working hours, Minimal nutrition literacy are characteristic of food vendor constraints. Minimal nutrition literacy is characteristic of food vendors, but immediate availability of perishable produce does not mean improved dietary practices or health among food sellers. Specifically, the study sought to establish the dietary practices, nutrition knowledge, and the challenges that the street vendors themselves encountered, based on which the possible intervention measures to enhance their nutrition status could be recommended. **Methods & Materials:** A comparative cross-sectional study was carried out among 20 street vendors from an urban locality. Semi structured questionnaires were used elicit information touching on demography, diet, and availability of clean water. Frequency scale (daily, often, sometimes, never) was used to check the consumption of fruits, vegetables, fast foods, and sugary drinks. Amongst the important barriers to a balanced diet, time, financial constraint, and access to health care are included in the list. The data collected via Google forms were summarized using descriptive statistics to identify trends in dietary habits and barriers **Results:** Most respondents were middle-aged women, and were married. Even though 85% had clean drinking water, only 57.9% of them took two meals a day, that is, with the exclusion of breakfast. Only 47.4% took vegetables daily, and 80% took fruits occasionally. The consumption of fast foods and sweet drinks was a low since 60% did not consume those products. Only 40% could recommend eating fruits and vegetables. The highest constraints included lengthy working hours (100%), costly diets (35%), and unknown nutritional content of foods (30%). **Conclusion:** Differences between availability and consumption levels as far as street food traders are concerned. These factors hinder healthy consumption, including having little knowledge, having a limited amount of money to spend, and spending many hours in a day at work. Some of these inputs are reasonable prices of healthy food and flexible educational forms. Community and local group affiliation may influence diet behavioral change.

Keywords: Street vendors, Dietary habits, Nutritional barriers, Urban nutrition

Abstract ID: 357

ABSTRACT TITLE: EFFECT FOOD CHOICES ON THE DIETARY CONSUMPTION AND LIFESTYLE PATTERN CONSUMPTION AMONG COLLEGE STUDENTS

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Background: In today's fast-paced world, college students, as they navigate through the academic pressure, in addition social media influences, peer pressure and personal growth their food choices and daily routines tend to prioritize processed and convenience foods over nutritious foods. This survey explores the dietary habits and lifestyle behaviours of college students during their college years, a critical period for shaping long-term health. **Methods & Materials:** A cross-sectional study was conducted using self-administered questionnaire among 186 university students (Males-81, Females-105) aged 17-23years. Anthropometric measurements such as height, weight and BMI was calculated to assess the nutritional status. The food frequency intake of recipes, outside eating pattern, skipping of meals and lifestyle habits such as physical activity levels, sleep pattern, alcohol consumption and smoking was collected. The data were analysed to associate nutritional status with dietary and lifestyle factors. **Results:** The assessment of nutritional status revealed that 22% of participants were underweight, 44% had normal weight, and 34% were classified as overweight/obese. Males had a higher prevalence of overweight/obesity (44.4%) than females (27%). This risk of double burden of malnutrition was evident as observations in dietary consumption patterns where 22% followed a vegetarian diet, while 69% were non-vegetarian. Around 11.3% of students skipped breakfast daily, and 25.8% skipped it multiple times a week, mainly observed in males. Fast food and high fat, sugar and salt food intake were high with 32.3% consumption of soft drinks, 45.2% eating cakes/pastries, and 31.7% consuming chips/ready snacks at least once a week. The frequency of online food ordering was more in 2-3 times per week. Lifestyle pattern showed 73% of students spent 3 or more hours on social media or watching television daily. Alcohol consumption was 46%, while 15% smoked, physical activity was 30 min and 1 hr among 15% students. **Conclusion:** These findings highlight prevalence of unhealthy dietary, lifestyle patterns among college students, showing high intake of HFSS foods, meal skipping, prolonged screen time. Intervention strategies focusing on nutrition education, healthier food choices, and reduced sedentary behaviours are essential to promote long-term health in this population. **Keywords:** Dietary, Lifestyle, Students

Abstract ID: 369

ABSTRACT TITLE: A SURVEY ON IMPACT OF STRESS RELATED EATING HABITS AMONG ADOLESCENTS DURING EXAMS

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Background: The period of transition between childhood and adulthood in human is defined as adolescent. The academic pressure make one need to satisfy the expectations of the parents, teachers and society as well as to keep up with the competition to set themselves apart from the other students.

All this may cause stress which may impact severely on their behavior and there will be chances to impact their eating pattern among adolescence. This problem has a negative impact on cognitive functions and learning skills. Students with stress will tend to increase the consumption of high calorie and fat food according to new research. Hence a survey was conducted among school going students of ninth, tenth, eleventh and twelfth to find out the impact on eating habit due to exam stress using a standard questionnaire to collect the data which also includes the nutritional status, food choices and eating habits, sleep patterns. **Methods & Materials:** A Cross-sectional survey was conducted using a standard questionnaire. The study was carried out during the month of March, 2023. Verbal consent was sought to participate in the study. **Results:** From the above analysis most of the respondents are said no to over eat during exams, and they are described healthy and balanced plan/food choice and they are eating fruits and vegetables during the exams. And also, they are never skip breakfast during exam time due to stress. During the exam stress they said no to have a fixed meal time that follow. **Conclusion:** The present study as a survey on impact of stress related eating habits among adolescents during exam. The students were different ages most of between 14 and 18. Too much stress can interfere their academics. It was found in the study that stress and eating habits were related to each other. More emphasis is needed on understanding the impact of examinations on students, on identifying vulnerable individuals, and on the appropriateness of the current examination process. So, the students were given nutrition counselling and a sample menu was given to their parents.

Keywords: Stress, Sleep patterns, Nutrition counselling

Abstract ID: 370

ABSTRACT TITLE: A STUDY ON BONE HEALTH OF GARMENT WORKERS IN SELECTED GARMENT INDUSTRIES OF COIMBATORE AND TIRUPUR

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Background: Empirical evidence shows that long working hour, exposure to chemical, compromised work environment and dietary inadequacy as a contributing factor for poor health status of workers in Garment Industry. However, there is dearth of information on bone health of employees of this sector and hence the present investigation aims at understanding the impact of occupational hazard of bone health of men and women working in garment industry. **Method & Materials:** A total of 320 Garment Workers such as men and women were purposively selected. Socio-demographic Profile, Anthropometric Measurements and Bone Mineral Density and dietary habits were studied. Using a CM 200 Ultrasound Bone Densitometer the bone mineral density of all the selected subject was evaluated and the status of bone health was assessed based on T- Score (T -scores equal -1 < -2.5 indicate osteopenia, while > -2.5 reflect osteoporosis). **Results:** Out of 320 garment workers studied 67.5% were male and 32.5% were female. The mean BMI was observed to be 25.3 and 26.3 for male and female respectively. Sixty two percent of male and 79 percent of female were at the risk for metabolic disorders. Based on Waist Hip Ratio 62.5 percent of male and 79% of female were at the risk

of requiring metabolic diseases. Out of 216 male 91 of them were found to be Osteopenic and 28 of them were found to be Osteoporotic. Out of 104 female 36 of them were found to be Osteopenic and 16 of them were found to be Osteoporotic.. **Conclusions:** The findings highlight the need for targeted dietary and supportive interventions, such as ergonomic improvements, health education, and early screening, to reduce the risk of musculoskeletal disorders and improve the overall health and quality of life of garment workers.

Keywords: Garment Workers, Bone Health, BMI, Health Problems

Abstract ID: 372

ABSTRACT TITLE: ENHANCING GUT HEALTH, ENERGY, AND MICRONUTRIENT STATUS IN YOUNG ADULTS: THE ROLE OF REGULAR ADD TO FOOD NUTRITION MIX SUPPLEMENTATION

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Background: Micronutrient deficiencies (MND) impact approximately 2 billion individuals globally, contributing to significant morbidity and mortality. The National Family Health Survey-5 reveals that 57% of Indian women aged 15-49 were anaemic, with anaemia affecting 59% of adolescent girls and 30% of adolescent boys. Additionally, a 2021 meta-analysis of 270 studies identified vitamin D deficiency as the most common micronutrient deficiency in India, affecting 61% of the population, followed by iron (54%), vitamin B12 (53%), folic acid (37%), and iodine (17%). This study aimed to evaluate the efficacy and safety of a 4.6 g dose of Nutrition Mix supplementation in improving gut health, energy levels, and micronutrient status in a healthy population aged 13 to 35 years. **Method & Materials:** This single-center, open-label, single-arm clinical study was conducted with healthy participants aged 13-35 years. Data collection involved baseline assessments of gut health, energy, immunity, and micronutrient levels, followed by a daily 4.6 g intake of Nutrition Mix supplement for a specified treatment period of 120 days. Primary endpoints included gut health parameters (Global Assessment Scale, Bristol Stool Scale), energy assessment (30-Second Chair Stand Test), and micronutrient levels (Vitamin D, B12, Iron). Secondary endpoints evaluated immune status (Immunoglobulin G, C-reactive protein) and quality of life. **Results:** Participants demonstrated significant improvements in gut health, as indicated by enhanced bowel movement regularity and reduced discomfort. Energy levels, assessed through the 30-Seconds Chair Stand Test, indicated a 24.4% improvement in stamina and energy levels of all participants. Micronutrient analysis revealed notable improvement of 65.4%, 26% and 30.8% in Vitamin D, Vitamin B12 and Iron levels from baseline to the final visit at 120 days. Safety assessments indicated no significant adverse events or abnormal laboratory findings throughout the study period. **Conclusions:** The 4.6 g daily dose of Nutrition Mix effectively enhanced gut health, energy, and micronutrient levels among participants, demonstrating its potential as a beneficial, easy to use dietary supplement for general population. The study supports

Good Monk as a promising option for improving overall health in young adults, contributing to the management of MND and promoting well-being through enhanced nutritional intake.

Keywords: Micronutrient status, Gut health, Nutritional supplementation, Micronutrient deficiencies (MND), Anaemia, Vitamin D deficiency

Abstract ID: 401

Breastfeeding Dynamics and its Impact on Child Well-being: A Narrative Review

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Background: Breastfeeding is essential for child health, providing crucial nutrients and immunological benefits. Despite the well-documented advantages, global breastfeeding rates remain suboptimal due to socio-economic, cultural, and healthcare-related factors. We investigated breastfeeding initiation, exclusive breastfeeding, and weaning practices across diverse settings to elucidate critical factors influencing pediatric health outcomes. **Methods:** Our narrative review utilized PubMed and Scopus databases and included studies that focused on breastfeeding practices in low- and middle-income countries. We categorized the findings under themes: early initiation, exclusive breastfeeding, duration of breastfeeding, and factors affecting the aforementioned practices. Additionally, we evaluated the reported associations between breastfeeding practices and health outcomes. **Results:** Early breastfeeding initiation significantly reduces neonatal mortality, with studies reporting a combined RR of 0.56 (95%CI[0.40,0.79]) for all-cause mortality among live births surviving the first 48 hours. Exclusive breastfeeding for the first six months was associated with a lower risk of obesity and respiratory infections (OR, 0.62; 95%CI[0.48,0.79]). Extended breastfeeding duration was linked to a 30% reduction in childhood obesity risk, whereas early weaning correlated with increased hospitalization rates (OR, 1.96; 95%CI[1.12,3.47]) and malnutrition indicators. Key factors influencing breastfeeding initiation include maternal health status, socio-economic conditions, and healthcare support. **Conclusion:** Our findings underscore the necessity for policy interventions, such as extended maternity leave and breastfeeding support programs, to improve breastfeeding rates. Enhancing healthcare support and addressing socio-cultural barriers can significantly impact child health outcomes by promoting early and exclusive breastfeeding practices.

Keywords: Breastfeeding Initiation; Exclusive Breastfeeding; Pediatric Health; Neonatal Mortality; Public Health Policy

FREE COMMUNICATION - POSTER PRESENTATIONS

14th November 2024

Time: 1.00 pm to 1.45 pm

SESSION 1- EXPERIMENTAL NUTRITION

No	Abstract ID	Presenter name	Affiliation	City	Email	Title of Presentation
1	3	Dr Gayatree Rajendrasinh Jadeja	Polytechnic in Food Science & Home Economics	Anand	gayatreejadeja@gmail.com	Standardization of the technology for making Freekah (Green wheat)
2	37	Ms Smriti Mishra	UPES, Bidholi, Uttarakhand	Dehradun	SMRITI.105163@stu.upes.ac.in	Targeting the Gut-Brain-Skin Axis in Psoriasis with Phytoconstituent-Loaded Microspheres: A New Dietary Supplement Strategy
3	43	Mrs Dipika Das	Prabhat Kumar College, Contai	Haldia	dipikadas1985@gmail.com	Antidiabetic Role of Pleurotu sajor-caju Cultivated on Un-Conventional Bed: Banana Leaf Midrib and Gurmer Leaf Enriched Bed
4	45	Mrs Arivazhagan Suganya	Avinashilingam Institute for Home Science and Higher Education for Women	Coimbatore	suganyaa101@gmail.com	Anticarcinomic Effects of Tamarillo (Cyphomandra betacea) on Cervical Cancer
5	51	Dr Panchali Moitra	Sir Vithaldas Thackersey College of Home Science	Mumbai	panchali.moitra@svt.edu.in	Effects of Low Vs Restricted Fodmap Diet Plans on Symptom Severity and Quality of Life in People With Irritable Bowel Syndrome in Mumbai
6	75	Mrs Jayashree R	Sri Ramachandra Institute of Higher Education and Research	Chennai	jayashreer@sriramachandra.edu.in	Formulation and Sensory Evaluation of Plant Based Essential Amino Acid Rich Food Multimix
7	80	Mr Nikhi Nadiger	St Johns Research Institute	Bengaluru	nikhil.n@sjri.res.in	DNA methylation profiles of the Indian diabetic adipose tissue
8	84	Ms Pranjal Runwal	Shasta Nutrifooods	Pune	pranjalrunwal22@gmail.com	Development, packaging and quality evaluation of red kidney bean spread

9	89	Ms Akshata A Kamath	Manipal Academy of higher education and St Johns Research Institute	Bengaluru	akshata.ak@sjri.res.in	Development of a novel Event-related-potentials paradigm to assess neurocognitive performance in infants: A feasibility study in a rural south India
10	91	Ms Nandini Chopra	St. Johns Research Institute	Bengaluru	nandini.chopra1906@gmail.com	Impact of Two Doses of Vitamin D Supplementation on Maternal Circulating Total 25(OH)D Levels - A Quasi-Experiment
11	94	Ms Y K Sanjana	JSSAHER	Mysuru	y.k.sanjana98@gmail.com	Ethnoplantkinetic Studies on Citrus-Medica : Elucidation of Anti-inflammation activity using In-silico technique
12	101	Ms Medha Singh	UPES	Dehra dun	medha1102@gmail.com	Identifying the Optimal Functional Food Premix to Alleviate Diabetes-Related Complications in Type 2 Diabetes
13	106	Ms Sunaina Chhetri	Interactive Research School for Health Affairs, Bharati Vidyapeeth (Deemed to be) University	Pune	sunainachhetri8198@gmail.com	Excess maternal vitamin B12 supplementation differentially influences maternal fatty acids
14	108	Ms Prabnoor Kaur	College of community science	Ludhiana	noorsago788@gmail.com	Comparative analysis of Nutritional Profiles of Barnyard Millet (Echinochloa esculenta) varieties
15	123	Dr Manisha Sharma	College of Community Science, Assam Agricultural University	Jorhat	2509manisha@gmail.com	Development of Probiotic Complementary Food and Its Antimicrobial Activity Against Common Enteropathogens
16	162	Ms Pooja Kashyap	Banasthali Vidyapith	Tonk,Rajasthan	poojakashyap14899@gmail.com	Nutritional content in leafy vegetables: Assessing the effect of hydroponic farming practices on nutritional and mineral composition

17	176	Dr Anindita Nandi Batabyal	PG Department of Home Science, Sardar Patel University	Vallabh Vidyanagar	aninditanandi5feb@gmail.com	Preconception High-Dose Vitamin D3 Supplementation Improves Pregnancy Outcomes by Modulating Placental Inflammation and Oxidative Stress in a GDM Rat Model
18	250	Ms Chhaya K	Welcomgroup Graduate School of Hotel Administration	Udupi	k.chhaya@manipal.edu	Evaluating the cognitive learning behavior in mice fed with novel DHA rich diet
19	262	Ms Anu Mahajan	Symbiosis International University	Pune	anumahajan835@gmail.com	Diving deeper: A Systematic review and meta-analysis of short-term vs. long-term yoga practice effects in managing type 2 diabetes among Asian population
20	281	Ms Sakshi Rai	ICMR-National Institute of Nutrition	Hyderabad	raisakshi722@gmail.com	Impact of Pearl-Millet and Peanut-Chikki Supplementation on Gut-Microbiota and Hemoglobin-Levels in Anemic Women of Reproductive-Age
21	290	Ms Nidhi Darji	Cyanohealth Pvt. Ltd.	Mumbai	nidhidarji9@gmail.com	Establishing the onset of diseases due to consumption of Ultra-processed food and its intervention by algal food fortification
22	291	Mrs Puneetha P	Department of studies in Food Science and Nutrition	Mysore	puneethap.26@gmail.com	Impact of "Cardiacare-DM" Functional Food Formulation on Lipid Profile, Body Composition, and Blood Sugar Control in Type 2 Diabetes Patients
23	300	Ms Sneha Chopra	DIPAS, DRDO	New Delhi	snehachopra1119@gmail.com	Association between antioxidant minerals and oxidative stress biomarkers with altitude among young Indian Males; a cross-sectional study
24	301	Ms Nivedita Singh	Tilkamanjhi Bhagalpur University	Bhagalpur	NIVAIDITA55SIINGH@GMAIL.COM	Toxicity of food colour dye Tartrazine and its safe assessment

25	317	Ms Nisarga N	JSS AHER	Mysuru	nisargag867@gmail.com	Sensorial and Nutritional Quality Evaluation of Pearl Millet Based Vegan Ice-cream
26	319	Mrs Arundhati Lahiri	Dr. BMN College of Home Science, Matunga	Mumbai	mukhopadhyay.arundhati@gmail.com	Impact of nutritional intervention on hemoglobin levels of adolescents and young adult girls (16-24 years) studying in undergraduate college of Mumbai
27	341	Mr Sanjay K Gowda	CSIR-Central Food Technological Research Institute	Mysuru	sanjaykgowd amandya@gmail.com	Surface coated pomegranate polyphenols encapsulated PLGA nanoparticles: Preparation, Characterization, Antioxidant activity and evaluation of its toxicity
28	363	Mrs Annapurna Reddy A	GITAM School of Sciences	Vishakapatnam	areddy5@gitam.in	Impact of various Indian culinary practices on the retention of minerals in Green Leafy Vegetables
29	368	Dr Deepa Sathish	PSGR Krishnammal College for Women	Coimbatore	deepasathish@gmail.com	Incorporating Dried Mango and Guava Leaves into Food Products:Formulation and Evaluation
30	385	Gulafsha Khan	ICMR-National Institute of Nutrition	Hyderabad	khangulafsha995@gmail.com	The impact of IFA supplementation on gut microbiota composition in mild and moderate anemic Women of Reproductive Age (WRA)
31	396	Vrushali Kadam	Interactive Research School for Health Affairs, Bharati Vidyapeeth (Deemed to be University)	Pune	vrushali.kadam1@bharativedyapeeth.edu	Maternal fatty acid status influences growth in children at 3-7 years
32	399	K. Devi	Avinashilingam Institute for Home Science and Higher Education for Women	Coimbatore	devi_fsn@avinuty.ac.in	Enzymatic Hydrolytic Approach on Nutritional and Functional Aspects of Whey Protein Isolate

Abstract ID: 3

**ABSTRACT TITLE: STANDARDIZATION OF THE TECHNOLOGY FOR MAKING FREEKAH
(GREEN WHEAT)**

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BACKGROUND: Freekah is an ancient and traditional whole wheat product that is produced from early-harvested wheat at the milky stage using generally immature durum wheat (*Triticum durum*) and sometimes immature bread wheat (*T. aestivum*). It is a scorched, charred, or roasted grain that is generally homemade for domestic consumption or commercially produced by small-scale manufacturers. It is usually produced by roasting (scorching) the immature spikes on flames to burn off the awns and leafy material. Then the spikes are dried in the sun, threshed, the kernels separated from hulls, and cracked. The parching or charring gives the freekah a unique, appetizing smoked flavour. Freekah is a seasonable product that is mainly produced in farms and villages. The traditional processing method is very lengthy and more chances of burning of seeds. **MATERIALS AND METHODS:** To avoid the wastage of seeds the oven drying technology was standardised. Pods were dried in tray drier for different time and temperature and then proximate analysis and shelf life study was carried out. **RESULTS:** When the pods of wheat during milky stage, dried in tray drier at 200°C for 30 minutes and then dehusked followed by shadow drying of dehusked seeds have six months shelf life and contained 12.77% protein, 2.87% fat, 32.6% calcium and 9.66% fibre. **CONCLUSION:** While no commercial freekah production facilities currently exist, the market is ripe for new investors, particularly those interested in a unique, healthy ingredients.

KEY WORDS: Freekah, Durum Wheat, Processing, Roasting, Milky Stage, Oven Drying.

Abstract ID: 37

**ABSTRACT TITLE: TARGETING THE GUT-BRAIN-SKIN AXIS IN PSORIASIS WITH
PHYTOCONSTITUENT-LOADED MICROSPHERES: A NEW DIETARY SUPPLEMENT STRATEGY**

Ms Smriti Mishra¹

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Background: Psoriasis is a chronic inflammatory skin disorder influenced by genetic, environmental, immune factors, and lifestyle choices. Recent research highlights the role of the gut-brain-skin axis in disease progression, emphasizing the interconnectedness of gut microbiota, psychological stress, and immune responses. Lifestyle factors, such as diet and stress management, play a crucial role in regulating this axis, impacting psoriasis severity. Nutritional interventions, particularly those bioactive compounds having anti-inflammatory properties, have shown promising results in improving psoriasis outcomes. However, their poor solubility and bioavailability limits clinical use of these phytochemicals.

Objective: The aim of this study is to develop and explore the potential of phytoconstituent-loaded microspheres as a novel dietary supplement to target the gut-brain-skin axis and assess their efficacy in psoriasis management. **Materials and Methods:** Phytoconstituents having anti-inflammatory and immunomodulatory properties were selected and encapsulated in biodegradable polymeric microspheres using emulsion solvent evaporation techniques. The microspheres were characterized for their size, encapsulation efficiency, and release profile to ensure optimal bioavailability. In vitro antimicrobial activity was tested against pathogenic bacteria commonly associated with gut dysbiosis in psoriasis. The minimum inhibitory concentration and minimum bactericidal concentration of the phytoconstituent-loaded microspheres were analyzed. **Results:** The phytoconstituent-loaded microspheres showed high encapsulation efficiency and a sustained release profile, ensuring increased and enhanced bioavailability of the bioactive compounds. In the antimicrobial study, the microspheres showed inhibitory effects against the pathogenic bacteria. This antimicrobial activity likely contributes to the reduction of gut dysbiosis and inflammation, further supporting their role in modulating the gut-brain-skin axis. **Conclusion:** Phytoconstituent-loaded microspheres present a novel dietary supplement strategy for targeting the gut-brain-skin axis in psoriasis management. By enhancing the bioavailability of anti-inflammatory phytoconstituents and modulating gut microbiota, this approach offers a promising therapeutic intervention for psoriasis. Future pre-clinical trials will be evaluated to check the safety and efficacy of these microspheres in mice with psoriasis.

Keywords: Bioavailability Enhancement; Dietary Supplement; Gut Microbiota Modulation, Psoriasis Management; Phytoconstituents;

Abstract ID: 43

ABSTRACT TITLE: ANTIDIABETIC ROLE OF PLEUROTU SAJOR-CAJU CULTIVATED ON UN-CONVENTIONAL BED: BANANA LEAF MIDRIB AND GURMER LEAF ENRICHED BED

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Background: Paddy straw agrowaste is widely used as conventional bed materials for the cultivation of edible mushroom. To enhance the quality of the mushroom based on nutritional and medicinal aspect, some unconventional bed materials has been used in the present study. **Materials and Methods:** The phenolic compound rich banana leaf midrib (BLM) agrowaste and gymnemic acid rich Gurmer (*Gymnema sylvestre*) leaves (GL) are used as unconventional bed materials for the cultivation of *Pleurotus sajor-caju*. The paddy straw (PSC) is used as control bed materials. The Biological efficacy (BE) with macro and micro-nutrient contents are measured in mature mushrooms cultivated on BLM, GL enriched and PSC bed. The aquash mushroom extract is applied (3gm/kg body wt.) to the Streptozotocin (STZ) -induced diabetic rats (60mg/ kg body wt.) and FBS is measured in different time frame. **Results:** The BE, total protein, Vit C, Na and P is increased, and total carbohydrate is decreased

significantly in BLM and GL mushroom compared to PS mushroom. Zn level is elevated in GL mushroom, Vit B2 is elevated in BLM mushroom compared to control. Vit A, Vit D, Vit B3, Vit B6, K, Fe, Se remains unaltered in BLM and GL mushroom compared to PSC mushroom. The elevated level of FBS in STZ-induced diabetic rats come back to its normal level in BLM (after 4 weeks) and GL (after 3 weeks) mushroom extract treated rats, compared to the PSC, Diabetic Control (DC), and leaves treated control (Banana leaves control and Gurmer leaves control). The decreased level of FBS in Gurmer leaves control rats supports the probability of the biotransformation of Gurmer leaves containing antidiabetic bio-compounds from bed to mature fruit bodies. The recovery of the elevated FBS level in STZ-induced diabetic rats is faster in GL mushroom treated rats compared to BLM mushroom treated rats. **Conclusion:** The mushroom cultivated on BLM and Gurmer leaves enriched bed may produce mushroom having some antidiabetic role. The transformation of the bio-active compounds from the unconventional bed materials to the mature fruit bodies of mushroom is important in this context.

Keywords: Edible Mushroom, Unconventional Bed, Fasting Blood Sugar, Nutrients

Abstract ID: 45

**ABSTRACT TITLE: ANTICARCINOMIC EFFECTS OF TAMARILLO (CYPHOMANDRA BETACEA)
ON CERVICAL CANCER**

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Background: Cyphomandra betacea, a fruit grown in frosty areas, is gaining attention for its nutritional and health-promoting properties. This study aimed to investigate the nutritional and bioactive properties of tamarillo and their potential implications for cervical health. **Materials and Methods:** The study included an evaluation of proximate and nutritional composition of tamarillo. Phytochemicals were screened using aqueous, ethanol and methanol extracts, while the bioactive components in the methanolic extracts were profiled through Fourier Transform Infrared Spectroscopy (FT-IR) and Gas Chromatography- Mass Spectrometry (GC-MS) analyses. The antioxidant activity of tamarillo was assessed using DPPH assay. Aqueous and methanol extracts of tamarillo fruit was identified for its potential anticancer properties. **Results:** The study revealed that tamarillo fruit containing the essential nutrients vitamin A (β carotene 832.6 ± 2.5) μg and (vitamin C 27.66 ± 1.24) mg, dietary fibre (47.3 ± 0.57) g. The qualitative phytochemical assessment indicated that tamarillo fruit contains significant level of phenolic compounds, flavonoids, glycosides, terpenoids and carotenoids. The identified functional groups include alcoholic, phenolic and aromatic groups. GC-MS analysis has identified bioactive components in tamarillo like beta-Bisabolene, hexadecenoic acid, pentadecane carboxylic acid, octadecanoic acid and isobutyric acid. Notably tamarillo extracts exhibit strong antioxidant activity effectively scavenging free radicals with an IC₅₀ value of 22.1 $\mu\text{g}/\text{mg}$ ML⁻¹. Cell viability and cytotoxicity

were assessed using the MTT assay, shows IC₅₀ for aqueous and methanol extracts of tamarillo fruit at 121.86 and 96.89, 77.65 and 81.75, 73.78 and 79.82 for the durations of 24, 48, 72 hours respectively. Further investigations into cell cycle, apoptosis and reactive oxygen species were conducted using flow cytometry to illustrate the anticancer properties of tamarillo fruit against cervical cancer. **Conclusion:** The study provides compelling evidence that tamarillo fruit has nutritional potential with significant health benefits for cervical cancer. The fruit has rich in vitamins, dietary fibre and antioxidant. The findings suggested that tamarillo could be a valuable dietary addition for promoting overall well-being.

Keywords: Cervical Cancer, Cyphomandra Betacea, Bioactive Compounds, Cell Viability, Cytotoxicity.⁶

Abstract ID: 51

ABSTRACT TITLE: EFFECTS OF LOW VS RESTRICTED FODMAP DIET PLANS ON SYMPTOM SEVERITY AND QUALITY OF LIFE IN PEOPLE WITH IRRITABLE BOWEL SYNDROME IN MUMBAI

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Background: Diets low in fermentable oligo-di-mono-saccharides and polyols (FODMAPs) are considered cornerstone strategies to manage gastrointestinal symptoms in individuals with irritable bowel syndrome (IBS). However, studies investigating the efficacy of low FODMAP diets in people with IBS in India are limited. Therefore, the present study aimed to compare the effectiveness of low Vs restricted FODMAP diets on symptom severity and quality of life in 18-45-year-old adults with IBS in Mumbai. **Materials and Methods:** A parallel arm, open-label randomized controlled trial was conducted. Adults (n= 32, mean age 32.2 (8.7 y), 59.4% females) having moderate to severe IBS symptoms (IBS Symptom Severity Score (IBS-SSS ≥175) were randomized to receive either a low FODMAP diet (LFD, a dietitian-guided plan including complete exclusion of the trigger FODMAPs and <0.5 g total FODMAP content per meal) or moderately restricted FODMAP diet (MRFD, a simplified

approach of restricting foods considered as common symptom triggers) or a standard of care diet plan (control group) over a four weeks trial period. The IBS SSS, IBS Quality of Life (IBS- QoL), Bristol Stool Frequency Scale, and three days 24h diet recalls were recorded at baseline and end line. **Results:** Significant improvements in total IBS-SSS (LFD (43.3%, $p < 0.001$) Vs RFD (36.7%, $p = 0.012$), $p = 0.34$) were observed. At 4 weeks, LFD reported greater improvements in GI symptoms - abdominal pain severity (34.7% vs 24.8%, $p < 0.023$), frequency (53.3% vs 24.3%, $p < 0.001$), and IBS QoL scores ($p < 0.001$) as compared to RFD. The stool frequency ($p = 0.034$), and consistency ($p = 0.017$) improved in LFD but not in RFD. However, no significant differences were observed in bowel habit dissatisfaction ($p = 0.111$) and abdominal distension ($p = 0.062$) between LFD and RFD participants. **Conclusion:** Though limited by a modest sample size and short trial duration, ours is the first study in India to suggest the acceptability and efficacy of customized dietitian-guided LFD plans in adults with IBS. Further investigations are required in larger and more diverse population groups to validate these preliminary findings.

Keywords: Irritable Bowel Syndrome, FODMAP Diet, IBS Symptoms, Diet for IBS Management, Quality of Life, Restricted FODMAP Diet, Randomized Controlled Trial in IBS

Abstract ID: 75

**ABSTRACT TITLE: FORMULATION AND SENSORY EVALUATION OF PLANT BASED
ESSENTIAL AMINO ACID- RICH FOOD MULTIMIX**

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BACKGROUND: The food multimix idea is a food-based approach utilising traditional food preparation methods and locally obtainable, low-priced and inexpensive staples (fruits, pulses, vegetables and legumes) in the preparation of nutrient-enriched multi mixes Aim: The food multimix aims to enhance nutrition using sustainable, accessible, nutrient-rich ingredients, addressing health and environmental concerns. Objectives: To formulate a plant- derived, essential amino acids enriched food multimix using locally accessible millets and legumes to meet 50% of the daily Indian Recommended Dietary Allowance (RDA) for essential amino acids in adults and children. **MATERIALS AND METHODS:** Ingredients such as Glycine max, Paspalum scrobiculatum, Panicum sumatrense and Pistacia vera, known for their high essential amino acid levels, underwent preprocessing techniques like soaking, germination, sun drying, roasting, and pulverizing. Four multimix variations such as I-Millet max, II-Triple blend, III-Legume boost and IV-Legume mighty were developed and analysed for essential amino acid content. IV-Legume Mighty multi mix demonstrated the highest amino acid content among these variations, was subsequently integrated into ten South Indian recipes Idly, Dosa, Onion tomato chutney, Idiyappam, Chapatis, Potato Fry, Sambar, Kootu, Porridge, and Sweet Balls for sensory evaluation, comparing them to standard recipes which are controls without the inclusion of the formula, providing a

basis for comparison. **RESULTS:** Variation IV-Legume Mighty contained the highest amino acid content, meeting 40-70% of the RDA for essential amino acids and fulfilling 30-61% of protein requirements across different age groups. It also contributed 11% of calcium, 25-45% of zinc, and 29-31% of iron needs. Sensory evaluation across the ten South Indian recipes showed a high level of consumer acceptability for all but the porridge recipe. **CONCLUSION:** This food multimix improves nutritional quality by enhancing essential amino acid intake, reducing anti-nutritional factors, improving bioavailability, and promoting easier digestion. The multimix provides key nutrients and offers a viable solution to undernutrition, aligning with local dietary habits and economic considerations. It stands out as a sustainable approach to address dietary deficiencies and support public health goals.

KEY WORDS: Essential Amino Acid, Food Multi Mix, Glycine Max, Paspalum Scrobiculatum, Panicum Sumatrense, Pistacia Vera, South Indian Recipes, Under Nutrition, Vigna Radiata.

Abstract ID: 80

ABSTRACT TITLE: DNA METHYLATION PROFILES OF THE INDIAN DIABETIC ADIPOSE TISSUE

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BACKGROUND: Adipose de novo lipogenesis (DNL) preserves insulin sensitivity. Dysregulation of adipose DNL has been linked to insulin resistance and type 2 diabetes mellitus (T2DM). This study aims to unravel the epigenetic control of adipose DNL in diabetic Indians. **MATERIALS AND METHODS:** Age- and body mass index-matched normal glucose tolerance (NGT) and T2DM subjects were recruited with written, informed consent at the Department of General Surgery, St. John's Medical College and Hospital, Bengaluru. Omental adipose tissue was collected from individuals undergoing laparoscopic surgeries for their clinical complications. Epigenome-wide DNA methylation profiling of adipose using Illumina EPIC v2 methylation array was conducted. **RESULTS:** 35 NGT (males:46%) and 33 T2DM subjects (males:39%) were recruited. 2356 (FDR corrected $P < 0.05$) differentially methylated probes (DMP) across both sexes in T2DM subjects were identified. 807 (94%), 537 (97%) and 3174 (69%) of the DMP annotated genes were hypermethylated in the diabetic overall (male and female), female and male groups respectively, were hypermethylated. Male and female diabetics had 107 genes common between them, indicating sex-agnostic methylation profiles. DMP annotated genes such as HDAC2, SVBP, NGEF were hypermethylated in female diabetics but hypomethylated in male diabetics. While PHYHIP, PIEZO1 and KLC1 were hypermethylated in both the sexes. **CONCLUSION:**

A significant proportion of T2DM-associated DMPs and their corresponding mapped genes were hypermethylated in T2DM omental adipose tissue compared to NGT. While most (85%) of the DMPs annotated to genes were methylated in the same direction between male and female diabetics, 15% of these genes were hypermethylated in female and hypomethylated in the male diabetic group, indicating a sex-specific difference in the diabetic adipose methylome. These findings highlight the potential influence of sex-specific epigenetic regulation in T2DM.

KEY WORDS: Type 2 Diabetes Mellitus, Epigenetics, DNA Methylation.

Abstract ID: 84

ABSTRACT TITLE: DEVELOPMENT, PACKAGING, AND QUALITY EVALUATION OF RED KIDNEY BEAN SPREAD

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BACKGROUND: To develop the healthy, vegan ready to eat product using red kidney beans, that can be spreadable and can also be used as a dip, or dressing for salads. It will also improve the red kidney bean utilization in our country. **MATERIALS AND METHODS:** To develop basil pesto bean spread the red kidney beans, basil leaves, sunflower oil, cashew nut kernels, garlic, black pepper and salt were used. The trials were conducted with different flavours and in different proportions. The products were subjected to different analysis tests as sensory, proximate, microbial, and statistical analysis. The sensory analysis was carried out by semi trained panel members. Statistical analysis of data was carried out using one-way analysis of variance (ANOVA) single factor, Kruskal Wallis test, Chi square test. Statistical analysis was performed with the help of XRealStats in MS Excel. **RESULTS:** The product trial for basil pesto vean spread was highly acceptable by the panel members. The product when analysed for storage and packaging studies it showed negligible microbial growth during storage period in refrigeration conditions of 28 days and no significant difference in its taste, colour, spreadability and consistency, moisture, acidity. It showed significant decrease in the salt content. The glass jars were used for packaging as they provide good visibility and barrier for external matter and microorganisms. **CONCLUSION:** In conclusion, the development of the basil pesto bean spread provides a healthy and delicious option and sustainable alternative to the commercially available spreads. With the growing market of spreads and the vegan products, this product is expected to appeal a wide range of health-conscious consumers who prioritize animal welfare, sustainability and natural ingredients.

KEY WORDS: Spread, Vegan, Red Kidney Beans, Basil, Pesto.

Abstract ID: 89

ABSTRACT TITLE: DEVELOPMENT OF A NOVEL EVENT-RELATED-POTENTIALS PARADIGM TO ASSESS NEUROCOGNITIVE PERFORMANCE IN INFANTS: A FEASIBILITY STUDY IN A RURAL SOUTH INDIA

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BACKGROUND: The Event-related-potentials (ERPs) technique captures real-time brain activity in response to stimuli, providing an objective assessment of cognitive function. Infancy is a crucial period with rapid brain growth occurring within first year of life. Designing culturally relevant, infant-friendly stimuli specific to the population is crucial for accurate evaluation. This study, aimed to develop a short novel ERP paradigm with auditory and visual stimuli to evoke ERPs in infants aged 6-12 months and test its feasibility in a deployable field setup in rural Chitradurga, Karnataka. **MATERIALS AND METHODS:** The ERP paradigm included visual (multiple infant-friendly images of animals, cartoons, objects, and emotional faces) and auditory (paired tones of two frequencies) stimuli, presented independently and at specified time intervals time-locked to Electroencephalogram. This paradigm was designed to evoke multiple ERPs to simultaneously assess auditory, visual and attention processing based on a previously tested and published method in Indian adults (Assessing-Neurocognition-via-Gamified-Experimental-Logic). ERP data from 23 eight-month-old infants from two Chitradurga taluks were acquired using an adjustable 10-12 electrode saline-based cap with portable BESS 16ch XAmp system and a paradigm software developed by Axxonet System Technologies in a deployable field setup. **RESULTS:** ERP's related to multiple cognitive processes, including visual processing; Negative290, Positive400 (N290, P400) were prominent in the occipital lobe. Auditory processing; Mismatch Negativity (MMN) and attention/memory encoding; Negative-Central (Nc) were prominent in the temporal lobe in all participants. The median area-under-the-curve was 2.31(1.46,4.92) vs 1.29(0.93,4.42) for N290; 2.57(1.36,5.19) vs 1.42(0.58,2.62) for P400 in face vs non-face images, 1.78(0.85,2.80) vs 3.81(1.23,6.24) for MMN in standard vs deviant tones, 2.11(1.28,4.02) vs 2.77(1.39,5.38) for Nc in frequent vs rare images. **CONCLUSION:** These findings suggest that infants actively perceived and processed auditory, visual information differently in the designed ERP paradigm. The experiment proved feasible to capture ERPs in a deployable field setup in Indian infants under 1

year. Further, this ERP paradigm is used to test the efficacy of 3-month targeted nutritional intervention integrated with an educational component in a randomised controlled trial to detect ERP changes between control and intervention groups.

KEY WORDS: Event-Related-Potentials, Novel Paradigm, Field Deployable Setup, Feasibility Study, Rural Infants Population.

Abstract ID: 91

ABSTRACT TITLE: IMPACT OF TWO DOSES OF VITAMIN D SUPPLEMENTATION ON MATERNAL CIRCULATING TOTAL 25(OH)D LEVELS - A QUASI-EXPERIMENT

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BACKGROUND: Vitamin D deficiency (VDD) affects 70-90% of Indian pregnant women. As pregnancy advances, demand of vitamin D increases to support the growing foetus, making it essential to address maternal deficiency and aid transplacental transfer of vitamin D to foetus. Thus, our study aimed to assess the impact of 2000IU vitamin D3 on change in total 25(OH)D levels from first to third trimester compared to 500IU (standard-of-care) vitamin D3. **MATERIALS AND METHODS:** This quasi-experiment was conducted among VDD pregnant women. Following written informed consent, apparently healthy adult pregnant women with singleton foetuses were recruited at Obstetrics and Gynaecology Department of St. Johns Medical College Hospital, Bengaluru and were allocated to the supplementation group based on their consent. Participants consumed either 2000IU or 500IU vitamin D3 per day, administered as two tablets, which also contained 1g of elemental calcium. At recruitment, demographic, dietary, anthropometric, and seasonal data were collected. These measurements, along with supplement adherence details, were repeated at follow-up visits. Biomarkers like, serum total 25(OH)D, parathyroid hormone (PTH), vitamin-D-binding-protein, and vitamin-D-receptors were analysed at recruitment, then in second and third trimesters. Urinary calcium-to-creatinine ratio was assessed mid-pregnancy to rule-out hypervitaminosis D in both groups. For current statistical analysis, each participant in SoC-group was randomly matched for age and parity categories with two participants from the intervention group. **RESULTS:** In the present analysis, 65.6% of the total 90 participants (Standard-of-care-group - n=30; Intervention-group - n=60) transitioned to sufficiency by third trimester. The delta change in total 25(OH)D levels was statistically greater in the intervention compared to the SoC-group (14.9±9.9ng/ml vs. 9.5±1.3ng/ml, p=0.022). Importantly, none of the participants in the study exceeded the predefined safety threshold of urinary calcium-to-creatinine ratio of 0.8 or total 25(OH)D of 90ng/ml. **CONCLUSION:** These findings suggest that the higher dose of 2000IU per day vitamin D3 supplementation compared to standard-of-care, significantly enhances maternal total 25(OH)D levels, thereby more effectively alleviating VDD during pregnancy.

KEY WORDS: Vitamin D Deficiency, Pregnancy, Intervention, Supplementation, Total 25(OH)D.

Abstract ID: 94

ABSTRACT TITLE: ETHNOPLANTKINETIC STUDIES ON CITRUS-MEDICA: ELUCIDATION OF ANTI-INFLAMMATIN ACTIVITY USING IN- SILICO TECHNIQUE

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Background: Typically, increased consumption of fruits, vegetables, and whole grains contributes to the reduced risk of neurodegenerative diseases, cardiovascular disease (CVD), diabetes, and cancer. Citrus medica (citron/kimb), a member of the Rutaceae family is originated from India, China, and has spread across the western countries. The genus Citrus L., is one of the most important fruit crops, rich in carotenoids, flavonoids, terpenes, limonoids, and other bioactive compounds contributing nutraceutical values. Often flavonoids are proven to be the vital nutraceutical regime comprising diverse therapeutic properties. In line, rutin, also known as vitamin P or rutoside, has been explored for a number of pharmacological effects. Tea leaves, apples, and Oregano possess rutin molecule as one of the active constituents. Currently there is need of validated experimental research for understanding its nutraceutical potential . **Objective:** The investigation aims at understanding the Anti-inflammatory properties of Rutin using Citrus Medica by means of insilico technique. **Materials and Methods:** A. Analytical study- proximates of C.Medica were invetigated using standard operating protocols of AOAC. B. Phytochemical studies- determination of Rutin using RU-FD-AMGCS-01 Method C. In-silico study - using Cygwin software (A Linux-based platform) the anti-inflammatory effect of Rutin was investigated. **Results:** The proximate composition reveales CHO (8.92g/100), protein (2.10g/100g), total fat (nil),total moisture (90%). Ash (98%) The minerals present are zinc (0.35/ 100g), Magnesium (1.57mg/100g) of the 100g sample. In order to compare the binding energies of the ligands with the highest binding affinities, the binding energies of dexamethasone was utilised as a reference standard (control). It was demonstrated that a Rutin was potent antagonistic compound and had a minimum binding energy of -3.92 kcal/mol with an estimated inhibition constant of 1.35µM than the control (Dexamethasone) that had minimumn binding energy of -5.43 kcal/mol with an estimated inhibition constant of 104.56 µM.. **Conclusion:** Experimental research paves a strong understanding of anti-inflammatory activity of the bioactive molecule Rutin, This may help in addressing neuroinflammation seen in Neurodevelopmental and neurodegenerative disorder.

Keywords: Citrus Medica, Rutin, In-silco Study, Neuroinflammation, Neurodevelopmental Disorder

ABSTRACT ID: 101

**ABSTRACT TITLE: IDENTIFYING THE OPTIMAL FUNCTIONAL FOOD PREMIX TO ALLEVIATE
DIABETES-RELATED COMPLICATIONS IN TYPE 2 DIABETES**

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BACKGROUND: Type 2 diabetes, characterized by insulin resistance and impaired glucose metabolism, is a significant global health concern. This study investigates the potential of a functional food premix containing Perilla, Fenugreek, and Kodo millet in managing type 2 diabetes. Perilla, known for its rich polyphenol content, may contribute to regulating glucose levels. Fenugreek has demonstrated anti-diabetic properties, including reducing fasting plasma glucose and improving insulin sensitivity. Kodo millet, a nutrient-dense gluten-free grain, has shown antioxidant and anti-diabetic effects. Together, these three ingredients could be utilized as a functional food to aid in managing type 2 diabetes. **MATERIALS AND METHODS:** The methodology involves formulation of random premix ratios using response surface methodology out of which ten ratios were selected for further testing for moisture, ash, fat, protein, fiber, and carbohydrates. Validation is being carried out for the antioxidant and antidiabetic activity through in vitro DPPH assay and α -amylase inhibitory assay, respectively. **RESULTS:** Among the various ratios, PM (premix) 6 demonstrated the highest IC₅₀ value of α -amylase inhibitory activity, registering at 41.86 μ g/ml against Acarbose being used as standard with IC₅₀ 24.73 μ g/ml, and exhibited the most potent radical scavenging activity, measuring 83.41 mg/ml. Furthermore, it contained a protein content of 23.44% and a fat content of 17%. PM 4 displayed the highest protein content at 31.08%, whereas PM 7 showcased the lowest fat content at 8%. **CONCLUSION:** These results indicate that premix 6 shows the highest anti-diabetic activity out of the different premix ratios and may be further considered for in vivo studies to validate the findings.

KEY WORDS: Functional Food, T2DM Management, Insulin Resistance, Anti-Diabetic Property.

Abstract ID: 106

**ABSTRACT TITLE: EXCESS MATERNAL VITAMIN B12 SUPPLEMENTATION DIFFERENTIALLY
INFLUENCES MATERNAL FATTY ACIDS**

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Background: Both vitamin B12 and fatty acids are vital for fetal growth and development. They are interlinked in the one-carbon cycle, and play an important role in 'programming' of adult non communicable diseases. Studies have extensively demonstrated the effect of maternal vitamin B12 deficiency and adverse pregnancy outcome. However, less is known about effect of excess maternal vitamin B12 supplementation on pregnancy outcome and fatty acid status. This study reports the effect of prenatal supplementation of excess vitamin B12 on reproductive performance and maternal fatty acids levels in Wistar rats. **Materials and Methods:** Female rats were divided into three groups from pre-pregnancy to pregnancy, viz Control, Intermediate and Excess. The control group was given 0.375 µg/day while the intermediate group and excess group were supplemented with 1.5 µg/day and 120 µg/day of vitamin B12 respectively. Dams were sacrificed at d20 of gestation to collect dam blood, brain, placenta, pup liver and pup brain. Vitamin B12, folate and homocysteine were estimated by chemiluminescent microparticle immunoassay technology. Fatty acids levels from dam erythrocytes was analysed using gas chromatograph. Values were expressed as mean ± SD. **Results:** Vitamin B12 levels were significantly higher in excess group ($p < 0.01$) as compared to intermediate and control group. Folate and homocysteine were found to be similar across groups. The weight gain across pregnancy was similar between groups. The dam brain weight in the excess group was lower ($p < 0.05$) as compared to the intermediate group. There was no difference in litter weight or litter size. Myristic acid (MYR) ($p < 0.01$), stearic acid (STE) ($p < 0.05$) and saturated fatty acids (SFA) ($p < 0.05$) were higher in the excess group as compared to the control group. In contrast, total omega-6 fatty acids ($p < 0.05$) and omega 3 to omega 6 ratio ($p = 0.052$) were lower in the excess group as compared to the control group. **Conclusion:** Our study demonstrates no adverse effect of excess maternal vitamin B12 supplementation on pregnancy outcome. Excess vitamin B12 showed differential effects on various fatty acids studied. Further studies need to examine the long term effects of excess vitamin B12 supplementation.

Keywords: Vitamin B12, Folate, Homocysteine, Fatty Acids, One Carbon Cycle, Reproductive Performance

Abstract ID: 108

ABSTRACT TITLE: COMPARATIVE ANALYSIS OF NUTRITIONAL PROFILES OF BARNYARD MILLET (ECHINOCHLOA ESCULENTA) VARIETIES

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Background: Barnyard millet is an underutilized crop that contains significant amounts of macro- and micronutrients. This gluten-free grain offers numerous health benefits, including management of diabetes, obesity, blood pressure, cardiovascular disease, and celiac disease. The purpose of the

present study was to compare the nutritional profile of two barnyard germplasm lines (excession of these germplasm lines has been short listed as variety for cultivation in Punjab) against the national check. **Materials and Methods:** Two germplasm lines B1 (IC-372797) and B2 (IC-472348) and national check (MDU 1 IC 280656) were procured from Director of seeds, Punjab Agricultural University, Ludhiana and. The barnyard millet grains were milled at a medium speed of 18,000 rpm to produce flour (mesh size 0.895mm) for nutritional analysis. Standard techniques and protocols were employed to analyze the proximate composition, total starch, resistant starch and trypsin inhibitor and phytic acid. **Results:** The crude protein and crude fibre content was found to highest in B1 variety (10.12, 6.88%) followed by B2 (9.96, 6.20%) and national check (9.45, 6.72 %). The total starch content in B1 per 100gm was also found higher (53.96g) than B2 (47.78g) and national check (49.65g). Similarly, resistant starch content in B1 was 11.26g which was higher than B2 (8.20g) and national check (8.48g) respectively. Anti-nutritional factors viz. phytic acid and trypsin inhibitor was found to be lowest in B1 (1.87, 7.91mg) as compared with B2 (2.14, 8.01mg) and national check (1.92, 8.22mg), respectively. **Conclusion:** It was concluded that B1 variety (IC-372797) had higher amount of crude protein, crude fibre, total starch, resistant starch and low levels of phytic acid and trypsin inhibitor than other variety and national check. Therefore, this variety is nutritionally better and should be promoted for cultivation in Punjab. Also, the value added products can be developed from this variety for providing healthier dietary options to the population.

Keywords: Barnyard Millet, Nutritional Value, Resistant Starch, Anti-Nutritional Factors.

Abstract ID: 123

**ABSTRACT TITLE: DEVELOPMENT OF PROBIOTIC COMPLEMENTARY FOOD AND ITS
ANTIMICROBIAL ACTIVITY AGAINST COMMON ENTEROPATHOGENS**

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Background: The Sustainable Development Goal 2 aims to eradicate hunger and ensure food security by 2030, providing safe and nutritious food year-round. Yet, one in four children under five suffers from stunted growth due to chronic undernutrition, increasing their risk of diseases like pneumonia, malaria, and diarrhea. Food fortification is crucial in India and recognized as a cost-effective strategy to improve diets and prevent micronutrient deficiencies. Developing probiotic complementary foods from local ingredients can enhance accessibility and mitigate malnutrition and lifestyle diseases among vulnerable populations. Cereals serve as excellent substrates for fermentation, mainly involving lactic acid bacteria and yeasts. However, spontaneous fermentation poses risks of pathogen contamination and quality control issues. To ensure consistent product quality, uncontrolled fermentation techniques in developing countries should be replaced with pure culture fermentation. **Materials and Methods:** Various ingredients for the complementary food mixes were selected following ICMR (2000) guidelines and

sourced from Coimbatore, Tamil Nadu. These ingredients, chosen were processed into flour using standard protocols for mix development. Six different complementary food mixes were developed requiring at least 75% cereals and legumes in corporations. Antimicrobial activity was assessed using the disc diffusion method, revealing growth inhibition zones for various antibiotics against common enteropathogens. **Results:** Ampicillin showed significant inhibition against the pathotypes EHEC (15±0.03 mm) and O157:H7 (18±0.01 mm). The developed mix CFM II demonstrated strong inhibitory effects on O157:H7 (28±0.01 mm) and EHEC (26±0.05 mm), while CFM I inhibited O157:H7 (26±0.05 mm) and EHEC (25±0.001 mm) as well. **Conclusion:** Both formulations exhibited significant antimicrobial activity against enteropathogens. With growing concerns about antibiotic resistance, natural alternatives like probiotics are increasingly appealing. The WHO recommends reducing antibiotic use in human medicine, highlighting the need for effective fermentation technology to enhance the nutritional quality of non-dairy foods for infants.

Keywords: Probiotic, Complementary, Antimicrobial, Enteropathogens.

ABSTRACT ID: 162

ABSTRACT TITLE: NUTRITIONAL CONTENT IN LEAFY VEGETABLES: ASSESSING THE EFFECT OF HYDROPONIC FARMING PRACTICES ON NUTRITIONAL AND MINERAL COMPOSITION

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Background: Hydroponic farming has gained popularity as a soil-less agricultural method and is currently practiced in several regions, including Jaipur. Hydroponic farming is a promising sustainable agricultural practice that offers a controlled environment for optimizing nutrient supply to crops, although definitive evidence is limited. Thus, this study aimed to assess the impact of hydroponic cultivation on the nutritional composition and mineral content of leafy vegetables, comparing it to conventional soil-based farming methods. The hypothesis tested was that hydroponically grown vegetables would retain higher concentrations of essential nutrients and minerals. **Materials and Methods:** The samples were purchased directly from vendors of both conventional and hydroponic vegetables from Jaipur. The analysis of nutritional composition of the leaves of coriander(*Coriandrum sativum*), mint (*Mentha spicata*), lettuce (*Lactuca sativa*) and spinach (*Spinacia oleracea*) were carried out using standard methods. Essential minerals such as iron, calcium, magnesium, potassium, and sodium were analyzed using atomic absorption spectrophotometry (AAS). Data were statistically analyzed using ANOVA to identify significant differences between the farming methods. **Results:** The results showed that there were minimal differences in most nutritional components between hydroponic and conventionally grown vegetables. Hydroponic samples exhibited a slight increase in moisture, ash, and protein content, though these differences were not statistically significant. Potassium levels were notably higher in

hydroponically grown vegetables, while sodium levels showed a marginal increase. In contrast, iron content was consistently higher in conventionally grown samples. No significant differences were observed in calcium and magnesium levels across the two farming methods. **Conclusion:** The study concluded that while hydroponic vegetables had slightly elevated potassium levels, the overall differences in nutritional and mineral content between hydroponic and conventional farming methods were minor. Both methods do not provide a clear nutritional advantage over one another, apart from potassium levels.

Keywords: Conventional, Farming, Hydroponic, Nutritional, Sustainable.

Abstract ID: 176

ABSTRACT TITLE: PRECONCEPTION HIGH-DOSE VITAMIN D3 SUPPLEMENTATION IMPROVES PREGNANCY OUTCOMES BY MODULATING PLACENTAL INFLAMMATION AND OXIDATIVE STRESS IN A GDM RAT MODEL

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Background: Gestational diabetes mellitus (GDM) is a common pregnancy complication linked to placental dysfunction, inflammation, and oxidative stress. Adequate vitamin D (VD) levels (≥ 30 ng/ml) may offer protection. This study examines the effects of high-dose vitamin D3 (VD3) supplementation, starting preconception, on pregnancy outcomes, placental inflammation, and oxidative stress in a GDM rat model. **Materials and Methods:** Wistar albino rats were divided into five groups: (1) Control (GR-1: 1000 IU VD3/kg diet), (2) Vitamin D Deficient (GR-2: 0 IU VD3/kg diet), (3) GDM control (GR-3: 1000 IU VD3/kg diet + GDM), (4) VD3-supplemented (GR-4: 1500 IU VD3/kg diet + GDM), and (5) High-dose VD3-supplemented (GR-5: 10,000 IU VD3/kg diet + GDM). GDM was induced in GR-3, GR-4, and GR-5 through a high-fat, high-sugar diet and streptozotocin injection. On gestation day 20, dams were dissected, and dam blood and placentas were collected for further analysis. **Results:** VD3 supplementation at 10,000 IU/kg in GR-5 significantly elevated ($p < 0.01$) serum VD levels to sufficiency (> 30 ng/ml) compared to other groups. GR-3 showed higher gestational weight gain and a reduced fetal/placental weight ratio, which normalized in GR-5 ($p < 0.05$). VD3 in GR-5 also improved calcium homeostasis, with higher phosphorus and reduced parathyroid hormone compared to GR-3. One-carbon metabolites revealed higher homocysteine ($p < 0.05$) and reduced folate ($p < 0.01$) in GR-3 compared to GR-1, while GR-5 showed increased folate and reduced homocysteine levels in GR-5 compared to GR-3 ($p < 0.05$). The levels of malondialdehyde, a marker of oxidative stress, were significantly higher in GR-3 compared to GR-1 ($p < 0.05$) and were lowered in GR-5 ($p < 0.01$). Fatty acid analysis indicated altered n-6 fatty acids in GDM groups, compared to non GDM groups. The GDM groups showed higher placental TNF- α levels than non GDM groups. The IL-6 levels were higher in GR-3 and GR-4 ($p < 0.05$) compared to the GR-1 and were lowered in GR-5. **Conclusion:** High-dose

VD3 supplementation (10,000 IU/kg) in GDM rats effectively raised serum VD to sufficiency and positively impacted pregnancy outcomes by influencing placental one carbon cycle metabolism, fatty acid metabolism, oxidative stress and inflammation.

Keywords: Vitamin D, Gestational Diabetes Mellitus, Placental Inflammation, Oxidative Stress

Abstract ID: 250

ABSTRACT TITLE: EVALUATING THE COGNITIVE LEARNING BEHAVIOR IN MICE FED WITH NOVEL DHA RICH DIET

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Background: Advanced cognitive function is essential for human evolution, affecting quality of life and societal progress. The WHO reports a rising prevalence of cognitive impairment and dementia, particularly in developing regions, with about 35.6 million affected globally. In India, the prevalence of intellectual disabilities is 10.5 per 1,000, higher in urban areas. Research indicates that diet rich in docosahexaenoic acid (DHA), plays a critical role in improving cognitive outcomes, while deficiencies can lead to behavioral issues. This study investigates the effects of a novel DHA-rich diet on cognitive learning behavior in mice. **Materials and Methods:** This interventional study involved 24 BALB/c mice, aged 3-4 weeks. A novel DHA diet was formulated with flax seeds, barley, green gram, millet and fish oil, which were roasted, ground, and baked into pellets. Mice were divided into three groups: Group 1 received the DHA-rich diet, Group 2 received a mixture of normal and DHA diet, and the control group received standard pellets. Nutrient intake was monitored over 90 days, while cognitive performance was evaluated using novel object recognition and T-maze test at short (45 days) and long (90 days) intervals. Data were analyzed using repeated measures ANOVA and two-way ANOVA. **Results:** Nutrient intake varied significantly among groups, with group 1 consuming more protein, due to the DHA diet's composition. Cognitive test indicated that in the short term, no significant improvements

were observed in the novel object recognition task across groups. However, in the long term, Group 1 exhibited superior cognitive performance, visiting novel objects more frequently compared to controls. T-maze tests showed similar patterns, with Group 1 showing improved spatial memory in both spontaneous alteration and rewarded alteration tasks. The combination diet (Group 2) performed poorly, likely due to reduced DHA content. **Conclusion:** Long-term supplementation with a novel DHA-rich diet positively impacts cognitive learning memory in BALB/c mice, particularly in spatial memory tasks. Although statistical significance was not uniformly achieved, mean differences suggest beneficial effects. These findings highlight the potential of dietary DHA to enhance cognitive function and warrant further investigation into dietary interventions for cognitive health. In this study, stable omega-3 fatty acid and protein enriched flour pre-mix developed. This pre-mix can be used for omega-3 fatty acid and protein enriched flour-based food products.

Keywords: Cognition, Flaxseed, Omega-3 Fatty Acid, Object Recognition, T-Maze

Abstract ID: 262

ABSTRACT TITLE: DIVING DEEPER: A SYSTEMATIC REVIEW AND META-ANALYSIS OF SHORT-TERM VS. LONG-TERM YOGA PRACTICE EFFECTS IN MANAGING TYPE 2 DIABETES AMONG ASIAN POPULATION TO COMPARE THE EFFECTIVENESS OF SHORT-TERM (LESS THAN 12 WEEKS) VERSUS LONG-TERM (MORE THAN 12 WEEKS) YOGA PRACTICE IN MANAGING T2D, SPECIFICALLY AMONG THE ASIAN POPULATION

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Background: 5 out of the top 10 countries worldwide with a prevalence of diabetes were from Asia, which has become a growing health concern. Yoga, a mind-body practice, has improved the glycemic profile, reduced insulin resistance, and improved lipid profiles. However, the comparative analysis of short-term vs. long-term yoga intervention effect in managing type 2 diabetes hasn't been studied.

Materials and Methods: Databases PubMed, Scopus, Web of Science, and Science Direct were searched for the past two decade (2004-2024) with keywords: [diabetes management/treatment, glycemic control, HbA1c, lipid profile/ Yoga therapy, yoga, yoga exercise]. Out of 664 results, 22 Randomized clinical trials were identified where Yoga was practiced. They are investigated for the comparative analysis in managing blood sugar levels. **Results:** 1720 participants, age 18-65 years, from 22 studies with intervention periods ranging from 5.5 – 24 weeks. yoga therapies of ≥ 12 weeks show significant decrease in HbA1c levels [SMD=-0.70, $p=0.0001$, $I^2=89\%$], while interventions of ≤ 12 weeks did not show a statistically significant difference [SMD=-1.04, $p=0.28$, $I^2=93\%$]. Both durations of yoga interventions resulted in substantial reductions in Fasting Blood Glucose and Post-Prandial Blood

Glucose levels. Weight loss was significant for interventions ≤ 12 weeks [SMD=-0.60, $p=0.05$, $I^2=0\%$] but not for those ≥ 12 weeks [SMD=-0.58, $p=0.17$, $I^2=92\%$]. Lipid profile changes varied, with significant reductions in Total Cholesterol [SMD=-0.34, $p=0.05$, $I^2=85\%$] and Low-Density Lipoprotein [SMD=-0.30, $p=0.05$, $I^2=79\%$] for interventions of ≥ 12 weeks, while High-Density Lipoprotein [SMD=0.37, $p=0.04$, $I^2=85\%$] increased significantly in this group. Blood pressure improvements were notable, with both SBP and DBP showing significant reductions in interventions lasting ≤ 12 weeks [SMD=-1.18, $p=0.009$, $I^2=69\%$ and SMD=-0.62, $p=0.003$, $I^2=0\%$, respectively]. **Conclusion:** Yoga interventions lasting for ≥ 12 weeks significantly improve glycemic control, lipid profile, blood pressure, and inflammatory biomarkers, indicating yoga as an effective complementary therapy for managing type 2 diabetes

Keywords: Type 2 Diabetes, Yoga, Glycemic Control, Diabetes Management.

Abstract ID: 281

ABSTRACT TITLE: IMPACT OF PEARL-MILLET AND PEANUT-CHIKKI SUPPLEMENTATION ON GUT-MICROBIOTA AND HEMOGLOBIN-LEVELS IN ANEMIC WOMEN OF REPRODUCTIVE-AGE

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Background: According to NFHS-5 data, 57% population of Indian females within the age-group 15-49 are affected by anemia. This affects their physical, cognitive capacity, increasing the risk of infections, further endangering the maternal and child health. Along with dietary-factors, impairments in gut-microbiota and nutrient assimilation plays an equally important role in contributing to anemia. In this intervention study (IEC-05/II/2018), a pearl-millet-based-chikki was given to participants which is not

only rich in iron but also holds prebiotic potential due to its high-fibre content. This product aims to address the situation through modulation of the gut-microbiota and hemoglobin-levels. **Materials and methods:** A total of 133-women of reproductive-age with mild-to-moderate anemia ($Hb \geq 8g/dL$) were recruited for the intervention. A pearl-millet-peanut chikki-bar with biofortified pearl-millet (Dhanashakti-variety) was developed. 100g daily serving of the product was supplemented for 90-days (twice-a-day). Blood and fecal samples were collected pre-and-post-intervention. The blood samples were analyzed to measure hemoglobin along with other serum-iron markers. For fecal samples, 88 subject's fecal sample (matched) were used for the gut-microbiota analysis for both baseline and endpoint. Analysis was done using 16S-rRNA amplicon-sequencing (targeting V3-V4-region) by high-throughput metagenomic-sequencing. Changes in the gut-microbiota structure was analysed. Alpha-diversity indices were calculated to assess microbial diversity, and differential abundances of bacterial groups by statistical methods. Paired t-tests were used to compare both timepoint hemoglobin and serum-iron levels. **Results:** For these 133-subjects, mean Hb-levels reported an increase of 10.5 ± 1.06 to 10.9 ± 1.2 from baseline to endpoint. Based on Hb-levels, individuals (at endpoint) were categorised as the responder group (shifting from moderate to mild, mild to normal conditions), while those with no improvement were categorised as non-responders. In alpha-diversity indices, an increased diversity, richness, and evenness was seen in the responder group, contrast to non-responder group. **Conclusion:** Changes in alpha-diversity indices suggest a potential connection between gut-microbiota diversity and nutrient-assimilation. This study underscores the potential of integrating naturally fortified and gut-microbiota directed diets for anemia management strategies. By addressing both nutritional intake and gut health, such interventions may offer a more holistic and effective approach to combating anemia in vulnerable populations.

Keywords: Gut-microbiota, Anemia, Gut-modulation, Pearl Millet

Abstract ID:290

ABSTRACT TITLE: ESTABLISHING THE ONSET OF DISEASES DUE TO CONSUMPTION OF ULTRA-PROCESSED FOOD AND ITS INTERVENTION BY ALGAL FOOD FORTIFICATION

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Background: Nutritional intake or diet is one of the major factors influencing gut-health. Ultra-processed foods (UPFs), rich in sugars, unsaturated fats, and chemical additives, contribute to numerous non-communicable diseases leading to national disease burden. Dysbiosis, a key biomarker of these conditions, can be mitigated by improving dietary intake. *A. platensis*, a prebiotic with high nutritional value, has shown promise in regulating metabolic disorders, including hypercholesterolemia and inflammation. Using *Drosophila melanogaster* as a model organism, in this study which shares significant genomic and gut microbiome similarities with humans, provides an effective system to

investigate the impact of prebiotic / nutraceutical interventions on disease reversal. **Materials and Methods:** Environmental conditions were simulated for the growth of *Drosophila* in the laboratory. Novel variations (4) of UPF based media for insect growth was formulated. These animals (~150) were used to study on-set of diseased (gut dysbiosis) conditions by consumption of UPF through conventional microbial assays evaluating the efficacy of algal fortified food as an intervention to diseased conditions. **Result:** Physiological changes were systematically analyzed in this model. One of the six families found in the *Drosophila* gut microbiome also part of human intestinal flora were microbiologically estimated and identity ascertained. Apart from the novelty of standardizing growth for the model organism in UPF and its variant food diets; counts of gut microbes in different media exemplified the negative impact (>90%) of UPF and positive intervention exhibited by consumption of natural super foods viz. Spirulina indicative of disease remission (>95%). **Conclusion:** The increased size and sluggish behavior of the flies and behavioral assays were indicative towards onset of obesity. These conditions led to elevated oxidative stress levels along with pro-inflammatory cytokines, setting the bar for other metabolic disorders e.g.the absence of reproduction observed on consumption of an UPF-based diet. All these conditions play a major role in reducing the lifespan of the organism causing early death. A Spirulina-fortified diet showed an increase of beneficial microflora mitigating gut dysbiosis – A plausible solution to increasing disease burden NCDs.

Keywords: Ultra-Processed Foods, Dysbiosis, Spirulina, *Drosophila*, Food Fortification

Abstract ID: 291

ABSTRACT TITLE: IMPACT OF “CARDIACARE-DM” FUNCTIONAL FOOD FORMULATION ON LIPID PROFILE, BODY COMPOSITION, AND BLOOD SUGAR CONTROL IN TYPE 2 DIABETES PATIENTS

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Background: Type 2 diabetes mellitus (T2DM) increases cardiovascular disease (CVD) risk, especially in individuals with abdominal obesity. Functional foods enriched with bioactive compounds offer potential as complementary therapies. This study examines the effects of Cardiacare-DM (C-DM), a functional food designed to lower blood sugar and cholesterol, on lipid profiles and body composition in T2DM patients. The goal is to enhance metabolic and physical health, contributing to improved diabetes management and reduced cardiovascular risk. **Materials and Methods:** A 90-day cohort study was conducted on 31 T2DM subjects (14 men and 17 women), aged 32 to 65 years, recruited from the Primary Health Centre, University of Mysore. 100 g of C-DM was consumed in the form of ‘chapathi’ on a daily basis. Pre- and post-intervention assessments were performed on biochemical parameters, anthropometric measurements by using standard protocol, and body composition using a multi-

frequency analyzer (InBody 770). Data analysis was conducted using SPSS with relevant statistical methods. **Results:** A parametric paired sample t-test ($p < 0.05, 0.01$) revealed significant improvements in body composition post-intervention. Body weight, BMI (27.5 to 27), body fat mass (27 to 26 kg), and body fat percentage (38 to 37%) decreased, along with waist-to-hip ratio (0.93 to 0.92), visceral fat area (137 to 128 cm²), degree of obesity (128 to 126), abdominal circumference (93 to 91 cm), and arm measurements (33 to 32 cm), indicating reduced abdominal obesity. Biochemical markers showed significant reductions in fasting blood sugar (165 to 129 mg/dl), postprandial blood sugar (232 to 160 mg/dl), HbA1c (8.8 to 8.3%), and average blood glucose (204 to 192 mg/dl), reflecting improved glycemic control. Lipid profile enhancements included lowered cholesterol (183 to 157 mg/dl), triglycerides (215 to 156 mg/dl), VLDL (49 to 32 mg/dl), and non-HDL cholesterol (144 to 118 mg/dl), reducing cardiovascular risk. **Conclusion:** The C-DM nutritional intervention in T2DM subjects suggests that functional foods could offer a novel and comprehensive dietary approach for managing T2DM and reducing cardiovascular risk. However, further research is necessary to explore its long-term effects.

Keywords: C-DM, T2DM, CVD, Visceral Fat Area, WHR, Lipid Profile, HbA1c, VLDL, Triglycerides, Total Cholesterols.

Abstract ID: 300

ABSTRACT TITLE: ASSOCIATION BETWEEN ANTIOXIDANT MINERALS AND OXIDATIVE STRESS BIOMARKERS WITH ALTITUDE AMONG YOUNG INDIAN MALES; A CROSS-SECTIONAL STUDY

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Background: Lowlanders exposed to high altitude (HA) are susceptible to oxidative stress as a result of hypobaric hypoxia and reduced intake of dietary antioxidants. Limited data available on microminerals status at HA leaves the role of mineral antioxidants poorly understood. This study aimed to estimate levels of selenium (Se), zinc (Zn), iron (Fe) and copper (Cu), along with their bioavailability markers, at different altitudes. **Materials and Methods:** A total of 500 healthy males, aged 20-40 years from different altitudes: sea level (SL)- 257 meters (m), moderate altitude 1 (A1)- 1585m, moderate altitude 2 (A2) - 2290 m, and high altitude (A3)- 3500 m were randomly selected. ICP-MS was utilized

to quantify micromineral levels in plasma. Oxidative stress biomarkers: MDA (malondialdehyde) through HPLC and lipid hydroperoxides through ferric oxidase xylene orange (FOX) assay, metalloproteins: Metallothionein (MT), Cu-Zn superoxide dismutase (SOD), glutathione peroxidase (GPx), Selenoprotein P1 (Sepp1) measured through ELISA. Data analysed through Two-way ANOVA. **Results:** We observed that Se ($p<0.001$), Zn ($p=0.02$), Cu ($p<0.001$) and Fe ($p<0.001$), levels were higher at A2 compared to SL, declined at A3 (Se: $p<0.001$; Zn: $p=0.04$; Cu: $p<0.001$; Fe: $p=0.01$) relative to A2. MDA levels higher at A3 ($p=0.013$) compared to SL, while FOX levels elevated at both A2 ($p<0.001$) and A3 ($p<0.001$) relative to SL. MT levels higher at A1 ($p<0.001$) and A3 ($p<0.001$) compared to SL however lower at A2 ($p<0.001$) relative to A1. SEPP1 concentrations higher at A3 compared to SL ($p<0.001$), A1 ($p<0.001$), and A2 ($p<0.001$). **Conclusion:** Based on findings, we conclude, microminerals exhibit dynamic fluctuations across altitudes, with significant elevations at moderate altitude, followed by a marked decline at higher altitude. This suggests an altitude-dependent modulation of essential trace elements, potentially impacting oxidative stress and metabolic regulation. Significant increase in MDA and FOX levels at higher altitude further implies elevated oxidative stress at A3. MT and SEPP1 levels exhibited dynamic changes, pointing to adaptations to oxidative stress and micromineral homeostasis at varying altitudes. These results provide comprehensive understanding of biochemical adaptations to altitude and ways to alleviate altitude-induced oxidative damage.

Keywords: High Altitude-Antioxidant Minerals – Oxidative Stress Biomarkers – Metalloproteins – ICP-MS

Abstract ID: 301

ABSTRACT TITLE: TOXICITY OF FOOD COLOUR DYE TARTRAZINE AND ITS SAFE ASSESSMENT

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Background: Damage to chromosome is the most observed data in shorter dose treatment. The study aimed to evaluate the experimental practice to show the adverse impact of TAZ harming the genotoxicity of mitotic chromosome, sperm head quality head quality and its count. Several impact includes damage to embryo growing in mother's womb. **Materials and methods:** Swiss albino mice was taken for the experiment for both morphology and count studies of sperm treated with different doses of TAZ, including relevant database measurement. **Results:** The abnormalities includes different forms of sperm head like double headed, banana shape, hookless, dumbbell shape and so on. Sperm count were seen decreased as compared to control group. **Conclusion:** The treated group of tartrazine of higher dose of different duration shows significantly high level of abnormalities in sperm head and sperm counts that is both quality and quantity damage.

Keywords: Tartrazine(taz), Swiss Albino Mice, Sperm Head Morphology, Sperm Count

Abstract ID: 317

ABSTRACT TITLE: SENSORIAL AND NUTRITIONAL QUALITY EVALUATION OF PEARL MILLET BASED VEGAN ICE-CREAM

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Background: Vegan ice cream is the more popular nowadays, which is prepared from coconut milk, soy milk, nuts milk which containing many nutritious value and health benefits. Incorporating millet into ice cream boosts its nutritional value and reduces the carbohydrate profile. Pearl millet is the staple cereal food and meet the nutritional requirement by its highly nutritious components especially in developing countries. It is rich in macronutrients, micronutrients significantly in resistant starch and insoluble dietary fibres. **Materials and Methods:** Pearl millet ice cream has developed with control © (70% milk powder; 130g coconut milk), variation 1(V1) (60% pearl millet; 140g coconut milk), and variation 2 (V2) (85% pearl millet; 115g coconut milk) were developed. Proximate analysis, antinutrient estimation and organoleptic evaluation have carried out by conventional methods. **Results:** Replacement of pearl millet and coconut milk in ice cream with regular ingredients resulted in the beneficial values in all the parameters. Though the most accepted sample was control in sensory evaluation, variation 2 has shown the improvisation in most of the parameters. When comparing with other variations, variation 2 has high dietary fiber, low carbohydrate, low fat and moderate protein that are 4.86 ± 0.13 , 28.82 ± 0.14 , 11.41 ± 0.22 and 3.48 ± 0.15 respectively. Calcium level was high in control group and V2 has slight increase in zinc level compare to V1. Less than 10mg of total polyphenol is present in all the variations as product has undergone to many processing techniques. **Conclusion:** It can be concluded that, millet has major role in reducing the glucose level by having high fiber content and complex carbohydrate, which can be used by lacto Intolerance, hypercholesterolemia individual

Keywords: Pearl Millet, Coconut Milk, Vegan, Ice Cream, Dietary Fiber.

Abstract ID: 319

ABSTRACT TITLE: IMPACT OF NUTRITIONAL INTERVENTION ON HEMOGLOBIN LEVELS OF ADOLESCENTS AND YOUNG ADULT GIRLS (16-24 YEARS) STUDYING IN UNDERGRADUATE COLLEGE OF MUMBAI

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Background: Anemia among adolescent girls is a public health concern that impacts physical strength and cognitive performances. Nutrition education helps in making informed choices about food. The objective of this RUSA sponsored experimental study was to improve hemoglobin (Hb) levels through nutritional intervention by imparting nutrition education and micronutrient supplementation. **Materials and Methods:** 216 adolescent and young adult girls (16-24 years) studying in undergraduate college of Mumbai were recruited using a convenient sampling method for the pilot study. An informed written consent was obtained from parents for blood tests and nutritional intervention. 97 participants were identified as anemic ($Hb < 12$ gm/dl), who were divided into two groups. Group 1 of Mild anemic ($Hb = 11.0-11.9$ gm/dl) and Group 2 of Moderate and severely anemic ($Hb < 11$ gm/dl) participants were constituted. Both the Groups received three nutrition education sessions including one session with parental participation. Group 2 additionally received a single deworming dose followed by micronutrients supplementation (50 mg elemental Iron, 0.5 mg Folic acid and 500 mg Vitamin C) and protein snacks for 100 days under physical monitoring during working days and digital monitoring during holidays. The effectiveness of nutrition intervention was evaluated for hemoglobin (Hb) level before and after intervention. The data was analyzed using SPSS software version 26. **Results:** 75 out of 97 participants completed the post intervention blood tests. The median Hb level of anemic participants increased from 10.8 (9.9,11.4) gm/dl at baseline to 12.1 (11.3-12.8) gm/dl post intervention. For Group 1 participants, although there was a marginal but significant increase ($p = 0.039$) in the Hb levels from 11.4 (11.2,11.7) gm/dl at baseline to 11.6 (11.1,12.2) gm/dl post intervention ($p = 0.039$), whereas Hb levels of Group 2 participants increased significantly ($p < 0.0001$) from 9.9 (9.3,10.5) gm/dl at baseline to 12.7 (11.4,13.4) gm/dl post intervention. **Conclusion:** Micronutrient supplementation is a known intervention to reverse anemia for moderate and severe cases. However, nutrition education, although a slower method, may contribute towards economic and sustainable intervention for improving Hb levels

Key words: Anemia, Adolescent Girls, Haemoglobin Levels, Micronutrient Supplementation, Nutrition Intervention

Abstract ID: 341

ABSTRACT TITLE: SURFACE COATED POMEGRANATE POLYPHENOLS ENCAPSULATED PLGA NANOPARTICLES: PREPARATION, CHARACTERIZATION, ANTIOXIDANT ACTIVITY AND EVALUATION OF ITS TOXICITY

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Background: Pomegranate peel is a non-edible part of *Punica granatum* L. with high concentration of ellagitannins, phenolics, anthocyanidins, flavonoids etc., which exhibits strong antioxidant, anticancer, anti-inflammatory and neuroprotective effects. However, most of these phytochemicals have limited bioavailability and show poor blood brain barrier penetrability, thereby limiting their applicability in treatment of brain disorders. Nanoformulations with PLGA is one of the approaches to improve bioavailability and efficacy of these bioactives. **Materials and Methods:** PLGA- nanoformulations of

Punicalgin and ellagic acid enriched fraction from pomegranate peel was prepared by double-emulsification method and characterized for its particle size, zeta potential and polydispersity index (PDI). The %encapsulation efficiency (% EE) was determined, release studies were carried out. Further characterized using SEM, FTIR, DSC and XRD. The % RSA was estimated using DPPH assay. The erythrocyte compatibility was assayed using hemolysis assay. **Results:** The %yield of extract from peel powder was found to be $42 \pm 1.26\%$ (w/w). The major polyphenols were Punicalagin ($38.0 \pm 3.01\%$), Ellagic acid ($14.5 \pm 2.95\%$), Gallic acid ($4.6 \pm 1.1\%$). Total polyphenol content was found to be 45.55 ± 1.76 g GAE/100g. The particle size of uncoated and coated nanoparticles were 173.57 ± 1.86 nm and 181.47 ± 1.10 nm, respectively. The %EE was 71.72 ± 3.02 and 68.52 ± 0.72 respectively. PDI indicated the narrow distribution of nanoparticles. SEM images revealed spherical shape with even distribution of particles. FTIR studies confirmed the encapsulation of bioactive and P80 coating. XRD patterns confirmed the amorphous nature of the nanoparticles. DSC also indicated the increase in the amorphous nature and thermal stability of NPs on encapsulation and coating. The release pattern of polyphenols revealed approximately 50% and 90% release at 6h and at the end of 48h, respectively, in both the nanoformulations and followed Baker-Lonsdale model (R^2 0.9668 and 0.9725, respectively), indicated that pure diffusion was the dominant mode of drug release. The DPPH assay showed the good %RSA of nanoparticles. Hemolysis assay showed no significant erythrocytes toxicity, as evident by absence/low hemolysis in prepared nanoparticles. **Conclusion:** The data suggested the successful preparation of intended nanoparticles and were shown to possess good antioxidant activity with hemocompatibility.

Keywords: PLGA Nanoparticles, BBB, Pomegranate Polyphenols.

Abstract ID: 363

ABSTRACT TITLE: IMPACT OF VARIOUS INDIAN CULINARY PRACTICES ON THE RETENTION OF MINERALS IN GREEN LEAFY VEGETABLES

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Background: Incorporating green leafy vegetables (GLVs) into diet boosts vital minerals, supporting overall health. While cooking enhances palatability, methods like steaming, microwaving retain nutrients compared to prolonged boiling. Investigating various home cooking techniques affect mineral content of GLVs is essential, as educating the Indian community on improved preparation methods can minimize nutrient losses. This study is undertaken to compare the nutritional content of organic and conventionally grown vegetables across different culinary practices. **Materials and Methods:** Samples were sourced from different markets in twin cities of Hyderabad and Secunderabad, pooled, cleaned, washed, and air-dried to prevent oxidative damage. About 200 g of each sample was prepared in triplicates, employing six cooking methods: cooking with and without lid, microwave cooking, sautÃ©ing, steaming, and deep frying, with meticulous recording of cooking times. **Results:** The study concluded that organic samples generally contain higher mineral levels compared to conventional ones,

particularly when cooked with a lid or steamed. The minerals analyzed are Zinc, Copper, Iron, calcium and Magnesium. Zinc content in conventional samples ranged from 0.46 to 0.83 mg/100g, while organic samples showed 0.93 to 1.13 mg/100g, with boiling with a lid and steaming being the most effective methods. Calcium and magnesium levels were notably high in both Organic Moringa and Amaranthus, with steaming yielding 129.53 mg/100g (conventional Moringa) and 147.15 mg/100g (organic Moringa), as well as 295.94 mg/100g (conventional Amaranthus) and 263.56 mg/100g (organic Amaranthus). Iron content was highest in raw Moringa (8.97 mg/100g for conventional and 9.32 mg/100g for organic), while boiling with a lid yielded 5.96 mg/100g for conventional and 6.06 mg/100g for organic Green Amaranthus. Deep-frying with groundnut oil showed better iron content than sunflower oil in conventional Amaranthus samples. **Conclusion:** Raw samples generally have higher mineral content than cooked ones but in some samples cooking destroys antinutrients increasing the mineral content after cooking. Organic foods show slightly more minerals than conventional, with cooking methods like steaming and boiling with lid retaining more.

Keywords: Organic, Conventional, Cooking Methods, Mineral Content

Abstract ID: 368

**ABSTRACT TITLE: INCORPORATING DRIED MANGO AND GUAVA LEAVES INTO FOOD
PRODUCTS: FORMULATION AND EVALUATION**

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Background: In today's fast-paced world, people's lifestyles are evolving, leading to changes in their dietary habits. The growing acceptance of new food concepts has increased the availability of convenience foods, while traditional dishes are primarily reserved for special occasions. This shift towards quick and easy meals has spurred the global growth of the food industry. Convenience foods are characterized by their ease of preparation, distribution, and consumption, along with enhanced taste, stability, digestibility, cost-effectiveness, and nutritional value. Value-added food products improve existing offerings or introduce new ones, catering to diverse health and environmental needs while promoting convenience, making them essential for a balanced daily diet. **Materials and Methods:** The study focused on the selection of guava and mango leaves as ingredients for value addition to the formulated healthy food products. The standard and value added health mixes namely chutney mix, rasam mix, dosa mix, health mix and idli powder in three different variations were considered for sensory evaluation. In each value addition, three variations were analyzed for the sensory attributes, nutrient content and cost effectiveness. **Results:** The yield of mango leaf powder (MLP) was higher with the highest energy content (330.38 Kcal/100g), fibre content (16.2g/ 100g), fat content (3.50g/100g) and β -carotene content (19mg/100mg) when compared with the dried guava leaf (DGL). The protein (18.8g/100g), calcium (785mg/100g), phosphorous (314mg/100g), iron (8mg/100g), thiamine (1.4mg/100g), riboflavin (0.72g/100mg) and vitamin- C (102mg/100g) content were high in dried guava leaf when compared with dried mango leaf. Presence of phenols, tannins, saponins were observed in

both the leaves and terpenoids were absent in in guava leaves. **Conclusion:** The incorporation of both the leaf powders in the regular dietaries is feasible and affordable. Incorporation of these powders enhanced not only the antioxidant property and but also showed the low glycemic index with high water absorption capacity, an indicator of blending ability of the powder with formulated healthy house hold food products

Keywords: Value Addition, Incorporation, Ready Mixes, Mango and Guava Leaves, Phytochemicals

Abstract ID: 385

ABSTRACT TITLE: THE IMPACT OF IFA SUPPLEMENTATION ON GUT MICROBIOTA COMPOSITION IN MILD AND MODERATE ANEMIC WOMEN OF REPRODUCTIVE AGE (WRA)

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Background: Iron and folic acid (IFA) supplementation is a key strategy for combating iron deficiency anemia (IDA) in women of reproductive age (WRA), improving iron status, and reducing health risks such as impaired cognitive development and increased maternal mortality. However, excessive iron intake can disrupt gut microbiota, promoting pathobionts through siderophore production—iron-chelating molecules that enable these bacteria to outcompete beneficial microbes. This disruption can lead to dysbiosis, driving gut inflammation and impairing the gut barrier. **Method:** This study examines the effects of IFA supplementation (IEC: 06/II/2018) on 158 mildly (Hb11–11.9 g/dL) and moderately anemic (Hb 8–10.9 g/dL) adolescent girls. The supplementation regimen included 60 mg iron and 500 µg folic acid daily for 90 days. Participants who used antibiotics or gut-altering products four weeks before sample collection were excluded. Fecal and blood samples were collected at baseline (pre-supplementation) and endpoint (post-supplementation). Gut microbiota composition was analyzed through 16S rRNA gene sequencing, and hemoglobin levels were assessed to evaluate the intervention's effectiveness and correlation with microbial changes. **Results:** A Total of 82 samples were collected from 41 participants at both baseline and endpoint, with 32 participants showing increased hemoglobin levels and improvements in anemia status. Alpha diversity (Shannon, Observed Species, and Simpson) indicated that the mild anemia group had higher microbial diversity and richness compared to the moderate group. This trend persisted from baseline to endpoint, with an overall enrichment in microbial diversity post-intervention. Differential abundance analysis revealed that iron supplementation favored the growth of *Prevotella* and *Desulfobulbus*, potentially contributing to dysbiosis. Conversely, beneficial bacteria such as *Ruminococcus* and the *Eubacterium* group, important for short-chain fatty acid production, declined, potentially impacting gut health and nutrient

absorption. **Conclusion:** IFA supplementation in women with mild and moderate anemia led to improved Hb levels in 77.5% of participants. However, it also altered gut microbiota composition, with mild anemia associated with higher microbial diversity. The supplementation promoted the growth of bacteria linked to dysbiosis while reducing beneficial microbes, potentially affecting gut health and nutrient absorption.

Keywords: Iron deficiency anemia, IFA supplementation, gut microbiota, dysbiosis, folic acid, 16S rRNA, fecal samples.

Abstract ID:396

ABSTRACT TITLE: MATERNAL FATTY ACID STATUS INFLUENCES GROWTH IN CHILDREN AT 3-7 YEARS

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Background: Fatty acids play a key role in influencing pregnancy outcome. However, limited studies have explored the impact of maternal and cord fatty acid status on the anthropometric measures in children born small for gestational age (SGA). This study compares the maternal and cord fatty acid status in women delivering SGA and appropriate for gestational age (AGA) infants. We also report their association with child growth anthropometric measures in childhood. **Materials and Methods:** This study included 671 mother-offspring dyads recruited at Bharati Hospital, Pune. They were categorized into two groups based on the INTERGROWTH-21st standards: SGA (n=281) and AGA (n=390). Maternal and cord fatty acids were analysed using gas chromatography. Child anthropometry and blood pressure were measured at ages 3-7 years. Independent t-tests was used to compare means between groups, and multiple logistic regression analyses was used to examine associations between fatty acids and child outcomes after adjusting for potential confounders. **Results:** Higher maternal monounsaturated fatty acids (MUFA) and $\Delta 6$ desaturase index ($p < 0.05$) and lower polyunsaturated fatty acids levels (PUFA) ($p < 0.05$) was observed in women delivering SGA babies. In contrast, cord DHA ($p < 0.01$) and total n-3 ($p < 0.05$) levels were higher as compared to AGA. SGA children had lower BMI, mid-upper arm, head, chest, hip, and waist circumference (all $p < 0.01$). The sum of skinfolds (SS) was also lower in SGA children ($p < 0.01$). Low levels of maternal PUFA and MUFA levels were associated with an increased risk of SGA birth. Higher maternal n6: n3 ratio was positively associated with children's BMI and skinfold thickness. Cord $\Delta 6D$ positively correlated with BMI and SS while $\Delta 5D$

showed a negative association with BMI and SS. **Conclusion:** This study for the first time demonstrates that maternal fatty acid status influences anthropometric measures in children. Our data suggests that optimal fatty acids stores in pregnancy play a key role in reducing the risk of obesity in children.

Abstract ID:399

ABSTRACT TITLE: ENZYMATIC HYDROLYTIC APPROACH ON NUTRITIONAL AND FUNCTIONAL ASPECTS OF WHEY PROTEIN ISOLATE

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Background: Enzymatic hydrolysis of proteins is a bioactive approach to explore the appropriate hydrolytic conditions to exploit the structure of whey proteins to enhanced antioxidant activity and nutritional quality. Hence the present study was formulated to prepare antioxidative whey protein hydrolysate by adopting antioxidative hydrolytic conditions for Alcalase enzyme and compare nutritional quality as well as structural changes of native whey protein isolate (WPI) and antioxidative whey protein hydrolysate by Alcalase (WPHA). **Material & Methods:** WPI was hydrolysed at antioxidative hydrolytic conditions such as substrate concentration (8 %w/w), pH of 8, temperature (60°C), E/s ratio (0.9%w/w), time (60 min). Ferric Reducing Antioxidant Power (FRAP) Assay was employed to assess antioxidant activity of WPHA and WPI. Biochemical, nutritional and structural characteristics of WPHA was comparatively analysed with WPI. **Results:** WPHA was observed with FRAP values of 555.7µM FeSo4.7H2O higher than WPI. Amino acid profile of WPI and WPHA were not significantly differed ($P>0.05$) with the increase in methionine and tryptophan in WPHA. Gel filtration fractionation and SDS Page showed the release of low molecular weight peptides (<3 KDa). Nutrition quality parameters such as Amino Acid score, Essential Amino Acid Index, Protein Efficiency Ratio and Biological value and Digestible Indispensable Amino Acid Score (DIAAS) proved the good quality of proteins in WPI and WPHA ($P>0.05$). Structural Analysis revealed the deformation of spherical shaped particles of WPI in WPHA from Field Emission Scanning Electron Microscope, β Sheet secondary structural changes in WPHA by Raman and Fourier Transform Infra Red Spectra, particle size reduction from 689.5 nm in WPI to 228.2 nm in WPHA. **Conclusion:** Enzymatic hydrolysis by Alcalase enzyme enhanced the nutritional quality antioxidant activity of whey protein isolate by releasing the low molecular weight peptides which are entrapped in the primary structure of protein. Hence enzymatic hydrolysis could be the best suitable approach in the preparation of natural antioxidative whey protein hydrolysate with nutritional quality.

FREE COMMUNICATION - POSTER PRESENTATIONS

14th November 2024

Time: 1.00 pm to 1.45 pm

SESSION 1- NUTRITION EDUCATION AND COMMUNICATION

No	Abstract ID	Presenter name	Affiliation	City	Email	Title of Presentation
1	4	Dr Rajarajeswari	AIIMS Rishikesh	Rishikesh	k.rajarajeswari@gmail.com	Effectiveness of an educational module on knowledge and practice of nutrition management among mothers of under-five children at selected areas of Rishikesh: A Quasi-experimental study
2	42	Dr Rita Hansdah	Berhampur University	Berhampur	rita.86hansdah@gmail.com	Assess the knowledge regarding nutrition and food adulteration among house wife: A study on Ganjam district, Odisha
3	54	Dr Pragati Yadav	Chandra Shekhar Azad University of Agriculture and Technology	Kanpur	PRAGATI.FEB11@GMAIL.COM	Nourishing Minds: Enhancing Nutrition Education through Behavioural Change Strategies
4	57	Mr Vishal Mishra	IGNOU, Maidan garhi	New Delhi	vishal202493577@ignou.ac.in	Utilizing Combination of Behavior Change Models for Strengthening Home-Based Primary Care Programs in India
5	71	Ms Sanskriti krishnatray	Amity Institute of Food Technology	New Delhi	Sanskriti.krishnatray1@samity.edu	Development and Organoleptic Evaluation of Traditional Food Products Incorporating Micronutrients rich underutilised grains and leaves
6	117	Ms Bhavya Chopra	University of Delhi	Delhi	bhavya.snappy09@gmail.com	Personal Hygiene and Sanitary Practices Title: Among Food Handlers Working in Cafeterias of Higher Education Institutes in Delhi
7	147	Ms Akshata A Kamath	Manipal Academy of higher education and St Johns	Bengaluru	akshata.ak@sjri.res.in	Development of a novel Event-related-potentials paradigm to assess neurocognitive performance in infants: A feasibility

			Research Institute			study in a rural south India
8	185	Ms Neyati Abhay Nandu	College of Home Science Nirmala Niketan	Mumbai	nanduniyati@gmail.com	To gain in depth understanding of VII experiences related to FL and analyse the presence of QR code in Indian market and suggest universally accessible FL for all
9	199	Ms Hemashree V P	JSS AHER	Mysuru	hemavaavle@gmail.com	Increased risk of Osteoporosis in Menopausal women
10	216	Dr Vijayalakshmi Dega	University of Agricultural Sciences GKVK Bangalore	Bangalore	viji.dega@gmail.com	Adolescents' preferences toward processed food: Insights before and after nutrition education intervention
11	234	Mr Harshavardhan K A	JSS AHER	Mysuru	harsha2125.hvka@gmail.com	Role of Selenium in AIDS
12	261	Dr Snehasree saha	Udaynarayanpur Madhabilata Mahavidyalaya	Kolkata	sneha.snehasree16@gmail.com	Comparative analysis of possibilities and impact of food label information in nutrition intervention studies using systematic review
13	287	Ms S Vaishnavi	JSS AHER	Mysore	svaishnavi23104@gmail.com	Nutritional Knowledge and Nutritional Status of Children Attending Mid Day Meal Scheme
14	324	Ms Nalini Khatwani	Symbiosis Skills and Professional University	Pune	khatwaninalini@gmail.com	Knowledge, Attitude, and Practice of Sustainability Claims on Food Labels.
15	346	Ms Bilkisu Ismail	Symbiosis School of Culinary Arts and Nutritional Sciences	Pune	bilkisu.ismail23nd@ssca.edu.in	Enhancing Anemia Awareness and Evaluating Anganwadi Centers in Mulshi villages of Pune district, Maharashtra.
16	361	Ms Vidya Sudamrao Ghule	Indira Gandhi National Open University	Pune	ghulevidya1993@gmail.com	Influence of nutrition education on body mass index and dietary diversity of adolescent girls
17	364	Dr Shrushti Vivek Shiram	SNEH Foundation	Pune	shiramshru16@gmail.com	Addressing Malnutrition in Urban Slums of PCMC, Pune: Impact of CMAM Approach on Malnutrition Reduction and Knowledge Improvement (2014-2023)

18	374	Dr Reema Devi	Krishi Vigyan Kendra-2 Katiya	Sitapur	reema23i carkvk@g mail.com	Conservation of traditional knowledge and food biodiversity in Sitapur district through various recipe contests
19	380	Ms. Moturi Vineetha	SAHS, JAIN (Deemed to be University)	Bangalore	23msahr1 18@jainu niversity.a c.in	Nutritional Card Play: Transforming Nutrition Education Through Engaging Learning Tools
20	384	Ms Prachi Gattani	Post Graduate and Research Centre, PJTSAU	Hyderabad	pgattani9 @gmail.c om	Impact of Nutrition Education Intervention on Prenatal Nutrient Intake in Women Seeking Treatment at a Tertiary Care Fertility Centre
21	389	Vasundhara Singh	Seva Mandal Education Society's Dr. BMN College of Home Science (Empowered Autonomous Status)	Mumbai	vasundha rasingh17 12@gmail .com	Influence of Knowledge, Attitudes, and Practices on Food Label Use Among Female Household Decision-Makers and Their Packaged Food Purchases (Aged 25-50 Years) in Mumbai
22	397	Alekia Uscoicar	Symbiosis School of Culinary Arts and Nutritional Sciences	Pune	alekiausc oicar@gm ail.com	Knowledge, Attitude, and Practices Towards Food Safety Among Youth in Urban Areas of Dantewada District of Chhattisgarh: A Cross-Sectional Study

Abstract ID: 004

ABSTRACT TITLE: EFFECTIVENESS OF AN EDUCATIONAL MODULE ON KNOWLEDGE AND PRACTICE OF NUTRITION MANAGEMENT AMONG MOTHERS OF UNDER-FIVE CHILDREN AT SELECTED AREAS OF RISHIKESH: A QUASI-EXPERIMENTAL STUDY

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Background: Nutritional deficiency disorders are major public health problem in India and other developing countries. It affects the vast majority numbers of the population and is responsible for approximately 55 percent of childhood deaths. Mothers of under-five children have to be educated about the importance of proper nutrition and how to manage nutrition in their children. Prevention and management of undernutrition in their children is of paramount importance in preventing malnutrition.

The study aimed to assess the knowledge and practice of nutrition management among mothers of under-five children. **Materials and Methods:** A Quasi-experimental one-group pretest and post-test design was used for the study. The study was conducted in Anganwadis of Krishna Nagar, Shyampur, and IDPL Labor colony, Rishikesh on mothers who had under-five children aged 12 months to 59 months of age by using a Self-Structured Knowledge Questionnaire, and Self-Reported Practice Checklist. A convenient sampling technique was used to select the study participants. After pre-test, the participants were given education using self-structured booklet and the post test was done after 21 days of education. Data was analyzed using statistical methods and presented in tabular form. **Results:** There was a notable improvement in knowledge and practice levels, with 24.5% of participants having adequate knowledge and 21.8% having good practice post-intervention as opposed to 5.5% of mothers having adequate knowledge and good practice before the intervention. There was a significant improvement in the practice of mothers after intervention ($t = 7.976$, $p < 0.001$), and knowledge of mothers ($t = 7.976$, $p < 0.001$) indicating that the difference in mean scores between the pretest and post-test was statistically noteworthy. It was also found that there was no significant association between sociodemographic variables and the knowledge and practice of mothers regarding under-five nutrition management. **Conclusion:** The educational module significantly improved mother's knowledge and practice regarding under-five nutrition management.

Keywords: Under-five Nutrition Management, educational module, Knowledge, Practice

Abstract ID: 042

ABSTRACT TITLE: ASSESS THE KNOWLEDGE REGARDING NUTRITION AND FOOD ADULTERATION AMONG HOUSEWIFE: A STUDY ON GANJAM DISTRICT, ODISHA.

Dr Rita Hansdah¹, Mrs Jyotirmayi Rath², Dr Namita Mahapatra³

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Background: Adulteration of food has occurred if it contains any substance injurious to health; it contains any filthy, putrid or decomposed substance; it is prepared, handled or stored under unsanitary conditions; diseased animals have been used in preparation; the container is made of a poisonous substance which will render the contents harmful; valuable constituents have been omitted, substances have been used to conceal inferiority, contains colors and preservatives other than those permitted by law; it contains pesticide residues or additives not recognised as safe etc. foods may be adulterated either intentional or incidental at all stages from production to selling. Food is adulterated if its quality is lowered or affected by the addition of substances which are injurious to health or by the removal of substances which are nutritious. The present study focuses on the awareness of the housewife's among the consumers on food adulterants and to find out the extent of adulteration of the food. **Materials and Methods:** This study was conducted to assess the knowledge about food adulteration among 100 housewives in selected areas. A survey was conducted to collect the information through interview

method. **Results:** The findings revealed that 45.56% of them had average knowledge on food adulteration. They must be well acquainted with the physical food characteristics such as appearance, color, texture, flavor, taste etc. The urban and rural women are using the home test method for detecting food adulteration. Some urban housewives are having knowledge about food law and the rest of the housewife's are not aware about food law. The rural housewife's are not having any knowledge regarding food law, food standard and consumer protection Act. **Conclusion:** It can be concluded that some women are not having any knowledge regarding different adulteration programme. So, the government and people should promote different adulteration program. The media should take a important role to aware women in an interesting and attractive manner. Hence, it is essential to create community awareness and take interventional measures for the health and wellbeing of the community.

Keywords: Adulteration, House wife, knowledge

Abstract ID: 054

ABSTRACT TITLE: **NOURISHING MINDS: ENHANCING NUTRITION EDUCATION THROUGH BEHAVIOURAL CHANGE STRATEGIES**

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Background: Effective nutrition education can significantly transform individuals'; dietary habits and behaviours, leading to notable improvements in nutritional health. **Materials and Methods:** This study evaluates the impact of nutrition education on dietary knowledge and consumption patterns among 420 rural adolescent girls in Deoria district, Uttar Pradesh. Data was collected before and after the nutrition education intervention to assess its effects on participants ≤ eating behaviours. **Results:** Nutrition education stands out as a powerful tool in enhancing global nutritional standards. It has been shown to significantly boost nutritional knowledge among adolescent girls, leading to observable changes in their eating habits and nutrient intake. This research highlights nutrition education≤ crucial role in fostering meaningful improvements in dietary understanding and practices among young populations. **Conclusions:** Leveraging Strategic Nutrition and Health Interventions for Lasting Dietary Change: A Comprehensive Framework for Promoting Healthy Eating Practices. This study underscores the importance of nutrition and health interventions as key drivers of long-term dietary improvements. When integrated into school-based programs, these interventions are vital for preventing malnutrition across future generations. To be truly effective, nutrition education must encompass classroom, home, community, and school environments. Sustaining healthy eating habits requires the combined efforts of educators, families, and a curriculum focused on nutrition education.

Keywords: Strategic Nutrition, Health interventions, consumption pattern, malnutrition, Dietary improvements.

Abstract ID: 057

ABSTRACT TITLE: UTILIZING COMBINATION OF BEHAVIOR CHANGE MODELS FOR STRENGTHENING HOME-BASED PRIMARY CARE PROGRAMS IN INDIA

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Background: Infant and child primary care through home visits, have been started in early 1980-90s in India. Home visits through Community health workers got recognition only after Gadchiroli study (1993-98) and there after many studies was conducted to check the efficiency of this intervention. Based on the success of these studies, Govt. of India started Home Based Newborn Care (HBNC) program in 2011 and Home Based Care for Young child program (HBYC) in 2018. **Materials and Methods:** However studies shows that there is inefficiency in the working of frontline community health workers in these programs and various components like adequate complementary feeding show very poor improvement across India. **Results:** Combination of the constructs available in three behavior change models (i.e “Health Belief Model” “The Theory of Planned Behaviour” and “ Social Cognitive Theory”) can be used in designing Nutrition Education Intervention for these programs that will solve the primary care issue in terms of nutrition component available in these programs. **Conclusions:** Efficacy of these programs could be increased when Nutrition interventions will be designed utilizing combinations of different behavior change models.

Keywords: HBNC, HBYC, ASHA, Nutrition Education Intervention

Abstract ID: 071

ABSTRACT TITLE: DEVELOPMENT AND ORGANOLEPTIC EVALUATION OF TRADITIONAL FOOD PRODUCTS INCORPORATING MICRONUTRIENTS RICH UNDERUTILISED GRAINS AND LEAVES

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Background: Malnutrition declares that Micronutrient deficiencies (MNDs) are a set of critical concerns in the realm of global health as well as in socio-economic development that cuts across the globe across the LMICs as well as the industrialised countries. The young, women, children, middle-aged, and the elderly are the most affected by the various diseases since their respective immune systems are weak. Even with the enhancements in nutritional knowledge and intakes for several decades, there is still a significant ‘nutrition transition’ between actual consumption and recommended nutrient-dense food like

green vegetables and fruits which are common all over the developed and developing world. This imbalance is more so in developing countries such as India where prevalence of PEM, IDD, VAD, and IDA is still high. **Materials and Methods:** The study revolves around the use of underutilised leaves for instance, the Ipomoea, Knol-Khol, Colocasia, Kondhwa and grains such as ragi, bajra and amaranth seeds. These grains and vegetables will be dried using several techniques like tray drying, freeze drying and then being grinded and produced in powdered form and be utilised in the production of value added foods. **Results:** It aims at achieving the objectives of enhancing the utilisation of these nutrient-dense but under-utilised grains and the green leafy vegetables in the daily diets to tackle problems. **Conclusion:** This study emphasizes the critical importance of addressing micronutrient deficiencies (MNDs), which remain a significant global health concern across both low- and middle-income countries (LMICs) and industrialized nations. Vulnerable groups such as women, children, and the elderly are particularly susceptible due to their weaker immune system. The rising incidence of non-communicable diseases such as cardiovascular diseases, diabetes, obesity, and cancers can be traced to poor dietary habits and insufficient nutrient intake. However, there is a promising opportunity to bridge this nutritional gap by utilizing under-exploited, nutrient-dense foodstuffs like underutilized grains (e.g., ragi, bajra, amaranth) and leafy vegetables (e.g., Ipomoea, Knol-Khol, Colocasia, Kondhwa). These foodstuffs, which are both affordable and nutritious and are very nutritious.

Keywords: Micronutrients, Socioeconomic, Protein-Energy Malnutrition, Under-utilised.

Abstract ID: 117

ABSTRACT TITLE: PERSONAL HYGIENE AND SANITARY PRACTICES TITLE: AMONG FOOD HANDLERS WORKING IN CAFETERIAS OF HIGHER EDUCATION INSTITUTES IN DELHI

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Background: College cafeterias are known to offer a wide variety of foodstuff that are freshly prepared, available quickly and are priced reasonably. It is a space for students to relax between the lectures, socialise and make new friends. But, eating out of home presents additional challenges when compared with eating at home as food is handled by many food handlers. So, this research aims to study the knowledge, attitude and practices followed by food handlers working in cafeterias of colleges of University of Delhi. **Materials and Methods:** An observational cross-sectional study was conducted from January-June, 2024 in various Colleges of University of Delhi using the developed questionnaire and checklist. Questionnaire consisted of 2 parts: a) Demographic profile and b) Knowledge, Attitude and Practices of food handlers. Checklist consisted of pointers related to infrastructure and sanitary conditions of the cafeteria & food safety practices followed by food handlers. Data was analysed using MS Excel and SPSS. **Results:** 90 Food handlers from 18 Cafeterias participated in the study. The results show that there is a positive correlation between Education level and Food safety knowledge ($p \leq 0.05$), Training and Knowledge ($p \leq 0.1$), Knowledge and Attitude ($p \leq 0.1$). **Conclusions:** Even though

trained food handlers had better knowledge levels than the untrained ones, but there was no significant difference between their practices. This implies that food safety trainings are increasing the food safety knowledge of food handlers, but the knowledge is not being translated into practice. Thus, to improve the food safety practices, frequent and regular trainings might help.

Keywords: Cafeteria, Canteen, University cafeteria, Campus canteen, University campus, food court

Abstract ID:147

ABSTRACT TITLE: DEVELOPMENT OF EDUCATIONAL MATERIAL ON INFANT NUTRITION AND HYGIENE: A MULTIMEDIA APPROACH

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Background: Infant malnutrition is a global concern impacted by factors like food insecurity, suboptimal Infant young child feeding (IYCF), and inadequate water sanitation and hygiene (WASH) practices. Since adequate nutrition during first year of life can improve growth and brain development, providing caregiver education will effectively enhance IYCF and WASH practices. Thus, we developed culturally appropriate audio-visual materials to educate caregivers in rural Chitradurga taluks, Karnataka, on these practices. **Materials and Methods:** Educational material (EM) included: booklet titled Shishu-pragathi and 2-animated videos. The booklet featured IYCF practices in Kannada or English. It covered concepts on diet-diversity, foods-to-avoid, responsive feeding, hygiene while food handling, feeding during illness, age-appropriate food quantity and consistency. It included recipes formulated using Excel's solver to meet energy, protein, and fat requirements for infants aged 6-12 months. Ingredient measurements, step-by-step preparation with visuals (conducted at St. John's metabolic kitchen) incorporated for enhanced caregiver understanding. The IYCF video featured key characters (mother, infant, ASHA worker, and Anganwadi worker) with a narrative by professional voice-over artists in Kannada emphasizing on routine growth monitoring and reinforcing booklet's contents. The WASH video was entirely visual with background music depicting contrasting scenarios (following versus neglecting good hygiene practices), and its impact on child's health. The video design steps included: script-writing, character sketching, storyboard creation and revisions for cultural relevance. Professional animators helped in 2D animations. EM were piloted among 59 caregivers in Chitradurga talukas, followed by administration of multi-choice-questions (MCQs) for testing their understanding of the contents designed. EM were modified to incorporate qualitative feedback from caregivers for improved understanding. **Results:** All participants responded positively towards liking the matter, simplicity and clarity in the visuals and language used. Above 80% of participants answered correctly on general IYCF practices and 46% on food groups to include in the diet to the MCQs administered. **Conclusion:** EM

and nutritional counselling were well-appreciated in this effort. This serves as an effective resource to provide culturally accepted education to caregivers about IYCF and WASH guidelines and enhance nutritional intervention studies aimed at assessing various health outcomes including growth and cognition.

Keywords: IYCF Booklet, IYCF animated video, WASH animated video, Knowledge, Piloting

Abstract ID: 185

**ABSTRACT TITLE: EXPLORING THE ACCESSIBILITY OF INFORMATION ON FOOD LABELS
FOR PERSON WITH VISUAL IMPAIRMENT: A STEP TOWARDS INCLUSIVE FOOD AND
NUTRITIONAL LITERACY**

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Background: Nutrition education for visually impaired individuals (VII) of packaged food largely depends on their ability to read food labels (FL). FL provides crucial information for consumers to make informed choices regarding safety and quality of food products. In 2023, FSSAI advisory suggested incorporating QR code on food products which encompasses comprehensive details. **Materials and Methods:** The study was qualitative. Six VII aged 18-60 years were selected using purposive sampling and interviewed regarding the role of FLs in food procurement and preparation. A preliminary market survey was conducted to check for the presence of QR code and information provided. Based on this a proposal for accessible food labelling design was developed. **Results:** It was found two VI read FLs. It was seen that assistance from others or technology was taken to read labels. In case of assistive technology two reported ease in using and one felt it was complex. Five preferred online shopping. In online platforms only certain information was accessible and information like ingredients, nutrient content, etc. was inaccessible. All suggested braille labelling will be helpful, especially for price, expiry date, allergen information. Out of 120 food products assessed only 33 products had QR code but none had comprehensive details related to ingredients, nutritional information, manufacturing dates, expiry dates, etc. Rather this QR code is directed towards company's websites, games, or provided only manufacturing unit or recipe information. Thus, we propose a technology that provides QR code or barcode-based audio labelling. We also suggest this technology should encompass information in a multilingual and simplified manner to make it accessible to all. **Conclusions:** The current practices of food labelling are not specifically favourable for VII. We suggest policies should make it mandatory to provide information like price, expiry date and product name in tactile or audio format. To improve this scenario an app that is universal could be developed in addition to visual presentation enabling use of multi-sensory cues and catering to diverse language and intellectual capacities.

Keywords: Visually impaired, Accessible, Food label, Inclusive.

Abstract ID:199

ABSTRACT TITLE: INCREASED RISK OF OSTEOPOROSIS IN MENOPAUSAL WOMEN

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Background: Natural menopause is absence of menstrual cycle for 12 consecutive months, a natural physiological phenomenon as defined by World Health Organization. Menopause increases the risk of osteoporosis in women of age above 50 years, mainly associated with decreased estrogen production as well as increased levels of follicle-stimulating hormone. Osteoporosis, most prevalent in menopausal women, reduces the quality of life. **Materials and Methods:** The literature survey was carried out using different search engines such as Google scholar, research gate and PubMed to collect the articles related to osteoporosis in menopausal women. **Results:** The present review focuses on creating awareness and helps women to take required measures to manage this progressive disorder. Osteoporosis is characterized by low bone mineral density leading to increased risk of fractures at several locations. Continuous bone remodelling is important for maintaining bone mineral density and bone health. Studies have established that estrogen has a role in bone remodelling, contributing to bone resorption and strengthening. Estrogen regulates specialized bone cells termed osteoclasts, osteoblasts, and osteocytes, which play crucial role in bone remodelling. Because symptoms are not visible, early detection by measuring bone mineral density, can help in preventing the fractures. **Conclusion:** Osteoporosis is not a curable disease and hence, lifelong preventive strategies should be encouraged. Bone friendly lifestyle measures, dietary modification and proper medications can be incorporated to manage the symptoms and risk factors associated with osteoporosis.

Keywords: Menopause; quality of life; osteoporosis; resorption; bone mineral density.

Abstract ID:216

ABSTRACT TITLE: ADOLESCENTS' PREFERENCES TOWARD PROCESSED FOOD: INSIGHTS BEFORE AND AFTER NUTRITION EDUCATION INTERVENTION

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Background: Processed food consumption has significantly increased amongst adolescents contributing to life-style disorders and malnutrition. Thus, the present study evaluated the impact of nutrition education intervention (NEI) on the processed foods consumption among adolescents in North Bengaluru, Karnataka, India. **Materials and Methods:** NEI was conducted for 3 months with selected government school students from rural, peri-urban and urban areas comprising 300 adolescents (13-15yr) with an equal distribution (50 girls and 50 boys) from each area. Data on the frequency of processed food consumption viz., sweets, chats, beverages, fried foods, and bakery products was

collected using a semi-structured, pre-tested interview schedule before and after the intervention. Friedman two-way ANOVA and Wilcoxon signed-rank tests were applied for statistical analysis. **Results:** The Friedman test revealed a significant change in processed food consumption pre- and post-intervention ($p < 0.00$). Notable decline was seen in preferences for bakery and fried foods with the pre-intervention rank means decreasing from 3.6 and 2.9 to 3.1 and 2.7 post-intervention respectively. This decline suggests a shift in both preference and consumption frequency. A noteworthy reduction in daily consumption frequency was observed, with sweets (25 to 18) and fried foods (35 to 22) amongst five. The Wilcoxon statistic value for fried foods (36) indicated a significant reduction, while bakery products showed the most pronounced decrease (12) in both daily and weekly consumption. This decline suggests a shift in both preference and consumption frequency. The NEI analysis also revealed that adolescents realized about the importance of limiting high-calorie foods. **Conclusion:** The findings highlighted the effectiveness of a three-month NEI towards significantly reducing the processed food consumption among adolescents. The combination of increased awareness, behavioural shifts, and statistically significant changes in food preferences highlights the potential of nutrition education programmes to foster healthier eating habits in youth. Future initiatives can be build based on this study by continuing to emphasize the importance of healthy food choices and providing ongoing support to reinforce these positive changes.

Keywords: adolescents, intervention, nutrition education, processed foods

Abstract ID:234

ABSTRACT TITLE: ROLE OF SELENIUM IN AIDS

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Background: HIV infection compromises on the nutritional status of an infected individuals and can lead to further acceleration of the disease. Prevalence of higher rates of nutritional deficiencies in HIV infection has been reported. Selenium, a vital micronutrient, plays a significant role in immune function and antioxidant defence mechanisms, which are crucial in managing chronic diseases like AIDS. Along with other micronutrient deficiencies, weakens the immune system and promotes the progression of HIV infection to AIDS. AIDS, caused by HIV infection, leads to severe immune system degradation, making patients more susceptible to opportunistic infections. **Materials and Methods:** Selenium deficiency is common in HIV/AIDS patients and is associated with faster disease progression, increased viral replication, and higher mortality rates. Selenium's role as a cofactor for antioxidant enzymes, such as glutathione peroxidase, helps reduce oxidative stress and inflammation, both of which are elevated in HIV-infected individuals. **Results:** Selenium supplementation may slow HIV progression, improve CD4+ T cell counts, and reduce viral load, thus enhancing immune function. While selenium supplementation holds promise as a supportive treatment, further clinical studies are necessary to confirm its efficacy and to establish appropriate dosage guidelines. **Conclusion:** This abstract explores

the emerging evidence for selenium's role in AIDS management, emphasizing its potential to improve patient outcomes by modulating immune responses and reducing oxidative damage.

Keywords: HIV infection; selenium; immune system; and oxidative stress.

Abstract ID: 235

ABSTRACT TITLE: EXPLORING NUTRITIONAL DISPARITIES IN SCHOOL CHILDREN: A RURAL - URBAN COMPARISON

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Background: Nutritional assessment is an essential requirement for understanding the health status of school children, especially in different settings such as rural and urban areas. In developing countries, large rural-urban disparities are prevalent in terms of nutritional status in children. Studies have indicated significant differences in nutritional status of rural and urban children. The present study was carried out to analyse the nutritional status of school children belonging to rural and urban settings.

Materials and Methods: A cross-sectional comparative study design was employed, involving a representative sample (N=200) of school children between the age group of 7-12 years, from selected schools in rural and urban areas. A structured questionnaire was developed to collect the information on demography, anthropometric measurement, clinical and dietary assessment to assess nutritional status of children. The data collected was subjected to suitable statistical tests to analyse rural-urban differences in nutritional status of children. **Results:** The study found significant differences in dietary intake. Urban children exhibited a higher consumption of processed foods, sugary beverages, and snacks, whereas, rural children primarily consumed traditional staple foods and home-cooked meals. Anthropometric measurements indicated notable variations, with urban children generally showing higher BMI values compared to their rural peers. The findings of the study suggest that urban environment may contribute to poorer nutritional outcomes due to greater access of unhealthy food options. **Conclusion:** The study highlights critical disparities in dietary habits, anthropometric measurements, and the prevalence of eating disorders among school children in rural versus urban settings. The findings emphasize the urgent need for targeted interventions that address the nutritional challenges faced by children in different environment. By tailoring strategies to improve nutrition and address specific deficiencies, we can enhance the overall health and well-being of school children across these diverse settings.

Keywords: School children, Rural, Urban, Dietary Intake, Malnutrition

Abstract ID:261

ABSTRACT TITLE: COMPARATIVE ANALYSIS OF POSSIBILITIES AND IMPACT OF FOOD LABEL INFORMATION IN NUTRITION INTERVENTION STUDIES USING SYSTEMATIC REVIEW

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Background: Considering food labels on processed and pre-packaged foods are direct means of communication to the consumers, and advocated as a tool to promote healthier food choices; objective of the current review is to explore the incorporation of food label information as nutrition communication component in dietary intervention research in Indian set-up. **Materials and Methods:** Systematic internet searches were conducted to review research in the last two decades on food label information and nutrition intervention. Using inclusion exclusion criteria, impact of food label information on healthier food choices on metabolic diseases and use of nutrition communication tool in dietary intervention studies were segregated and analysed and compared. **Results:** The mandatory food labelling law has been effectively providing nutrient information at point-of-purchase. The studies among Indian consumer reflect intention to use food label information for healthier food choices and to avoid HFSS food consumption. The studies have suggested increasing interpretational skills of food label information can benefit overall dietary intake. On the other hand, the nutrition intervention studies have focused on awareness and education on dietary modification, effect of amount of trans fat, salt and sugar in disease progression, but have scarcely used food label information as a nutrition communication tool despite a clear shift towards increase of processed and packaged food consumption in recent years. **Conclusion:** There is a need to make collaborative effort to include food label information as a communication medium in population-based nutrition intervention studies to reduce metabolic diseases in current food environments.

Keywords: food label, nutrition intervention, diet

Abstract ID:287

**ABSTRACT TITLE: NUTRITIONAL KNOWLEDGE AND NUTRITIONAL STATUS OF CHILDREN
ATTENDING MID DAY MEAL SCHEME**

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Background: Nutritional education emerged as an important public health strategy to combat both under-nutrition and emerging concern of obesity in school children. Inadequate nutrition knowledge results in poor dietary intake, food choices leading to triple burden malnutrition. The mid-day meal scheme (MDMS) is an important nutrition intervention program in India aimed at improving the nutritional status of school students. **Materials and methods:** Nutritional status of students was assessed in selective schools by collecting their anthropometric data (height, weight, BMI, WHR MUAC). Students' nutritional knowledge evaluated by engaging techniques, such as nutritional games and interactive Q&A sessions were employed to make the sessions enjoyable. Dietary intake

pattern and mid-day meal consumption pattern was collected using dietary tools. **Results:** The study revealed that among 170 participants 90 are boys and 80 are girls in which 43% of boys and 60% of girls were of short stature for their age, while 59% of boys and 55% of girls were undernourished. Additionally, 13% of boys and 7% of girls were at risk of overweight and obesity. The mean Waist-to-Hip ratio was 0.82 ± 0.04 in boys and 0.72 ± 0.12 in girls. The mean Mid-Upper Arm Circumference (MUAC) was 20.5 ± 3.6 cm for boys and 19.9 ± 3.8 cm for girls. Furthermore, 69% of the participants consumed mid-day meal daily basis, while 22% consumed home food daily. Approximately 15% skipped lunch. **Conclusion:** In conclusion, this study highlights significant nutritional concerns among participants mostly girls experienced short stature and high rates of undernutrition were seen in boys. While a small percentage were at risk of overweight and obesity, the mean WHR and MUAC indicate suboptimal nutritional status. Despite a majority consuming mid-day meal, students still skipped lunch, which may lead to deficiencies. These findings emphasize the need for targeted interventions to improve nutritional knowledge and growth & development to prevent from deficiencies during childhood and in later stages of life.

Keywords: Nutritional Education, Waist Hip Ratio, Mid Upper Arm Circumference, Mid-day meal, Overweight, Obesity, Undernutrition.

Abstract ID: 324

ABSTRACT TITLE: KNOWLEDGE, ATTITUDE, AND PRACTICE OF SUSTAINABILITY CLAIMS ON FOOD LABELS

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Background: In recent years, growing environmental awareness and demand for sustainable practices have substantially impacted consumer behavior. Sustainability claims on food labels have grown in importance for consumers and producers. These claims frequently include “fair trade”; “carbon footprint”, “good for health- good for the planet,” and “Jaivik Bharat”. The impact and efficacy are undermined as they are inconsistent, unclear, and untrustworthy. Other factors, such as the intricacy of international supply chains, the absence of established laws, and “greenwashing” contribute to the complexity of this issue. Thus, the study examines consumers’ knowledge, attitudes, and perceptions regarding sustainability claims on food labels, striving to examine consumers’ familiarity with sustainability claims made on product labels. In addition, the study investigates how demographic characteristics influence customers’; comprehension, perspective, and behavior. **Materials and Methods:** A stratified random selection technique was employed. A sample size of 161 individuals from Nagpur was taken, as this city is a rising metropolis with a diversified population that represents a microcosm of India’s greater sociological and economic processes. The experimental study design was conducted using a pre-tested questionnaire. Regression analysis was carried out. **Results:** The level of familiarity respondents have with sustainability claims was moderate, 33.5% of respondents, and

slightly familiar, 32.9% of respondents. However, the level of knowledge about specific sustainability certifications and labels varies. Out of the 45.3% of respondents with no or limited understanding of eco-labels, 19.3% were unsure or didn't know about these sustainability claims. Regression analysis is used here to understand the relationship between Education status (independent variable) and familiarity with sustainability claims on food labels (dependent variable). The R-squared value of 1.6% is meager, suggesting that education status did not much affect the familiarity with sustainability claims.

Conclusions: The research highlights the current gaps in knowledge and comprehension of these sustainability claims. The results provide insightful advice to regulatory agencies on improving standards to guarantee veracity and accuracy, shielding consumers from deceptive information and greenwashing. Research findings could aid businesses in enhancing marketing strategies and advocating for environmentally friendly practices.

Keywords: Sustainability claims, knowledge, attitude, Practice, environment, food labels

Abstract ID: 346

ABSTRACT TITLE: ENHANCING ANEMIA AWARENESS AND EVALUATING ANGANWADI CENTERS IN MULSHI VILLAGES OF PUNE DISTRICT, MAHARASHTRA

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Background: Anemia remains a significant public health concern in rural India, particularly among women, and contributes to maternal and child health challenges. Anganwadi centers, integral to India's Integrated Child Development Services (ICDS), aim to tackle malnutrition and anemia through health education and service delivery. This study sought to assess the impact of anemia awareness sessions on rural women and evaluate the operational conditions of Anganwadi centers in Pune district, Maharashtra. **Materials and Methods:** The study involved visits to 10 Anganwadi centers across Mulshi villages in Pune district, Maharashtra. 30 Women of reproductive age attending these centers participated in the anemia awareness sessions, which included interactive presentations, pamphlets in local languages, and group discussions. Observational data were collected on the centers' infrastructure, resource availability, and community engagement. A qualitative assessment compared participants' anemia knowledge before and after the sessions, while a checklist-based evaluation assessed the centers' operational conditions. **Results:** The awareness sessions significantly improved participants' understanding of anemia by 60%, including its causes, prevention, and treatment. Post-session survey showed a 60% increase in anemia knowledge among the women. Some of the challenges found during the awareness sessions were lack of proper menstrual hygiene, taboos related to menstruation, and attitudes of family members during the menstrual period. The observational analysis of the Anganwadi centers identified several challenges, such as poor infrastructure, inadequate nutritional resources, and low community participation as one center only had one child enrolled in it. While some centers demonstrated strong engagement in health and nutrition programs, others were hindered by resource limitations. **Conclusions:** This study highlights the importance of targeted health

awareness programs in rural settings to improve anemia-related knowledge among women. Although the awareness sessions were effective, the suboptimal conditions of many Anganwadi centers highlight the need for immediate improvements in infrastructure and resources. Strengthening these centers is crucial to achieving broader public health objectives and reducing the prevalence of anemia in rural areas.

Keywords: Anemia, Anganwadi centers, rural women, awareness, Integrated Child Development Services (ICDS), malnutrition, infrastructure, resource availability, Pune

Abstract ID: 361

ABSTRACT TITLE: INFLUENCE OF NUTRITION EDUCATION ON BODY MASS INDEX AND DIETARY DIVERSITY OF ADOLESCENT GIRLS

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Background: Adolescents (10-19 years) experience critical dietary changes that impact long-term health. Consumption of a balanced diet helps in improving dietary diversity score (DDS) and healthy body mass index (BMI). Dietary diversity ensures that adolescents receive essential nutrients necessary for development. Nutrition education is key to fostering these healthy eating habits for optimal growth and development. **Materials and Methods:** This study aimed to assess the effect of three-month nutrition education intervention on BMI and DDS among adolescent girls aged 12 to 14 years studying at Bharti Vidyapeeth School in Pune, Maharashtra. A semi-structured questionnaire based on pilot study was used to gather data on participants age, education, socioeconomic status, anthropometric profiles, and dietary patterns. Dietary data was collected using 24-hour dietary recall method. BMI and DDS were calculated before and after the intervention. Statistical analysis was conducted using descriptive analysis and t-test. **Results:** The study results revealed that majority of the respondents (66%) belonged to upper middle class, and only 8% were from lower middle class. Additionally, 63% of respondents were part of nuclear families, compared to 37% from joint families. The impact of nutrition education on respondents' BMI depicted an average increase from 18.905 to 19.184. However, the proportion of individuals with a normal BMI increased from 55% to 69%. While, the percentage classified under underweight decreased from 43% to 31%, and that of pre-obesity decreased from 2% to 1%. Similarly, it was indicated that average DDS increased from 7.63 to 8.24 with more participants having high DDS post intervention (23%) compared to pre-intervention (9%). **Conclusion:** The nutrition education intervention positively transformed eating habits of adolescents, resulting in improved Dietary Diversity Scores (DDS). Thereby, indicating that targeted nutrition education plays vital role in promoting healthier dietary practices among adolescents.

Keywords: adolescents, body mass index, dietary diversity scores, nutrition education

Abstract ID: 364

**ABSTRACT TITLE: ADDRESSING MALNUTRITION IN URBAN SLUMS OF PCMC, PUNE:
IMPACT OF CMAM APPROACH ON MALNUTRITION REDUCTION AND KNOWLEDGE
IMPROVEMENT (2014-2023)**

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Background: Malnutrition is a significant global health issue, particularly in India, where 35.5% of children under five are underweight, contributing to nearly 45% of child mortality worldwide. The Addressing Malnutrition project targets Severe Acute Malnutrition (SAM) and Moderate Acute Malnutrition (MAM) among children aged 6 months to 5 years in urban slums of Pune. This research evaluates the effectiveness of the Community-Based Management of Acute Malnutrition (CMAM) model in reducing malnutrition rates and enhancing caregivers' nutrition knowledge. By combining therapeutic feeding and educational interventions, the project aims to address immediate health needs and underlying factors contributing to malnutrition. **Materials and Methods:** The study utilized a mixed-method approach, combining both quantitative and qualitative techniques. A stratified purposive sampling method ensured representation from SAM, MAM, and healthy children. Pre- and post-test assessments were conducted across 15+ communities in PCMC, Pune, with 2,759 direct beneficiaries. Additionally, KAP (Knowledge, Attitude, and Practice) surveys were administered to 73,000 indirect beneficiaries (mothers and caregivers) to evaluate changes in awareness and behaviors. Data analysis was done using MS Excel. **Results:** Over the years, we applied a psycho-social model combining therapeutic feeding and community interventions to combat malnutrition. SAM children received fortified feeds, while MAM children were provided supplementary foods followed by iron, calcium, and multivitamin supplements. This approach, along with a family development program and early childhood development activities, resulted in 93% of enrolled children moving from SAM and MAM categories to healthy status. **Conclusions:** The Addressing Malnutrition project significantly reduced malnutrition rates among urban slum children in Pune while enhancing caregivers' knowledge of nutrition and health, demonstrating a successful, replicable model for addressing malnutrition in vulnerable populations.

Keywords: Malnutrition, Severe Acute Malnutrition, Moderate Acute Malnutrition, Community-Based Management of Acute Malnutrition

Abstract ID: 374

**ABSTRACT TITLE: CONSERVATION OF TRADITIONAL KNOWLEDGE AND FOOD
BIODIVERSITY IN SITAPUR DISTRICT THROUGH VARIOUS RECIPE CONTESTS**

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Background: Food biodiversity may contribute to sustainable food systems which can strengthen efforts to end hunger, curb malnutrition, improve livelihoods and also contribute to greater socio-cultural wellbeing. Keeping in view the importance of traditional knowledge about various food systems, the

present study was planned to capture the traditional knowledge and food biodiversity in Sitapur district of Uttar Pradesh through various recipe contests among local farm women. **Materials and Methods:** Surveys were conducted by subject matter experts of KVK and found that there are three blocks of Sitapur district namely Mishrik, Machreta and Aeliya where the traditional millets crops are grown and consumed in daily diet. Recipe contests were organized in these blocks and documented different types of millet-based recipes including millet type, ingredients used, recipe type, method of preparation, recipe name in the local languages, cultural importance, nutritional and health benefits of that recipes. **Results:** The study documented 30 types of millet-based food recipes from local farm women of Sitapur district, such as Jowar ki Katli, Kakun ka Bhat, Popped Bajra Laddu, Sanwa ka Bhat, Makke ke Ladoo, Kakun ki Kachori, Bajra ke Bade, Sanwa ki Tahedi, Bajra ke Namkeen Puwa, Bajra ki Namkeen etc. Pearl millet (Bajra) has been predominantly used to prepare food recipes followed by sorghum and Barnyard millet. Various types of cooking techniques, such as steaming, roasting, frying and boiling have been adopted to prepare these recipes. All the traditional food recipes were analyzed for their sensory attributes and the results showed that Sorghum based sweet recipe i.e. Jowar Ki katli fell in the category of liked extremely on the basis of sensory scores given by consumers, whereas all pearl millet-based recipes were fell in the category of liked very much. **Conclusions:** The present study concluded that these types of recipe contests demonstrate the feasibility and importance of greater inclusion of food biodiversity for a wealth of benefits ranging from healthy diets and nutrition to improved ecosystems, prosperity and socio-cultural wellbeing. Moreover, it should not be an isolated occurrence, but rather a continuous process.

Keywords: Food Biodiversity, Millets, Sensory evaluation, Traditional Knowledge

Abstract ID: 380

**ABSTRACT TITLE: NUTRITIONAL CARD PLAY: TRANSFORMING NUTRITION EDUCATION
THROUGH ENGAGING LEARNING TOOLS**

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Background: Educating children about healthy eating in today's fast-paced society can be quite challenging, especially with the overwhelming amount of misleading information out there. To address this, educators need creative approaches to teach nutrition in a way that captures children's interest and makes learning enjoyable. This study aimed to explore the effectiveness of using a set of educational nutritional cards to help children understand how to build balanced meals, identify nutrient-rich foods, and calculate their calorie intake. **Materials & Methods:** The experiment involved both students and teachers using a deck of 60 cards. Each card represented different food items from the five main food groups: Fruits & Vegetables, Proteins, Grains, Meat & Dairy, and Fats & Oils. To add a fun twist, the deck also included "power" cards, which allowed players to take an extra turn, and "minus" cards, which caused them to lose a round. The game's objective was for participants to create balanced

meals based on the information on the cards. Everyone started with seven cards and took turns drawing from the pile, strategizing to form meals that met nutritional guidelines. **Results:** The results showed that the use of nutritional cards significantly helped children and teachers learn about meal planning and the nutritional content of foods. The interactive and engaging nature of the game encouraged creativity, and participants enjoyed the experience. Many children even came up with their own innovative meal ideas, showing a deeper understanding of the subject. **Conclusion:** In conclusion, using these nutritional cards as a teaching tool proved to be an effective way to make learning about nutrition both fun and educational. This approach not only helped children grasp the concept of balanced eating but also promoted better awareness of healthy food choices, potentially encouraging lasting healthy habits.

Abstract ID: 384

Prachi Gattani

Abstract ID:389

ABSTRACT TITLE: INFLUENCE OF KNOWLEDGE, ATTITUDES, AND PRACTICES ON FOOD LABEL USE AMONG FEMALE HOUSEHOLD DECISION-MAKERS AND THEIR PACKAGED FOOD PURCHASES (AGED 25-50 YEARS) IN MUMBAI

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Background: Globalisation and the quickening tempo of modern life have carried many people to the processed food shelf and away from India's rich and diverse traditional food culture. The result, increasingly, is a preference for commercially prepared products, partly because there is less time to cook at home. Economic growth and international cuisine exposure have also played a role. Readiness across countries in readiness for global, ready-to-use food items has become more than Indian food. This trend unfortunately comes with health implications as it involves more intakes of high sugar, fatty, and salty foods that have been associated with lifestyle diseases including obesity and diabetes. In this aspect, food labels have to give the information concerning nutritional content of the product intended to be consumed. Understanding food labels has become a primary function in managing health and making better dietary choices, especially with the growing prevalence of non-communicable diseases. The challenge remains in ensuring that consumers are developed enough to interpret the messages correctly and make healthier decisions in a highly commercialized food landscape. **Aim:** This study aims to assess how household decision-makers interpret and comprehend nutritional information found on labels while addressing and reducing stereotypes and technical difficulties related to label comprehension. **Objectives:** 1-To gauge the extent of food labelling understanding among housewives.2- To establish the common technical and linguistic issues encountered by housewives while reading the nutrition labels.3- To establish the general ease and difficulty encountered by housewives to understand the nutritional information displayed. **Methodology: Type:** Cross-sectional

survey. **Population:** Housewives residing either in urban or semi-urban areas. **Sample Size:** 60 No. of respondents. **Sampling Method:** Purposive random sampling to ensure diverse representation across different socio-economic backgrounds. **Data Collection:** Instrument: Personal interview session and a structured questionnaire designed to assess the understanding and knowledge of nutritional labels. **Results:** The results revealed that 71.3% of housewives reported reading the labels on food products, but 60% encountered some form of technical difficulty in doing so, and 28.7% identified language barriers as an obstacle. Only 6.7% found it very easy to understand the nutritional information, whereas 25% found it often challenging, and 4.7% reported significant difficulty in reading food labels. Additionally, 53.3% of housewives based their purchasing decisions on the price of the product, 35% were influenced by special offers or discounts, another 35% by attractive packaging, and 1.7% by celebrity endorsements. Furthermore, a connection was observed between label reading and health conditions such as hypertension and diabetes. Many housewives overlooked hidden sugars and salts in the nutritional information, leading to the exacerbation of these comorbidities. The failure to recognize these ingredients contributed to an increase in their health risks, particularly for those managing chronic conditions like hypertension and diabetes. **Discussion:** The p-value of the statistical analysis was less than 0.0001, indicating that the result was extremely significant. This points out the need for better food labelling practices and educational intervention to improve comprehension, especially for housewives who are engaged in meal planning.

Abstract ID: 397

**ABSTRACT TITLE: KNOWLEDGE, ATTITUDE, AND PRACTICES TOWARDS FOOD SAFETY
AMONG YOUTH IN URBAN AREAS OF DANTEWADA DISTRICT OF CHHATTISGARH: A
CROSS-SECTIONAL STUDY**

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Background: Foodborne diseases pose persistent challenge to public health globally. In India, the burden of foodborne illnesses is exacerbated among urban youth due to inadequate food safety practices and knowledge. **Objective:** The study objective was to examine the knowledge, attitudes, and practices (KAP) towards food safety among youth in urban areas of Dantewada district, Chhattisgarh. **Materials and Methods:** A cross-sectional study was conducted among 302 randomly selected youth in urban areas of Dantewada district, Chhattisgarh. A written informed consent was taken from the study participants. The data was collected between March to May, 2024 using a self-administered questionnaire. The collected data were checked for completeness, coded manually, and then exported to SPSS version 29 for data and analysis. One-way ANOVA was used to examine the association between sociodemographic variables and KAP. Pearson correlation analysis was conducted to measure the association among food safety knowledge, attitude, and practice scores. A p-value < 0.05 was considered statistically significant for both tests. **Results:** The study sample included 197 males (65.2%) and 105 females (34.8%). The mean age of participants was 22.5 ± 4.5 years. The overall

scores for food safety knowledge, attitudes, and practices among respondents were 66.2% (good), 77.7% (positive), and 20% (good), respectively. Participants demonstrated significant differences in attitudes based on gender and age ($p < 0.05$), but there were no significant differences in knowledge or practices based on these variables. Occupation did not significantly affect any KAP aspects. Pearson correlation analysis revealed a small negative correlation between knowledge and practices ($r = -0.235$, $p < 0.001$), a moderate positive correlation between knowledge and attitudes ($r = 0.428$, $p < 0.001$), and a small negative correlation between practices and attitudes ($r = -0.244$, $p < 0.001$). **Conclusion:** This study revealed that the overall knowledge, attitudes, and practices towards food safety among youth in Dantewada District are moderate to good. However, there is a disconnect between knowledge and practices, indicating potential risks for foodborne diseases. Strengthening educational interventions focused on practical food safety measures is essential to improve overall food safety among this population. Future research should explore the effectiveness of such interventions in enhancing food safety practices.

Keywords: Food safety, Hygiene, Knowledge, Attitude, Practise, Public Health

FREE COMMUNICATION - POSTER PRESENTATIONS

14th November 2024

Time: 1.00 pm to 1.45 pm

SESSION 1- NUTRITION & HEALTH POLICY RESEARCH

No	Abstract ID	Presenter name	Affiliation	City	Email	Title of Presentation
1	12	Mr Sambaran Mondal	West Bengal State University	Kolkata	sambaranm28@gmail.com	Nutritional and Health Policies in India: Perspectives for Healthy Aging
2	161	Ms Samraggi Roy	The Maharaja Sayajirao University of Baroda	Bengaluru	ssamraggi.roy@gmail.com	Assessing Challenges to IFA Supplementation Adherence and Anemia Control Among School-Going Adolescent Girls in Bankura District, West Bengal
3	163	Ms Aditi Devidas Vargante	Hirabai Cowasji Jehangir Medical Research Institute	Pune	aditivargante@gmail.com	Developing a tool to assess KAP on Microplastics and Endocrine Disrupting Chemicals consumption through foods, cosmetics and personal care products
4	208	Mr Bhasker Reddy P	ICMR-National Institute of Nutrition, Hyderabad	Hyderabad	bhasker.perumalla@gmail.com	Impact of the Millet Year 2023 Campaign in Shaping Knowledge, Attitude, and Practices of Millets Consumption among College Going Adult Women in Urban Areas of Telangana
5	239	Ms ReshmaG	JSS AHER	Mysuru	reshmakalavathig@gmail.com	Assessing Nutrition Health Policy Awareness Among Young Adults
6	279	Ms Anushka Banerjee	Simply Wellness	Pune	anushkabanerjee.nd2224@sihs.edu.in	Relationship between ADIPOQ /adiponectin gene and its polymorphisms on insulin sensitivity in anorexia nervosa patients
7	295	Ms Aishwarya Nair	Symbiosis School of Culinary Arts and Nutritional Sciences	Pune	ashnair2105@gmail.com	Exploring link between fad diet and nutritional health: KAP study in young adults in Maharashtra, India
8	310	Ms Zaware Sayali Santosh	Symbiosis Skills and Professional University	Roha	sayaliszaware30@gmail.com	Impact of ADIPOQ, FTO, LEPR, MC4R & PPARG gene polymorphism on variance associated obesity among Indian population

9	326	Ms Sasirekha N	Avinashiln gam Institute	Coimbat ore	sasirekha.nel apudi@gmail .com	Millet Revolution: India's public distribution system and Startul Innovation
10	352	Ms Darshika Bhutda	Symbiosis School of Culinary Arts and Nutritional Sciences	Pune	darshikabhut da7@gmail.c om	Enhancing the Implementation of Welfare Schemes: Insights from Southern Indian States on Mission Shakti and Allied Programs
11	355	Ms Shivangi Abdhesh Shukla	Symbiosis School of Culinary Arts and Nutritional Sciences	Pune	shivangiashu kla@gmail.c om	Nourishing Insights: A Situational Analysis of Dietary Patterns and Nutrition Awareness in Rural Maharashtra
12	365	Ms Pooja Panchal	Symbiosis School of Culinary Arts and Nutritional Sciences	Pune	poojapanchal 20@gmail.co m	Situational Analysis of Psychosocial Perspectives of β -Thalassemia Major (β TM) Patients in Gujarat

Abstract ID: 12

ABSTRACT TITLE: NUTRITIONAL AND HEALTH POLICIES IN INDIA: PERSPECTIVES FOR HEALTHY AGING

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Background: India is experiencing a rapid increase in its elderly population. With the increasing elderly population the occurrence of diseases and disorders among them are also in rise, which creates a challenging situation for the country. In this backdrop, the study attempts to understand the role of prevailing nutritional and health policies in India and their contribution towards healthy aging. **Materials and Methods:** The study used framework and manifest content analysis methods for the investigation. Different nutritional and health policy documents from relevant sectors were collected. The documents were selected purposively and analyzed. **Results:** The study reveals that there are several nutritional and health related policies are in operation in India, but the country lacks specified nutritional or health policy for the Indian elderly. Provision of healthcare and nutritional benefits to the increased elderly

population could be a challenging issue. **Conclusion:** There is need of specified nutritional or health policy for the Indian elderly to achieve healthy aging.

Keywords: Indian elderly, Nutritional policy, Elderly youth, Healthy aging

Abstract ID: 161

ABSTRACT TITLE: ASSESSING CHALLENGES TO IFA SUPPLEMENTATION ADHERENCE AND ANEMIA CONTROL AMONG SCHOOL-GOING ADOLESCENT GIRLS IN BANKURA DISTRICT, WEST BENGAL

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Background: Anaemia remains a critical public health challenge in India, despite technological and healthcare advancements, particularly affecting women and adolescents. In Southeast Asia, malnutrition and anaemia during adolescence increase pregnancy complications and perpetuate cycles of intergenerational malnutrition. Government interventions to reduce anaemia face obstacles, including inadequate IFA tablet distribution and limited counselling services. In Bankura District, anaemia prevalence among adolescent girls is alarmingly high at 80.3% (NFHS-5). Addressing adolescents' nutritional needs is crucial to disrupting these cycles. This study examines the implementation of the 6x6x6 anaemia control strategy in Bankura District, focusing on IFA supplementation adherence and revealing challenges in program execution, training, and cross-sector coordination. **Material and Methods:** This study assesses the Anaemia Mukh Bharat (AMB) initiative; effectiveness in addressing adolescent anaemia, with a focus on IFA compliance among school-going adolescent girls in the Taldangra block of Bankura District, West Bengal. A Knowledge, Attitudes, and Practices (KAP) survey was administered to 100 adolescent girls (aged 15–18 years) and 30 frontline workers (ASHAs, AWWs). Data collection included anthropometric measurements, dietary recall, and interviews to understand behaviours linked to anaemia. Statistical methods, including chi-square and t-tests, were used to analyse the relationships between key variables. **Results:** The study found that 56% of the adolescents had normal BMI-for-age, while 22% exhibited mild thinness, 8% moderate thinness, 12% were overweight, and 2% were classified as obese. Dietary diversity was lacking, with 86.66% reporting high consumption of processed foods. IFA compliance was low, with only 61% adherence, and taste was a significant deterrent ($p = 0.001$). A striking 89% of adolescents had poor knowledge regarding anaemia, though frontline workers demonstrated better understanding. The main challenges identified were inadequate training for workers and weak coordination between ASHA workers, AWWs, and school personnel. **Conclusion:** Significant gaps exist in IFA compliance and nutrition among adolescent girls, compounded by insufficient supervision and lack of training for frontline workers. Strengthening multi-sectoral collaboration, increasing government involvement, and providing enhanced training for frontline workers are crucial steps to improve adolescent health outcomes and the effectiveness of anaemia control programs.

Keywords: Anaemia, Anaemia Mukht Bharat (AMB) policy, Iron folic acid (IFA) Supplementation, Adolescent nutrition

Abstract ID: 163

ABSTRACT TITLE: DEVELOPING A TOOL TO ASSESS KAP ON MICROPLASTICS AND ENDOCRINE DISRUPTING CHEMICALS CONSUMPTION THROUGH FOODS, COSMETICS AND PERSONAL CARE PRODUCTS

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Background: Plastic is used extensively, for food packing and storage and poses risk to human health and the ecosystem when Microplastics (MPs) are released into the environment. Exposure to MPs and Endocrine Disrupting Chemicals (EDCs) used in their manufacturing can lead to a variety of disorders. To limit exposure to these hazardous compounds, awareness must be raised for implementation of stringent rules. **Materials and Methods:** A cross-sectional study conducted on 210 participants from Pune of age 18-60 years, with minimum education of grade 12th. A tool was developed to collect data on KAP on MPs and EDCs through interviews, subsequent to data analysis, ensuring validity and reliability of the tool. **Results:** Out of the 210 participants 160 (76.2%) had knowledge of MPs, and a staggering 156 (74.3%) of the participants did not have knowledge of EDCs. The reliability analysis of this study for the tool had a value of $\alpha = 0.710$, and demonstrated a satisfactory I-CVI and S-CVI score for content validity, and had a face validity of 86.5%. **Conclusion:** This study indicates participants knew about the existence of MPs, which was reflected in their attitudes towards them. Although there was no significant correlation with consumption of foods that are potential sources of MP contamination. Furthermore, participants had poor knowledge of EDCs despite being able to comprehend its ill-effects. Those who knew of EDCs, knew of their presence in personal care products. Based on the reliability, face and content validity analysis of the tool, it is acceptable to measure KAP of Microplastics and Endocrine Disrupting Chemicals. In conclusion, it is imperative to create awareness about MPs and EDCs, their hazards, to improve human practices and implementation of laws and regulations to safeguard the health of all organisms and protect the integrity of the planet.

Keywords: KAP, Microplastics, Endocrine disrupting chemicals

Abstract ID: 208

ABSTRACT TITLE: IMPACT OF THE MILLET YEAR 2023 CAMPAIGN IN SHAPING KNOWLEDGE, ATTITUDE, AND PRACTICES OF MILLETS CONSUMPTION AMONG COLLEGE GOING ADULT WOMEN IN URBAN AREAS OF TELANGANA

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Background: The year 2023 has been designated as the International Year of Millets (IYOM 2023) for promoting a global celebration and recognition of the importance of millets in our lives. Millets have been a staple diet in some parts of India. The purpose of this study was assess the impact of the IYOM 2023, campaign in shaping knowledge, attitudes, and practice of Millet Consumption among young women in Telangana. **Material and Methods:** A cross-sectional study design with mixed methods approach was employed. The study population was urban college-going adult women (>18 years) in urban areas of Telangana. A multistage random sampling technique was utilized to select the study participants. Assuming the prevalence of millets consumption 25%, 95% CI, 5% precision, non-response 10% and design-effect of 1.5, the sample calculated was 480(Rounded to 500). A structured, pre-tested questionnaire was administered for quantitative data and a theme guide was used for In-depth Interviews (IDIs). Quantitative data was analysed using SPSS.21 and qualitative data was coded and analysed manually. **Results:** A majority of participants 292 (58%) belonged to the Backward Class (BC), 101(20%) to Scheduled Caste (SC), and 28(6%) to Scheduled Tribes (ST). Majority of the participants 493(97.5%) knew about millets, with 120 (24%) having only heard of them, 332(66%) had little knowledge, and 41(8%) had good knowledge. Top information sources were family members (93.1%), social media (44%), and friends (32.8%). Sorghum (92.6%) and finger millet (92.3%) were most well-known. About 36% consumed millets since childhood, while 21.7% started in the last three months. Of 493 participants, only 27% were aware of the IYoM2023 campaign. In all, 8 themes and 27 sub-themes were derived from qualitative data. The participants reported to have witnessed heightened coverage about millets across media platforms. **Conclusion:** Many students were not aware of IYoM2023 campaign. Very few types of millet are known and used. Family tradition and cultural habits determined millet consumption. Social media is the most preferred source of information.

Keywords: IYoM-2023, Urban-women, Millets, KAP

Abstract ID:279

**ABSTRACT TITLE: RELATIONSHIP BETWEEN ADIPOQ /ADIPONECTIN GENE AND ITS
POLYMORPHISMS ON INSULIN SENSITIVITY IN ANOREXIA NERVOSA PATIENTS**

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Background: This systematic review aims to study the relationship of ADIPOQ/ adiponectin gene with increased insulin sensitivity in anorexia nervosa (AN) patients and to identify polymorphisms in ADIPOQ gene and its effect on impaired insulin sensitivity in AN patient. **Material and Methods:** An electronic search for full-text research articles was performed in selected 5 scientific databases such as PubMed, Web of Science, Science Direct, SCOPUS, and EBSCO. The research articles published in English language between January 2003 were included in the review. COVIDENCE 2.0 systematic review software was used for removing the duplicates and title and abstract along with full text screening of research articles. The reporting quality of the included research studies was determined by using the JBI tool. The screening was conducted by two independent reviewers and any discrepancy was resolved by the third expert reviewer. Data extraction was performed in well-defined excel spreadsheets based on the study objectives and results were critically synthesized. **Results:** A total 35 full text articles were identified through initial literature search. After removing duplicates and screening of the research articles 15 articles were included in the review based on well-defined eligibility criteria. Out of 15 studies seven studies reported significant relationship between ADIPOQ/ adiponectin and increased insulin sensitivity in AN patient of which four studies demonstrated a positive relationship (p-values range < 0.05 - < 0.0001). However, thirteen studies out of fifteen focussed on the significant effect of impaired polymorphisms (+45T > G and +276G > T) in ADIPOQ gene on impaired insulin sensitivity in AN patient. **Conclusion:** Evidence studies suggest complex and multifaceted relationship between elevated adiponectin levels and improved insulin sensitivity. Further research is necessary to clarify the metabolic dynamics underlying this relationship. This systematic review aligns with Sustainable Development Goals-3 by contributing to improved health outcomes and quality of life in vulnerable populations like AN patients.

Keywords: Anorexia Nervosa, Adiponectin, Insulin sensitivity, Insulin sensitivity

Abstract ID: 295

ABSTRACT TITLE: EXPLORING LINK BETWEEN FAD DIET AND NUTRITIONAL HEALTH: KAP STUDY IN YOUNG ADULTS IN MAHARASHTRA, INDIA

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Background: Fad diets are characterized by extreme and often unsustainable dietary practices, which gained popularity among young adults seeking rapid weight loss/health improvements. However, the long-term effects of these diets on nutritional adequacy and health remain unclear. The study

investigates the relationship between fad diets and the nutritional status of young adults in Maharashtra, India. **Material and Methods:** The research employs an observational approach, utilizing a cross-sectional design to explore the relationship between fad diets affecting the nutritional status of young adults in Maharashtra. The pre-tested validated questionnaire was developed using 21 questions, including socio-demographic information, knowledge of nutrition and FAD diets, attitude towards FAD diets, dietary practices, and the effect of FAD diet on nutritional status. Descriptive statistics summarized the participants; characteristics, dietary behaviors, and nutritional status. Chi-square tests evaluated the factors affecting fad diet practices and nutritional outcomes. The study included 239 young adults, and ethical approval was granted by the Symbiosis Institutional Ethics Committee (SIU/IEC/740). **Results:** The study included adults with an average age of 23 ± 2 years from various locations in Maharashtra. Most participants were female (89%, $n=210$). The group comprised postgraduates (65.30%), graduates (5%), and undergraduates (28%). A significant association was found between fad diets and nutritional status among young adults aged 17-24 years ($p=0.004$), particularly those who had followed fad diets for less than a month ($p=0.016$). Greater knowledge about fad diets was associated with reduced consumption ($p=0.000$). Fad diets had a negative effect on the emotional and psychological well-being of young adults ($p=0.000$). Gender did not affect the influence of fad diets on nutritional well-being. **Conclusion:** Fad diets in India have significant economic and health implications. Economically, it increased spending on specialized foods and supplements, potentially straining personal finances. Health-wise, fad diets offer short-term benefits, often lead to imbalanced nutrition, and adversely affect long-term well-being. There is a need for better education and guidance to ensure dietary choices support overall health.

Keywords: FAD diet, emotional wellbeing, psychological wellbeing, nutritional status, nutrition trends.

Abstract ID: 310

**ABSTRACT TITLE: IMPACT OF ADIPOQ, FTO, LEPR, MC4R AND PPARG GENE
POLYMORPHISM ON VARIANCE ASSOCIATED OBESITY AMONG INDIAN POPULATION**

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Background: Obesity has become a global burden thus studying factors that influence the onset and risk of obesity becomes very crucial. ADIPOQ, FTO, LEPR, MC4R and PPARG are the genes that are yet to be studied exclusively in obesity among the Indian population. The aim of this study was to find out the determinant gene (rsIDs) for obesity among obese and non-obese groups. **Material and Methods:** Genetic testing of 51 individuals was done through AirGenomix Pvt. Ltd. The genetic data was generated using the GAS3 technique on Illumina software. Logistics and comparative methods were applied to analyze the segregated data. **Results:** Around 96% of the total population had affected homozygous variant G allele for rs17300539 of ADIPOQ. Among all the assessed genes FTO rsIDs showed greater ratio of difference among obese and non-obese individuals. **Conclusion:** The ADIPOQ gene variant is prevalent in 96% of the population, indicating that it is not a primary determinant of

obesity. Meanwhile, FTO gene can act as a determinant to understand the risk of obesity among individuals. In the study, even non-obese individuals had variant alleles present in them which goes on to show the influence of factors other than genetics. Thus, epigenetic factors like dietary habits and lifestyle should be studied in detail.

Keywords: Obesity, Nutrigenomics, Determinant gene, Polymorphism, Genetics, Variant allele

Abstract ID: 326

**ABSTRACT TITLE: MILLET REVOLUTION: INDIA'S PUBLIC DISTRIBUTION SYSTEM AND
STARTUP INNOVATION**

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Background: The Public Distribution system (PDS) in India is increasingly integrating millets, aligning with the International Year of Millets initiative to enhance nutrition and millet based startup's to boost innovation sector. Supporting sustainable agriculture and foster entrepreneurial growth in the millet ecosystem. **Material and Methods:** Data were collected from government reports, policy documents and case studies of millet startups. A comparative analysis of millet integration into the PDS and interviews with startup founders including qualitative assessments, impact on state economy and their integration into the International market were conducted to understand the challenges and innovations driving millet ecosystem. **Results:** Startups developed a range of millet based products engaging market accessibility and consumer awareness. India's millet market increased by 8% metric tons in 2021-22 and expected to increase by 12% by 2025. The advancement of Millets still represents a small fraction of PDS distributions, only about 1.3% as rice and wheat. As a result Millets are becoming more prominent in both domestic and International markets. **Conclusion:** The Millet Revolution represents a significant shift in India's agricultural landscape, driven by startup innovation and supportive public policies. Continued collaboration between entrepreneurs, farmers, academicians and consumers will be essential for sustaining this momentum and ensuring millets regain their status as staple foods in Indian diets. States like Karnataka and Odisha have pioneered this integration with many programs like Millet Mission promoting local production and consumption through the government programs like the PDS and Mid-Day Meal schemes. This study concludes a major policy push to promote value added millet products.

Keywords: Public Distribution System, Millet Revolution, Startups, Market, Nutrition, Policy

Abstract ID: 352

**ABSTRACT TITLE: ENHANCING THE IMPLEMENTATION OF WELFARE SCHEMES: INSIGHTS
FROM SOUTHERN INDIAN STATES ON MISSION SHAKTI AND ALLIED PROGRAMS**

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Background: This observational study evaluates the implementation of the Mission Shakti scheme across six southern Indian states “Kerala, Tamil Nadu, Karnataka, Telangana, Andhra Pradesh, and Pondicherry” focusing on challenges, best practices, and recommendations. Launched by the Ministry of Women and Child Development, GOI, Mission Shakti, aims to promote the safety, security, and empowerment of women through variety of programs like Beti Bachao Beti Padhao (BBBP), One Stop Centers (OSC), and Working Women Hostels (WHL). **Material and Methods:** A mixed-method approach was used, involving qualitative observations and quantitative data from state-level presentations during the regional consultation held at National Institute of Public Cooperation and Child Development (NIPCCD), Bangalore. Data collection focused on operational challenges, success indicators, and best practices as reported by 48 CDPOs from each state, supported by quantitative data such as fund disbursement delays, vacancy percentages, and program reach. Comparative analysis was conducted across the six states to identify regional trends and disparities in program outcomes. **Results:** Significant challenges included over 30% delays in fund disbursement across states, especially in PMMVY, where 40% of applications in Tamil Nadu and Kerala faced portal issues. Staffing shortages, with vacancy rates up to 40% in Telangana and 35% in Tamil Nadu, hampered program delivery. Kerala lacked video conferencing facilities in 60% of its centers. Notable best practices emerged, such as Tamil Nadu; use of CSR funds for transgender-operated rescue vehicles, improving response times by 15%. Andhra Pradesh community engagement reached over 80% of schools, reducing child marriage rates by 10%. **Conclusion:** Despite strong community engagement and collaboration, systemic inefficiencies in funding, staffing, and technology persist. The study recommends timely fund releases, reducing vacancy rates to below 10%, and improving technical infrastructure, particularly the PMMVY portals. These measures are essential for enhancing the effectiveness of Mission Shakti, benefiting over 5 million women and children across the six states.

Keywords: Mission shakti, Women empowerment, Southern India, Scheme implementation, Beti Bachao Beti Padhao, Public health policy, Public health nutrition

Abstract ID: 355

ABSTRACT TITLE: NOURISHING INSIGHTS: A SITUATIONAL ANALYSIS OF DIETARY PATTERNS AND NUTRITION AWARENESS IN RURAL MAHARASHTRA

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Background: Malnutrition and insufficient dietary diversity are frequently observed in rural regions with scarce resources. The study examined the dietary habits and nutrition awareness of the Wakipada community in Naigaon, Palghar District, Maharashtra. **Materials and Methods:** The study focused on

conducting detailed dietary assessments to evaluate food consumption patterns and nutritional intake from the households of Naigaon village. Data were collected through food diversity questionnaires and food insecurity surveys, assessing the intake of various food groups over time. The community also participated in educational workshops to raise awareness about balanced diets and healthy eating practices. Descriptive statistics were used to assess the food consumption patterns in the Naigaon village. **Results:** The assessment revealed that the diet in Naigaon was dominated by cereal consumption, with 100% of respondents relying heavily on grains. There was minimal intake of fruits and vegetables, leading to low dietary diversity. Protein sources were limited, contributing to potential micronutrient deficiencies. Outside food consumption was very low (12.5%), mainly due to economic constraints, while food insecurity and shared water sources further aggravated the community's nutritional issues. **Conclusion:** Dietary assessments in Naigaon revealed a strong dependence on cereals, contributing to poor nutritional outcomes. Continued efforts are needed to improve food security, promote dietary diversity, and provide ongoing nutritional education to ensure long-term health improvements.

Keywords: Dietary Assessment, Rural Nutrition, Food Security, Malnutrition, Naigaon, Public Health, Dietary Diversity

Abstract ID: 365

ABSTRACT TITLE: SITUATIONAL ANALYSIS OF PSYCHOSOCIAL PERSPECTIVES OF B-THALASSEMIA MAJOR (BTM) PATIENTS IN GUJARAT

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Background: Gujarat bears a huge burden of transfusion-dependent beta-thalassemia patients, with a prevalence of 4.0-5.0% and 18-25% in high-risk communities. The burden of thalassemia is chronic in nature and demands intensive care treatment, leading to several psychological challenges for an individual, household, and community at large. Thus, the current study aimed to assess the psychosocial difficulties of Gujarat beta-thalassemia major (β TM) patients. **Material and Methods:** A cross-sectional study was conducted using a mixed-method approach. Quantitative data was collected using a snowball approach for connecting with the β TM patients. The pre-tested questionnaires were used to elicit information on socio-demographic details, societal challenges, and social stigma majorly faced by blood transfusion-dependent adolescents. The qualitative data was collected using focused interviews with key members representing government officials and non-government organizations (NGOs) from Ahmedabad, Junagadh, Jamnagar, Rajkot, Surendranagar, and Bhavnagar to understand their psychosocial challenges associated with the disease. It was an observational study; thus, the research ethics committee of IIPH-G had exempted the ethical approval for the study. The Commissioner of Health, the National Health Mission, and the Gujrat government approved publishing

the data. **Results:** The mean age of adolescents was 11.5 ± 1.7 years, and adults were 23.5 ± 3.1 years, included in study. Most patients suffering from β TM had family history of thalassemia. Blood transfusion-dependent patients faced a shortage of blood units during summer. Also, in the community, inequality existed among the population and thalassemic families, as hesitation was reported due to difficulties in finding a suitable partner for their children. Social stigma influenced family relationships- desertion, divorce, suicides, depression among parents, separation, and children with thalassemia were sent to orphanages and considered an economic burden by the families. The current study reported approximate costing of paid blood transfusion varied from Rs. 1000 to Rs. 3000 per month. As a treatment along with blood transfusion, the participants consumed Deferasirox, Asunra, Novartis, and MMN supplements such as calcium to reduce the skeletal tissue damage, iron chelation and increase the immunity. **Conclusion:** Improving the existing program with approaches to support the psychosocial issues of β TM patients would be very relevant.

Keywords: β - Thalassemia major, Psychosocial, Gujarat, Quality of life

FREE COMMUNICATION - POSTER PRESENTATIONS

15th November 2024

Time: 11.45 am to 12.15 noon

SESSION 2- CLINICAL NUTRITION

No	Abstract ID	Presenter name	Affiliation	City	Email	Title of Presentation
1	11	Dr Harmeet	Institute of Home Economics, University of Delhi	New Delhi	harmeetkaur707@gmail.com	Comparative analysis of the metabolic triad in apparently healthy vegetarian and non-vegetarian urban adults residing in New Delhi: Interplay of obesity, hypertension and diabetes
2	21	Dr Deeksha Naik	Deeksha Diet Clinic	Shimoga	diksharhsc@yahoo.in	Clinical Benefits of Poshan Mix for HIV-Positive Children: An Empirical Analysis
3	29	Mrs Tanmayi Naik Pathak	Freedom From Diabetes	Pune	nutritionist@freedomfromdiabetes.org	Positive Impact of a One-Year Online Lifestyle Intervention on Glycemic Control, Dyslipidemia, Hypertension, and Remission Rates in Severely Obese T2D Patients
4	41	Mrs Pradnya Manish Bagalkote	Dharampeth M P Deo Memorial Science College	Nagpur	shymalipink@gmail.com	Relationship between Nutrient Adequacy Ratio and Biomarkers in COVID-19 Patients: A Retrospective Study.
5	44	Ms Sowmiya G	Avinashilingam Institute for Home Science and Higher Education for Women	Coimbatore	sowmiyagunasekaran98@gmail.com	Investigating the Influence of Fermented Plant Based Fibres on Gut Microbiome: A Systematic Review
6	47	Dr Koushik Biswas	All India Institute of Medical Sciences	Raebareilly	koushik2907@gmail.com	Association of visual impairment with malnutrition in the elderly population: a pilot study
7	64	Ms Jolly	Avinashilingam Institute for Home Science and Higher Education for Women	Coimbatore	annviajollycmc@gmail.com	Early Detection and Management of PCOS: A Study on Prevalence and Risk Factors Among Young Women in Thrissur, Kerala
8	65	Mrs Sanya Durrani	JSS Academy of Higher Education and Research	Mysuru	sanyadurrani@jssuni.edu.in	Assessment of Biochemical Parameters and Body Composition Among Hypothyroid Subjects

9	66	Ms Shraddha Vyas	Appediet online diet and wellness consulatati on	Hydera bad	shraddha.n anotech@g mail.com	Evaluation of Antioxidant and Anti-Inflammatory Properties of Justicia wynaadensis Extracts: Potential for Neuroprotective Applications in Neurodegenerative Disease
10	74	Ms Soma Basu	Sri Ramachan dra Institute of Higher Education and Research (DU)	Chenn ai	somabasu abps@gma il.com	Seizing Nutritional Status: The Underexplored Impact of Epilepsy
11	81	Ms Riya Khurana	Manav Rachna Internationa l Institute of Research and Studies	Farida bad	khuranariy a833@gm ail.com	Impact of Socio-Economic Status on Adherence to Low Fodmap Diet in Patients with Irritable Bowel Syndrome: Phase I
12	83	Ms. Lalithambi ka S	JSS Academy of Higher Education & Research	Mysuru	slalithambi ka067@gm ail.com	Prevalence of Extra Uterine Growth Restriction (EUGR) in Preterm Infants: A Retrospective Study
13	95	Ms Ganavi K N	JSSAHER	Mysuru	ganavikn20 00@gmail. com	A Comprehensive Review Reports on Clinical Implication and Therapeutic Strategies of Tryptophan: As a diagnostic measure in neurodegenerative disorder treatment
14	100	Ms Neha Yadav	Manav Rachna Internationa l Institute of Research and Studies	Farida bad	Ny492438 @gmail.co m	AI-Assisted Nutrient Optimization for Managing Chronic Diseases
15	127	Ms Sowmya Ramesh	Sri Ramachan dra Institute of Higher Education and Research	Chenn ai	sowmyar@ sriramacha ndra.edu.in	Targeting Micronutrients: Validation of a Semi-Quantitative Food Frequency Questionnaire (FFQ) for Vitamin C, E, Selenium, and Zinc Intake in Prediabetic Individuals
16	129	Dr Supriya V	Department of Clinical Nutrition, SRIHER (DU)	Chenn ai	supriya.v@ sriramacha ndra.edu.in	Association of Parosmia and nutritional status in Post COVID Patients using PAST TOOL
17	131	Dr Sharvari Rohan Desai	Kasturba Health Society Medical Research Centre	Mumb ai	sharvarima lshe8@gm ail.com	Leukocytosis- At-glance marker for underlying inflammatory risks
18	133	Ms Saloni Santosh Nevgi	SNDT College of Home Science	Pune	saloninevgi 08@gmail. com	Association of Perceived Stress, Quality of Sleep and Hedonic Hunger Among Medical Students

19	139	Ms Payal Sanjay Konde	SNDT College of Home Science	Pune	payalkonde0042@gmail.com	A Study on the Interrelation of Dietary and Lifestyle Habits on Dysmenorrhea
20	148	Ms Shivani	JSS AHER, Mysuru	Mysuru	shivani2005mol@gmail.com	An Observational Study on the Association Between Dietary Patterns, Lifestyle, and Obesity on Non-Alcoholic Fatty Liver Disease in Karnataka
21	151	Ms Sowmya KP	Department of Nutrition and Dietetics, JSS AHER	Mysuru	sowmyakpsowmyakp1@gmail.com	Role of Nutritional Assessment and Food Frequency Pattern in Understanding Pregnancy Outcomes in Infertile Population
22	152	Ms Mugdha Pradhan	Thrivetribe Wellness Solutions Private Limited	Pune	mugdha@ithrivein.com	Efficacy of a functional nutrition approach in the management of deranged thyroid parameters in an Indian population: a retrospective study
23	174	Ms Payal Patil	MGM school of biomedical science	Mumbai	patilpayal316@gmail.com	Association between the functional ability and dietary pattern of Geriatric Population: A cross-sectional study
24	180	Dr Zubeda Tumbi	Healthwatch Nutrition Clinic	Mumbai	zubedatumbi12@gmail.com	Effect of nutritional intervention on liver health and body weight with Metabolic Associated Fatty Liver Disease(MAFLD) & Overweight /Obese Indian adults
25	181	Ms J N Harini	Sri Ramachandra Institute of Higher Education and Research	Chennai	harinijn@sriramachandra.edu.in	Gut-Bone Axis: Probiotic Supplementation for Enhancing Bone Health and Reducing Osteoclastogenesis in Postmenopausal Women – A Review of Randomized Controlled Trials
26	182	Dr Vineeta Bansal	Mahatma Gandhi University of Medical Sciences & Technology	Jaipur	drvineetabansal@mgumst.org	Association of lifestyle & dietary factors with severity of symptoms in cancer patients
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Abstract ID:11

ABSTRACT TITLE: COMPARATIVE ANALYSIS OF THE METABOLIC TRIAD IN APPARENTLY HEALTHY VEGETARIAN AND NON-VEGETARIAN URBAN ADULTS RESIDING IN NEW DELHI: INTERPLAY OF OBESITY, HYPERTENSION, AND DIABETES

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Background: Non-communicable diseases such as hypertension, obesity, and type 2 diabetes mellitus represent significant global health challenges. Assessing cardio metabolic risk factors in apparently healthy populations in high-prevalence regions like India is essential. Given the substantial impact of diet on metabolic health, this study examined how vegetarian and non-vegetarian diets affect metabolic outcomes. It aimed to elucidate the prevalence and patterns of these metabolic disorders, both individually and in combination (metabolic triad), across the two dietary groups. **Material:** This community-based cross-sectional study included 400 healthy Indian urban adults (200 vegetarians and 200 non-vegetarians), age and gender-matched, recruited via purposive sampling by organising health camps in Delhi. Anthropometric measurements, blood pressure, and fasting glucose levels were assessed using standard protocols. Hypertension was defined according to JNC 7 -2003 criteria, diabetes was diagnosed using WHO guidelines, and obesity was assessed using BMI with WHO-Asian cut-offs. Appropriate statistical tests were applied to the data to draw valid and reliable conclusions. **Results:** The results highlight the prevalence of various metabolic comorbidities in relation to dietary habits, focusing on isolated and combined conditions. Among isolated conditions, obesity was the most prevalent, affecting 61.25% of participants, while diabetes was the least common at 13%. Among combined conditions, "Obesitension"; (obesity-hypertension) was most prevalent at 18.5%, followed by "Diabesity" (diabetes-obesity) at 8% and "Diabtension" (diabetes-hypertension) at 6%. The prevalence of the metabolic triad was 8%, with nearly equal distribution between vegetarians (8.5%) and non-vegetarians (7.5%). Notably, "Obesitension" was significantly more prevalent among vegetarians (23.5%) compared to non-vegetarians (13.5%). Other conditions, such as isolated hypertension, T2DM, obesity, "Diabesity," "Diabtension," and the metabolic triad, showed no significant differences between the dietary groups. **Conclusion:** These results highlight hidden metabolic risks in healthy individuals, with "Obesitension" particularly common among vegetarians. This differential prevalence suggests that even healthier dietary patterns may contribute to specific metabolic risks. The presence of the metabolic triad across dietary groups emphasizes the need for early screening and preventive strategies, even in those perceived as healthy.

Keywords: diabetes, diabesity, diet, hypertension, metabolic triad, obesity, vegetarian diet, non-vegetarian diet.

Abstract ID: 21

ABSTRACT TITLE: CLINICAL BENEFITS OF POSHAN MIX FOR HIV-POSITIVE CHILDREN: AN EMPIRICAL ANALYSIS

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Background: HIV-positive children are particularly vulnerable to nutritional deficiencies that can exacerbate their condition, affecting growth, immune function, and overall health. Addressing these nutritional needs is critical for improving their clinical outcomes. This study presents an empirical analysis of the clinical benefits of Poshan Mix, a specially formulated nutrient-rich supplement, for HIV-positive paediatric patients. **Material:** "The clinical efficacy of the poshan mix was studied for a period of 3 months. The research involved a comprehensive evaluation of clinical trials and observational studies, focusing on key health metrics such as immune function markers, weight gain, biochemical parameters, and overall quality of life. The analysis utilized a mixed-methods approach, integrating quantitative data from clinical assessments with qualitative feedback from caregivers and healthcare providers." **Results:** Quantitative findings demonstrated that children receiving Poshan Mix experienced significant improvements in weight gain and growth compared to those receiving standard nutritional interventions. Additionally, immune function marker like CD4 cell counts, showed favourable responses to the supplementation, suggesting enhanced immune support. There was significant ($p \leq 0.001$) improvement in all the parameters like weight, haemoglobin and CD4 count in experimental group when compared with control group. Haemoglobin level raised from 12.5 g/dl to 12.82 g/dl over a period of 3 months in experimental group. CD4 count went from 876 to 993 in experimental group and 671 to 631 in control group. Qualitative assessments revealed improved patient-reported outcomes, including enhanced energy levels, better appetite, and increased overall well-being. **Conclusion:** These findings highlight Poshan Mix's role not only in addressing immediate nutritional deficiencies but also in supporting long-term health and developmental goals. The study's results advocate for the inclusion of Poshan Mix in nutritional care plans for HIV-positive children, providing evidence that it can play a crucial role in mitigating the adverse effects of HIV on growth and immune function. By incorporating Poshan Mix into standard care practices, healthcare providers can potentially enhance the quality of life and clinical outcomes for this vulnerable population. This research offers valuable insights for policymakers, clinicians, and researchers focused on improving paediatric HIV care and nutritional support.

Keywords: HIV, AIDS, Nutrition, Health, CD4 Count, Haemoglobin, Weight Gain, Opportunistic Infections, Paediatric Nutrition

Abstract ID: 29

ABSTRACT TITLE: POSITIVE IMPACT OF A ONE-YEAR ONLINE LIFESTYLE INTERVENTION ON GLYCAEMIC CONTROL, DYSLIPIDEMIA, HYPERTENSION, AND REMISSION RATES IN SEVERELY OBESE T2D PATIENTS

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Background: Type 2 diabetes (T2D) is a global health issue that is frequently associated with obesity, hypertension, and dyslipidemia. Although pharmacotherapy is commonly used in its management, lifestyle interventions are gaining recognition for their holistic management potential. This study assessed the effectiveness of a one-year online lifestyle intervention for severely obese T2D patients, focusing on glycaemic control, blood pressure, lipid profiles, weight management, ABC target achievement, and remission rates for T2D, hypertension, and dyslipidemia. **Material and Methods:** Severely obese T2D patients (BMI ≥ 30 kg/m²) on oral hypoglycaemic agents participated in a one-year lifestyle program at the Freedom from Diabetes Clinic, Pune, India (June 2020-August 2023). The intervention included plant-based diet, personalized exercise, stress management, and medical support. ABC targets were defined as HbA1c $\leq 7.0\%$, blood pressure $\leq 140/90$ mmHg, and LDL-C ≤ 100 mg/dL. Remission of dyslipidaemia was defined as total cholesterol ≤ 240 mg/dL, triglycerides ≤ 200 mg/dL, HDL ≥ 40 mg/dL (males) or ≥ 50 mg/dL (females), and LDL ≤ 160 mg/dL without medication. Hypertension remission was defined as BP $\leq 140/90$ mmHg without medication. **Results:** Among 583 T2D patients (mean age 52 ± 9.6 years, diabetes duration 8.2 ± 6.3 years), 58.3% and 64.5% were on antihypertensives and statins, respectively. Post-intervention, significant improvements were observed in HbA1C, systolic and diastolic blood pressure, and lipid profiles ($p \leq 0.05$). A BMI reduction resulted in 43.2% of patients shifting to the 'moderately obese' category (BMI 25-30 kg/m²) and 5% shifting to 'overweight' (BMI 23-25 kg/m²). The achievement of the ABC targets increased from 16.1% at baseline to 26.1% post-intervention ($p \leq 0.05$). The remission rates were 26%, 11%, and 9.2% for T2D, hypertension, and dyslipidaemia, respectively. **Conclusion:** The one-year online lifestyle intervention improved health outcomes, ABC target Remission, achievement, and remission rates in severely obese T2D patients, offering an effective non-pharmacological approach to T2D management.

Keywords: ABC goal, Dyslipidemia, Hypertension, Obesity, Remission

Abstract ID: 41

ABSTRACT TITLE: RELATIONSHIP BETWEEN NUTRIENT ADEQUACY RATIO AND BIOMARKERS IN COVID-19 PATIENTS: A RETROSPECTIVE STUDY

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Background: The Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), known as coronavirus disease 2019 (COVID-19) was initially reported in Wuhan, China and rapidly spread worldwide in December 2019. The present retrospective study was conducted on Nutrient Adequacy Ratio (NAR) and biomarkers of COVID-19 patients. **Material and Methods:** About 369 patients diagnosed with COVID-19 by positive RT-PCR test and admitted in non-intensive care units in hospitals of Nagpur City, Maharashtra, INDIA, were selected by incidental sampling method. These patients were given standard medical protocols for the treatment of COVID-19. The important biomarkers of COVID-

19 patients viz., D-Dimer, Ferritin, CRP (C-reactive protein) and LDH (Lactate Dehydrogenase) were recorded on the day of admission (initial), on the 15th and 30th day after discharge from the hospital. The diet intake was calculated using the 24-hour recall method. The nutrient intake was computed according to IFCT (2017) and compared with EAR/RDA 2024 (ICMR-NIN). **Results:** The study showed a significant association between male and female patients for Nutrient Adequacy Ratio of energy, thiamine, Vitamin A, Vitamin C and Chromium ($p<0.01$). The mean Nutrient Adequacy Ratio of energy, total fat, fibre, Riboflavin, Vitamin B6, Ascorbic acid, Vitamin D, Vitamin A and Chromium ($p<0.01$) showed a significant difference with respect to the gender of the patients. The mean Nutrient Adequacy Ratio (NAR) of energy, protein, fat, fibre, riboflavin, Vitamin A, Vitamin D, Copper, Zinc and Selenium showed a significant difference ($p<0.01$) with respect to age of COVID-19 patients. Initial Ferritin, after the 15th and 30th days levels showed negative and significant correlations with NAR of Vitamin A; D-Dimer values on the 15th day and 30th day showed positive and significant correlations with NAR of Vitamin D ($p<0.05$); C-reactive Proteins of the 15th day showed positive and significant correlation ($p<0.01$) with NAR of Ascorbic acid. **Conclusion:** The study concluded the significant associations between biomarkers and age and gender of the COVID-19 patients and significant correlations between NAR and biomarkers of COVID-19.

Keywords: COVID-19, EAR-RDA, NAR, Biomarkers.

Abstract ID: 44

ABSTRACT TITLE: INVESTIGATING THE INFLUENCE OF FERMENTED PLANT BASED FIBRES ON GUT MICROBIOME: A SYSTEMATIC REVIEW

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Background: The human gut microbiome is composed of trillions of microbes that beneficially interact with the host and have a remarkable potential to influence physiological functions like energy harvest, metabolism and immune process. **Material and Methods:** This systematic review focuses on how fermented plant-based fibres positively influence human gut microbiome which includes articles published in PubMed database over the past five years by using keywords "Prebiotics " AND Gut Microbiome, and " Fermentation " AND Prebiotics. After exclusion of review articles, meta-analysis, systematic review, book chapters and conference proceedings, a total of 183 clinical research articles for the first keyword and 20 clinical research articles for the second keyword were included. A total of 36 research articles were selected after applying PRISMA statement and inclusion criteria such as significant influence of fermented plant-based fibres on gastrointestinal diseases (colorectal cancer), immunity development during early stages of life, chronic diseases and impact of fermentation on Prebiotics and human gut microbiome. **Results:** The result of the

comparative analysis highlights that Prebiotics are one of the microbiota's regulatory tools to positively modulate the gut microbiome but there is less usage of fermentation technology on Prebiotics food and the impact on gut microbiome is lacking. **Conclusion:** Most of the research studies focus on beneficial interaction between probiotics and gut microbiome but prebiotic study and usage of fermentation technology in enhancing the efficacy of Prebiotics and its impact on the gut microbiome are limited.

Keywords: Gut Microbiome, Fermented Prebiotics, beneficial microbes, fermentation technology.

Abstract ID: 47

ABSTRACT TITLE: ASSOCIATION OF VISUAL IMPAIRMENT WITH MALNUTRITION IN THE ELDERLY POPULATION: A PILOT STUDY

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Background: The proportion of the elderly population is increasing in India. Disability and functional impairment such as visual impairment are common among aged persons. This study aims to evaluate if the elderly with visual impairment are at increased risk of malnutrition. **Material:** In this cross-sectional study 50 visually impaired (visual acuity < 6/18) and 50 normal vision elderly participants were selected by convenience sampling at the ophthalmology clinic. Interview and nutritional assessment of participants using case report form and Mini Nutritional Assessment (MNA) were carried out by a trained medical student. Medical history was obtained from patient records. All data were entered in an Excel spreadsheet and analysed by IBM SPSSv25. **Results:** Among the 50 visually impaired participants, 9 (18 %) had malnutrition and 28 (56 %) were at risk. Visually impaired elderly reported less frequent consumption of dairy products (52 % vs. 58 %), legumes or eggs (82 % vs. 94 %), meat, fish or poultry (2 % vs. 4 %), fruits or vegetables (80 % vs. 90 %), compared to those with normal vision, although this finding was statistically insignificant. They also had significantly lower mid-arm circumference and calf circumference. Logistic regression analysis revealed that visual impairment was an independent risk factor for malnutrition in the elderly (OR 8.41, 95% CI 1.52 – 46.36, p=0.015). **Conclusion:** Our results highlight that the elderly with visual impairment have an increased risk for malnutrition. The general physician can train his team to screen visually impaired elderly with MNA for early identification of malnutrition and prompt intervention.

Keywords: Visual Impairment; Aged; Geriatric Assessment; Nutrition Assessment; Malnutrition; Mini Nutritional Assessments; Dietary patterns

Abstract ID: 64

ABSTRACT TITLE: EARLY DETECTION AND MANAGEMENT OF PCOS: A STUDY ON PREVALENCE AND RISK FACTORS AMONG YOUNG WOMEN IN THRISSUR, KERALA

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Background: The study examines the prevalence of Polycystic Ovary Syndrome (PCOS) among college students in Thrissur, Kerala, highlighting it as a significant public health issue affecting women of reproductive age. Understanding PCOS's prevalence is essential due to its potential long-term health consequences, including infertility and metabolic syndrome. Investigating this condition in educational settings is vital for early diagnosis and targeted therapies, particularly as lifestyle changes during college years may increase the risk of developing PCOS. **Material and Methods:** A cross-sectional study conducted from June to August 2023 evaluated the prevalence of Polycystic Ovary Syndrome (PCOS) among 1,250 college students aged 18 to 21 in Thrissur, Kerala. The study aimed to identify clinical features and lifestyle factors associated with PCOS. Participants were categorized into risk groups based on Hirsutism and Risk Assessment scores, with 10% of high-risk individuals undergoing ultrasound scans to assess ovarian health. **Results:** Results indicated that 25.2% of participants exhibited risk factors for PCOS, with 49 individuals identified as high-risk based on both assessments. The demographic analysis revealed a predominantly Hindu population, with 40.16% classified as lower middle class. Body Mass Index (BMI) distribution showed 30.32% of participants were underweight, while 59.44% were within the normal range. Notably, 61.12% were classified as low risk for PCOS, and 60.56% had low hirsutism scores, suggesting many may not present overt symptoms. Correlation analysis indicated significant relationships between menstrual health, hirsutism, and weight management, emphasizing the interconnectedness of these factors. **Conclusion:** The findings underscore the necessity for comprehensive screening and targeted interventions to improve health outcomes for young women, promoting awareness and early diagnosis of PCOS. Overall, the study highlights the significant prevalence of risk factors associated with PCOS in this demographic, calling for tailored healthcare strategies to address both physical and psychological aspects of the condition and mitigate potential long-term consequences.

Keywords: PCOS, Prevalence, Hirsutism, Menstrual Irregularities, Risk Assessment

Abstract ID: 65

**ABSTRACT TITLE: ASSESSMENT OF BIOCHEMICAL PARAMETERS AND BODY COMPOSITION
AMONG HYPOTHYROID SUBJECTS**

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Background: "Hypothyroidism is one of the most common prevalent problems resulting from thyroid deficiency, and it was revealed that thyroid hormones are known to play an imperative role in influencing

the body composition pattern. Body weight changes related to thyroid dysfunction support the idea that thyroid hormones have an effect on body weight and body composition. With this background, objectives were set to know the body composition among hypothyroid subjects. **Objective:** The study's main aim was to evaluate body composition, and biochemical parameters in hypothyroid subjects. **Material:** A Clinical Study was carried out in renowned clinics of Mysore district, Karnataka with a study population of 70 hypothyroid subjects. With the help of Omron Karada Scan, body composition was analysed and BMI was assessed through a standard protocol. Biochemical parameters were collected as secondary data. The data collected was statistically analysed and evaluated. **Results:** The study found that 24.26 percent of 70 hypothyroid subjects were male, while 75.71 percent were female. The majority of subjects were found to be obese in both genders. Both genders had elevated visceral fat levels. Most subjects had elevated visceral fat levels, with females having higher levels of TSH and males having more T4 and T3 levels. **Conclusion:** Body composition is the major tool to assess the BMI, visceral fat, and subcutaneous fat. The present study revealed a higher obesity prevalence among screened subjects in both genders.

Keywords: Body composition, hypothyroidism, anthropometry

Abstract ID: 66

**ABSTRACT TITLE: EVALUATION OF ANTIOXIDANT AND ANTI-INFLAMMATORY PROPERTIES
OF JUSTICIA WYNAADENSIS EXTRACTS: POTENTIAL FOR NEUROPROTECTIVE
APPLICATIONS IN NEURODEGENERATIVE DISEASE**

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Background: Neurodegenerative diseases such as Alzheimer's and Parkinson's are characterized by progressive neuronal damage and limited effective treatments. *Justicia wynaadensis*, a plant with traditional medicinal uses, has shown promise in various biological activities. This study focuses on the plant's extract to assess its potential neuroprotective effects and its ability to mitigate oxidative stress and inflammation, key factors in neurodegeneration. **Objective:** The objective of this study is to evaluate the neuroprotective potential of *Justicia wynaadensis* through its extract by examining its antioxidant and anti-inflammatory properties, which are crucial in the management of neurodegenerative diseases. **Material:** Materials and Methods: *Justicia wynaadensis* was subjected to solvent extraction to obtain various extracts (e.g., ethanolic, aqueous). The extracts were then evaluated for their antioxidant activity using assays such as DPPH (2,2-diphenyl-1-picrylhydrazyl) and ABTS (2,2'-azino-bis (3-ethylbenzothiazoline-6-sulfonic acid)). Anti-inflammatory properties were assessed using in vitro assays to measure the inhibition of pro-inflammatory cytokines. Additionally, the total phenolic and flavonoid content of the extracts was determined to correlate with their bioactivity. **Results:** The extraction process yielded extracts with varying levels of antioxidant and anti-inflammatory activities. The ethanolic extract of *Justicia wynaadensis* exhibited the highest antioxidant capacity, as evidenced by its effective scavenging of DPPH and ABTS radicals. Additionally, this extract

showed significant inhibition of pro-inflammatory cytokines, suggesting strong anti-inflammatory properties. High levels of phenolic and flavonoid compounds were correlated with these biological activities. **Conclusion:** *Justicia wynaadensis* extracts demonstrate significant antioxidant and anti-inflammatory activities, indicating potential neuroprotective effects. These findings support the need for further research to isolate and characterize the active compounds responsible for these effects, which may lead to novel therapeutic approaches for neurodegenerative diseases.

Keywords: Antioxidants, Anti-inflammatory, Neurodegenerative, Neuroprotective, *Justicia wynaadensis*

Abstract ID: 74

ABSTRACT TITLE: SEIZING NUTRITIONAL STATUS: THE UNDEREXPLORED IMPACT OF EPILEPSY

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Background: Epilepsy is a prevalent neurological disorder in children, affecting 0.5% to 1% globally and malnutrition is a significant concern with incidence rates reaching 25% in this population indicating need for targeted interventions. **Material:** A cross-sectional study was conducted among thirty paediatric patients between one month to five years with Drug Resistant Epilepsy. Nutritional status was assessed using the STRONGkids tool. Neuroimaging and EEG studies examined seizure activity. Statistical analysis involved chi-square tests, descriptive statistics, and correlation coefficients, with significance at $p < 0.05$. **Results:** Thirty children with Drug Resistant Epilepsy were evaluated for nutritional status using STRONGkids Nutrition Screening Tool for malnutrition. Chi-square test showed a significant association between seizures and malnutrition risk ($p < 0.05$). Among thirty children, 40% were at high risk, 33% at medium risk, and 27% at low risk of malnutrition. Parental awareness was low in 65% of cases, significantly linked to higher malnutrition risk ($p < 0.01$). It was found that 60% of children with generalized epilepsy were at high risk for malnutrition, compared to 25% of those with focal epilepsy, indicating a significant association between epilepsy type and nutritional status ($p < 0.05$). Developmental delays were common, with 45% of children showing gross motor delays, 30% showing speech delays, and 25% demonstrating cognitive delays. These delays were significantly more frequent in children at high risk of malnutrition ($p < 0.001$). EEG abnormalities were seen in 70% of high-risk children, correlating with malnutrition ($p < 0.05$). Biomarkers, such as low albumin and haemoglobin, strongly correlated with high malnutrition risk ($p < 0.01$). Feeding problems, including poor appetite and swallowing difficulties, were present in 50% of high-risk children. Nutrient intake was analysed in terms of calories, proteins, carbohydrates, and fats. Around 60% of children failed to meet their calorie ($p < 0.01$), protein ($p < 0.05$), and fat ($p < 0.05$) requirements, while 50% had inadequate carbohydrate intake. **Conclusion:** This study highlights a critical association between drug-resistant

epilepsy and malnutrition among epileptic children, emphasizing the need for targeted nutritional interventions to improve health outcomes and developmental trajectories in this vulnerable population.

Keywords: Epilepsy, Malnutrition, Paediatric, Nutritional status

Abstract ID: 81

ABSTRACT TITLE: IMPACT OF SOCIO-ECONOMIC STATUS ON ADHERENCE TO LOW FODMAP DIET IN PATIENTS WITH IRRITABLE BOWEL SYNDROME: PHASE I

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Background: Irritable bowel syndrome is among the most prevalent functional gastro-intestinal disorders that has turned out to be the most challenging disorder to treat. The treatment often involves drug therapy and dietary changes for symptom relief. One such diet is low fermentable oligosaccharide, disaccharide, monosaccharide and polyol (FODMAP). It has shown significant reduction in symptom severity due to exclusion of certain types of food. However, there are few obstacles that might come in the way of patients following the low FODMAP diet such as affordability, literacy etc. This study aims to see whether the socio-economic status of a patient has an impact on dietary compliance to low FODMAP diet regime. **Material and Methods:** Through a multicentric, open label study held in Dr. Ram Manohar Lohia Hospital and Govind Ballabh Pant Hospital in New Delhi, 27 patients were given low FODMAP diet. Their demographic details like age, gender, family size and monthly income was collected. BG Prasad's classification for socio-economic status was used, the categories included upper class (UC), upper middle class (UMC), middle class (MC), lower middle class (LMC) and lower class (LC). After the completion of the first stage of low FODMAP diet, their dietary compliance was noted. Compliance categories included <25%- rarely, 25-50%- sometimes, 51-75%- frequently and 76-100%-always. **Results:** Among 10 UC patients, 40% (n= 4) complied always, other 40% (n=4) complied frequently and 20% (n=2) complied sometimes. Among 6 UMC patients, 33.33% (n=2) complied always, 50% (n=3) complied frequently and 16.6% (n=1) complied sometimes. Among 7 MC patients no one complied always, 28.57% (n=2) complied frequently, another 28.57% (n=2) complied sometimes and 42.85% (n=3) complied rarely. Among 4 LMC patients, 50% (n=2) complied sometimes and other 50% (n=2) complied rarely. No patient from UC and UMC had the compliance rate below 25%, no patient from MC had compliance rate above 75% and no patient from LMC had compliance rate above 50%. **Conclusion:** The above results suggest that socio-economic factors can play a role in patients following the low FODMAP diet.

Keywords: IBS, low FODMAP diet, diet for IBS

Abstract ID: 83

ABSTRACT TITLE: PREVALENCE OF EXTRA UTERINE GROWTH RESTRICTION (EUGR) IN PRETERM INFANTS: A RETROSPECTIVE STUDY

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Background: Extra-uterine growth restriction (EUGR) is a common problem and a known risk factor for poor development in very low-birth-weight (VLBW) new-borns. It has often been reported in literature following preterm birth and birth with VLBW, i.e., birth weight ≤ 1500 g). **Material:** A retrospective study was conducted in NICU, Department of Paediatrics, JSS Hospital, Mysuru. The study was approved by Institutional Ethics Committee of JSS Medical College (JSSMC/IEC/070324/14 NCT/2024-25). Non-probability purposive sampling technique was used among 128 preterm babies who were < 1500 g from July 2022 to January 2024. Data were analysed using SPSS software. Descriptive statistics were used to summarize the data, median interquartile range (IQR) was employed for the prevalence for EUGR and multivariate logistic regression was performed to identify the incidence and associated factors for EUGR with 95% confidence interval (CI) showing the statistical significance from the results. **Results:** From the current study total of 128 subjects born preterm were enrolled in the study out of which 71 male and 57 female preterm infants. The males (55%) and females (45%) were found to be impacted by EUGR among the preterm babies when factors such as NON EUGR and EUGR were taken into account. The male (58%) and female (42%) were impacted by NON EUGR. This led us to the conclusion that male were more prone to EUGR than female category. We discovered that birth weight, discharge weight, and gestational age were very significant (P value < 0.05) based on baseline features. Additionally, we discovered that gestational diabetes mellitus (GDM) was extremely significant (P value < 0.05) based on the multivariate logistic regression value. Consequently, it was demonstrated that men were more impacted by the EUGR than women. **Conclusion:** In new-borns whose postnatal growth declines, EUGR is an additional crucial metric to monitor. It has been associated with several causes, the most important of which is insufficient nutrition. More research is needed to determine the optimal and suggested dietary intakes rather than to just optimise and comprehend the variance in body compositions of these preterm new-borns, which impacts postnatal growth.

Keywords: EUGR, NON EUGR, growth restriction, very low birth weight, premature infants.

Abstract ID: 95

ABSTRACT TITLE: A COMPREHENSIVE REVIEW REPORTS ON CLINICAL IMPLICATION AND THERAPEUTIC STRATEGIES OF TRYPTOPHAN: AS A DIAGNOSTIC MEASURE IN NEURODEGENERATIVE DISORDER TREATMENT

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Background: Tryptophan is an essential amino acid in multiple physiological processes, including serotonin production and immune regulation. Notably tryptophan metabolism has been shown to drive neurodegenerative processes such as cognitive decline and motor dysfunction, as well as neurodevelopmental issues like behavioral abnormalities and cognitive deficits. **Objective:** The comprehensive review investigation sheds light on tryptophan levels' effects on the pathogenesis of neurodegenerative diseases. **Material:** Data Criteria: Scientific evidence-based reports including human clinical trials, animal model studies, and biochemical pathways connected with tryptophan metabolism. Data Framework and Acquisition: A systematic search of PubMed, Scopus, and Web of Science databases was adapted to acquire information in relevant to the objective. Scientific reports published between 2000 and 2023 with context to tryptophan metabolism in neurodegenerative diseases (Alzheimer's, Parkinson's, Huntington's). Out of 100 documented scientific papers, approximately 50 scientific reviews and original research were validated and investigated in accordance to the mechanism of tryptophan in Neurodegenerative diseases. Data reporting: Comprehensive review of acquisition and documentation followed PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. **Results:** Greater evidence has been reported that tryptophan levels have a significant synergistic effect on neurological conditions. Detrimental factors including low levels of protein, deficiency of vitamin B6, Bacterial Infection, and bowel disorders alter tryptophan metabolism. Altered tryptophan metabolism, particularly through the kynurenine and serotonin pathways, exacerbates the pathophysiology of neurodegenerative and neurodevelopmental diseases by promoting neuroinflammation, oxidative stress, and neurotransmitter imbalances. Findings reveal that Tryptophan has a significant role in correcting the functionality of the brain-gut axis and immunology. Therapeutic Dietary strategies comprising nuts, oil seeds, and customized lifestyle could combat altered tryptophan metabolism. **Conclusion:** Evidently the database elicits the cause and effects of tryptophan levels as diagnostic measures in understanding the pathogenesis of neurodegenerative disorders.

Keywords: Kynurenine pathway, Neurodegenerative Disorder, Tryptophan, Gut-Brain Axis.

Abstract ID: 100

ABSTRACT TITLE: AI-ASSISTED NUTRIENT OPTIMIZATION FOR MANAGING CHRONIC DISEASES

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Background: Chronic diseases pose a significant global health burden, with nutrition playing a crucial role in their management. Traditional nutritional therapy approaches often lack personalization and struggle to account for complex individual factors. AI technologies offer potential solutions, promising more precise and effective nutritional strategies for chronic disease management. **Material:** A

comprehensive review of peer-reviewed literature, clinical trials, and industry reports published between 2015 and 2024 was conducted. The analysis encompassed studies on AI applications in nutrient optimization for various chronic diseases, including diabetes, cardiovascular diseases, and obesity. Methodologies, outcomes, and limitations of existing research were evaluated, identifying key trends and gaps. **Results:** The analysis revealed promising AI applications in clinical nutrition for chronic diseases: 1. Machine learning algorithms for personalized nutrient recommendations. 2. Predictive models for individual dietary responses. 3. AI-powered decision support systems for dietitians. Studies on type 2 diabetes and cardiovascular diseases showed the most advanced applications, demonstrating potential to improve glycaemic control and cardiovascular risk factors. Research on other chronic conditions remains limited. Significant variability in AI methodologies and outcome measures across studies highlights the need for standardization. **Conclusion:** AI-assisted nutrient optimization shows significant promise in revolutionizing clinical nutrition approaches for chronic disease management. However, current research is limited by methodological inconsistencies and lack of large-scale, long-term studies. Future research should focus on: 1. Developing standardized protocols for AI integration in clinical nutrition. 2. Conducting large-scale, longitudinal studies to assess long-term efficacy. 3. Exploring AI applications in a broader range of chronic diseases. 4. Addressing ethical considerations and enhancing clinical trust in AI-driven nutritional advice. By addressing these research gaps, the field can move towards more robust, evidence-based AI applications in clinical nutrition, potentially transforming chronic disease management through precision nutrition strategies.

Keywords: Artificial intelligence, chronic disease management, nutrient optimization, clinical nutrition, machine learning, personalized nutrition, diabetes, cardiovascular disease, precision medicine, dietary interventions

Abstract ID: 127

ABSTRACT TITLE: TARGETING MICRONUTRIENTS: VALIDATION OF A SEMI-QUANTITATIVE FOOD FREQUENCY QUESTIONNAIRE (FFQ) FOR VITAMIN C, E, SELENIUM, AND ZINC INTAKE IN PREDIABETIC INDIVIDUALS

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Background: Prediabetes is a growing public health concern in India, with dietary factors playing a crucial role in its progression to type 2 diabetes. Antioxidants have been shown to mitigate oxidative stress, a contributing factor to prediabetes. To address this issue, this study aimed to develop a Food Frequency Questionnaire (FFQ) tailored to assess the intake of certain key antioxidants including Vitamin C, E, Selenium, and zinc in an Indian diet among prediabetic individuals. **Material:** A semi-quantitative FFQ was developed that consisted of dietary-rich sources of Vitamin C, Vitamin E, Zinc, and Selenium based on Indian food composition table, 2017. The FFQ included the portion sizes and

frequency of intake and was compared with 24-hour dietary recall collected from prediabetic individuals in Chennai. Using the single proportion absolute precision method, the required sample size was estimated to be 120. Data were analysed using established nutrient databases and statistical methods, and Pearson correlation was used to assess the relationship between the nutrient intake estimated by FFQ and the 24-hour dietary recall. **Results:** The FFQ demonstrated good reliability and validity, in estimating antioxidant intake. Pearson correlation coefficients showed a strong positive correlation between the FFQ and 24-hour recall for Vitamin C ($r = 0.909$), Vitamin E ($r = 0.915$), Selenium ($r = 0.696$), and Zinc ($r = 0.706$), all significant at $p < 0.001$, indicating good agreement between the two methods. **Conclusion:** This study developed and validated a reliable FFQ for estimating the intake of Vitamin C, Vitamin E, Selenium, and Zinc in prediabetic individuals. It is a practical and efficient tool for monitoring the antioxidant intake in clinical and public health settings. It will be valuable for researchers wishing to standardize antioxidant intake or simply document habitual intake during an intervention trial. Its application can enhance dietary assessment and support interventions aimed at reducing oxidative stress in prediabetes, contributing to better management and prevention strategies

Keywords: Antioxidant intake, Prediabetes, Semi-quantitative questionnaire, Validity, 24 hour dietary recall

Abstract ID: 129

ABSTRACT TITLE: ASSOCIATION OF PAROSMIA AND NUTRITIONAL STATUS IN POST COVID PATIENTS USING PAST TOOL

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Background: Parosmia is a sensory condition in which patients experience strange odours in reaction to familiar and unknown foods (3). This olfactory illness has distorted the once-familiar fragrances of the world into unrecognizable, often unpleasant, odours for many COVID 19 patients (4). This illness can significantly impact many aspects of daily life, including nutritional intake. **Objectives:** To determine the association between normal dietary intake of patients suffering from parosmia and clinically relevant recovery of olfactory and gustatory function in patients with post infectious COVID-19 using the PAST tool. **Material:** The study involved categorizing post-COVID patients into two distinct groups based on the presence or absence of parosmia. These groups were then subjected to a standardized questionnaire known as the " PAST TOOL" to determine the specific foods that elicited aversive reactions in the patients. The 24-hour recall was considered for calculating their energy and protein intake. **Results:** The study revealed that the presence of an odd/unusual taste and odour significantly influences the dietary behaviour, energy, and protein intake of individuals afflicted with parosmia. The patients' energy and protein intake were notably lower, with mean values of $538.6 (\pm) 148.9$ kcal and $26.17 (\pm) 8.08$ g, respectively, and the difference was statistically significant ($p < 0.05$). Furthermore, the

emotional well-being of the patients was adversely affected, leading to a significant impact on their overall quality of life. **Conclusion:** This study aims to investigate the potential correlation between parosmia and nutritional status among post-COVID patients. The PAST tool was utilized to obtain data on the olfactory and gustatory responses and stimuli of individuals who have encountered parosmia following their recovery from COVID-19. The exploration of this association is considered as a novel area of research as it has not been extensively studied.

Keywords: Olfactory; Parosmia; Gustatory; Covid19; PAST Tool

Abstract ID: 131

ABSTRACT TITLE: LEUKOCYTOSIS- AT-GLANCE MARKER FOR UNDERLYING INFLAMMATORY RISKS

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Background: Good metabolic health is important in young adults because this is a vulnerable age group which is highly susceptible to obesity, type 2 diabetes, and various cardiovascular disorders in adulthood. The underlying inflammation is a risk factor in these younger age group whose metabolic health is compromised. Thus, it is essential to monitor the inflammatory status by simple and at-a glance marker. **Material:** 1313 young adults aged 16-25 years living in Mumbai, who attended various academic institutions participated in the study. These participants were those who underwent screening as the first step of a clinical trial for studying the efficacy of almond intake in prediabetes. All these participants were screened for anthropometry, body composition, CBC profile, fasting and stimulated blood glucose and insulin. **Results:** The mean white blood cells count (WBC) was 7562 ± 1848 cells/ μ L and the mean neutrophil-lymphocyte ratio (NLR) was 1.7 ± 0.7 . WBC value was divided into quintiles, and those in the highest quintile of WBC (> 9100 cells/ μ L), had significantly higher mean weight, body mass index, waist circumference, waist-to-hip ratio, waist-to-height ratio, visceral fat and percent body fat. They also had significantly higher systolic and diastolic BP. Those in the fifth quintile also had a stimulated insulin level of 96.1 ± 79.2 mIU/L, almost 40 mIU/L higher compared to those in lowest quintile. Fasting insulin was 10.6 ± 7.7 mIU/L, 3 mIU/L units higher compared to those in lowest quintile. Fasting insulin ≥ 15 mIU/L was observed in 11.3% of the young adults whose NLR ratio ≥ 3.0 and 40.3% of young adults with stimulated insulin ≥ 80 mIU/L had NLR ratio ≥ 3.0 indicating underlying inflammation. **Conclusion:** WBC may serve as a simple and initial marker to identify individuals at risk of underlying inflammation associated conditions.

Keywords: inflammation, insulin, leucocytosis, neutrophil-lymphocyte ratio, young adults

Abstract ID: 133

ABSTRACT TITLE: ASSOCIATION OF PERCEIVED STRESS, QUALITY OF SLEEP AND HEDONIC HUNGER AMONG MEDICAL STUDENTS

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Background: In India, studying medicine is highly competitive with nearly two million aspiring students each year but only a few thousand succeeding. Although moderate stress can motivate students, excessive stress harms overall health, especially for medical students with demanding schedules. Hence, the objectives were to assess the quality of sleep, stress levels, and hedonic hunger and to examine the relationship between sleep, stress, and hedonic hunger among medical students. **Material and Methods:** An observational study was conducted in Maharashtra. A total of 200 medical students (18-25 years) were selected by simple random sampling method. The data was collected through a survey questionnaire and informed consent was obtained from participants. The stress was assessed by PSS (Perceived Stress Scale), PSQI (Pittsburgh Sleep Quality Index) assessed the quality of sleep while hedonic hunger was measured by PFS (Power of Food Scale). **Results:** The study found that 150(75%) of participants had moderate stress, 26(13%) had high stress, and 24(12%) had mild stress. While 116(58%) of participants had good sleep, 84(42%) had poor sleep. The majority of participants 70(35%) had moderate hedonic hunger, while an almost equal number of participants 65(32.5%) had mild and high hedonic hunger. There was a positive correlation between perceived stress and sleep quality ($p < 0.01$), and between sleep quality and hedonic hunger, but it was not statistically significant. Similarly, there was also a positive correlation between perceived stress and hedonic hunger, but it was not statistically significant. **Conclusion:** The research revealed a direct relationship between the perceived stress and the quality of sleep. There was a correlation between the quality of sleep and hedonic hunger. However, the latter relationship was not significant from a statistical standpoint. Additionally, there was a positive association between the subjective perception of stress and the desire for pleasure-based food, but it was not statistically meaningful. The results suggest that stress, sleep, and the desire for pleasure-based food are interrelated, but some of these relationships lack statistical significance.

Keywords: medical students, perceived stress, sleep, hedonic hunger

Abstract ID: 139

ABSTRACT TITLE: A STUDY ON THE INTERRELATION OF DIETARY AND LIFESTYLE HABITS ON DYSMENORRHEA

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Background: Menstruation is the shedding of the lining of the uterus through vaginal bleeding starting at puberty. It is accompanied by various symptoms such as fatigue, stress, nausea, and diarrhoea and the most significant one is menstrual cramps known as dysmenorrhea. The objective was to assess the interrelation of food habits and lifestyle factors on the occurrence of dysmenorrhea. **Material and Methods:** A cross-sectional study was conducted to observe the interrelation of dietary intake and lifestyle on menstrual cramps. The study had a sample size of 160 female menstruating participants aged 18-25 years staying in Pune City, Maharashtra. The data was collected using a questionnaire to observe the participants' dietary intake, lifestyle (physical activity, sleep), and remedies. **Results:** It was observed that 116(56%) females had dysmenorrhea. While 81(50.6%); 47(29.37%); 19(11.8%); 9(5.6%); 11(6.8%); and 48(30%) of the participants reported using dark chocolate, fruits, herbs, fenugreek seeds, other remedies and no remedies to relieve the cramps respectively. It was also observed that consuming fruits had a strong and positive association with dysmenorrhea (chi square=5.305, $p < 0.05$). There was a significant and positive correlation seen between the length of the menstrual cycle and the consumption of butter, oils, and nuts (Tau-b=0.218, $p < 0.01$), and a significant negative correlation was found between the duration of the menstrual flow and the consumption of bakery and confectionery (Tau-b= -0.138, $p < 0.05$). Of the participants, 96(60%) found that home remedies were helpful, while 17(10.6%) did not find any benefit from them. While reduced sleep was found to increase the length of the menstrual cycle, an association between menstrual cycle length and frequency of exercise was seen. **Conclusion:** The findings suggest that dietary habits do have an impact on menstrual characteristics. While fruits showed a positive impact on reducing the symptoms of dysmenorrhea, consuming fatty foods like butter, oils, and nuts was observed to lengthen the menstrual cycle. Concluding, the study emphasizes the inclusion of natural foods with lifestyle improvements to reduce dysmenorrhea symptoms.

Keywords: Menstruation, Dysmenorrhea, Dietary Habits, Lifestyle factors

Abstract ID: 148

ABSTRACT TITLE: AN OBSERVATIONAL STUDY ON THE ASSOCIATION BETWEEN DIETARY PATTERNS, LIFESTYLE, AND OBESITY ON NON-ALCOHOLIC FATTY LIVER DISEASE IN KARNATAKA

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Background: Non-alcoholic fatty liver disease (NAFLD) is a macrovesicular steatosis in $\geq 5\%$ hepatocytes, in the absence of a secondary cause such as alcohol or drugs. NAFLD has a global prevalence of 25% and has become one of the leading causes of chronic liver disease, yet public understanding of the disease remains very limited. **Material and Methods:** An observational study was

conducted among Non-alcoholic Fatty Liver subjects aged 25 to 50 years using a standardized questionnaire. **Results:** The present study showed that the prevalence rate of NAFLD in non-vegetarians (67.5%), middle-aged (82.5%) and men (70%), populations is more compared to vegetarians (32.5%), adults (17.5%) and women (30%). Out of 40 NAFLD subjects, 34 subjects were sedentary workers, 6 subjects were moderate workers, 4 subjects were normal, 3 subjects were overweight, 26 subjects were grade I obesity, and 7 subjects were grade II obesity. Lower serum levels of HDL, higher serum levels of LDL and VLDL levels, Increased levels of liver enzyme viz., Aspartate transaminase (50%), Alanine aminotransferase (65%) and impaired total bilirubin levels (20%) were observed among NAFLD subjects. Comorbidities viz., Hypertension (12), Prediabetes (14), Diabetes (20) and Dyslipidemia (8) were also observed in subjects with NAFLD. The intake of sugary foods, bakery foods, carbonated beverages, processed foods, fatty foods, deep fried, and outside food was high in NAFLD subjects. **Conclusion:** This observational study highlights that men who lead a sedentary lifestyle with non-vegetarianism were affected by NAFLD. Dietary pattern and lifestyle had significant contributions in the development of NAFLD.

Keywords: NAFLD, Dietary Patterns, Lifestyle, and Obesity

Abstract ID: 151

ABSTRACT TITLE: ROLE OF NUTRITIONAL ASSESSMENT AND FOOD FREQUENCY PATTERN IN UNDERSTANDING PREGNANCY OUTCOMES IN INFERTILE POPULATION

Ms Sowmya KP

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Background: Particularly among infertile populations is critical as diet has a profound influence on reproductive health. Infertility affects a significant number of couples worldwide, and lifestyle factors, including diet play a vital role in determining fertility potential. **Material and Methods:** A cohort study was conducted among women of reproductive age 18-45 years diagnosed with infertility or undergoing infertility treatment using a standardized questionnaire. **Results:** The present study revealed that, Women with higher plant-based food intake and healthy BMI (18.5 – 24.9) had higher chances of conception and live birth compared to those who were on lesser plant-based food consumption and underweight or obese. In terms of food frequency, the women who were able to conceive consumed more variety of cereals, millets, pulses, GLV, other vegetables, and fruits and lower frequency of consumption of roots & tubers. It was observed that among non – vegetarian foods, the frequency of consumption of eggs and milk was particularly high and those of chicken, fish, mutton, and pork were comparatively lower. The intake of processed foods, bakery foods, outside food, caffeinated beverages, chocolate & sweets was significantly lower in women who were able to conceive compared to women who are unable to conceive. Good sleeping quality, average stress level, and lower rate of alcohol consumption were observed in subjects who were able to conceive whereas subjects who were unable to conceive had poor sleeping quality, more stress levels, and a higher rate of alcohol consumption. **Conclusion:** By comparing these results, it is concluded that dietary patterns, food

frequency patterns and lifestyle habits play a major role in resulting in a positive pregnancy outcome in women who are undergoing fertility treatments.

Keywords: Infertility, Nutritional Assessment, Food Frequency Pattern, Life Style Habits

Abstract ID: 152

**ASTRACT TITLE: EFFICACY OF A FUNCTIONAL NUTRITION APPROACH IN THE
MANAGEMENT OF DERANGED THYROID PARAMETERS IN AN INDIAN POPULATION: A
RETROSPECTIVE STUDY**

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Background: The thyroid glands stimulated by TSH produce T3 or T4 essential for growth and development in mammals. Disorders of thyroid are treated using medications; however root causes are seldom addressed leading to relapse on discontinuation or side effects on long term use. Functional nutrition identifies root causes of diseases and addresses them through dietary modifications, nutraceuticals, physical activity and environmental modifications. The aim of this study was to analyse the efficacy of a functional nutrition approach in the management of deranged thyroid parameters in an Indian population. **Material:** A retrospective study was done using the in-house client database for thyroid disorders in the period of 2023-2024. A total of 12 participants' data were selected based on the inclusion criteria: participants showing derangements in any of the thyroid parameters -free T3, free T4, ultrasensitive TSH, TPOAb, TGAb and TRAb among the age group of 20 to 60 years. The exclusion criteria were participants with cancer or pregnant/lactating mothers. Serum analysis was performed to establish baseline levels. Root cause analysis revealed underlying infection and inflammation. The interventions involved dietary and lifestyle modifications, nutraceuticals, physical activity and stress management techniques for a period of three months. Post the intervention, the changes were analyzed statistically using a paired t test. **Results:** The average age group of the participants were 38.75 ± 8.54 years. Post the intervention, free T3 and free T4 showed a percentage decrease of 10.64% and 7.47%. Additionally TSH, TPOAb, TGAb and TRAb showed percentage decreases of 47.62%, 43.03%, 7.90% and 3.75% respectively. Although the changes were not statistically significant, the drastic percentage decreases in TSH (47.62%) and TPOAb (43.03%) correlated with symptomatic improvements such as increased energy, improved gut health and better weight management. **Conclusion:** The results imply that functional nutrition approach might be beneficial in improving thyroid markers to a certain extent on account of the percentage decrease observed among the parameters. The study can be extrapolated to prolong the intervention period to obtain significant changes in the thyroid parameters in a larger population.

Keywords: Functional nutrition, thyroid, lifestyle, diet, nutraceuticals, antibodies

Abstract ID: 174

**ABSTRACT TITLE: ASSOCIATION BETWEEN THE FUNCTIONAL ABILITY AND DIETARY
PATTERN OF GERIATRIC POPULATION: A CROSS-SECTIONAL STUDY**

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Background: Ageing is a natural process where individuals above 60-65 years' experience physical, functional, psychological, and dietary pattern changes, impacting their overall health and quality of life. The purpose is to assess the association between dietary patterns and overall functional ability in the geriatric population. **Material:** A total of 250 elderly subjects from the Geriatric department at MGM Hospital, Navi Mumbai, were studied using a pre-validated questionnaire to gather their general profile. Socioeconomic status was evaluated using the Kuppuswamy scale (2021). Anthropometric measurements including height, weight, and BMI were calculated using standardized methods. Dietary patterns were assessed through a 24-hour dietary recall, Mini Nutritional Assessment (MNA), and a food frequency table. Functional ability was measured using Activities of Daily Living (ADL) via the Barthel index, and Instrumental Activities of Daily Living (IADL) using the Lawton-Brody scale. Gait instability, risk of falling, and balance were assessed using the Timed Up and Go Test (TUG), while cognitive impairment was determined using the Clock Draw Test (CDT). Depression in elderly participants was evaluated using a two-question screener. **Results:** Among participants, 40.4% had normal nutritional status, 29.6% were at risk of malnutrition, and 30% were malnourished due to nutrient intake below the RDA. ADL results showed 3.2% were severely dependent, 52% moderately dependent, 4% slightly dependent, and 41.2% independent. IADL results indicated 8.4% had low function, 41.6% moderate function, and 50.4% high function. TUG test results revealed 40.8% had low, 15.2% moderate, and 44% high risk of falling. Cognitive testing showed 8.8% had dementia, 11.2% had dementia with abnormal CDT, and 80% were dementia-free. Depression screening revealed 20% had depression. Spearman's RHO correlation test showed a significant positive correlation ($p < 0.05$) between nutrient intake and ADL, IADL, with a negative correlation to gait instability, indicating a significant association between dietary patterns and physical activity levels. **Conclusion:** The study highlights a high prevalence of poor nutritional status and functional limitations in the geriatric population, emphasizing the need for targeted intervention programs to improve both their functional abilities and overall nutritional health.

Keywords: "Nutrient intake, ADL, IADL, gait instability, cognitive impairment"

Abstract ID: 180

ABSTRACT TITLE: EFFECT OF NUTRITIONAL INTERVENTION ON LIVER HEALTH AND BODY WEIGHT WITH METABOLIC ASSOCIATED FATTY LIVER DISEASE (MAFLD) & OVERWEIGHT /OBESE INDIAN ADULTS

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Background: The prevalence of metabolic dysfunction-associated fatty liver disease (MAFLD) is rising rapidly across all age groups, becoming a leading cause of liver disease. MAFLD can progress from simple steatosis to fibrosis, cirrhosis, and hepatocellular carcinoma. This study examines the effects of dietary therapy on obesity, metabolic syndrome parameters, and hepatic steatosis in overweight or obese patients with non-alcoholic fatty liver disease for 30 to 365 days. **Material:** This retrospective observational study involved 548 pre and 171 post intervention patients diagnosed with MAFLD based on ultrasound and metabolic indicators, with at least 2 MetS criteria (IDF). Participants were categorized by fatty liver grades (FLG-1, 2,3) and received personalized counselling and calorie-deficit diets. Changes in BMI, WHR, and WHtR were recorded. At follow-up, patients were classified as adherent or non-adherent based on a weight change of 5% or more. Statistical analysis was performed using IBM-SPSS, employing ANOVA and Pearson's correlation. **Results:** The study analyzed 548 overweight/obese participants (210 males, 338 females; aged 19-75) across three fatty liver grades (FLG 1-3). BMI correlated positively with weight, WHtR, and DBP (95% CI). Statistically significant differences ($p < 0.05$) were observed in weight, BMI, WHR, and WHtR, correlating with higher fatty liver grades. Among the sample, 97.9% were classified as obese by BMI with MetS and NAFLD, and 36.1% experienced hypertension and 65.9% had elevated FBS. Diabetes prevalence was 65.9% with strong correlations found between HbA1c and WHR, WHtR, SBP, FBS, and TG. Post-intervention data from 171 patients revealed that 102 had normal liver status, with a notable reduction in obesity grades. Mean BMI decreased from $32.5(\pm 5.61)$ to $28.8(\pm 4.25)$ ($p < 0.05$). WHtR was a better MAFLD indicator, 54.4% overweight and 41.5% obese. Normal blood sugar levels were recorded in the group with normal liver status, while SBP and DBP values were normal in 96.3% of participants. **Conclusion:** Nutritional interventions lasting 1-12 months, led to weight loss of 5-28%, significantly improved biochemical markers, reduced body measurements, and decreased fatty liver grades. This study confirms that even a 5% weight loss can positively impact the clinical outcomes of patients with MAFLD and excess weight.

Keywords: MAFLD, Dietary Intervention, Obesity Indices, BMI, WHR, WHtR, MetS

Abstract ID: 181

ABSTRACT TITLE: GUT-BONE AXIS: PROBIOTIC SUPPLEMENTATION FOR ENHANCING BONE HEALTH AND REDUCING OSTEOCLASTOGENESIS IN POSTMENOPAUSAL WOMEN – A REVIEW OF RANDOMIZED CONTROLLED TRIALS

Ms J N Harini, Dr. G Gayathri

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Background: The human gut microbiota is crucial for immune regulation, nutrient absorption, and metabolism, with emerging evidence connecting it to bone health. Dysbiosis disrupts gut barrier function, allowing lipopolysaccharides into the bloodstream, which elevates Th17 cells and promotes osteoclast genesis. Probiotics, by modulating gut microbiota, are being investigated for their potential to influence osteoblast and osteoclast activity and improve bone health. This review aims to explore the connection between gut microbiota and bone metabolism. Specifically, the effects of probiotic supplementation on bone mineral density (BMD) at the hip and spine, and its impact on bone turnover markers (CTX, P1NP, OC, TRAP) in postmenopausal women, aiming to prevent and manage osteoporosis. **Material and Methods:** The review followed PRISMA 2020 guidelines, analysing Randomized controlled trials (RCTs) conducted between January 2010 and April 2024. The studies were identified through searches across multiple databases including PubMed, SCOPUS, Web of Science, EMBASE, ProQuest, and the Cochrane register. Data from relevant studies were screened, extracted, and analysed for statistical significance. **Results:** Eight RCTs were included in the analysis. The results showed no significant effect of probiotics on BMD at the hip (SMD = 0.17, 95% CI: -0.16 to 0.50) or spine (SMD = 0.04, 95% CI: -0.14 to 0.22). Similarly, no notable effects on bone formation markers were found (SMD = -0.12, 95% CI: -0.34 to 0.11). However, a marginally significant reduction in bone resorption markers was observed (SMD = -0.19, 95% CI: -0.40 to 0.01), indicating potential effects on bone degradation. **Conclusion:** The findings suggests that probiotic strains *Lactobacillus paracasei*, *L. rhamnosus*, *L. plantarum*, *L. acidophilus*, *L. reuteri* & *Bifidobacterium longum* have found to enhance mineral absorption and positively influence bone health by producing SCFAs, lowering gut pH, modulating immune responses. While probiotics have limited effects on BMD and bone formation markers, their impact on bone resorption suggests they could serve as a complementary therapy in bone health strategies, especially given the adverse effects of long-term use of current osteoporosis treatments.

Keywords: Gut microbiota, Probiotics, Bone mineral density, Bone turnover markers, osteoclast genesis.

Abstract ID: 182

ABSTRACT TITLE: ASSOCIATION OF LIFESTYLE & DIETARY FACTORS WITH SEVERITY OF SYMPTOMS IN CANCER PATIENTS

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Background: Cancer is a global health challenge impacting 1 in every 5 people as per WHO. It is also evident that changing environment and globalisation has contributed to sedentary lifestyle and poor dietary factors which jeopardizes normal health. Hence this pilot study was planned to investigate the association of lifestyle and diet with severity of symptoms in cancer patients. **Material:** Location: Shri Ram Cancer Centre, MGUMST, Jaipur. Study design: Prospective observational pilot study. Study population: It involved a sample size of 30 oncology patients. Data collection: A questionnaire was developed to analyse the following independent variables- 1. Lifestyle factors such as alcoholism, smoking, tobacco addiction, sleep, physical activity, and stress. 2. Dietary factors including the intake of processed foods, red meat, salty & fatty foods, total fibre, total protein and antioxidants in diet with relation to its impact on dependent variables using standardised tools for anthropometric measurements, biochemical markers and clinical signs and symptoms. **Results:** Notably, none of the patients were found to be alcoholics or smokers. However, 10% were tobacco chewers, with signs of significant weight loss (>20% over 2 weeks), severe anaemia, low serum albumin levels and symptoms like anorexia, diarrhoea, fatigue, weakness, and body pain. The average sleep duration of 6-7 hours did not correlate with symptom severity, and only 10% of patients were physically active, exhibiting milder symptoms compared to their inactive counterparts. Twenty percent of the patients shared a history of some sort of mental stress, relating to weight loss and reduced lean body mass. Dietary habits revealed that 80% of cancer patients consumed processed foods in some form, while only 10% ate red meat. Most patients relied on salted and oily foods, with daily fiber intake at just 20% of the recommended levels. Antioxidants were primarily sourced from fruits and vegetables which were also found to be insufficient for a balanced diet, and overall protein intake was 44% below the required amount. **Conclusion:** The findings suggest a direct link between poor lifestyle choices and dietary habits with the severity of symptoms in cancer patients.

Keywords: Cancer, Nutrition, lifestyle, diet

Abstract ID: 187

ABSTRACT TITLE: THE ANTI-OBESITY POTENTIAL OF CAPSAICIN AND ORANGE PEEL AND COLLABORATIVE INTERVENTIONS TO OBESITY ATTENUATION

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Background: About 650 million individuals worldwide suffer from obesity, a chronic condition characterized by excess adiposity. It contributes to the risk for a number of metabolic complications — type 2 diabetes (T2D), cardiovascular disease, metabolic-dysfunction associated steatotic liver disease (MASLD), and numerous mechanical complications, like osteoarthritis and obstructive sleep apnea (OSA). Compromised nutrition, sedentary lifestyles, altered microbiota, congenital anomalies, genetic modifications, and epigenetic modifications are the primary causes of obesity. **Material and Methods:**

A comprehensive review of literature was conducted on multidisciplinary databases such as PubMed, Scopus and Web of Science to analyse current research findings on the impact of Capsaicin and Orange Peel and various interventions in obesity management. **Results:** Capsaicin and Orange Peel can decrease fat deposition and increase thermogenesis by modifying enzymes, transcription factors, and important signaling pathways like AMP-activated protein kinase (AMPK), peroxisome proliferator-activated receptor gamma (PPAR γ), and nuclear factor-kappa B (NF- κ B). Additionally, their antioxidant and anti-inflammatory properties help alleviate oxidative stress and inflammation, contributing to the management of metabolic disorders associated with obesity. **Conclusion:** Bioactive compounds found in chilli pepper and orange peel have promising roles in obesity prevention by targeting metabolic processes and reducing inflammation. In order to create wholesome, long-lasting solutions, a transdisciplinary approach combining multiple domains is necessary to address the complexity of obesity and its metabolic repercussions. Important domains for transdisciplinary cooperation consist of: Molecular Biology and Nutritional Science, Public Health, Behavioural Science, Agro systems and Community-based approaches.

Keywords: Anti-obesity, Capsaicin, Orange Peel, Obesity Management, Bioactive compounds

Abstract ID: 210

ABSTRACT TITLE: CHRONO-NUTRITION IN CHILDREN BASED ON OBESITY

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Background: Obesity is the result of a changed lifestyle which may be associated with changes in sleep patterns, increased screen time, and reduced physical activity levels. Chrono-nutrition is the relationship between nutrition and body & internal clock/ circadian rhythm which is altered, and impacts general health and nutritional status. Our aim was to assess association of chrono nutrition and other lifestyle factors in prevalence of childhood overweight/obesity. **Material:** A cross-sectional study was carried out in an Upper Middle Class English Medium School in children between ages of 10 -15yrs; appropriate ethical procedures were followed. By using a systematic questionnaire approach, data were collected. The questionnaire contained questions about screen time, sleep patterns, food frequency, physical activity, and child personal information. There were 246 children in the study. **Results:** Percentage of overweight/ obesity was 13.8% /13.4% respectively with greater than 95th percentile as per BMI category. Children were generally consuming all dietary groups, many of them regularly ate fruits and leafy green vegetables. Tendency of consuming junk food was found in most children. Most children had a screen time of more than the recommended 2 hours, however, they had adequate sleep hours. A negative correlation was observed between number of sleep hours and BMI ($p < 0.05$). Further, BMI and intake of junk food were significantly correlated (p value < 0.05). Also, BMI and screen time were significantly correlated ($p < 0.05$), increase in screen time and junk food intake was associated

with an increase in BMI. **Conclusion:** Over one fifth of the children studied were overweight or obese; the high intake of junk food and screen time in children is a matter of concern. Association of BMI with lifestyle factors and sleep suggests that urgent attention is required to improve children's lifestyle and sleep hygiene to control the epidemic of obesity in children and improve their overall health

Keywords: Nutrition in children, sleeping pattern, screen time, obesity, physical activity, dietary habits and health

Abstract id: 217

ABSTRACT TITLE: METABOLOMIC AND METAGENOMIC APPROACH TO STUDY HEALTHY CONTROL AND IBS PATIENTS FOR PRECISION NUTRITION

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Background: several studies consistently report alterations in short chain fatty acids (scfas) levels as well as in the native gut microbiota in individuals with irritable bowel syndrome (ibs). We have compiled a systematic review with such studies to draw a comparative analysis for SCFAS and gut microbial abundance in IBS individuals against healthy controls (hc). This review presents an expansive view on SCFAS and gut microbiome as promising markers for ibs to help improve the condition's diagnosis and treatment. **Material:** three databases were searched for relevant studies without any time constraint. Results were presented statistically as standard mean difference (SMD) and 95% confidence interval (95% ci) and graphically in form of joint bar plots to draw visual comparisons between hc and ibs individuals on scfa levels and gut microbiota abundance. **Results:** 7 studies were selected for the systematic review. Of them, 5 were selected for graphical representation and data analysis of scfa levels and gut microbiota abundance in IBS. Compared to hc, ibs individuals showed significantly lower levels of total SCFA content (SMD= 1.367, 95% ci 77.338, 93.762, $p < 0.05$) while a significant elevation in propionate in the ibs individuals (SMD= 1.110, 95% ci 17.072, 21.372, $p < 0.05$) was noted. Gut microbiota analysis showed significant alterations in the species belonging to the phyla bacteroidota and firmicutes. **Conclusion:** as per the review data there is a strong co-relation between scfa concentration and abundance of gut flora. Scfa can be a good biomarker for interventional study. It will be useful for clinical nutrition of ibs patients.

Keywords: ibs: irritable bowel syndrome, scfa: short chain fatty acid, hc: healthy controls, smd: standard mean difference

Abstract ID: 223

ABSTRACT TITLE: DIETARY CONSIDERATIONS POST-WHIPPLE'S SURGERY FOR PERIAMPULLARY CARCINOMA PATIENT - A CASE STUDY

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Background: Periampullary carcinomas originate from the ampulla of the pancreas, including the ampullary, duodenal, distal bile duct, and the head of the pancreas. The Whipple procedure, a complex surgery for treating these tumors, significantly affects the patient's nutritional status. Tailored nutritional management is crucial due to the extensive changes in the digestive system. This case study aimed to evaluate the patient's progress by assessing the effectiveness of nutritional management in minimizing postoperative complications during the hospital stay and recovery period. **Material and Methods:** A 71-year-old man with a history of diabetes mellitus, weight-loss, and abdominal pain was diagnosed with a periampullary tumor three months ago following extensive radiological imaging. He was admitted for Whipple's procedure. Preoperatively, a dietary assessment was conducted using a 24-hour dietary recall and an objective questionnaire to gather anthropometric measurements and other relevant details. Postoperatively, the patient was managed with jejunal feeds, starting with a semi-elemental formula at 30 ml/hr on the POD-2 (Post Operative Day) and gradually increasing to 150 ml/hr as tolerated until POD- 9. His estimated calorie and protein requirements were 29 kcal/kg and 1.2 g/kg, respectively. An oral liquid diet was introduced on POD-8, and he was discharged with jejunal feeds and a diabetic liquid diet. Blood glucose levels were maintained within the normal range. The patient was monitored for nine days postoperatively, receiving IV fluids, antibiotics, and supportive treatments. He was advised to prepare hygienic feeds at home and given dietary guidelines to start a diabetic soft diet as tolerated gradually. **Results:** The patient's condition improved steadily with the nutritional management and supportive treatments, leading to an uneventful postoperative course. He was discharged with specific dietary and medication guidelines. Follow-up was conducted via telecommunication and hospital visits, ensuring adherence to the prescribed regimen. **Conclusion:** This case underscores the importance of tailored nutritional management in enhancing recovery and minimizing complications post-Whipple surgery. Effective dietary strategies, including the use of semi-elemental formulas and careful monitoring of blood-glucose levels, are crucial for patient recovery. Future research should focus on optimizing nutritional interventions and exploring long-term outcomes.

Keywords: Periampullary carcinoma, Whipple's-Surgery, Semi-Elemental Formula, Dietary Considerations.

Abstract ID: 243

ABSTRACT TITLE: "CHANGES OF BODY COMPOSITION THROUGH PHYSICAL ACTIVITY AND RESISTANCE TRAINING"

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Background: As we live in an era when conscious and time-invested efforts are put into achieving peak physical fitness while maintaining health, numerous methods have been proposed and practiced in every corner of the world. Diet alteration has, for the past decade or so, has been the centre of making

healthier physical transformations. One of the new, most recent methods that claim to minimise time and maximise output is resistance training paired with strength training which is altered throughout the training schedule which is a period of 90 days. **Material and Methods:** The study examines the impact of physical activity and resistance training on body composition, incorporating dietary interventions. A total of 30 participants, aged between 20 and 40+, were subjected to a structured program combining diet and resistance training. **Results:** Results indicated a notable increase in skeletal muscle mass, accompanied by a reduction in overall weight and fat percentage, including visceral fat. Interestingly, the waist-hip ratio remained largely unchanged. Additionally, we monitored stress levels, fast food consumption frequency, and joint pain. The findings revealed a significant reduction in stress levels from 20% to 6.6% and a decrease in joint pain from 30% to 13.3%. The participants' lipid profiles also showed favourable changes. **Conclusion:** The results suggest that a regimen of resistance training combined with dietary adjustments can effectively enhance body composition and contribute to improved overall health. **Keywords:** Resistance training, lipid profile, skeletal muscle mass, structured program waist.

Abstract ID: 247

ABSTRACT TITLE: ROLE OF PSYCHOBOTICS IN IRRITABLE BOWEL SYNDROME & INFLAMMATORY BOWEL DISEASE PATIENTS: A MICROBIAL MECHANISM

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Background: Probiotics are live microorganisms that, when taken in sufficient quantities, have positive effects on health. The gut microbes are important in maintaining the balanced and healthy gut bacteria and are also known as "friendly" or "good" bacteria. Dysbiosis (imbalance in the good bacteria) in the gastrointestinal microbial composition is identified as a major contributor to chronic inflammatory conditions. Inflammatory Bowel Disease (IBD) and irritable bowel syndrome (IBS) are prevalent gastrointestinal disorders characterized by chronic inflammation and dysregulation of gut function, respectively. Purpose – To study and analyse the gut microbiome mechanism that plays a crucial role in maintaining the integrity of gut. This review is a comprehensive analysis of current research on the therapeutic potential of probiotics in managing IBD and IBS. **Objective –** To study the gut brain axis and the existing microbial action that influence the gut health through various parameters. **Material and Methods:** . Materials and Method – A detailed analysis of the clinical research was screened that addressed the effect of psychobiotics on IBS/IBD Patients. The review presented the updated and existing evidence on microbial action. **Results:** A thorough understanding about the importance and understanding of the microbial action in creating healthy gut microbiota and improving the symptoms of Inflammatory Diseases. **Conclusion:** This review highlights the mechanism of the gut microbiome that plays a central role in the pathogenesis of both conditions, thus paving the way for

microbiome-based therapies such as probiotics. The use of Psychobiotics (Probiotics that help in maintaining good gut health and mental health) should be a practicing approach in dealing with the gut related diseases.

Keywords: Psychobiotics, Probiotics, Inflammatory bowel disease, gut brain axis

Abstract ID: 252

ABSTRACT TITLE: TO ASSESS THE PREVALENCE OF OBESITY AND ITS ASSOCIATED FACTORS IN ADOLESCENTS AGED 11 TO 16 YEARS

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Background: Obesity is a complicated issue that is associated with biological, developmental, behavioral, and genetic factors. In developed and developing countries including India, the number of children in the common population who are overweight and obese has doubled in the last 20 years.

Material: This study was carried out from Badri Higher Secondary School, Indore, M.P. with a sample size of 94 adolescents aged 11 to 16 years. Data was collected using a pretested questionnaire.

Results: Obtained data revealed that Out of the total participants (n=94), there are more female respondents (52%) than male (48%). The majority of subjects are having a middle family income (89%), a sedentary activity level (79%), and a nuclear type of family (59%). Theirs found a statistically significant difference between the mean height of both males and females ($p < 0.05$) whereas, the difference between the mean weight of both males and females was found statistically insignificant ($p=0.17$). Moreover, the majority of males (24%) found to be obese as compared to females (22%). The majority of these adolescents exercise sometimes (68%) from which majority of them exercise for 30 minutes (40%), consume 3 meals a day (55%) with the intake of junk food and drinks once a day (34%) and once a week (36%) respectively, and sometimes go out for eating (84%). Also, the majority of adolescents who were obese have a paternal family history of obesity (50%) with a low record of being overweight at the time of birth (5%), were exclusively breastfed (77%), and majorly have anger issues (74%) with 1-2 hours of screen timing (41%) and 8 hours of sleep pattern (41%). **Conclusion:** This study concludes that, theirs high prevalence of obesity among adolescent males aged 11 to 16 years as compared to adolescent females of the same age. Moreover, among all the factors affecting obesity in them, family history of obesity majorly from the paternal side, and mood issues majorly anger have significant effects among adolescents who were obese.

Keywords: Adolescents, obesity, overweight, factors affecting obesity, lifestyle pattern

Abstract ID: 286

ABSTRACT TITLE: A REVIEW ON MICRONUTRIENT DEFICIENCY IN CARDIOVASCULAR DISEASES

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Background: Cardiovascular health, involving the heart, blood vessels, and organs, is crucial for overall well-being, as it supports every cell. Cardiovascular diseases remain the leading cause of mortality globally, accounting for approximately 31% of deaths. Nearly 85% of these deaths are due to heart attacks and strokes, often influenced by modifiable risk factors, including poor nutrition. Micronutrient deficiencies are linked to increased cardiovascular disease (CVD) and heart failure risk. Poor diet quality heightens cardiac risk. Micronutrients significantly impact cardiovascular health by regulating blood pressure, inflammation, blood clotting, and cholesterol. Deficiencies in vitamins B, C, D, and minerals like magnesium, selenium, and zinc increase the risk of CVD, including heart disease and stroke, while adequate intake can protect against these conditions. **Material and Methods:** A detailed study about the micronutrient deficiency in cardiovascular diseases using google scholar, PubMed, National library of medicine was carried out. Out of the 10 articles referred, 7 met the inclusion criteria on micronutrient deficiencies in cardiovascular diseases. **Results:** In Patients suffering with congestive heart failure, deficiencies are common due to factors like reduced dietary intake, increased metabolic demands, and losses from diuretic therapy. Up to 50% of patients are deficient in one or more micronutrients in cross-sectional studies. Some common micronutrient deficiencies seen in CVD patients are magnesium, vitamin D (97%), vitamin B6 (38%), B12(1.3-8%), folate (2.7%), potassium (35.9%), zinc (65%), iron (46%), and selenium (95%). **Conclusion:** Micronutrient deficiencies play a significant role in the development and progression of cardiovascular diseases, including heart failure. Ensuring adequate micronutrient intake through diet or supplements can help improve cardiac health and potentially reduce cardiovascular risk. Addressing these deficiencies through proper nutrition or supplementation may contribute to improved heart health and reduced mortality rates from cardiovascular events, a focus on optimizing micronutrient intake represents a crucial and modifiable approach to reducing CVD risk.

Keywords: Cardiovascular diseases, Micronutrient deficiencies, Nutrition, Mortality.

Abstract ID: 298

ASTRACT TITLE: EVALUATING SPICE INTOLERANCE IN HEAD AND NECK CANCER PATIENTS FOLLOWING RADIOTHERAPY—AN INDIAN PERSPECTIVE ON DIETARY ADAPTATION.

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Background: Radiation therapy (RT) for Head and neck cancer (HNC) treatment while offering cure also introduces significant morbidity in patients. One of the less studied side effects is limited tolerance to spices like chilly. This often limits patients resuming a normal lifestyle, including dietary habits post-therapy, which affects the quality of survival. While the impact of nutrition in managing treatment side effects like xerostomia and mucositis is well recognized, there is limited focus on interventions targeting spice intolerance due to the sensory changes caused by the treatment. This study aims to evaluate the prevalence of spice intolerance in head and neck radiotherapy patients and its impact on achieving nutritional adequacy. **Material and Methods:** In this observational study, HNC patients experiencing spice intolerance were referred for nutrition therapy. Individualized low-spice diet plans were designed, providing 35-40 kcal/kg and 1.5-2 g/kg protein, with alternative seasonings. Nutritional compliance was assessed using a 24-hour recall method, and discomfort with spice intake was rated on a 1-10 visual analogue scale, with '1' indicating no discomfort and '10' representing maximum discomfort. Food acceptability and appetite were also evaluated using the rating scale. **Results:** Among 30 patients (80% male, 66.6% under 50), 70% had oral cavity cancers. Most subjects with the site as an oral cavity with stage IV have increased spice intolerance issues and are found to have prolonged incidences of xerostomia and mucositis post-RT. Severe spice intolerance (rating ≥ 9) was reported by 90% of patients during RT, while 20% were able to moderately tolerate spices post-intervention. Food acceptability was initially low in 43% of patients and moderately high in 64% post-intervention. Appetite levels improved, with 57% reporting good appetite post-intervention. Despite improvements, 66% adhered to the diet but continued to struggle with spice intolerance due to prolonged xerostomia and mucositis but was able to manage with the nutrition protocol advised. **Conclusion:** Spice intolerance, exacerbated by xerostomia and mucositis, significantly impacts nutrition in HNC patients. However, individualized nutrition interventions can improve spice tolerance, food acceptability, and appetite, aiding in achieving nutritional adequacy.

Keywords: Spice intolerance, head and neck cancer, radiotherapy, quality of life, xerostomia, mucositis, nutrition interventions, nutritional compliance, food acceptability, appetite levels.

Abstract ID: 306

ABSTRACT TITLE: THE IMPACT OF EMOTIONS ON FOOD CHOICES AND BMI

Ms Shreya Jain

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Background: "Emotional eating is closely linked to unhealthy dietary patterns and has contributed to the rise in obesity, mental health issues, and stress-related eating behaviours. Interventions such as

nutritional education, counselling, emotional eating awareness workshops, and social support groups are beneficial. Additionally, stress-management techniques like meditation and breathing exercises help control emotional triggers. This study aims to explore the relationship between dietary patterns influenced by emotional changes, their impact on BMI and obesity. **Material:** "The designed used was a cross-sectional study. The target population were teenagers to young adults from 13 to 30 year-old belonging to Pune, Maharashtra. 162 responses via questionnaire were collected. The investigation was done on their weight (in kgs), height (in cm), emotions, daily eating habits, food choices, awareness about emotional eating, coping mechanisms, social and environmental factors, physical activity. **Results:** Approximately, 14.8% of participants were underweight, 45% were normal weight, 19.8% were overweight and 20.4% were obese. Almost 59.26% of participants found that their physical activity was dependent on their emotional state, 21.6% didn't find any association between physical activity and their mental state and 19.14% were unsure. It was found that 48.78% of participants reported eating due to emotions, 32.71% did not recall emotional eating, and 18.51% were uncertain about their food habits. **Conclusion:** "This study demonstrates a strong correlation between food habits and emotional changes which in turn has a substantial effect on psychological health and body mass index. His study comes under the 3rd Sustainable Development Goal which is to 'ensure healthy lives and promote well-being for all at all ages' Emotional fluctuation can worsen weight gain and contribute to obesity because they frequently trigger unhealthy eating habits like stress eating and emotional overeating. In addition, emotional eating patterns starts a vicious cycle that exacerbates bad eating habits and has a detrimental impact on overall health. To lower the risk of obesity and enhance general mental and physical health, it is essential to comprehend the interaction between emotions, nutrition, and BMI.

Keywords: Emotional eating, Dietary patterns, BMI, Nutritional education interventions, techniques.

Abstract ID: 307

ABSTRACT TITLE: GUT MICROBIOME PROFILES IN OVERWEIGHT AND OBESE CHILDREN: A SYSTEMATIC REVIEW OF CURRENT EVIDENCE

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Background: The rising prevalence of childhood overnutrition, including overweight and obesity, is a global health crisis among low-middle-income countries, including India. The gut microbiota, particularly the balance of key phyla such as Firmicutes, Bacteroidetes, and Actinobacteria, was recently found to contribute to overnutrition. The present review examines the association between gut microbiota composition and childhood overnutrition, focusing on microbial diversity and the Firmicutes/Bacteroidetes ratio in overweight and obesity in children. Shifts in the composition and diversity of microbial communities may significantly cause excess weight gain. The aim is to investigate the relationship between gut microbiota composition and childhood obesity, particularly focusing on microbial diversity and the Firmicutes/Bacteroidetes ratio. **Material and Methods:** A literature search

for original articles on gut microbiome profiles of overweight and obese children was conducted in PubMed, Scopus, Science Direct, and Web of Science, following PRISMA 2020 guidelines. Inclusion criteria were children below 16 years, from middle-high-income countries, exploring gut microbiome profiles, with observational designs, and published in English from 2010 to the present. Duplicates were removed, and titles, abstracts, and full texts were screened. Quality assessment of the included articles was performed, and data was extracted into an Excel sheet for narrative synthesis. **Results:** A total of 18 articles were obtained, two duplicates and four ineligible studies were excluded. The final twelve studies involving 1,500 children were included. Most studies reported an elevated Firmicutes-to-Bacteroidetes ratio in obese children, suggesting increased energy-harvesting capabilities leading to fat storage. Actinobacteria abundance was linked to carbohydrate metabolism and short-chain fatty acid production. Reduced microbial diversity in obese children indicated a less resilient microbiome. Genera like Faecalibacterium and Lachnospira were abundant in normal-weight children, suggesting metabolic health. **Conclusion:** Alterations in gut microbiota, particularly the increased Firmicutes/Bacteroidetes ratio and rise of Actinobacteria, were associated with childhood obesity. These findings highlight the gut microbiota's potential as intervention targets, necessitating further research into their roles as biomarkers for obesity risk and treatment strategies.

Keywords: "Childhood obesity", "Pediatric obesity", "Overweight children", "Gut microbiome", "Microbiota diversity", "Cohort studies", "Case-control studies", "Cross-sectional studies", "Observational studies".

Abstract ID: 308

ABSTRACT TITLE: DEVELOPING A SCORING MATRIX TO IDENTIFY KEY FACTORS ASSOCIATED WITH EARLY MENARCHE

Professor Anuja Amit Mohile, Dr. Radhika Prashant Hedao,

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- 2- Dr. Radhika Prashant Hedao, Assistant Professor, Symbiosis International University SSCANS

Background: Early menarche, defined as the onset of menstruation before the age of 12, has been linked to various long-term health risks, including obesity, cardiovascular disease, and psychosocial stress. Apart from heredity, early menarche is researched to be a combined consequence of poor lifestyle, including frequent indulgence in usage of social media. To evaluate the impact extensively, a well-designed comprehensive questionnaire aiming to assess the coalesced effect is required. This study aims to assess the incidence of early menarche among girls aged 8-12, identify environmental and social catalysts, and develop a validated scoring matrix to categorize the girls at risk of early menarche. **Material:** The first phase involves a thorough systematic literature review using search engines such as Google Scholar, Scopus, PubMed to identify the key determinants of menarche. Phase-2 involves developing a semi structured questionnaire, in languages namely English, Hindi and Marathi, encompassing validated tools, principally targeting the specific determinants of menarche in 8-12-year-old school going girls. The nutritional determinants such as frequent consumption of different forms of ultra-processed and preserved nutrient dense foods would be assessed by taking 24-hour

dietary recall along-with FFQ completion. Gold standards of anthropometry measures would be used to develop the cut off values in the matrix. CPAQ will assess the frequency, duration and regularity of physical activity. The Cohen's stress-scale, acute and chronic perceived stressors inclusive of academic and family subtleties would be assessed. The DSEQ will estimate the screen time exposure as well as the type of online engagement. Before pretesting and pilot testing the questionnaire on a small group, face content and construct validation will be done in Phase-3 by health professionals. Test-retest reliability testing of the questionnaire will be done before implementing it on a larger population.

Results: Using appropriate statistical analysis techniques, the cut off values would be established to enable the scoring matrix to predict an at-risk score of early menarche accurately. **Conclusion:** The scoring matrix shall be a valuable instrument for health professionals, aiding insights into the modifiable at-risk factors that can be intervened at early stages itself.

Keywords: early menarche, Food Frequency questionnaire (FFQ), Children Physical Questionnaire (CPAQ), Digital Screen Exposure Questionnaire (DSEQ)

Abstract ID: 314

**ABSTRACT TITLE: IMPACT OF ADIPOQ, FTO, LEPR, MC4R & PPARG GENE
POLYMORPHISM ON VARIANCE ASSOCIATED OBESITY AMONG INDIAN POPULATION**

Ms Sayali Santosh Zaware, Professor Anuja Amit Mohile

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2- Professor Anuja Amit Mohile, Assistant Professor, Symbiosis Skills And Professional University

Background: Obesity has become a global burden thus studying factors that influence the onset & risk of obesity becomes very crucial. ADIPOQ, FTO, LEPR, MC4R & PPARG are the genes that are yet to be studied exclusively in obesity among the Indian population. The aim of this study was to find out the determinant gene (rsIDs) for obesity among obese & non-obese groups. **Material:** Genetic testing of 51 individuals was done through AirGenomix Pvt. Ltd. The genetic data was generated using the GAS3 technique on Illumina software. Logistics & comparative methods were applied to analyse the segregated data. **Results:** Around 96% of the total population had affected homozygous variant G allele for rs17300539 of ADIPOQ. Among all the assessed genes FTO rsIDs showed greater ratio of difference among obese & non-obese individuals. **Conclusion:** The ADIPOQ gene variant is prevalent in 96% of the population, indicating that it is not a primary determinant of obesity. Meanwhile, FTO gene can act as a determinant to understand the risk of obesity among individuals. In the study, even non-obese individuals had variant alleles present in them which goes on to show the influence of factors other than genetics. Thus, epigenetic factors like dietary habits & lifestyle should be studied in detail.

Keywords: Obesity, nutrigenomics, determinant gene, polymorphism, genetics, variant allele

Abstract ID: 322

**ABSTRACT TITLE: TO STUDY THE INCIDENCE OF DIABETES IN VITAMIN D DEFICIENT
SAMPLES: A CROSS-SECTIONAL OBSERVATIONAL STUDY**

Ms More Manasi Rajendra

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Background: Vitamin D deficiency is one of the risk factors for developing diabetes. Vitamin D receptors are located in pancreatic beta cells, where vitamin D regulates insulin production, secretion and sensitivity, and in immune cells like T cells and macrophages, highlighting its role in immune regulation. Vitamin D deficiency can cause immune cells to invade and damage beta cells, leading to insulin deficiency which is a characteristic of Type 1 Diabetes Mellitus. In Type 2 Diabetes Mellitus, inflammation promotes insulin resistance, and vitamin D counteract these effects by regulating cytokine production. The current study aimed to investigate the incidence of diabetes in Vitamin D deficient samples across various age groups. **Material:** The study was conducted at a Diagnostic Centre in Pune, with an ethical approval from the centre. A Retrospective data was collected over one year, encompassing a total of 98 patients with vitamin D deficiency, aged between 1 to 90. The data included various blood sugar measurements (random, fasting, post-prandial, and HbA1c), and their demographic details. Statistical analysis was performed by using the Chi-square test while graphical representation was done by using SPSS software. **Results:** The study revealed that among 98 patients with vitamin D deficiency, about 57.14% were diabetic, 10.20% were prediabetic, and 32.65% were non-diabetic. Furthermore, it was observed that the incidence of vitamin D deficiency among diabetic individuals rose with age, with 46.15% in the 1-29 age group, 57.14% in the 30-59 age group, and 75.00% in the 60-90 age group. The calculated value (C.V.) of 17 was greater than the table value (T.V.) of 3.841, and the p-value of 0.000 was less than 0.05, leading to the acceptance of the alternate hypothesis. This confirmed a significant association between vitamin D deficiency and diabetes. **Conclusion:** The study established a significant association between vitamin D deficiency and diabetes among the 98 patients analyzed. These results highlight the critical role of vitamin D in diabetes management and suggest that addressing vitamin D deficiency may be beneficial for improving health outcomes in diabetic individuals.

Keywords: Vitamin D, Vitamin D Deficiency, Diabetes Mellitus, Type 1 Diabetes Mellitus, Type 2 Diabetes Mellitus, Beta cells.

Abstract ID: 323

ABSTRACT TITLE: ARE PRO INFLAMMATORY FOODS ASSOCIATED WITH INFLAMMATION IN RHEUMATOID ARTHRITIS? EVALUATION USING DII TOOL

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Background: Rheumatoid arthritis (RA) is a condition characterised with chronic inflammatory autoimmune disease. Both medical and dietary interventions play a pivotal role in management of disease progression. The Dietary Inflammatory Index (DII) score is an effective tool showing the risk of elevation of inflammation through dietary components. The study objective is to evaluate the nutrient

adequacy, association between DII food intake and inflammation index using biochemical markers among RA subjects. **Material:** In this cross-sectional study subjects recruited from tertiary health care in semi urban South-Indian population. Nutritional status was assessed using standard anthropometric tools. Macronutrient, micronutrient intake, nutrition adequacy was evaluated through food frequency intake and 24-hour diet recall. Biochemical parameters - ESR and CRP were assessed, clinical signs and symptoms, impact of diet & lifestyle patterns was assessed using structured and validated questionnaires. The association of dietary intake and inflammation was assessed using DII tool. **Results:** The anthropometric status as indicated by BMI of subjects (n=300, M=45, F=255) aged between 25 to 75 years was, undernourished: n=25, Overweight: n=66, and 87 and 30 were under obese grade-I and grade-II respectively. Dietary data indicated lower protein intake (6g/day), calcium (667 ± 108.7 mg), iron (11.3 ± 0.90 mg). The participants intake pattern according to quintiles of DII shows that consumption of CHO (216.61 ± 40.41), total fat (54.81 ± 25.15), falling under quintile 1 with DII scores between -0.51 to -1.25, reflecting pro-inflammatory DII score. Consumption of Proinflammatory foods with high DII scores was high such as sugars (54%), bakery products (37%), junk foods (3%), processed foods (3%), chocolate & beverages (2%) and deep fried-foods (1%). The CRP values were (29.97 ± 8.31), this shows a possible link between pro-inflammatory dietary intake and inflammation among the subjects. **Conclusion:** The study helps in understanding the association of DII with nutrient intake and dietary pattern in RA subjects. Food frequency intake reveal that most subjects are taking foods rich in DII which may increasing the RA symptoms. Along with drugs, adequate diet, low DII foods, lifestyle management are key strategies to effectively managing RA and improving the Quality of Life (QOL) in affected individuals.

Keywords: Rheumatoid Arthritis, DII, Nutritional Adequacy, Anti-inflammatory, Pro-inflammatory.

Abstract ID: 334

ABSTRACT TITLE: THE ROLE OF SWEET BASIL (OSCIMUM BASILICUM) IN MANAGEMENT OF TYPE 2 DIABETES MELLITUS: A REVIEW FROM ANIMAL STUDIES AND CLINICAL TRAILS

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Background: Sweet Basil (*Oscimum basilicum*) has therapeutic potential in treating type 2 diabetes, a condition marked by poor glucose metabolism and insulin resistance. Its abundance of bioactive components, like flavonoids and phenolic acids, might have contributed to its health-promoting qualities. Interest in how it affects glucose regulation and metabolic health has increased as a result.

Material: Preclinical research and clinical trials for the past 20 years were included in the literature review. About fifty articles were referred in databases like Google Scholar, Scopus, and PubMed. In general, participants were divided into control and intervention groups. The primary evaluation criteria were changes in insulin sensitivity indicators, HbA1c, and fasting blood glucose levels. Changes in weight, lipid profiles, and general metabolic health markers were the secondary outcomes. Both animal studies and clinical trials were included in the review for evaluating the effects of basil extract on blood

glucose and insulin sensitivity and the effect of basil supplementation on human glycaemic control respectively. Informed consent and ethics approval were acquired for each trial. Software such as SPSS was used for statistical analysis, with a significance level of $p < 0.05$. **Results:** According to animal studies, *Ocimum basilicum* has hypoglycaemic qualities that significantly decrease blood sugar levels and improve insulin sensitivity. Mechanistic studies suggest that these effects could stem from improved peripheral tissue glucose absorption and insulin signaling. Clinical trials supporting these results demonstrated that supplementing with sweet basil significantly reduced fasting blood glucose levels and HbA1c, improving glycaemic control. Only a few studies have shown a limited negative impact, suggesting that sweet basil could be a safe supplement to conventional diabetic treatments. **Conclusion:** Sweet basil shows promise as a complementary strategy in managing type 2 diabetes, potentially enhancing glycaemic control and reducing reliance on pharmaceuticals. The mechanisms of action and supporting data for its anti-diabetic benefits are highlighted in this review. To better understand and optimize its therapeutic potential in the treatment of diabetes, future research should concentrate on larger clinical trials and optimal dosages.

Keywords: *Ocimum basilicum*, sweet basil supplement, hypoglycaemic properties, glycaemic control, Anti-diabetic effects, Type 2 Diabetes management.

Abstract ID: 338

ABSTRACT TITLE: EFFECT OF DIET AND LIFESTYLE FACTORS ON OSMOTIC FRAGILITY OF RBC: COMPARATIVE STUDY BETWEEN VEGETARIAN AND NONVEGETARIAN

Dr Shambhavi Kulkarni Pathak

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Objective: 1- To identify the factors influencing diet and lifestyle on the osmotic fragility in vegetarians and non vegetarians among young adults. 2- To study the relationship between each factors, and their role on erythrocyte fragility to vegetarians and non vegetarians among young adults. **Material and Methods:** An increased intake of fat and a decreased intake of Vitamin B12 proved to have a hemolytic effect on the RBC. Lifestyle factors like smoking of cigarettes and alcohol consumption also had an impact on the membrane of the RBC. **Study Design:** Cross sectional study, **Study Population:** Males and females, aged between 18-35 years and equal number of vegetarians and non vegetarians were undertaken. **Results:** The 95% of CI 1.001 to 1.021 spans 1.0, the increased odds (OR 1.011) of Osmotic fragility of RBC with fat intake ($p=0.033$). The 95% of CI 0.363 to 0.936 spans 1.0, the decreased odds (OR 0.582) of Osmotic fragility of RBC with Vitamin B12 ($p=0.025$). The 95% of CI 1.160 to 4.279 spans 1.0, the increased odds (OR 2.228) of Osmotic fragility of RBC with cigarette smoking per day ($p=0.016$). The 95% of CI 1.094 to 1.449 spans 1.0, the increased odds (OR 1.259) of Osmotic fragility of RBC with alcohol consumption ($p=0.001$). **Conclusion:** An increased intake of fat

and a decreased intake of Vitamin B12 proved to have a hemolytic effect on the RBC. Lifestyle factors like smoking of cigarettes and alcohol consumption also had an impact on the membrane of the RBC.

Keywords: Osmotic Fragility, Haemolysis, Lifestyle, Dietary habits, Vitamin B12, smoking, alcohol

Abstract ID: 347

**ABSTRACT TITLE: INTEGRATIVE APPROACH TO DIABETES MANAGEMENT: CASE SERIES
EVALUATION OF HEALZEN'S PRO THERAPEUTIC PROTOCOL**

Dr Apurva Ahirrao

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Background: Diabetes mellitus is a global health crisis, particularly in India where many cases remain undiagnosed. Traditional treatments, while effective, often come with adverse effects, highlighting the need for alternative approaches. This study evaluates the efficacy of HealZen's Pro Therapeutic Protocol (PTP), a holistic treatment strategy for managing complex diabetes-related complications like diabetic foot. **Material:** The PTP integrates lifestyle modifications, personalized medicine, and advanced phyto-kinetics to improve metabolic control and patient outcomes. A total of 5 patients with long-standing diabetes were advised on the PTP including Liquid Chlorophyll, Capsule Sugar Control Formula-1, Liver Support Formula, Omega 3 6 9 capsules, Laxative Tablets, and Functional Nutrition Therapy (FNT). **Results:** One of the cases saw reduction in HbA1c levels from 10.2% to 6.6 %, fasting blood glucose dropping from 226 mg/dL to 168.27 mg/dL. Improvements in lipid profiles and reductions in symptoms such as constipation, fatigue, and stress were also observed. Another case with diabetes developed post-COVID and fatty liver showed a reduction in HbA1c from 8.1% to 5.0%, and third out of the five cases with diabetic foot complications experienced an 80% improvement in wound healing. **Conclusion:** Within three months of following HealZen's Pro Therapeutic Protocol showed potential in managing and possibly reversing diabetes by addressing both physical and psychological factors. Significant improvements in glycaemic control, lipid profiles, and overall well-being were observed in this study. This further highlights the need for further research to validate these findings and explore the long-term benefits of such holistic protocols in diabetes management.

Keywords: Heal Zen's Pro Therapeutic Protocol, Diabetes Management, Personalized

Abstract ID: 350

**ABSTRACT TITLE: STUDY ON FOOD CRAVINGS AND SYMPTOMS ASSOCIATED
WITH PREMENSTRUAL SYNDROME (PMS)**

Ms ANOUSHKA ARUN

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Background: Premenstrual syndrome (PMS) symptoms affect women of different age groups and its severity varies individually and impacts their quality of life and routine activities. Knowing the common symptoms and food craving during PMS helps to reduce its impact and contributes to a healthy regular menstruation. The study aimed to find out the common symptoms in PMS women and their knowledge on premenstrual dysphoric disorder (PMDD), the severe form of PMS. **Material:** The study took place in Chennai, Tamil Nadu, India. A descriptive survey was done with a total of 152 urban women between 18-50 years were selected using random sampling technique. The data that was collected through questionnaire were further analyzed using frequency and relative frequency tables. **Results:** The findings of the study revealed that most participants had food cravings 2-3 days before menstruation (50%) and they craved sweets, chocolates and/or ice creams (47.47%) often during evenings (53.28%). They led a sedentary lifestyle with exercise done for less than 20 minutes (46.05%) and were involved in aerobic exercises such as cycling, brisk walking, and jogging (57.34%). There was good quality sleep (49.34%) of 6-8 hours was reported by 79.60% of participants. Mild to moderate PMS symptoms were noticed among 46.05 % of the participants with 67.10% having mood swings and 50% having cramps as common symptoms. Some participants also reported no medications to alleviate the symptoms (87.5%). **Conclusion:** The study showed that the age or the type of profession did not influence the food cravings or symptoms during PMS. Most findings did align with previous studies. Most participants reported that they had good quality sleep and less sleep disturbances. This contradicts an earlier study which stated that poor sleep quality is one of the traits seen in PMS women. There is limited knowledge of PMDD among participants and their primary information source was the Internet, Sustainable development goal (SDG) 3 (Good Health and Well-Being) is directly related to PMS, PMS itself is not mentioned as such in the SDGs but issues surrounding women's menstrual health and education of PMS.

Keywords: Premenstrual Syndrome, food cravings, premenstrual dysphoric disorder, symptoms, menstruation

Abstract ID: 358

ABSTRACT TITLE: ASSESSING THE NUTRITIONAL STATUS, DIETARY DIVERSITY SCORE OF POSTPARTUM MOTHERS AND THEIR INFANTS BIRTH WEIGHT

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Background: Maternal nutrition contributes significantly to fetal growth and development. Maternal undernutrition during pregnancy causes intrauterine growth restriction (IUGR), leading to higher perinatal morbidity and mortality. This study investigated the nutritional status and dietary diversity of postpartum mothers who delivered a baby at SRM MCH & RC and examined its relationship with

infant birth weight. **Material:** The data were gathered from the subjects using a validated structured questionnaire and face-to-face interview on the 5th day of post-delivery. The variables included demographic data, socioeconomic factors, dietary habits, feeding patterns, and infant details. Infant weight was measured on the 7th day after delivery. **Results:** The dietary diversity score was found to be significantly correlated with maternal BMI ($p = 0.011$), MUAC ($p = 0.04$), literacy level ($p = 0.001$), socioeconomic status ($p = 0.000$), protein consumption ($p = 0.048$), intake of energy ($p = 0.045$), and carbohydrate consumption ($p = 0.03$). Infant birth weight correlated with maternal fat intake ($p = 0.021$) and the RBC count of postpartum mothers ($p = 0.000$). Infant weight on the 7th day was significantly associated with breastfeeding ($p = 0.000$) and type of feeding ($p = 0.000$) practice. **Conclusion:** The study highlights the importance of maternal dietary diversity in influencing various maternal and infant health parameters, including maternal anthropometry, and infant birth weight. These findings underscore the significance of promoting diverse and nutritious diets among postpartum mothers for optimal maternal and infant health outcomes.

Keywords: Postpartum mothers, Infant weight, Diet, Nutritional assessment

Abstract ID: 360

ABSTRACT TITLE: INTERMITTENT FASTING (IF), ENCOMPASSING METHODS LIKE ALTERNATE-DAY FASTING (ADF), THE 5:2 DIET, AND TIME-RESTRICTED FEEDING (TRF), HAS GARNERED SIGNIFICANT ATTENTION FOR ITS POTENTIAL HEALTH BENEFITS.

Ms Lakshmi

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Background: A literature search was on the impact of intermittent fasting and metabolism. We searched for published articles between 2012 and 2022 using PubMed, MEDLINE, and Google Scholar. Inclusion criteria of the articles on clinical trials, randomized controlled trials, case reports, case series, review articles, published articles, articles that were available in English, and were full text. The exclusion criteria included that the works were unpublished or irrelevant to the topic of interest, duplicates, abstracts, non-English papers, and articles that did not report outcome measurements for any of the previously described factors. To determine whether the articles fulfilled our inclusion criteria, four reviewers independently examined the papers. Articles which met the criteria were further reviewed to confirm their eligibility. After the evaluation process 44 papers were included in the final review. **Material and Methods:** A literature search was on the impact of intermittent fasting and metabolism. We searched for published articles between 2012 and 2022 using PubMed, MEDLINE, and Google Scholar. Inclusion criteria of the articles on clinical trials, randomized controlled trials, case reports, case series, review articles, published articles, articles that were available in English, and were full text. The exclusion criteria included that the works were unpublished or irrelevant to the topic of interest, duplicates, abstracts, non-English papers, and articles that did not report outcome measurements for any of the previously described factors. To determine whether the articles fulfilled

our inclusion criteria, four reviewers independently examined the papers. Articles which met the criteria were further reviewed to confirm their eligibility. After the evaluation process 44 papers were included in the final review. **Results:** Intermittent Fasting (IF) often results in reduced calorie intake, similar to calorie restriction (CR) regimens in laboratory studies. IF also promotes autophagy, reducing inflammation and oxidative stress and lowering the health risk of chronic diseases like cancer and neurodegenerative disorders. IF may enhance sleep quality and duration by aligning eating patterns with circadian rhythms, reducing inflammation, and aiding weight loss. Although most studies found no significant change in sleep duration, there is potential for IF to benefit those with less-than-optimal sleep. Overall, IF represents a sustainable and effective approach to improving metabolic health and sleep, with significant implications for managing obesity and related conditions. Additional research is required to comprehend the enduring effects of IF on many health outcomes. **Conclusion:** The present review examines the impact of IF on sleep patterns, body weight, and health risk factors for cardio metabolic illness. These regimens improve metabolic markers such as insulin sensitivity, glucose regulation, and lipid profiles, potentially reducing cardiovascular disease risk.

Keywords: Intermittent Fasting (IF), Time-Restricted Feeding (TRF), Alternate-Day Fasting (ADF), Calorie Restriction (CR)

Abstract ID: 387

ABSTRACT TITLE: STRING TEST FOR OBESITY: A PILOT STUDY

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Background: Obesity particularly central obesity is the most harmful in terms of various metabolic disorders and conditions. A cutoff of 0.5 for WHtR has been suggested as the first level of risk. A simple index such as WHtR is a good proxy for central obesity and has great practical advantages. The objectives were to develop an innovative tool for central obesity assessment and to explore the prevalence of central adiposity among young adults using traditional methods and a string test.

Materials and Method: An observational pilot study was carried out among young adults in the age group of 18-25 years. Obesity was assessed using weight and body mass index (BMI). The central obesity was assessed using waist and hip circumferences, waist-to-hip ratio (WHR) and waist-to-height ratio (WHtR). The string test was carried out using a non-stretchable cloth string. The length of string was measured from head to toe of the participant and a measured string was folded in half. Using this folded string, the participant's waist circumference was assessed. The participants were categorized as 'at risk' if the folded string was smaller than the waist circumference. **Results:** Forty (40) young adults (males and females) with a mean age 21.3 ± 2.26 years participated in this study. The mean WHR of females and males were 0.81 ± 0.074 and 0.74 ± 0.16 respectively. Whereas the mean WHtR among females was 0.50 ± 0.07 and 0.43 ± 0.10 among males. As per WHtR categories, 18(45%) participants

were at risk, 2 (5%) were at high risk and remaining were at no risk. The distance between two ends of string was significantly different among WHtR categories ($p < 0.05$). Similarly, string test observational categories and WHtR categories correlated significantly ($p < 0.05$). The Cronbach alpha analysis of the string test technique was observed to be reliable ($\alpha > 0.7$). **Conclusion:** WHtR is a simple anthropometric representation to identify central obesity. World Health Organization has stated WHtR > 0.5 is a good predictor of metabolic risk. Thus, this pilot study was an attempt to observe that string test is an potentially convenient tool for screening of central obesity in community set-up.

Keywords: Adiposity, Central Obesity, Nutritional Assessment, String Test

Abstract ID: 394

ABSTRACT TITLE: COMPARATIVE ANALYSIS OF GROWTH TRAJECTORIES IN CHILDREN WITH OROFACIAL CLEFT

Ms Manasi Puranik & Dr Anees Fathima Thabassum.Z *

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Background: Children with orofacial cleft often have feeding difficulties due to insufficient production of intraoral negative pressure, which is required for efficient sucking and swallowing. Most of the children affected with Cleft lip and Palate are undernourished and have poor growth velocity. These problems related to growth are largely caused by insufficient nutrient intake. We aim to assess and monitor the growth of children with orofacial cleft and children without orofacial cleft and compare it to the normative data as per WHO standards. **Material and Methods:** This study is a retrospective cohort study comparing 40 children with orofacial clefts to 40 children without orofacial cleft and standard WHO Z -scores. Data such as weight at first visit and first follow-up for children without cleft and weight of children with cleft for 5 follow ups was collected from medical records of a Cleft Care Unit. Data was analysed using SPSS (Statistical Package for Social Sciences) 22.0 version, IBM Corp. Descriptive statistics was performed. **Result:** It was found that the mean weight of participants with cleft (lip/palate/both) was found to be less than the mean weight of participants without cleft (lip/palate/both) after one month of follow-up. The mean difference was found to be statistically significant ($P = 0.001$). **Conclusion:** It was found that 71.1% of children affected with cleft belonged to severe underweight category and 78.9% of children affected with cleft belonged to moderate underweight category; 2.5% of children without cleft belonged to Severe underweight category and 17.5% of children without cleft belonged to moderate underweight category on the first follow-up based on WHO classification for malnourishment.

FREE COMMUNICATION - POSTER PRESENTATIONS

15th November 2024

Time: 11.45 am to 12.15 noon

SESSION 2- FOOD SCIENCE AND NUTRITION

No	Abstract ID	Presenter name	Affiliation	City	Email	Title of Presentation
1	6	Dr Samaila James	Department of Food Science and Technology, Federal University of Technology, Minna, Nigeria	Minna	samaila.james@futminna.edu.ng	Qualitative Assessment of Potentials Bioactive Compounds in African Oil Bean Seeds (<i>Pentaclethra mycophylla</i> Benth.)
2	19	Dr Sridhar Rachakonda	CSIR Central Food Technological Research Institute Resource Centre	Hyderabad	sreedharr@cftri.res.in	Protein Enriched Extruded Millet Snacks using Sesame (<i>Sesamum indicum</i> L.) Seed Cake
3	22	Mr Kishor Kashinathrao Anerao	College of Food Technology, VNMKV, Parbhani	Parbhani	kishorane135101@gmail.com	Enhancing Nutritional Profiles of Colored Sorghum Cultivars through Optimized Popping Techniques
4	32	Dr Ajanta Nayak	Shailabala Autonomous Womens College	Cuttack	ajanta.nayak6@gmail.com	Stagnancy in rice grain filling impacts its nutritional value and quality.
5	34	Dr A V Akash	Nehru Arts and Science College	Coimbatore	arayullaveetilakash@gmail.com	Neem Gum with Edible Film Packing
6	36	Mr Sanju Ashokan K A	Nehru Arts and Science College	Coimbatore	sanjuashokankochukulangeth@gmail.com	Development of Low Calorie Millet- Based Frozen Dessert
7	39	Mr SrinivasuluKorra	CSIR-CFTRI	Hyderabad	srinivasuluK@cftri.res.in	Formulation and Quality Evaluation of Composite Millet Flakes Nutri Bar
8	56	Ms Gulafshan Perween	P G Dept. of Home Science- Food & Nutrition	Bhagalpur	gulafshanperween4@gmail.com	Covid - 19 and Gender Implication: a case study of Bhagalpur Corporation
9	61	Ms Mudumby Sreedevi	Central Food Technological Research Institute, Resource Centre	Hyderabad	sreedevi.mudumby@gmail.com	Development and Quality Evaluation of Composite Millet Based Noodles

10	103	Ms Sinchana S Shetty	University of Agricultural sciences, Bangalore	Bangalore	sinchana1003@gmail.com	Comparative Assessment of Nutritional Quality, Mineral Bioaccessibility, and Product Development Potential of Microgreens and its Mature Counter Parts
11	104	Ms Neha Vijayagopal O R	St Josephs College for Women Alappuzha	Alappuzha	nehavijayagopal@gmail.com	Tender Coconut Banana Sap Pomegranate Drink: An Anti-Urolithic Elixir
12	110	Ms Sivapriya K C	School of Food Science and Technology	Kottayam	sivapriyacc@gmail.com	Effect of Malting on The Physicochemical, Functional, Anti-Oxidant and Anti-Nutritional Aspects of Biofortified Finger Millet (CFMV-1)
13	111	Ms Chaithanya	JSS AHER	Mysore	chaithanyac1523@gmail.com	Development of Functional Products from Jackfruit Flour
14	114	Dr Minelly	Department of Foods, Nutrition and Dietetics, College of Home Science Nirmala Niketan	Mumbai	minellyrodriques@gmail.com	Development of Micronutrient Fortified Tomato Based Ice Popsicles
15	121	Ms Snehal Sanjay Gaikwad	MIT School of Food Technology, MIT ADT University	Pune	gaikwadsheneh074@gmail.com	Effect of sun-drying, convection drying and freeze drying on bioactive profile of under-utilized Ficus carica fruit native to India
16	128	Ms V Keshikha	Madras Diabetes Research Foundation	Chennai	keshikhav1999@gmail.com	Evaluating the Sensory and Nutritional Composition of Peanut Incorporated Traditional Indian Recipes
17	134	Ms Riya Rammohan	The Maharaja Sayajirao University of Baroda	Vadodara	riyakitz@gmail.com	Nutritional Composition and Antioxidant Profile of Proso millet (Panicum miliaceum): Implications on Health

18	135	Ms Vaishali Laxman Jadhav	The University of Trans-Disciplinary Health Science and Technology	Bengaluru	vaishalija dav@tdu.edu.in	Documentation of Traditional Food Recipes of Karnataka and their Validation with Ayurveda and Nutritional Perspective
19	137	Dr Apurva Ameya Halbe	Kasturba Health Society Medical Research Center	Mumbai	apurva.ag ashe@gmail.com	Development and Acceptability Study of Millet Based Bar for children
20	142	Ms Priya Shridhar Atanur	SNDT College of Home Science	Pune	priyaatan ur26@gmail.com	Development, Quality Evaluation and Storage Studies of Chocolates Filled with Plant Based Milk (PBMs)
21	143	Dr Satish A	Sri Devaraj Urs Academy of Higher Education and Research	Kolar	satishanandan84@gmail.com	Effect of silkworm pupae oil on the development of glycation-induced protein-AGEs adducts
22	144	Ms Arpita Pain	SNDT College of Home Science	Pune	arpitapain 387@gmail.com	From Goat to Gourmet: Development & Quality Standardization of (RTE) Goat Milk Shrikhand
23	146	Ms Megharani Sharad Jadhav	SNDT College of Home Science	Pune	megharanijadhav158@gmail.com	Innovative Sattu Drink Cubes: Development and Quality Evaluation of Convenient Nutritious Beverage
24	157	Ms Kritika Rawat	Banasthali Vidyapith	Tonk	2kritikarawat.phd@gmail.com	Evaluation of Consumer Perception, Sensory Acceptance and Nutritional Profile of Microgreens: A Promising Addition to Diet
25	167	Ms Chandana M S	JSS Academy of Higher Education and Research	Mysuru	chandana ms@jssuni.edu.in	Demographic characteristics and Emotional wellbeing correlates among Working and Non-Working women residing from the regions of Karnataka & Tamil Nadu.
26	171	Ms Ginisha Kalsi	Assam Agricultural University	Jorhat	ginisha.kalsi@aau.ac.in	Formulation and Evaluation of Gluten-Free Cookies

						Using Purple Rice "Labanya" : A nutritional and Functional Perspective
27	178	Dr Soundariya	Sri Devaraj Urs Academy of Higher Education and Research	kolar	drsoundariya@sduher.ac.in	Neuroprotective effect of Saffron (Crocus sativus) Extract for children with Attention Deficit Hyperactivity Disorder (ADHD) symptoms
28	179	Ms Russell Sharma	Banasthali Vidyapith	Jaipur	russells.sharma@gmail.com	Effect of growing media on germination, growth, yield and nutrient quality of microgreens
29	183	Ms Garvita Agarwal	Banasthali Vidhyapith	Tonk	ag.garvita@gmail.com	Cannabis sativa: Evaluation of Physical Properties of seeds and Effects of Processing on Nutritional and Functional Properties
30	186	Ms Anupreet Kaur Sobti	Government Home Science College, Chandigarh	Chandigarh	anupreetsobti@gmail.com	Standardization & Comprehensive Analysis of a Sorghum- Based Recipe
31	188	Ms Pragati P	JSS AHER	Mysore	pragatipkhal@gmail.com	Value-Added Functional Food Trends: Purslane Based Cookies Formulation Using Lyophilized Technique
32	189	Mrs Harini M	JSS Academy of Higher Education & Reserch	Mysore	harinimanju12@gmail.com	Development of Value-added Baked Foods Incorporated with Millets and Red Rice
33	190	Ms Diksha Shah	Nutrition In Sync	Surat	deeksha8320@gmail.com	Development and Evaluation of Ready To Cook Complementary Mixes for Children Aged 6-12 Months
34	191	Ms Sanya Chaudhary	Manav Rachna International Institute of Research and Science	Faridabad	sanyachaudhary7890@gmail.com	Monk Fruit- Modified Traditional Sweets: A Healthy Solution for Sugar Cravings

35	194	Dr Soundariya S	Sri Devaraj Urs Academy of Higher Education and Research	Kolar	drsoundariya@sduher.ac.in	Neuroprotective effect of Saffron (Crocus sativus) Extract for children with Attention Deficit Hyperactivity Disorder (ADHD) symptoms
36	196	Ms Anuaswetha S U	Avinashilingam Institute for Home Science and Higher Education for Women	Coimbatore	anuaswetha@gmail.com	Development of Vegan Meat with Gluten and Horse Gram
37	197	Ms Nongmaithem Babita Devi	Avinashilingam Institute for Home Science and Higher Education for Women	Coimbatore	beitanong@gmail.com	Formulation of Instant Soup Mix with Edible Wild Split Gills Mushroom (Schizophyllum Commune) - Enrichment of Vitamin D2
38	200	Ms Ruchika Sharma	ICMR-National Institute of Nutrition	KV Rangareddy	ruchisha623@gmail.com	Development and Standardization of Ready-to-cook Multi-millet Idiyappam fortified with Mangifera indica leaf extract.
39	201	Ms Ruchika Sharma	ICMR-National Institute of Nutrition	Hyderabad	ruchisha623@gmail.com	Comparison of Sensory Evaluation, and Nutritional Profiling of Millet-Based Recipes
40	203	Ms Suruthiha K	Avinashilingam Institute for Home Science and Higher Education for Women	Coimbatore	suruthiha29@gmail.com	Study on Drying of Fenugreek Microgreens
41	204	Ms Shanthini S	Avinashilingam Institute for Home Science and Higher Education for Women	Coimbatore	shanthinisanthamorthy31@gmail.com	Lemongrass flavoured Soya Products for Menopausal Symptoms
42	207	Ms Anukeerthana S	Avinashilingam Institute for Home Science and Higher Education for Women	Coimbatore	anu03saravan@gmail.com	Nutraceuticals of Custard Apple Seed for Thyroid Disorder
43	209	Ms Divyadharshini S	Avinashilingam Institute for Home Science and	Coimbatore	divyadharshinis2020@gmail.com	Drumstick Seeds-Quercetin: Traditional Anti-

			Higher Education for Women			Hypertensive Nutraceutical
44	212	Ms Shalini M	Avinashilingam Institute for Home Science and Higher Education for Women	Coimbatore	shalinimanothar8@gmail.com	Apigenin in Basil Leaf Helps Treat Diabetes Mellitus
45	213	Mrs Manasa R	Yuvaraja's College (Autonomous), University of Mysore	Mysore	manasa1991.r@gmail.com	Development of Alternanthera sessilis Enriched Weaning Food Using Barnyard Millet (Echinochloa frumentacea)
46	214	Ms Shrunga M	Yuvaraja's College (Autonomous), University of Mysore	Mysore	shrunga.m2002@gmail.com	Development of laddu from Barnyard millet flour (Echinochloa frumentacea) and Flaxseed flour (Linum usitatissimum) to enhance the micronutrients
47	215	Ms Monika B	Yuvaraja's College (Autonomous), University of Mysore	Mysore	monikabalan06@gmail.com	Development of Cookies from Watermelon seed flour (Citrullus lanatus) enriching Micronutrients
48	218	Ms Poojashree M R	Yuvaraja's College (Autonomous), University of Mysore	Mysuru	poojagowdamr143@gmail.com	Development of Nutri bar using barnyard Millet flakes and incorporating Alternanthera sessilis to enhance the micronutrients
49	219	Ms Ashritha rp	JSS AHER	Mysore	ashritharp07@gmail.com	Grain Fit Fusion : Instant beverage to foster growing Years. Proposed experiment based investigation aims at designing instant beverage drink as a functional food contributing substantial calorific and nutritional values for growing years

50	222	Ms Deepika M	Yuvaraja's College (Autonomous), University of Mysore	Mysuru	deepikamallesh2000@gmail.com	Development of Muffins From Partial Replacement of Refined Wheat Flour by Kodo Millet (Paspalum scrobiculatum) Flour"
51	224	Ms Ameena Kousar	Yuvarajas college	Mysore	ameenakousar15@gmail.com	Development of Healthy Millet Malt Using Finger Millet (Eleusine Coracana) Enriched with Makhana Powder (Euryale Ferox)
52	225	Dr Thilakavathy subramaniam	Avinashilingam Institute For HomeScience and Higher Education For Women	Coimbatore	thilakavathy_fsn@avinuty.ac.in	Optimization of Recipes Incorporating Wheat Grass Powder into Millet Based Composite Flour
53	231	Ms Rubhatharani S	Avinashilingam Institute for Home Science and Higher education for Women	Coimbatore	rusira202817@gmail.com	Calcium Rich Supplement for Postmenopausal Women
54	232	Ms Sumaiya D	Jss Academy of Higher education and research	Mysore	s9073028@gmail.com	A comparative study on the changes of BMI , Dietary pattern, Menstrual cycle among Tribal and non tribal adolescent girls
55	237	Ms Arpitha M	JSS AHER	Mysuru	arpithamarpitha984@gmail.com	Seed crackers profiling : seedlicious bite as Therapeutic regime
56	238	Ms Rajeshwari C	Yuvarajas college Mysuru	Mysuru	rajeshwari74066@gmail.com	Comparison Of Value-Added Cookies Prepared Using Kodo Millet And Brown Top Millet
57	240	Ms Reethu M	Yuvarajs College University of Mysore Mysuru	Mandya	reethumreethum@gmail.com	Development and Evaluation of Foxtail Millet (Setaria Italica) and Pearl Millet (Pennisetum Glaucum) Based Nippattu Enriched with Drumstick Leaves
58	241	Ms Bindu Shree	Yuvarajas college Mysuru	Hunsur	bindushree8253@gmail.com	The Development and Nutritional Evaluation of Multimillet ball using Kodo Millet

						(Paspalum scrobiculatum) and Pearl Millet (Pennisetum glaucum)
59	242	Ms Manasagowda M	Yuvarajas college university of mysuru mysuru	Mysuru	manasagowdaa2421@gmail.com	Development OF Value-Added Cookies Using Germinated Kodo Millet Flour
60	245	Ms Ruchitha P M	Yuvarajas College University of Mysore Mysuru	Mandya	pmruchitha24@gmail.com	Development of Cake with Incorporation of Sorghum Millet (Sorghum Bicolor L. Moench) and Beetroot (Beta vulgaris)
61	248	Ms Divya Priya A	Central Food Technological Research Institute	Mysore	divyapriatham@gmail.com	Exploration of the nutritional composition of different fractions of the ripe green Rhodomyrtus tomentosa (Ait) Hassk fruits
62	251	Ms Gauri Ligade	Interactive Research School For Health Affairs Bharati Vidyapeeth (Deemed to be University)	Pune	gaurivligade11@gmail.com	Development and stability assessment of flour pre-mix fortified with omega-3 fatty acids and protein
63	253	Ms Prabha V	Avinashilingam Institute for Home Science and Higher Education for Women	Coimbatore	prabhaverasimman@gmail.com	Instant Soup Mix Powder for Treating Menstrual Problem
64	255	Ms Menagadevi	Avinashilingam University	Coimbatore	menagamenu45@gmail.com	Formulation And Standardization of Sprouts Kulfi
65	260	Mr Muralidharan Chinnadurai	SASTRA Deemed University	Thanjavur	muralidharanchinnadurai@gmail.com	Effect of phytochemicals on the inhibition of the microbial spoilage in Lutjanus campechanus (Red snapper) fish
66	263	Ms Swethaa H K	Avinashilingam Institute for Home Science and Higher Education for	Coimbatore	hkswethaa@gmail.com	Moringa Infused Feast: Nutrient-Packed Dissolvable Soup Pouches: An Alternative to Instant Plastic Soup Pouches

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68	265	Ms Aastha Kapoor	JSS Academy of Higher Education and Research	Mysore	khushikapoor784@gmail.com	Effect of Dry Heat Cooking Method on The Glycemic Index and Glycemic Load of Food Products Developed Using Composite Flour Mix
69	266	Ms Sharmila R	Avinashilingam Institute for Home Science and Higher Education for Women	Coimbatore	sharmilakamalakanan96@gmail.com	Development of Homemade Butter Incorporated with Rosemary Leaves Powder
70	267	Ms Supritha K	JSS Academy of Higher Education and Research	Mysore	ksupritha657@gmail.com	Effect of Complete and Partial Gelatinization on The Glycemic Index and Glycemic Load of Meal Items Prepared by Incorporating Composite Flour Mix
71	268	Ms Jeevitha	Avinashilingam Institute for Home science and Higher education for Women	Coimbatore	jeevithar2706@gmail.com	Oral Dissolving Strips (ODS) Using Papaya Leaf Extract
72	269	Ms Sree Vinu D	Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore	Coimbatore	sreevinu33@gmail.com	Assessment of Knowledge and Consumption Pattern of Probiotic Foods Among College Going Women Students
73	270	Ms Nivedha Devi P V	Avinashilingam Institute for Home Science and Higher Education for Women	Coimbatore	nivi312002@gmail.com	Optimization Of Protein and Iron Rich Formulation for Underweight School Going Children

74	271	Ms Amulyha B	Avinashilingam Institute for Home Science and Higher Education for Women	Bangalore	ammubhaskar25@gmail.com	Chickpea Edible Cups : Fun and sustainable sips for kids
75	273	Ms Divya L	Avinashilingam Institute for Home Science and Higher Education for Women	Chennai 39	divyalakshmanan65@gmail.com	Leafy Treat: Crafting Edible Films from Jamun Leaves Extract
76	274	Ms Srijana M Shekar	DoS in Food science & nutrition, University of Mysore	Mysuru	srijanamshekar@gmail.com	High-fiber crackers: Enhancing nutritional value and ensuring long-term storage stability
77	276	Ms Madhura Shreeram Ghaisas	Dr. BMN College of Home Science	Mumbai	msgmadhura@gmail.com	Making of handmade paper from onion peels: a step towards sustainability
78	277	Mr Vishwas Gowda V G	JSS college of arts commerce and science Mysore	Mysore	vishwasgowda2200@gmail.com	Development of Brownie: To Enrich Iron From Barnyard Millet Flour (Echinochloafrumentacea)
79	282	Ms M Vandana	JSS AHER	Mysore	vandanam0603@gmail.com	A review on food additives and its impact on health status of children
80	283	Ms Sangeetha	avinashilingam institute for home science and higher education for women	coimbatore	sangeethaarvindkumar02@gmail.com	Prevention of Anemia in Adolescent Girls with Beet Root Malt
81	284	Ms Eduri Tanuja	Avinashilingam Institute for Home Science and Higher Education for Women	Coimbatore	tanuja.eduri@gmail.com	Preparation and Formulation of Country Borage Candy to Treat Colds and Coughs
82	296	Ms Poomagal K P	Avinashilingam Institute for Home Science and higher education for women coimbatore	Coimbatore	punnagaiyarasi77@gmail.com	Gummies on Yellow Pumpkin
83	297	Dr Thilakavathy Subramaniam	Avinashilingam Institute For HomeScienc	Coimbatore	thilakavathy_fsn@avinuty.ac.in	Optimization of Recipes Incorporating Wheat Grass Powder into

			e and Higher Education For Women			Millet Based Composite Flour
84	302	Ms Ashwini A	Yuvaraja's College (Autonomous), University of Mysore	Mysore	ashwinias hu28042003@gmail.com	Development of Cookies from barnyard millet flour (Echinochloa esculenta) enriching Micronutrients
85	303	Dr Parul Thapar	Swami Vivekananda University	Kolkata	parul.thapararparul.thapar@gmail.com	The Gut Microbiome and Pediatric Undernutrition: A Comprehensive Review of Emerging Insights
86	305	Ms Vaibhavi Vijaykumar Uttarwar	MIT School of Food Technology, MIT ADT University Pune	Pune	vaibhavi.uttarwar@gmail.com	Development of Micronutrient Rich Extruded Snack Using Finger Millet: Formulation and Nutritional Assessment
87	316	Ms B Rajalakshmi	Avinashilingam Institute for Home Science and Higher Education for Women	Trichy	18phfdp002@avinuty.ac.in	Mineral Composition and Antimicrobial Activity of The Parboiled White Rice Fermented in Traditional Unglazed Clay Pot (Manpaanai) for Gut Health
88	321	Ms Deepansha	Government Home Science College, Sector-10	Chandigarh	deepanshamakkarf3@gmail.com	Incorporating Ragi and Amaranth Microgreen powder in fermented Idli
89	327	Ms Pooja Mer	National Institute of Nutrition	Hyderabad	poojamer@live.com	Effect of processing on physicochemical characteristic of "Chittimuthyalu"- a zinc rich rice landrace
90	332	Ms Shreya Guglani	Government Home Science College, Chandigarh	Chandigarh	shreya.goleccha@gmail.com	Study on the Effect of Germination of Foxtail Millet and Finger Millet on the Nutrition Enrichment of Pizza Base
91	333	Ms Kelly Madonna Dsouza	Symbiosis school of culinary arts and nutritional sciences	Pune	kellymaddonadsouza@gmail.com	Understanding Clean Label Perceptions: A Study of Consumers and Food business Operators
92	340	Dr Anjana P	HarvestPlus Solutions	Pune	anjana.3.a.p@gmail.com	Assessment of Food Waste in Restaurants in Pune Along the Supply

						Chain: A Food Systems Approach
93	345	Ms Bharathi Udayakumar	Vivekanandha College of Arts and Sciences for Women	Tiruchengode	bharathiday24@gmail.com	Development and Characterization of Corn Silk Tea: A Novel Herbal Beverage with Nutrient and Antioxidant Properties
94	354	Ms Yerra Harinee	Symbiosis School Of Culinary Arts and Nutritional Sciences	Pune	yerraharinee@gmail.com	Assessing the Dietary Preferences and Health Challenges of Older Adults: Insights from a Survey
95	356	Mr Mohammad Zohor Naseri	University of Mysore	Mysore	m.zohor.naseri@gmail.com	Development of Soy-Millet Milk Blends for Vegan Yogurt: Impact on Fermentation and Sensory Properties
96	359	Ms Suba S	Nehru Arts and science College	Coimbatore	subasivamani17@gmail.com	Development and Quality Evaluation of Novel Chocolate Energy Bar Using Sprouted Ragi Powder
97	371	Ms Jaanhavi Singh	Symbiosis School of Culinary Arts and Nutritional Sciences, Pune	Pune	singhjaanhavi02@gmail.com	Edible Coatings- Promising Solution for Shelf-Life prolongation of fresh fruits: A Systematic Narrative Review
98	373	Ms Devasena R S	Symbiosis School of Culinary Arts and Nutritional Sciences	Pune	rsdevasena@gmail.com	Exploring Women's Insights: Knowledge, Attitudes, and Practices Surrounding Fortified Food Products in Pune
99	375	Ms Debjani Das	College of Community Science, Professor Jayashankar Telangana Agricultural University	Hyderabad	dasdebjani038@gmail.com	Effect of cold plasma treatment on aflatoxin decontamination and quality aspects of red chillies
100	378	Ms. Shreya Govalkar	Symbiosis School of Culinary Arts and Nutritional Sciences	Pune	shreyagovalkar08@gmail.com	Safeguarding food plates: Evaluating Awareness and Practices of Food Adulteration Among Rural Women in Mulshi Taluka, Pune

101	379	Dr Estuti Chandra	SAHS, JAIN (Deemed to be University)	Bangalore	c.estuti@jainuniversity.ac.in	Development of Ready-to-Eat Products Using Sweet Corn: A Novel Approach
102	381	A. Annapurna Reddy	GITAM School of Sciences,	Vishakapatnam	areddy5@gitam.in	Impact of various Indian culinary practices on the retention of minerals in Green Leafy Vegetables
103	384	Nandu Neyati Abhay	College of Home Science Nirmala Niketan affiliated to University of Mumbai	Mumbai	nanduniyati@gmail.com	Exploring the accessibility of information on food labels for person with visual impairment: A step towards inclusive food and nutritional literacy
104	386	Saloni Mahurpawar	Department of Food Technology, BIT,	Ballarpur	salonimahurpawar@gmail.com & ajaydurge15@gmail.com	Formation and Standardization of Gluten Free Cookies Made from Buckwheat (Fagopyrum Esculentum) Flour
105	392	ASV Monvitha MS	CSIR-Central Food Technological Research Institute	Hyderabad	asrivallimonvitha@gmail.com	Development of Protein Enriched Millet Noodles Using Sesame Seed Cake
106	393	Ayushi Joshi	G B Pant University of Agriculture and Technology,	Pantnagar	ayushijoshi7895@gmail.com	Numerical Optimization of Nutritious Gluten-Free Chapatti from Underutilized Sources for Celiac Disease
107	395	Karuna Singh Chauhan	Dayalbagh Educational Institute	Agra	karunasinghchauhan@dei.ac.in	Development of Value-added Peanut Chikki
108	398	Chandrama Baruah	ICMR-National Institute of Nutrition	Hyderabad	chandramabaruah11@gmail.com	Effect of hydrothermal processing on carbohydrate profile and estimated glycaemic index of pearl millet (Pennisetum glaucum)
109	400	Spoorthi Nagesh	JSS Academy of Higher Education and Research	Mysuru	spoorthinagesh306@gmail.com	Unveiling Nutritional Value: Proximate Composition, Functional Potential and nutritional value of Hibiscus sabdariffa Stem

Abstract ID: 06

ABSTRACT TITLE: QUALITATIVE ASSESSMENT OF POTENTIAL BIOACTIVE COMPOUNDS IN AFRICAN OIL BEAN SEEDS (PENTACLETHRA MYCROPHYLLA BENTH)

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Background: African oil bean tree is a large wild woody plant that belongs to the family Leguminous and sub-family Mimosoidae. It produces seeds that are dorsa-ventrally flat, hard, brown in colour and about 6 cm wide. The seeds are cited among the lesser known and under exploited legumes. The oil bean seeds contain 4 - 17% carbohydrate, 36.2 – 43.89% protein, 44 - 47 % oil which is rich in oleic acid and linoleic acid. Studies on its oil characterization have been substantially reported; however, there is dearth of information on their bioactive potentials. The major traditional food processed from the seeds' mesocarp is ugba, which is a ready to eat fermented product found in Eastern Nigeria. Its wild fermentation takes 3 - 4 days which increases nutrients availability, digestibility as well as palatability. However, in Western Nigeria the mesocarp is cooked to doneness and consumed as a porridge. Despite the limited traditional applications of the seeds in Nigeria, the seed has been reported to contain a large reservoir of phytochemicals; therefore, the need to profile its bioactive potentials.

Materials: African oil bean seed mesocarp was ground into a flour of 0.05 mm size. The flour was soaked in 60% (v/v) acetone at a solvent-to-solid ratio of 10:1 and continuously agitated for 30 min. at room temperature (27 ± 2oC). After extraction, a rotary vacuum extractor (Eyela, A-1000S, Japan) at 40oC was used to remove the solvent. The crude extract was separated and subjected to Gas-Chromatography/Mass Spectrometry (GC-MS) for sample characterization. **Results:** The results of the study revealed that African oil bean seeds contain bioactive compounds such as amitriptyline and venlafaxine which are antidepressants; mexiletine, a bioactive implicated in restoring regular heartbeat (antiarrhythmia); N-methyl-1-[4-(methylsulfonyl)phenyl] propan-2-amine and thiodiglycol which are enzyme inhibitors. Antitumor compounds such as 4-butoxy phenol and N-Benzyl-N,N-dimethyl ethylene diamine as well as 3-Methoxy-4-methyl-(2-aminobutyl) benzene which is a biostimulant were identified. **Conclusion:** This study revealed that African oil bean seed is a good source of bioactive compounds, hence, its consumption would offer measurable physiological benefits.

Keywords: African oil bean seeds, Bioactive compounds, Gas chromatography.

Abstract ID: 19

ABSTRACT ID: PROTEIN ENRICHED EXTRUDED MILLET SNACKS USING SESAME (SESAMUM INDICUM L.) SEED CAKE

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Background: The rapid growth in the ready to eat snack product sector is due to the convenience coupled with exciting sensory and textural properties. Extrusion cooking is one of the most important technology which have shown great potential in snack industry. This work is aimed to develop a nutritious spice-coated extruded snack based on millets (barnyard millet, and foxtail millet) and defatted sesame cake flour (DSCF) along with corn grits, to fulfil the demand for healthy snack foods. **Materials:** The selected millets barnyard, foxtail and corn grits were cleaned, milled along with DSCF in different proportions and extruded using a single screw extruder to yield ready to eat products. The extruded products (control and a mango based spice coat) were evaluated for physico-chemical characteristics, polyphenol content, antioxidant activity, sensory, microbial analysis and moisture sorption studies employing standard methods. **Results:** The extruded snacks were found to be rich in protein (23%), fiber (2.5%), calcium (73 mg/100g), iron (12 mg/100g), and phosphorous (349 mg/100g). The antioxidant activity of extruded products assayed employing DPPH and ABTS methods indicated spice-coated snacks exhibited higher activity when compared to the uncoated sample. Sorption isotherm studies indicated that the extruded product with initial moisture content 3.60 and 5.52% on as is basis equilibrates to 27 and 57% RH respectively. The critical moisture contents were 5.88 and 6.75%, which equilibrated to 44 and 62% RH for samples of control and with spice coated extruded snacks respectively. The extruded products were microbiologically safe even after three months of storage. The overall sensory quality of spice-coated extruded snacks was found to be excellent up to three months of storage in MPE pouches at room temperature. **Conclusion:** A highly acceptable, protein rich ready to eat millet based extruded snack, which is stable for 3 months was developed using defatted sesame flour.

Keywords: Protein Enriched Extruded Millet Snacks, Sesame Seed Cake.

Abstract ID: 22

**ABSTRACT TITLE: ENHANCING NUTRITIONAL PROFILES OF COLORED SORGHUM
CULTIVARS THROUGH OPTIMIZED POPPING TECHNIQUES**

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Background: The aim of this study was to specify and describe the appropriate stages of pop processing of three sorghum cultivars (Parbhani Moti, GP-1539, GP-2017-5) then selection of suitable cultivar for pop production and the association between its chemical composition and the ability of popping. Among the selected sorghum variety Parbhani Moti is taken as a control which is specifically used for popping and other two colored cultivars are studied for their popping characteristics and the effect of popping on its nutritional and total phenolic content was analyzed. **Materials:** Processing parameters for popping was optimized by variation in hot water soaking and conditioning time. Experiments were carried out to decide the levels of soaking time (1, 2 and 3 min in hot water at 90°C), conditioning time (6 and 8 hrs) and keeping popping temperature constant at 170°C. Then obtained sorghum pops were subjected for sensory analysis. **Results:** It was observed that maximum popping yield was obtained at 3 min (90 °C in hot water) soaking time, 6 hr conditioning time with desired quality characteristics. The physico-chemical analysis of the three genotypic varieties was carried out finding color values ranging from 58.62 (lightest) to 34.91 (darkest), moisture content higher in GP-2017-5 (9.4 per cent), protein content higher in GP-1539 (11.57percent). The concerning TPC and anthocyanin content of the raw sorghum genotypes was noted to be highest in GP-1539 which is 289.20 mg/100 g and 53.30 mg/ 100 g respectively. Further, the effect of popping was studied for color analysis, popping yield and the expansion ratio of sorghum conditioned for 6 hrs and 8 hrs were examined, where the highest values were noted for Parbhani Moti followed by GP-2017-5 and GP-1539. **Conclusion:** Processing, value addition and export of sorghum is simple and cost efficient. As Compared to popcorn, popped sorghum has a smaller popped kernel size. This quality makes it ideal in products where popcorn is too large to be used, like granola bars or candies.

Keywords: Total phenolic content, Total anthocyanin content, Popping, Millet.

Abstract ID: 32

**ABSTRACT TITLE: STAGNANCY IN RICE GRAIN FILLING IMPACTS ITS NUTRITIONAL VALUE
AND QUALITY**

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Background: Rice (*Oryza sativa* L.) is consumed as one of the most important dietary sources of carbohydrate and provides 21% of global human per capita food calories and 15% of per capita protein. Apart from its nutritional and health benefits, it is also a good natural source of phytochemicals, antioxidants and possess medicinal properties too. But, in a rice panicle spikelet development lacks homogeneity and there is considerable variation in individual grain weight as well as their nutritional value. Moreover, most consumers do not get all the nutrients as well as medicinal phytochemicals present in rice and are deprived of all health benefits as they consume polished white endosperm. Therefore, the focus of this research study is analysis of grain filling stagnancy, explore regulatory ways to enhance the nutritional value of rice grains and alleviating the nutritional loss. **Materials:** In this study rice varieties with varying panicle architecture were grown under open field conditions at Niali village, Cuttack, Odisha. Two varieties (Mahalaxmi and Upahar) were selected for further study because of their contrasting panicle traits. Their grain filling pattern was studied and estimation of soluble sugar and starch (Buysee and Merck, 1993) in the spikelets was carried out. Correlation between their concentration and grain filling was studied. **Results:** Upahar showed lowest panicle weight, low grain number, but filling rate is high compared to high grain number and poor filling trait of Mahalaxmi. Grain filling is slackened because of increased compactness of panicle. High starch concentration and low sugar concentration was revealed in Upahar compared with Mahalaxmi and in the apical spikelets compared with basal ones. **Conclusion:** Future research work particularly on the traditional varieties will provide better understanding about their nutritional quality and yield. Future molecular investigations will help us to know the detrimental effect of poor grain filling on the nutritional value of rice and will give important clues to overcome the issue.

Keywords: Panicle, Spikelets grain, Filling nutritional value.

Abstract ID: 34

ABSTRACT TITLE: NEEM GUM WITH EDIBLE FILM PACKING

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Neem gum is a natural resin obtained from neem trees. It is transparent, amber-colored, tasteless, and dissolves in cold water. Used as a bulking agent and in specialty foods. This research focuses on creating edible film packaging using neem gum. Edible films contain lipids like waxes, fatty acids, and fatty alcohols. Plasticizers such as glycerin are added for flexibility. The film is made using corn flour, neem gum, glycerin, and water. The mixture is dried for 12-24 hours, forming a film that can be peeled and cut. The resulting film can be stored for future use.

Background: Edible films and coatings from proteins (A. Chiralt et. al. 2018). Use of edible films and coatings in cheese preservation (Maria J. Costa et. al. 2018). Characterization of New Biodegradable Edible Films and Coatings. Based on Seeds Gum (Fakhreddin Salehi1 2019) **Materials:** Corn flour, Neem gum, Glycerin, Water. **Methodology:** • Pour the water into a small saucepan and add the corn flour and the neem gum. • Add the glycerin and stir briefly. Place the pan over medium heat, bring it to a boil, lower the heat and simmer the liquid until it's thickened. • Filter it. So, it will smooth the mixture and remove any bubbles. • Pour enough of the mixture into a Teflon pan to coat the base to a depth of 1mm. • Dry it naturally. Drying will take anything from 12 to 24 hours, depending on the ambient temperature and humidity. **Results:** 1- Determined the moisture absorption of the film packet obtained is -13. 8. 2- Determined the thickness as an average of four values is 1.177×10^{-3} . 3- Determined the degradability of the film packet in soil. **Conclusion:** Neem gum, extracted from the Neem tree, offers potential as a sustainable and edible packaging material. It serves as an adhesive and strengthens paper, enhancing food quality, shelf life, and safety when used in edible films and coatings. This natural biopolymer can be used for individual packaging, food coating, and carrying active ingredients. It is biodegradable and eliminates the need for recycling, making it a promising alternative to conventional packaging materials.

Keywords: Edible film, Neem gum, Glycerin, Corn flour, Biodegradable.

Abstract ID: 36

ABSTRACT TITLE: DEVELOPMENT OF LOW-CALORIE MILLET- BASED FROZEN DESSERT

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Background: Researchers (Patel et al., 2015) found that adding malted ragi flour to ice cream increases its iron and fiber content. Chocolate-flavored ragi ice cream stood out as the most nutritious and tasty. Studies are exploring ways to make ice cream healthier by incorporating ingredients like probiotics, herbal extracts, and antioxidants (Kareena Khan et al., 2023). Experiments with sweet potato puree in ice cream (Shinyoung Kim et al., 2020) showed that it enhances the color, flavor, and nutritional value of the dessert. **Materials:** Finger Millet, Pearl Millet, Groundnut Milk, Brown Sugar, Emulsifier, and Ice-cream stabilizer. **Methodology:** Clean and soak selected millet variety. Grind the millet to remove coarse substances. Weigh the millet according to the required amount. Extract milk from the millet (1:3 ratios). Combine finger millet milk, brown sugar, emulsifier, and stabilizer. Blend. Add brown sugar and mix well. Add emulsifier as binding agent. Add stabilizer for texture and small pore formation. Blend the mixture again for airage. Store in an airtight container for 3-4 hours at -4° C. Cool in the freezer for 15 minutes at 12°C. Store in the freezer to achieve desired consistency. **Results:** Fat

Content (Zaks Method): Total Sugar Content (Lane Eynen Method): Titrates with Fehling's solution and methylene blue until a brown precipitate forms. Titratable Acidity Protein Content (Lowry's Method): **Conclusion:** Millet, an affordable and nutrient-dense grain, is a key solution to combat malnutrition and improve health, especially in lower-income populations. It is rich in fiber, calcium, iron, and other essential nutrients, making it a valuable food source for overall well-being and disease prevention. Promoting millet cultivation and consumption can significantly enhance human health and nutritional status.

Keywords: Frozen Dessert, Pearl Millet, Finger Millet, Fat, Sugar, Titrable Acidity, Protein.

Abstract ID: 39

TITLE ABSTRACT: FORMULATION AND QUALITY EVALUATION OF COMPOSITE MILLET FLAKES NUTRI BAR

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Background: Cereal flakes are one of the ready to eat convenient extruded product with expanded, light and crispy texture. Flakes are generally made from a variety of cereals including rice, corn, sorghum and wheat. The present study was carried out with the objective to standardize composite millet flakes based Nutri bar using Barnyard millet (*Echinochloa frumentaceae*), Little millet (*Panicum sumatrense*) and Kodo Millet (*Paspalum scrobiculatum*) Flakes. **Materials:** The selected millets flakes were procured from a local supermarket and trials carried out by blending the millet flakes in various proportions along with Jaggery, Groundnut and Chocolate. Essence was added to improve the flavour. The formulation of the Nutri bar was standardized based on sensory assessment. The standardized Nutri bar was packed in MPE laminated pouches and assessed for various nutritional parameters, moisture sorption studies and microbial quality during the storage period of six months. **Results:** Proximate analysis showed that Millet flakes Nutri bar was a good source of protein and fibre. It contained 3.85% moisture; 11.7% protein; 1.39% ash and 7.27% fibre. Mineral analysis showed 6.46 mg/100 gm Iron, 250.3 mg/100g phosphorus and 127.65 mg/100g Calcium. Microbial analysis showed that Salmonella and E.coli were absent and the product could be safely stored for a period of six months without affecting the microbial quality. The product scored excellent for overall sensory quality in terms of appearance, colour, flavour and taste. **Conclusion:** Apart from value addition to traditional millets, development of such nutri bar could offer variety, convenience, quality, cost efficiency and scope for increasing the nutritive value. Acceptability of the bars showed the commercial viability of product in addition to nutritional significance and acceptability.

Keywords: Nutri bar ERH studies millets

Abstract ID: 56

ABSTRACT TITLE: COVID - 19 AND GENDER IMPLICATION: A CASE STUDY OF BHAGALPUR CORPORATION

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Background: Covid- 19 appeared as viral infection which swiftly changed into pandemic from infecting trillion of people and causing death to millions. In the above perspective covid affected people of Bhagalpur city were subjected to be analyzed on gender basis. **Materials:** The present work was extracted from the comprehensive confirmed covid-19 affected persons list provided by the District Health Society with the permission of the Civil Surgeon. Few cases were identified and isolated from the extensive record for the people of Bhagalpur corporation to be analyzed for any gender bias of covid-19. **Results:** The result showed that out of 284 affected covid positive confirmed persons subjected to study, 167 were male and 117 female respectively. The data were collected from District Health Society Bhagalpur with the help of Civil Surgeon. Male prevalence rate was higher compared to female. It could be more possibility of mobility fore male which exposed them to virus load in outside of home. On the other hand the physiological stability indoor activity & endurance in female might have provided them safety from the onslaught of covid -19. Which is obvious from the present work. Further analysis of data are being compiled to take deeper insight. **Conclusion:** Though the sex ratio of Bhagalpur is in favour of male still they were affected more by the covid pandemic as compared of female it may be because of higher frequency male mobility. The study also revealed that men smoke more, due to which the immunity has been negatively affected and the immunity has also reduced. This has also been found to be one of the reasons why coronaviruses target such people quickly. The study also revealed that during covid, men used to go out and do small household petty work while women did not had as much exposure with the outside as men had, due to which men became more affected of the covid pandemic

Keywords: Covid, Pandemic, Infection etc.

Abstract ID: 61

ABSTRACT TITLE: DEVELOPMENT AND QUALITY EVALUATION OF COMPOSITE MILLET BASED NOODLES

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Background: Noodles are widely consumed throughout the world and their global consumption is second only to bread. The present study focuses on the preparation of minor millet-based noodles that cater to the demand for healthy and gluten-free alternatives. As millet is naturally gluten-free, these noodles are a better choice for those who are gluten-intolerant or have celiac disease. The composite millet noodles were prepared by blending flours of proso millet (*Panicum miliaceum*), kodo millet (*Paspalum scrobiculatum*) and barnyard millet (*Echinochloa frumentaceae*) flours along with natural binders to achieve the desired texture.

Materials: Cleaned minor millets such as proso, kodo and barnyard millets were processed by soaking, steaming, drying and milling to flour. They were blended in equal proportions along with blackgram flour, gluten free maida and other minor ingredients. The flour was conditioned with moisture and extruded through single screw extruder followed by steaming. The standardized composite millet noodles were evaluated for nutritional and sensory acceptability.

Results: The millet noodles were found to be good source of protein (7%), calcium (54.08 mg/100 g), iron (5.2 mg/100 g) and phosphorous (274.97 mg/100 g). The formulated noodles after cooking and seasoning with oil and spices were highly acceptable on a 9-point hedonic scale by semi-trained panellists. **Conclusion:** Minor millet-based gluten-free noodles offer a nutritious, sustainable, and culturally rich alternative to traditional noodles. They can be used in a wide range of recipes, making them an ideal choice for those looking to incorporate more diverse grains into their diet while enjoying familiar dishes. Their health benefits, combined with their ability to cater to modern dietary needs, make them an excellent choice for consumers seeking wholesome, gluten-free options.

Keywords: Composite Millets, Extrusion, Noodles, Quality Evaluation, Sensory Studies

Abstract ID: 103

ABSTRACT TITLE: COMPARATIVE ASSESSMENT OF NUTRITIONAL QUALITY, MINERAL BIOACCESSIBILITY, AND PRODUCT DEVELOPMENT POTENTIAL OF MICROGREENS AND ITS MATURE COUNTERPARTS

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Background: Microgreens are young, tender seedlings harvested 7–21 days after germination from various vegetable and herbaceous plants. This study aimed to assess the morphological properties, standardize drying temperature, analyse nutritional composition and determine the mineral bioaccessibility of microgreens and their mature counterparts. **Materials:** Microgreens of red amaranth, fenugreek, and spinach were grown in trays using cocopeat and a cocopeat-vermicompost mix. Morphological properties were recorded. Microgreens were tray dried at 40°C, 50°C, 60°C and temperature was standardized on the basis of colour retention, polyphenols, flavonoids and vitamin C content. Nutritional analysis was performed to compare protein, ash, and mineral content between microgreens and mature plants. Mineral bioaccessibility was analyzed, and Sambar powder was developed followed by sensory evaluations. **Results:** Microgreens grown in the cocopeat + vermicompost medium exhibited better morphological characteristics and sensory appeal compared to those grown solely in cocopeat. The tray drying at 40°C was effective in retaining colour and maintaining a high vitamin C content in the dried microgreens. Nutritional analysis revealed that microgreens of red amaranth, fenugreek, and spinach had higher protein (3.5g, 5.5g, 3.6g) and ash (2.5g, 3.5g, 2.2g) content compared to their mature counterparts. Mineral bioaccessibility was significantly higher in microgreens compared to mature plants: Red amaranth (iron: 18% vs. 8%; calcium: 33% vs. 23%; magnesium: 28% vs. 13%; zinc: 23% vs. 13%), Spinach (iron: 20% vs. 10%; calcium: 35% vs. 25%; magnesium: 30% vs. 15%; zinc: 25% vs. 15%), and Fenugreek (iron: 17.5% vs. 7.5%; calcium: 32.5% vs. 22.5%; magnesium: 27.5% vs. 12.5%; zinc: 22.5% vs. 12.5%). Value-added product, sambar powder was well-received in sensory evaluations. **Conclusion:** The study demonstrates the superior nutritional quality of microgreens, particularly in protein content, vitamin C content. The bioaccessibility of essential minerals was significantly higher in microgreens, making them a valuable dietary addition. The successful development and high sensory acceptance of microgreen-based product further highlight the potential of microgreens for broader applications in the food industry.

Keywords: Microgreens, Bioaccessibility, Polyphenols, Flavonoids.

Abstract ID: 104

ABSTRACT TITLE: TENDER COCONUT BANANA SAP POMEGRANATE DRINK: AN ANTI UROLITHIC ELIXIR

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Background: Urolithiasis, a renal stone condition has a high global prevalence and recurrence. Surgical methods and oral medication methods are most common ways of prevention which can be complex, less effective, less tolerable, expensive and with no preventive effects in stone recurrence. The high recurrence rate and the financial burden associated with surgery emphasize the need for effective and affordable pharmacological therapies. This study aims to develop a novel therapeutic drink containing banana sap water, tender coconut water, and pomegranate juice with nephroprotective effects. **Materials:** *Musa acuminata*, *cocos nucifera*, *punica granatum* were used to develop 4 different variations with different proportions of these three ingredients. An organoleptic evaluation using a 9 point hedonic scale was carried among 5 aged kidney stone patients. Nutrient analysis of therapeutic drinks was carried out. **Results:** Four different variations were created, V1- BSW-50 ml: PJ-50 ml: TCW-50 ml; V2 – BSW-100 ml: TCW-25 ml: PJ-25 ml; V3- PJ-25 ml: BSW-25 ml: TCW-100 ml; V4- BSW-25 ml: PJ-100 ml: TCW-25 ml. In organoleptic evaluation variation V4 (BSW-25 ml: PJ-100 ml: TCW-25 ml) was most generally accepted by the judging panel on the basis of taste, colour, appearance, flavor, thickness, mouth feel and overall acceptability and V3 (PJ-25 ml: BSW-25 ml: TCW-100 ml) in sweetness. **Conclusion:** The introduction of new therapeutic drink consists of different ingredients viz banana sap water, tender coconut water and pomegranate juice having unique combination of the phytochemicals, the electrolyte contribution, and different phenolic compounds. The citrate and potassium in tender coconut water, flavonoids, polyphenols, high antioxidant capacity of pomegranate, gives a perfect blend to suppress the crystal formation by enhanced diuretic, antioxidant, anti-inflammatory and alkalizing effects. There are several herbal medicines that have not been discovered yet or not popular much. One such medicine is this banana sap water which offers a lot of health benefits which will be a promising strategy for urolithiasis.

Keywords: Tender coconut water, Banana sap water, Pomegranate, Antiurolithic, Therapeutic drink.

Abstract ID: 110

ABSTRACT TITLE: EFFECT OF MALTING ON THE PHYSICOCHEMICAL, FUNCTIONAL, ANTIOXIDANT AND ANTI-NUTRITION ASPECTS OF BIOFORTIFIED FINGER MILLETS(CFMV-1)

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Background: Finger millet is a gluten-free grain rich in nutrients such as calcium and iron. The development of bio-fortified varieties of Finger Millet, which is rich in calcium, iron, and zinc, can prevent

malnutrition, but their anti-nutrients may hit its bio-availability. This study evaluated the physicochemical, functional, antioxidant and anti-nutritional properties of malted biofortified finger millet (CFMV-1). **Materials:** The millet was germinated for 24, 48, and 72 hours, followed by kilning for 8 hours. **Results:** Results indicated that moisture, ash, fibre, protein, total phenolic content, total flavonoid content, and DPPH activity increased after malting. Conversely, fat, carbohydrate, and energy values decreased. Malting also enhanced the solubility index and the water and oil absorption capacities while reducing packed and loose bulk density. Inductively coupled plasma mass spectrometry (ICP-MS) analysis revealed a significant increase in the mineral composition in malted biofortified finger millet. Fourier-Transform Infrared (FTIR) Spectra showed slight shifts in the peaks of the biofortified millet after malting. Furthermore, malting significantly reduced the levels of anti-nutritional factors in biofortified finger millet. **Conclusion:** Hence, malted biofortified Finger millet has optimal nutritional and functional benefits, significantly impacting the nutritional and food processing industries.

Keywords: Malted biofortified finger millet, Physicochemical properties, Antioxidant activity, Anti-nutritional factors, Mineral composition.

Abstract ID: 111

ABSTRACT TITLE: DEVELOPMENT OF FUNCTIONAL PRODUCTS FROM JACKFRUIT FLOUR

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Background: Jackfruit consists of 27% edible seed coat, 15% edible seeds, 20% white pulp and rind, and 10% core. It is rich in fiber (3.6g/100g), which helps prevent constipation and promotes smooth bowel movements. Jackfruit is also high in magnesium (27mg/100g), which strengthens bones and helps prevent osteoporosis. Additionally, it supports anemia prevention and improves skin health.

Materials: Cookies were prepared using various ratios of unripe jackfruit flour and wheat flour. Proximate analysis was conducted on both the raw ingredients and the prepared cookies, assessing moisture, ash, fat, phosphorus, calcium, and magnesium content. The cookies were then subjected to sensory evaluation, assessing appearance, taste, texture, aroma, flavor, and overall acceptability in comparison to a standard cookies. The analysis was carried out using standard AOAC method.

Results: The cookies were evaluated by a panel of 50 members, who assessed their appearance, taste, texture, flavor, and overall acceptability. The results showed that the three variations of the cookies were similar in acceptability to the standard product. This similarity could be attributed to the pleasant aroma of the unripe jackfruit flour. Nutritionally, the cookies made with jackfruit flour had higher calcium and magnesium concentrations than those made with whole wheat flour. The fat(8.55+/_0.148), calcium(32.7mg/100g), magnesium(164.3mg/100g), and phosphorus(0.86mg/100g) content of the variation were high compared to standard. **Conclusion:** In conclusion, the development of cookies

using jackfruit flour presents a promising opportunity to enhance nutritional value while utilizing an underutilized resource. The incorporation of jackfruit flour not only improves the cookies' fiber content but also adds unique flavors and potential health benefits. Consumer acceptance tests indicate a favorable response, suggesting that these cookies could meet market demand for healthier snack options. Overall, this development not only supports sustainability but also offers innovative alternatives for health-conscious consumers.

Keywords: Unripe Jackfruit, flour, wheat flour, product development, cookies

Abstract ID: 114

**ABSTRACT TITLE: DEVELOPMENT OF MICRONUTRIENT FORTIFIED TOMATO BASED ICE
POPSICLES**

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Background: Ice popsicles have gained widespread popularity among diverse age groups due to their vibrant colours, flavours and sensory appeal. Tomatoes can be a potential ingredient for the development of popsicles due to their attractive colour, taste and numerous health benefits attributed to the presence of lycopene. The study aimed at developing tomato-based ice popsicles (TP) fortified with iron and vitamin C as a means to combat iron deficiency anemia, a significant public health concern in India. **Materials:** Ingredients were sourced from local markets. The recipe for tomato-based ice popsicles was standardized. Ascorbic acid and ferrous fumarate were added for fortification. Physicochemical analysis [pH, Total Titratable Acidity (TTA), Total Soluble Solids (TSS), Iron (Ramsay's method), Ascorbic acid (DCIP method), Lycopene content, Total Antioxidant Capacity (TAC) and melting rate), microbial analysis [Total Plate Counts (TPC) and Yeast and Mold Counts] and sensory evaluation of the product were conducted during a shelf-life study of 15 days. **Results:** The standardized product was found to have a pH of 3.36, TTA (0.2g%) and TSS (22°Brix). Each portion (60mL) of the product was found to contain 2.6mg iron, 23.3mg Ascorbic acid and 893.16µg of lycopene. Total Antioxidant Capacity was found to increase with increase in sample volume. The melting rate analysis showed excellent performance, with dripping beginning after five minutes and complete melting occurring at 25 minutes. Total Plate Counts were found to be 1 log cfu/mL. No yeasts and molds were detected in the product. The sensory characteristics of the product were found to be acceptable by the panel members. No significant changes in the physicochemical properties, microbiological quality and sensory characteristics of the product were observed when it was stored at -18°C in LDPE packaging during the shelf-life study of 15 days ($p > 0.05$). **Conclusion:** During the peak tomato season in our country, these innovative and low-cost micronutrients fortified ice popsicles can offer an excellent outlet for utilization of surplus tomato supplies and minimise their wastage.

Keywords: Tomatoes, Lycopene, Ice-Popsicles, Fortification.

Abstract ID: 121

**ABSTRACT TITLE: EFFECT OF SUN-DRYING, CONVECTION DRYING AND FREEZE DRYING
ON BIOACTIVE PROFILE OF UNDER-UTILIZED FICUS CARICA FRUIT NATIVE TO INDIA**

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Background: Ficus carica is an edible fruit with significant health benefits. India, ranking 12th in global fig production, rich in bioactive components like vitamins, minerals, dietary fibers (soluble dietary fibres and insoluble dietary fibres), and phytochemicals such as phytosterols, anthocyanins, flavonoids, polyphenols, coumarins, etc. Despite their nutritional value, figs are often underappreciated compared to other fruits. The key polyphenols in figs include rutin, epicatechin, catechin, and ellagic acid. The utilization of Ficus carica fruit focuses on harnessing the bioactive compounds present within.

Materials: Fig fruit (reddish-purple color) were procured, washed and pulped, The pulp was further dried by three drying methods (sun-drying, hot Air oven drying and freeze-drying), grinded and studied for drying yield and influence on bioactive profile of fruit content. Drying was followed by solvent extraction, dried sample dissolved in ethanol (1:10), orbital shaking for 8 hours followed by centrifugation and filtration. The supernatant was collected, further concentrated by rotary vacuum evaporator. The volume was reduced and further freeze-dried and stored at -2 °C. Total polyphenolic content, Total flavonoid content, anti-oxidant activity and total anthocyanin content were determined.

Results: The results indicated convection oven drying exhibits higher yield (19.86 %) compared to freeze drying (17.18%) and sun-drying (18.87%) due to more moisture retention and increased water activity post-drying. Freeze-dried samples had higher total phenolic content (9.819 mg GAE/100 g DW of extract), higher total flavonoid content (/100 g DW of extract) and antioxidant activity as DPPH inhibition (48.49 IC₅₀ µg/mL), anthocyanin content (8.41 mg of cyn-3-glu/100 g) compared to the other two drying methods, likely because lower temperatures prevent the breakdown of phenolic compounds and reduce oxidative stress. **Conclusion:** Freeze-drying can effectively preserve and extract bioactive compounds from under-utilized fruits like Ficus carica, making them valuable for the nutraceutical industry, targeting several chronic diseases, anti-ageing and maintaining gut health.

Keywords: freeze-drying, phytochemicals, phenolics, anti-oxidants, nutraceuticals

Abstract ID: 128

**ABSTRACT TITLE: EVALUATING THE SENSORY AND NUTRITIONAL COMPOSITION OF
PEANUT INCORPORATED TRADITIONAL INDIAN RECIPES**

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Background: Current Indian diets are predominantly high in carbohydrates, mainly from refined grains, deficient in protein and healthy fat which have been identified as independent risk factors for non-communicable diseases (NCDs) such as obesity and type 2 diabetes. Enhancing carbohydrate-rich meals with nutrient-dense nuts like peanuts could improve their nutritional profile in terms of protein, fat and lower the carbohydrates. This study aims to assess the effect of peanut incorporation on sensory attributes and nutrition composition of a few traditional Indian food preparations. **Materials:** Ten popular Indian recipes— idli, dosa, semolina upma, vermicelli upma, pongal, lemon rice, tamarind rice, tomato rice, vegetable rice, and vegetable sandwich—were prepared with (test foods) and without (control foods) peanuts. Peanuts were added as roasted powder (30g) with skin just before serving, except for idli and dosa (included during preparation). A sensory evaluation was conducted with 30 participants using a 9-point hedonic scale to assess appearance, taste, texture, aroma, and overall acceptability. The Mann-Whitney U test was used to determine significant differences between the test and control foods, with $p < 0.05$ considered statistically significant. Nutritional composition was determined using IFCT 2017. **Results:** Sensory analysis showed that peanut-incorporated idli, lemon rice, vegetable sandwich and semolina upma were significantly preferred for overall acceptability when compared to control foods. Similarly, dosa, vermicelli upma, and tamarind rice also scored higher for taste, aroma, texture and overall acceptability, though no significant change in appearance was noted. Nutritional analysis revealed an increase in protein, fiber, and fat content in peanut-incorporated dishes. Protein content increased by 22.4%-41.1%, with the highest rises seen in vegetable sandwiches and tomato rice. Fat content, mainly from peanuts, also significantly increased, while carbohydrate content decreased by 6.1%-21.7%. **Conclusion:** Incorporating peanuts into traditional foods enhances their nutrient profile by improving protein, fat, and fiber content while reducing carbohydrates without compromising their sensory attributes. This may also help to reduce the glycemic index and load of high

carbohydrate Indian meals. Thus peanut-enriched meals may be a cost-effective approach to improve diet quality that may potentially aid in the prevention and management of NCD's.

Keywords: Peanuts, Sensory evaluation, Nutritional composition, Plant protein, Healthy fats, Carbohydrate-rich meals, Indian diet.

Abstract ID:134

ABSTRACT TITLE: NUTRITIONAL COMPOSITION AND ANTIOXIDANT PROFILE OF PROSO MILLET (PANICUM MILIACEUM): IMPLICATIONS ON HEALTH

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Background: One of the oldest known foods to humans are millets. Obesity and non-communicable diseases have increased in the modern period due to increased intake of fast food and processed foods. People are now conscious about their health these days. One of the most prominent solutions available is millets. Millets exhibit nutraceutical properties as they provide dietary fiber, proteins, energy, minerals, vitamins, and antioxidants that are vital for human health. Research on the lesser explored minor millets is essential. Panicum miliaceum, often known as Proso millet, is one such under researched millet.

Materials: Proso millet was procured from a local store in Vadodara, Gujarat. The entire sample was mixed properly and homogenized and the representative sample was subjected to analysis for nutritional value and antioxidant content of Proso millet using standard techniques. **Results:** The results indicated the levels of protein, moisture, fat, ash, carbohydrate, crude fiber, energy and Vitamin C of Proso millet (g/100g) were found to be 13.726g, 12.198g, 3.515g, 1.320g, 69.327g, 0.567g, 367 kcal and 16.6mg respectively. The calcium, sodium, potassium, phosphorous and magnesium per 100g of Proso millet were found to be 58.2mg, 5.32 mg, 178.3 mg, 332.8mg and 164.8mg respectively. The free radical scavenging activity of the proso millet was found to be 0.215 μ M of ferric equivalents per gram of the sample. The analysis of proso millet revealed a total phenol content of 335.36 mg per 100g.

Conclusion: This study underscores the nutritional and functional benefits of Proso millet, advocating for its inclusion in diets to enhance health outcomes and support sustainable food systems. Furthermore, the phenolic content of proso millet was quantified, revealing a diverse range of phenolic compounds that contribute to its antioxidant potential which reduce inflammation which is an underlying factor in non-communicable diseases. Proso has a notable capacity to neutralize free radicals, which can be beneficial for reducing oxidative stress and promoting overall health.

Keywords: Proso millet, Antioxidant, Nutraceutical, Phenol, Non-communicable diseases.

Abstract ID: 135

**ABSTRACT TITLE: DOCUMENTATION OF TRADITIONAL FOOD RECIPES OF KARNATAKA
AND THEIR VALIDATION WITH AYURVEDA AND NUTRITIONAL PERSPECTIVE**

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Background: India has a large cache of traditional foods, and to help preserve and study them, we need standardized methods and community-friendly ways to share them. The objective of our study is to develop a methodology to gather traditional food recipes from communities in Karnataka, and evaluate them from nutritional and Ayurvedic perspectives. 100 recipes will be shared through an e-book and YouTube videos. **Materials:** A total of 22 locations representing diverse agro-climatic geographical zones across Karnataka were identified. Data on agriculture practices, festivals, community types and consumed foods were collected from literature and digital sources. Respondents from each location were contacted via NGO networks, TDU website, and personal contacts. Phone interviews helped to collect 80-150 traditional recipes per location, from which 5-6 unique recipes were shortlisted for video documentation based on nutritional content and Ayurvedic principles. The selected recipes were filmed in homes of consenting respondents. **Results:** To date, from over 1,500 traditional recipes, 101 have been documented in video format from 18 locations. Nutritional analysis of 44 recipes from 7 locations has been completed. Distinct regional culinary patterns are observed: North Karnataka recipes contain cereals, nuts and oilseeds, while coastal regions have fruits and dairy. In central Karnataka, meat is used along with cereals, pulses. The method of preparation also varies: North Karnataka recipes have garlic and hot spices for seasoning to help with preservation, while coastal and central areas rely on spices with fresh coconut and coconut oil for seasoning. Foods reflect the Ayurvedic principle of desha: promoting the consumption of local, seasonal foods to regulate body temperature and metabolism. **Conclusion:** Geography, season and cuisines have evolved with one another and despite diversity, are capable of providing nutrition that is rich in energy, protein and essential nutrients. This study also suggests a need to expand the ingredient list in the “Indian Food Composition Tables”. Sharing of nutritional and ayurvedic perspective, can empower communities to make dietary choices that are healthy but also honor local culinary traditions.

Keywords: Traditional Foods, Karnataka, Nutritional analysis, Ayurvedic principles, Recipe documentation.

Abstract ID: 137

**ABSTRACT TITLE: DEVELOPMENT AND ACCEPTABILITY STUDY OF MILLET BASED BAR
FOR CHILDREN**

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Background: Middle childhood (5 years to 9 years of age) bridges the gap between first and second window of opportunity and lays foundation for adult life. Nutrition during this period is critical to maintain adequate growth trajectories till it reaches maturity and to support healthy transition to productive adulthood by correcting inadequacies and imbalances. Inadequate nutrition during this period will affect the physical and neurocognitive growth trajectories which will inhibit the individual's full potential. School Supplementary nutrition programme is one of the best ways to fulfil nutritional requirements. The present study was aim to develop low-cost nutrient dense millet based bars with the use of locally available ingredients to provide adequate nutrition to school children. **Materials:** The millet-based bar was developed using pearl millet, jowar, Green Gram Whole, Niger seeds, Skim Milk Powder, Jaggery and ghee. The weight of the one bar was 40 g. Nutrient composition of the bar was estimated using standard procedures of AOAC. Sensory evaluation of the bar was carried out by a semi- trained panellist and accepted by school children (1st -7th Std) with the use of 9-point hedonic scale. Acceptability study was conducted at Tribal School in Thane District with school permission. Mean and standard deviation was calculated using SPSS version 20. **Results:** Nutrient composition of 40g bar indicated that energy content was 142 ± 0.07 kcal. Protein content 4.0 ± 0.21 g while fat content was 4.14 ± 0.07 g. The micronutrient content, namely iron was 1.5 ± 0.01 mg and calcium content was 53.08 ± 0.14 mg. Scores for Taste and overall acceptability were 8.35 ± 0.67 , 8.2 ± 0.56 respectively. It indicated that taste and overall acceptability of the mix were liked very much by panellist. The scores for colour, aroma and taste were 8. It indicated that taste and overall acceptability of the mix were "liked very much" by children. **Conclusion:** The Millet based bar develop in present study can be good option for snack to school children. The results of study indicated it liked by children and providing balance amount of nutrients to support growth. Also, the bar can be taken up by SHG's /MSME to manufacture at community level.

Keywords: Millet Bar , Middle Childhood, Hedonic Scale, Niger Seed.

Abstract ID: 142

**ABSTRACT TITLE: DEVELOPMENT, QUALITY EVALUATION AND STORAGE STUDIES OF
CHOCOLATES FILLED WITH PLANT BASED MILK (PBMS)**

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Background: In the recent years, plant-based milk (PBM) is gaining popularity among consumers as an alternative to traditional dairy milk due to its perceived health benefits and sustainability. This trend is driven by several factors, including health concerns, animal welfare, environmental awareness, and taste preferences which has led to an increased interest in developing new and innovative products that cater to this market. According to market research, a new product was developed that combines the indulgence of dark chocolate with the health benefits, availability and sustainability of oat milk along with desiccated coconut that added a chewy and tropical note to the product which is likely to appeal to a wide range of consumers who are seeking delicious, nutritious and cost-effective plant- options that align with their health and environmental concerns. **Materials:** Different methods were used for preparation, extraction and concentration of oat milk followed by incorporation of this oat milk along with desiccated coconut in the filling of the filled chocolates. Most acceptable treatment was then used for bulk preparation. Quality analysis (such as physical, chemical, microbial and sensory) were conducted on the bulk prepared product during the storage period of 30 days. **Results:** The proximate constituents of the prepared filled chocolates after analysis were found out to have (g%) moisture -12.62%, fat- 14.46%, ash- 4.18%, Total Sugar- 3.53%, acidity- 0.13%, protein- 2.67%, carbohydrate- 14.69%, and fibre - 3.15%. Additionally, they provide 52.3 kcal of energy per serving. After the microbial analysis, the results indicated that the filled chocolates had a low microbial load and remained microbiologically safe for up to 30 days at the refrigeration temperature (4°C). **Conclusion:** Thus, the filled chocolates remained in a good condition for a period of 30 days and also reduction in cost of the product confirms the feasibility of manufacturing at larger scale. Besides it, filled chocolates made with oat milk showcases essence of veganism, paired with ethical choices. It embraces joy of guilt-free indulgence, where sweetness and sustainability comes in perfect harmony.

Keywords:

Filled Chocolates, Plant Based Milk Products, Guilt-free desserts.

Abstract ID: 143

ABSTRACT TITLE: EFFECT OF SILKWORM PUPAE OIL ON THE DEVELOPMENT OF GLYCATION-INDUCED PROTEIN-AGES ADDUCTS

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Background: Silkworm pupae oil (SWPO), extracted from the pupae of *Bombyx mori*, is rich in unsaturated fatty acids such as linoleic and oleic acids, along with bioactive compounds like tocopherols

and phytosterols. Known for its antioxidant and anti-inflammatory properties, SWPO has gained interest for its potential therapeutic applications. Protein glycation, a non-enzymatic reaction leading to the formation of advanced glycation end products (AGEs), plays a crucial role in the development of diseases such as diabetes, atherosclerosis, and neurodegenerative disorders. This study hypothesizes that SWPO, due to its metal-chelating and antioxidant effects, could inhibit glycation-induced AGE formation and help prevent these diseases. **Materials:** The antiglycation activity of SWPO was assessed using in-vitro methods. Metal chelation, a key factor in glycation inhibition, was measured. Glycation was induced using various amine sources (hemoglobin, bovine serum albumin, and G.K. peptide) and sugar sources (gluconolactone, methylglyoxal, and ribose). SWPO's ability to suppress AGE formation was evaluated at different stages of glycation (early, middle, and late). Aminoguanidine (AG), a well-known antiglycation agent, was used as a reference. **Results:** SWPO demonstrated significant inhibition of AGE formation at all stages of glycation. It showed metal-chelating activity, contributing to its antiglycation effect. While SWPO was effective at every step, its inhibitory potential was most pronounced at the late stage of protein glycation compared to the early and middle stages. SWPO's efficacy was comparable to that of aminoguanidine, especially in the final stages of AGE formation. **Conclusion:** SWPO shows potential as an effective inhibitor of glycation-induced protein modifications, particularly in the late stages of AGE formation. Its metal-chelating and antioxidant properties make it a promising candidate for preventing AGE-related diseases, warranting further investigation for clinical applications.

Keywords: Diabetic, Antiglycation, Pupa, Silk worm, Oil

Abstract ID: 144

ABSTRACT TITLE: FROM GOAT TO GOURMET: DEVELOPMENT & QUALITY STANDARDIZATION OF(RTE) GOAT MILK SHRIKHAND

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Background: Shrikhand is a semi-soft, sweetish-sour Indian dairy delicacy traditionally made from whole milk. It is a renowned fermented milk product for its unique flavor, nutritional profile, and potential health benefits. This popular fermented milk product, Shrikhand is rich in milk proteins and phospholipids, produced through lactic acid fermentation by bacterial species such as Lactobacillus, and Streptococcus. **Materials:** This study developed goat milk Shrikhand, capitalizing on its superior digestibility and nutritional beneficiaries. The Chakka base was prepared by straining goat milk yogurt and incorporating a probiotic culture to enhance its functional properties. It is nutrient-dense, just like fermented milk products. It is popular because of its distinct flavor, taste, edible qualities, & as well as possible therapeutic benefits. According to the Food Safety & Standards Authority of India

(FSSAI), Chakka is a concentrated fermented milk product that is made by partially removing whey from plain yogurt or Dahi. In the present study, the Chakka was prepared & probiotic / culture source was added then it was subjected to various treatments with variations in the composition of different flavors & other ingredients & filled in polypropylene cups & stored under refrigerated conditions & demonstrating its potential for commercialization as an RTE product. **Results:** All treatment samples underwent sensory evaluation by a panel of semi-trained and untrained members using a 5-point hedonic scale. Sensory, physicochemical, and microbial quality parameters were monitored at 7-day intervals over a 30-day storage period. This evaluation focused on attributes - taste, texture, sweetness, and overall acceptability while also assessing pH, acidity, and microbial viability to ensure the product. The results indicated that treatment T2-A, which included date paste, cardamom powder, and jaggery powder, was the most preferred formulation, exhibiting superior sensory attributes and maintaining physical, chemical, and microbial stability. It demonstrated promising acceptability, with stable sensory qualities over the storage period. **Conclusion:** This study highlights the development of a healthier version of goat milk Shrikhand that retains traditional flavors. This product's development and quality standardization underscores the versatility of goat milk in gourmet applications.

Keywords: Shrikhand Goat Milk, Beneficiaries for Therapeutic, Probiotic

Abstract ID: 146

**ABSTRACT TITLE: INNOVATIVE SATTU DRINK CUBES: DEVELOPMENT AND QUALITY
EVALUATION OF CONVENIENT NUTRITIOUS BEVERAGE**

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Background: This study focuses on the development, potential, and implications of Sattu-formulated drink cubes as a convenient and nutritious food option. Sattu, a traditional Indian flour made from roasted chickpeas, is renowned for its high protein, fibre, and mineral content. However, incorporating Sattu into the diet can be cumbersome and time-consuming. In response to this challenge, Sattu-formulated drink cubes offer a convenient solution, providing time-saving and easy way to harness Sattu's nutritional power. Through a comprehensive review of the literature, this study examines the historical context of Sattu, its nutritional composition, consumer trends in the convenience foods market, and the product development efforts focused on formulating Sattu into drink cubes. Additionally, the initiative aims to evaluate consumer acceptance, health implications, sustainability considerations, and the regulatory landscape associated with Sattu-formulated drink cubes. **Materials:** By synthesizing existing knowledge and identifying areas for further research, this study sheds light on the transformative potential of Sattu-formulated drink cubes in revolutionizing convenience and nutrition. The beverage industry is witnessing a growing demand for convenient and innovative options that offer

nutrition and ease of consumption. To meet this demand, the study focuses on novel product development: Sattu Beverage Dissolving Cubes. These cubes are formulated using a blend of high-quality ingredients including roasted Sattu flour, dry mango powder, mint powder, cumin powder, salt, guar gum, and cornstarch and for optimal binding, guar gum, and cornstarch are used in a ratio of 1:1. This study focuses on evaluating the feasibility and quality of Sattu Beverage Dissolved Cubes over a 45-day shelf life period. **Results:** Various chemical parameters including moisture content, salt concentration, and acidity are monitored throughout the storage period to ensure product stability and safety. Results indicate that the Sattu Beverage Dissolved Cubes maintain acceptable chemical parameters throughout the 45-day study period, validating their suitability for commercial production and consumption. **Conclusion:** This innovative product offers a convenient and nutritious beverage option, catering to the evolving needs of consumers seeking both health-conscious and convenient alternatives in the beverage market.

Keywords: Sattu Drink, Nutritious Beverage, Health Drink Cubes

Abstract ID: 157

**ABSTRACT TITLE: EVALUATION OF CONSUMER PERCEPTION, SENSORY ACCEPTANCE
AND NUTRITIONAL PROFILE OF MICROGREENS: A PROMISING ADDITION TO DIET**

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Background: Microgreens have gained popularity because of their potent flavors and nutritional quality, but limited research is available on their sensory attributes and nutritional properties. These immature-plants are harvested after the development of cotyledon leaves. The study evaluated consumer perception, sensory acceptance, and analysed the nutritional profiles of five microgreen varieties. **Materials:** A survey was conducted using online-platform to study the perception and familiarity regarding microgreens was answered by 610 individuals aged 20-35 years, out of which only 400 were familiar with microgreens and hence answered further questions on their understanding of microgreens. Consumer acceptance of the five varieties of microgreens i.e., radish (white, purple, pink), beetroot, and carrot was assessed by conducting a sensory evaluation using consumer-panel (n=400) by employing 9-point hedonic scale. Additionally, twelve sensory attributes were scored by a semi-trained panel of 20 members. Nutritional composition of the same varieties was analysed on fresh weight basis. ANOVA was used to test the hypothesis that there is no significant difference among the mean values of nutrients across five varieties. **Results:** A positive attitude was observed towards microgreens. Majority expressed strong agreement that microgreens positively impact personal health (64.7%), promote gut-health (35.5%), and are safe for consumption (36.7%). The sensory evaluation of microgreens by consumer panel also showed likeability towards microgreens, beetroot microgreens stood out as the most liked variety with a mean score of 6.30 ± 1.68 , followed closely by carrot (6.28 ± 1.97). Intensity of bitterness, astringency, grassy, heat and sweetness showed a significant difference among all the five varieties. Nutritional composition of microgreens also differed significantly among the five varieties. Moisture content was highest for white radish (93.43 ± 0.45 mg/100g), carrot

had highest ash (1.39 ± 0.005 mg/100g) and crude fiber content (5.71 ± 1.27 mg/100g), while carrot had highest ascorbic acid content and DPPH radical-scavenging activity. **Conclusion:** The tiny, tasty microgreens are rich in nutrients and antioxidants. The sensory properties are compromised in some varieties due to bitterness and tanginess but their overall perception as health-promoting food is positive among lay people.

Keywords: Microgreen, Perception, Sensory evaluation, Consumer Acceptance, Nutritional composition

Abstract ID: 167

ABSTRACT TITLE: DEMOGRAPHIC CHARACTERISTICS AND EMOTIONAL WELLBEING CORRELATES AMONG WORKING AND NON- WORKING WOMEN RESIDING FROM THE REGIONS OF KARNATAKA &TAMIL NADU

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Background: Women plays a major role in the society as a working and non-working woman. The connection between health and diet has a significant impact on their nutritional status, decision-making, family responsibility, psychological well-being and quality of life. **Materials:** A total of 95 working women and 95 Non working women aged between 21 to 40 years were selected using convenient random sampling from the regions of Karnataka and Tamil Nadu state. Structured questionnaires, physical examinations were used to collect data on anthropometric measurements, medical history, dietary practices, lifestyle factors, and demographics details. Data elicitation and documentation were done by adhering to the ethical guidelines and considerations. **Results:** Demographic findings reveals 87.4% non-working women and 50.5% working women were married. 77.8% non working women and 51.6% working women were from nuclear families. 81% working women were overweight and obese than their counterpart 59%. 86.3% non-working women has higher propotion of waist hip ratio. Incidence of diabetes (17.9%), cholesterol (45.3%), thyroid (42.1%), PCOS (21%) were higher in working women than non-working women (12.6%, 12.6%, 42.1%, 7%) respectively. 45.3% working women exhibited work related stress, while 46.3% non-working women exhibited family related stress. 53.7% working women experienced inadequate sleep compared to their counter parts i.e 41.1% non working women. 44 % working women had frequency of skipping meals and eating outside than non working women i.e 25% respectively. **Conclusion:** Evidently there is a need to address on health challenge and untailored lifestyle among women. Further customized Dietary and Lifestyle approach are vital in achieving holistic reproductive health

Keywords: Working & Non Working women, Demography, Nutritional status, Dietary practices, Stress.

Abstract ID: 171

ABSTRACT TITLE: FORMULATION AND EVALUATION OF GLUTEN-FREE COOKIES USING PURPLE RICE “LABANYA”: A NUTRITIONAL AND FUNCTIONAL PERSPECTIVE

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Background: Cookies are ready-to-eat everyday snacks globally, nevertheless the presence of gluten found in the majority of wheat-derived cookies causes digestive issues for individuals posing gluten sensitivity. The present investigation delved into the prospective utilization of North East India's pigmented purple rice landrace, Labanya, as an alternative cereal grain for developing whole grain gluten-free cookies with enhanced nutritional composition. **Materials:** The study glanced at the comparison between the cookies formulated from 100% whole grain purple rice flour and refined wheat flour in terms of the physico-chemical, proximate, functional, textural, microbial and sensorial qualities.

Results: The substitution of RWF with WGPRF had an impact on the proximate composition and physico-chemical properties. The cookies developed from WGPRF were superior to the RWF cookies in terms of functional and textural attributes resulting in higher organoleptic evaluation scores. The supplementary nutritional advantages of WGPRF-derived cookies are primarily likely due to the higher concentrations of bioactive compounds such as total phenols, flavonoids and antioxidant activity derived from DPPH in Labanya rice. **Conclusion:** This study demonstrates that whole grain rice flour from Labanya could potentially be a suitable substitute to RWF to formulate gluten-free cookies with enhanced nutritive benefits.

Keywords: Purple Rice, Labanya, Gluten Free, Bioactive Compounds, Sensory evaluation

Abstract ID: 178

ABSTRACT TITLE: NEUROPROTECTIVE EFFECT OF SAFFRON (CROCUS SATIVUS) EXTRACT FOR CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD) SYMPTOMS

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Background: Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by inattention, hyperactivity, and impulsivity. Methylphenidate is commonly prescribed for ADHD but may cause side effects. Saffron (*Crocus sativus*) extract has been suggested as a natural alternative due to its neuroprotective, antioxidant, and sleep-enhancing properties. This study aimed to assess the efficacy and safety of saffron extract in managing ADHD symptoms in children compared to methylphenidate. **Materials:** A non-randomized, pre-post intervention study was conducted in Chennai, India, with 64 children (42 boys, 22 girls) aged 4-12 diagnosed with ADHD. Group 1 received psychoeducation and methylphenidate (up to 1 mg/kg per day), while Group 2 received

psychoeducation and saffron extract (30 mg/day) for six months. ADHD symptoms were assessed using the ICD-11 checklist and Conners' Parent Rating Scale, while sleep quality was measured using the Sleep Disturbance Scale for Children. Statistical analyses included Mann-Whitney tests and two-way ANOVA were conducted to evaluate pre-post treatment changes. **Results:** Saffron extract demonstrated significant improvement in ADHD symptoms, particularly hyperactivity and inattention, with similar efficacy to methylphenidate. However, saffron showed greater benefits in improving sleep quality, reducing sleep onset latency, and enhancing sleep duration. Both groups reported improved overall symptom management, but saffron was better tolerated with fewer side effects compared to methylphenidate. **Conclusion:** Saffron extract appears to be a safer and equally effective alternative to methylphenidate for treating ADHD symptoms in children. In addition to managing ADHD symptoms, saffron also improved sleep quality. These findings suggest saffron could offer a natural, well-tolerated treatment option for ADHD, warranting further research and clinical application.

Keywords: ADHD; saffron; ICD -11, Children, symptoms

Abstract ID: 179

ABSTRACT TITLE: EFFECT OF GROWING MEDIA ON GERMINATION, GROWTH, YIELD AND NUTRIENT QUALITY OF MICROGREENS

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Background: Microgreens are newly emerging crop that can be sustainably produced in almost any locale. Microgreens are gaining interest for claimed high nutraceutical properties, but data on their chemical composition are so far limited. This study aimed to provide an insight into the impact of different growing mediums on germination rate, growth and total edible biomass yield along with nutritional parameters of radish, beetroot and fenugreek microgreens. **Materials:** Three different soilless mediums were prepared using different ratio of growth medium including cocopeat (standard), cocopeat, vermiculite, perlite in 3:1:1 (growing media1) and cocopeat, vermiculite, perlite in 3:2:1 (growing media2). Seeds of three microgreens (fenugreek, beetroot and radish) were sown in the green house of Indian Agriculture Research Institute, New Delhi. Similar environmental conditions (seed quality, temperature, water, pH and humidity) were maintained to observe the effect of different treatments on germination, growth, yield and quality of microgreens. To observe the impact of different treatments on germination rate, growth, yield and nutrient quality, the days of germination, emergence of first true leaf, fresh microgreens weight, leaf area, diameter, perimeter, density, perimeter ratio and proximate analysis (AOAC) were observed and compared with the microgreens grown using standard medium. **Results:** One to two days reduction in days to germination, two to three days early emergence of first true leaves with highest leaf area has been observed in the microgreens grown using growing media1. Highest edible biomass of beetroot, fenugreek and radish were found in the microgreens grown in growing media1. High concentrations of protein, fibre, ash, moisture were present in the microgreens grown using growing media1 along with lowest percentage of fat and carbohydrate concentration were

present in the same microgreens. Conclusion: Growing media¹, which was the mixture of cocopeat, vermiculite, perlite at 3:1:1 was the most suitable growing medium for the soilless practice to grow nutrient dense microgreens at household level and commercial level in both rural and urban locale.

Keywords: Microgreens, Growing medium, Soilless

Abstract ID: 183

ABSTRACT TITLE: CANNABIS SATIVA: EVALUATION OF PHYSICAL PROPERTIES OF SEEDS AND EFFECTS OF PROCESSING ON NUTRITIONAL AND FUNCTIONAL PROPERTIES

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Background: In recent years, consumers have increasingly incorporated healthy, locally available foods into their diets in the desire for better health. Oilseeds are rich in nutrients and have gained prominence due to their health benefits. Hemp seeds are nutritionally dense, offering protein, fiber, magnesium, potassium, and iron. Hemp seeds are consumed in various forms, including chutneys, oils, and other products, adding both flavor and health benefits to diets. The study evaluated the physical and functional properties of hemp seeds and the nutritional profile of three variants of hemp seeds obtained by different processing methods. **Materials:** Hemp seeds were procured from local markets of cities in Uttarakhand. The seeds were analyzed for physical properties i.e., moisture content, 100 seed mass, volume of 100 seeds, length, width, thickness, density, geometric mean diameter, sphericity, surface area, arithmetic mean diameter, square mean diameter, bulk density, true density, and porosity. Processing of seeds was done by roasting and steaming techniques. All three seed variants (unprocessed, roasted and steamed) were ground, homogenized and stored in an airtight container for further analysis of the functional properties (water absorption capacity, oil absorption capacity, swelling index, bulk density) and nutrient composition. The means of nutritional quality and functional properties of variants were compared using analysis of variance (ANOVA). **Results:** The hemp seeds had a moisture content of $0.8 \pm 0.1\%$. Whereas, length, width, thickness, and sphericity were reported as 4.04 ± 0.03 mm, 3.33 ± 0.03 mm, 2.70 ± 0.02 mm, and 1.02 ± 0.48 . The functional properties of the flour variants found to be altered after processing several properties differed significantly. Unprocessed hemp seed flour had 1.03 ± 0.15 WAC, 1.46 ± 0.03 OAC, and 4.23 ± 0.25 ml/g swelling index. Nutritional analysis showed that hemp seed contains 33.98 ± 1.37 mg/100g crude protein and 31.24 ± 3.69 mg/100g crude fat. There was a significant difference observed in the nutritional and functional properties of variants. **Conclusion:** The study highlights hemp seeds' nutritional richness and functional properties. Hemp seeds are a valuable source of protein and fat, offering potential health benefits when incorporated into various diets.

Keywords: Hemp seeds, Roasting, Steaming, Physical-properties, Oilseeds.

Abstract ID: 186

ABSTRACT TITLE: STANDARDIZATION & COMPREHENSIVE ANALYSIS OF A SORGHUM-BASED RECIPE

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Background: With increasing demand for nutrient-rich snacks, sorghum offers a sustainable alternative to conventional grains. This study explores the development of a sorghum-based snack, Bakharwadi, aimed at enhancing the nutritious options for all age-groups to combat micronutrient deficiencies. **Materials:** The study involved the formulation of three variations of sorghum-based Bakharwadi, adjusting the proportions of sorghum flour, other ingredients to optimize flavor and texture. A sensory evaluation was conducted with trained and semi-trained panel using a 9-point hedonic scale. Following this, the selected variant underwent a detailed nutritional analysis further confirmed by biochemical analysis. Shelf-life testing was conducted to evaluate stability under ambient conditions. Additionally, a comparison of the nutrient content of the optimized sorghum Bakharwadi was made with that of commercially available packaged product to highlight potential nutritional advantages. **Results:** The organoleptic evaluation indicated that Sample A (50% jowar, 50% maida) was more acceptable than Sample B (50% jowar, 50% wheat flour) and Sample C (50% jowar, 25% maida, 25% wheat flour) across all sensory attributes. Nutritional analysis of the acceptable recipe revealed an energy content of 693.3 kcal, with 16.68 grams of protein, 55 grams of fat, and 43.7 grams of carbohydrates. Additionally, it provided significant amounts of calcium (84.8 mg), phosphorus (143.3 mg), iron (3.5 mg), and fiber (4.82 grams). When compared to market alternatives, the jowar Bakharwadi was found to be a healthier option, being lower in fat and calories while containing beneficial levels of fiber, iron, and calcium. Shelf-life analysis indicated that the Bakharwadi remained stable for 60 days at 20-25°C, although it showed signs of spoilage, such as the presence of green mold and a pungent aroma after this period. **Conclusion:** This study successfully developed, standardized, and evaluated a nutrient dense sorghum-based snack, Bakharwadi, highlighting the nutritional benefits of using sorghum as an alternative to conventional grains. The findings support the potential of jowar Bakharwadi as a healthy, sustainable snack option for consumers, particularly those seeking gluten-free alternatives, while underscoring the importance of further research on preservation techniques to enhance its shelf life.

Keywords: Sorghum Bakharwadi, Gluten-free snack, Nutritional evaluation, Sensory analysis, Shelf life, Sustainable nutrition

Abstract ID: 188

ABSTRACT TITLE: VALUE-ADDED FUNCTIONAL FOOD TRENDS: PURSLANE BASED COOKIES FORMULATION USING LYOPHILIZED TECHNIQUE

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Background: Today foods are not only intended to satisfy hunger and provide necessary nutrients for humans but also to prevent nutrition related diseases and improve physical and mental well-being of the consumers. In this regard, functional foods play an outstanding role. Purslane is globally used both a vegetable and as an herb for medical and therapeutic purposes. **Materials:** By using Lyophilization method (freeze drying), powder extracts from the purslane plant was prepared and kept for freeze drying

at -20°C for 22 hours. Formulation study was carried out with substituting 2, 4, 6gms of Purslane powder to the cereal portion of the cookies. Nutritional composition, phytochemical content, sensory characteristics were analysed using the standard operating procedures. **Results:** Sensory profile of the purslane based Cookies were significantly accepted by the panel member using hedonic scale. Purslane based cookies showed significant proportion of protein, fatty acids and minerals. Formulation had significant amount of antioxidant, total phenols and total flavonoids and with potential health benefits and nutritional characteristics. Notably the cookies proves nutritional properties, anti-diabetic activity, physicochemical characteristics and organoleptic properties. **Conclusion:** The study successfully demonstrated the potential of incorporating Lyophilized Purslane powder in cookie formulation to enhance its nutritional profile. Purslane cookies have proven to be a functional food that not only meets dietary needs but also promotes health, making it a valuable addition to nutritionally enriched food products.

Keywords: Purslane, Lyophilization, Cookies, Physicochemical property, Antioxidants

Abstract ID: 189

DEVELOPMENT OF VALUE- ADDED BAKED FOODS INCORPORATED WITH MILLETS AND RED RICE

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Background: Millets are a form of nutri-cereal that is highly nutritious. Millets and red rice are high in protein, dietary fibre, and micronutrients. Millets are good sources of phytochemicals with nutraceutical properties, which could be beneficial for subjects with diabetes, cardiovascular disease, hypertension, dyslipidemia & celiac disease, etc. **Materials:** In the present study, baked products (cookies-C and muffins-M) incorporated by millets and red rice were prepared in various ratios (V1-20:60:20, V2-60:20:20, C3-40:40:20) and with above variations 3 cookies (CV1, CV2, CV3) and 3 muffins (MV1, MV2, MV3). The proximate analysis (energy, carbohydrate, protein, fat and dietary fibre) and functional properties- water absorption capacity (WAC), oil absorption capacity(OAC), bulk density(BD), and foam capacity(FC)) of the raw formulation and baked products was conducted. The baked products were subjected to sensory evaluation for appearance, color, taste, texture, flavor, and overall acceptability compared to standard products. **Results:** The product developed by Millets incorporating cookies and

muffins is well accepted. The results revealed that in the proximate analysis of cookies CV3 was high in carbohydrates- 72.9g/100, protein-12.6g/100, CV2 high in fat-17.5g/100, fibre-6.2g/100 was found to be high in these variations, while in muffins, MV2 high in protein-6.1g/100, fibre- 4.2g/100, MV1 high in fat-52.1, MV3 high in CHO-52.1g/100 were found to be high in these variations. When compared to the standard, the proximate analysis in developed products was high in variations. In functional properties of the cookies CV1 high in WAC-200ml/100, OAC-190ml/100, CV2 high in FC-45.2%/, CV3 high in BD-45.2g/1001 was high in these variations and muffins MV2 high in WAC-160ml/100, FC-45.2%/100 MV1 high in OAC-160ml/100, BD-0.93g/1001 were high in these variations compared to standard. More products can be developed by utilizing the millet keeping its health benefits in view. **Conclusion:** Millet and red rice, rich sources of antioxidants, and nutrients and other minerals will be advantageous for people with diabetes, obesity. Also improves skin health, Aids in Digestion, boosts immunity and helps lower the risk of heart diseases. The cookies and muffins have high protein, energy, fat, carbohydrates, and fiber indicating the need for more product development

Keywords: Millets, Phytochemicals, Nutraceuticals, Bio-active compounds.

Abstract ID: 190

**ABSTRACT TITLE: DEVELOPMENT AND EVALUATION OF READY TO COOK
COMPLEMENTARY MIXES FOR CHILDREN AGED 6-12 MONTHS**

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Background: Inappropriate complementary feeding practices are a major cause of malnutrition in young children in developing countries. Complementary foods are essential as they help bridge the gap between breast milk and the increasing dietary demands required for the child's proper growth and development. **Materials:** Locally available foods were used to develop five Ready-to-Cook Complementary Mixes (RTCM). The nutritional composition of RTCMs was compared against the 2020 Recommended Dietary Allowances (RDA), and their compliance with the Minimum Dietary Diversity criteria was also evaluated. The nutritional composition, adequacy, dietary diversity, and shelf life of the recipes were assessed. Organoleptic examination was performed by forty semi-trained panelists using a seven-point hedonic scale and a ten-point composite rating scale. **Results:** The RTCMs were found to meet the energy, protein, and fat requirements for the 6–9-month age group. The mean percentage of fiber requirements met was over 60%. RTCCMs provided mean energy provided by RTCCMs was 380 ± 4.97 kcal energy, 85.138 ± 7.31 g carbohydrates, 7 ± 1.12 g protein, 2.9 ± 0.73 g fat, 9.3 ± 1.58 g dietary fibre, 134.6 ± 8.44 mg calcium, 4.2 ± 0.23 g iron, $5.51\% \pm 0.01$ moisture and $2.41\% \pm 0.00$ Ash. On conducting the sensory evaluation, overall acceptability, RTCCM 2,3 and 5 were rated the highest. **Conclusion:** These mixes successfully met the Minimum Dietary Diversity and nutrient requirements for children aged 6-9 months and thus, can be used effectively for improving the diet quality of complementary feeds.

Keywords: Complementary feeding, Complementary Mixes , Developing Ready to Cook Complementary Mixed.

Abstract ID: 191

ABSTRACT TITLE: MONK FRUIT- MODIFIED TRADITIONAL SWEETS: A HEALTHY SOLUTION FOR SUGAR CRAVINGS

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Background: Monk fruit also known as *Siraitia grosvenorii* has emerged as a promising natural sweetener for individuals seeking to satisfy their sugar cravings without consuming sugar. This research explores the development of monk fruit- modified traditional sweets and evaluates their taste and sensory appeal compared to standard sugar-based recipes. Sensory evaluations conducted by trained panel members revealed that the monk fruit-based recipes provided equal sweetness and satisfaction, offering a healthier alternative without sacrificing taste. Many individuals face the challenge of managing their sugar cravings due to health concerns, leading to the need for innovative solutions that modify traditional sweets without compromising taste. Monk fruit, a natural sweetener from Southeast Asia, has gained attention for its ability to offer sweetness without adding calories or raising glycemic levels. Its active compounds, mogrosides, are significantly sweeter than sugar, providing a viable replacement in traditional recipes. **Materials:** Traditional sweet recipes were modified by replacing sugar with monk fruit sweetener. Sensory evaluations were carried out by a trained panel to compare the experimental monk fruit-based sweets with the standard sugar-based versions. Evaluation criteria included sweetness, texture, taste, and overall satisfaction. Additionally, the nutritive value of monk fruit, particularly its zero- calorie and antioxidant properties, was analysed. **Results:** Sensory evaluations showed monk fruit based recipes were equally sweet and enjoyable as sugar-based ones. Panel members approved, noting health benefits without compromising taste. **Conclusion:** Monk fruit offers a practical solution for satisfying sugar cravings by delivering sweetness without the harmful effects of sugar. Its successful incorporation into traditional sweets proves its potential for broader application in product development aimed at health-conscious individuals. The sensory evaluations confirm that monk fruit-based recipes are a viable and appealing alternative, offering both taste and nutritional benefits.

Keywords: Monk fruit, Sugar cravings, Natural sweetener, Mogrosides, Product development, Sensory evaluation, Traditional sweets.

Abstract ID: 194

ABSTRACT TITLE: NEUROPROTECTIVE EFFECT OF SAFFRON (CROCUS SATIVUS) EXTRACT FOR CHILDREN WITH ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD) SYMPTOMS

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Background: Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by inattention, hyperactivity, and impulsivity. Methylphenidate is commonly prescribed for ADHD but may cause side effects. Saffron (*Crocus sativus*) extract has been suggested as a natural alternative due to its neuroprotective, antioxidant, and sleep-enhancing properties. This study aimed to assess the efficacy and safety of saffron extract in managing ADHD symptoms in children compared to methylphenidate. **Materials:** A non-randomized, pre-post intervention study was conducted in Chennai, India, with 64 children (42 boys, 22 girls) aged 4-12 diagnosed with ADHD. Group 1 received psychoeducation and methylphenidate (up to 1 mg/kg per day), while Group 2 received psychoeducation and saffron extract (30 mg/day) for six months. ADHD symptoms were assessed using the ICD-11 checklist and Conners' Parent Rating Scale, while sleep quality was measured using the Sleep Disturbance Scale for Children. Statistical analyses included Mann Whitney tests and two-way ANOVA were conducted to evaluate pre-post treatment changes. **Results:** Saffron extract demonstrated significant improvement in ADHD symptoms, particularly hyperactivity and inattention, with similar efficacy to methylphenidate. However, saffron showed greater benefits in improving sleep quality, reducing sleep onset latency, and enhancing sleep duration. Both groups reported improved overall symptom management, but saffron was better tolerated with fewer side effects compared to methylphenidate. **Conclusion:** Saffron extract appears to be a safer and equally effective alternative to methylphenidate for treating ADHD symptoms in children. In addition to managing ADHD symptoms, saffron also improved sleep quality. These findings suggest saffron could offer a natural, well-tolerated treatment option for ADHD, warranting further research and clinical application.

Keywords: ADHD; saffron; ICD -11, Children, symptoms

Abstract ID: 196

ABSTRACT TITLE: DEVELOPMENT OF VEGAN MEAT WITH GLUTEN AND HORSE GRAM

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Background: The quality of protein for human nutrition is primarily determined by its content of essential amino acids and its ability to meet the body's requirements. Major sources of protein come from animal products like eggs, meat, and fish. However, individuals following a vegan diet often face protein deficiencies, as their protein intake is limited to plant-based sources. This can leave vegans vulnerable to nutrient deficiencies. The objective of this study is to formulate a vegan alternative to meat and develop a plant-based meat product using wheat gluten and horse gram flour. **Materials:** Vegan meat was

prepared using gluten extracted from wheat flour and horse gram flour. Three variations were prepared with different compositions of wheat gluten and horse gram flour to determine the ideal ingredient ratio. Sensory evaluation of the three variations was conducted by fifteen semi-trained panel members, using a 9-point hedonic scale to assess sensory acceptability. **Results:** Among the three variations, the one containing 90% gluten and 10% horse gram flour received the highest sensory acceptability, scoring 8.4 out of 9. This variation was rated best in appearance, color, flavor, texture, and taste, showcasing excellent overall sensory qualities.

Conclusion: Vegan meat serves as a substitute for animal meat, both in terms of nutrients and taste. Gluten replicates the texture of meat while providing protein, and horse gram is a pulse rich in protein and minerals. This study presents clear evidence that the combination of wheat gluten and horse gram flour results in a flavourful vegan meat alternative.

Keywords: Vegan meat, Gluten, Horse gram flour, Protein.

Abstract ID: 197

ABSTRACT TITLE: FORMULATION OF INSTANT SOUP MIX WITH EDIBLE WILD SPLIT GILLS MUSHROOM (SCHIZOPHYLLUM COMMUNE) - ENRICHMENT OF VITAMIN D2

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Background: Split gill mushroom (SGM) is widely consumed in Asia, Mexico, tropical regions and north-eastern India because of its unique umami taste, numerous medicinal and nutraceutical properties. It is used as a culinary as well as medicine in household levels, regardless of not formulated instant soup mix incorporating split gill mushrooms. Mushrooms are a rich source of vitamin D2 when exposed to natural or artificial ultraviolet light. The main objective of the present study is to formulate cost effective nutritious soup mix using SGM powder, sensory analysis of the three different variations formulated soup mix, nutrient analysis of the highly acceptable soup mix, antioxidant activity, and total bacterial count. **Materials:** Wild edible dry SGM was purchased from the local market of Kakching, Manipur. It was cleaned, washed, sundried and powdered. Three different variations of instant soup mix were formulated using sundried SGM powder 10%, 20% and 30% with 10% of finger millet powder, corn starch, milk powder and other ingredients. Mixed all the dry ingredients and boiled with 15 times of water for 5 minutes. Organoleptic test was performed by 30 semi-trained panellists. The most accepted instant soup mix was analysed for nutrient composition, antioxidant activity (AA), observed for total plate count (TPC) and shelf life for 30 days in ambient condition. **Results:** There was no significant difference between the three variations of soup in the overall acceptability from the organoleptic test ($p > 0.5$). The selected soup mix (20% SGM) was rich in energy (371.9 kcal/100g), protein (11.04 g/100g), carbohydrate (77.1 g/100g), fibre (1.01g/100g), vitamin D2 (29.50 µg/100g), and

low fat (2.15 g/100g). DPPH was range between 80.65% to 93.84% at IC₅₀ of 35.71µg/ml. TPC was found below hazardous levels. No change in taste was observed after 30 days. **Conclusion:** Because of its high nutritional content, rich in vitamin D2, and radical scavenging abilities, instant soup mix enriched with SGM powder should be encouraged among children, adults, and elderly people to prevent macronutrient deficiency and vitamin D deficiency and to improve bone health.

Keywords: Instant soup mix, Organoleptic, Split gill mushroom, Vitamin D2.

Abstract ID: 200

ABSTRACT TITLE: DEVELOPMENT AND STANDARDIZATION OF READY-TO-COOK MULTI-MILLET IDIYAPPAM FORTIFIED WITH MANGIFERA INDICA LEAF EXTRACT.

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Background: Millets are gaining popularity as nutrient-rich, high-fibre, and gluten-free alternatives to traditional grains, offering economical, and environmental sustainability. Global millet production increased from 28.33 million metric tons in 2019 to 30.08 million in 2021 (FAO, 2021), driven by consumer interest in health and sustainability. Millet-based RTE and ready-to-cook RTC products, like porridges, bakery items, etc., are emerging. Indian millet-based packaged food market was valued at \$37.7 million in 2022 and is expected to grow at a 9.2 % CAGR, reaching \$91.1 million by 2032. However, challenges like coarse texture, poor shelf-life, distinct flavour etc., limit millet content in products. most available millet-based products contain less than 50% millet. This study aims to develop a multi-millet Idiyappam fortified with mango-leaf extract to boost polyphenol content. **Materials:** Millets (little millet, barnyard millet, and finger millet) and soybeans were sourced locally, cleaned, and ground into fine flour. Mango leaves were collected from the ICMR-National Institute of Nutrition campus, processed into an extract, and stored. The extract was stored at -20°C. The dough for fortified multi-millet idiyappam was prepared by mixing millet and soybean flour with mango leaf extract, and then the dough was subjected to steam, and extrusion followed by solar drying. Nutritional composition, anti-nutrient content, antioxidant activity, and polyphenols were analyzed using standard methods. **Results:** The fortified idiyappam had a moisture content of 3.58%, total ash content was measured at 2.56%, and protein of 18.90% due to the addition of soybean flour, with a fat and carbohydrate content of 7.88% and 56.43%, respectively. The total phenolic content was 338.98 mg GAE/100G, and the total flavonoid content was 203.83 mg/100g. antioxidant activity was assessed with DPPH (IC₅₀=38.06 mg/mL), ABTS (IC₅₀ = 36.48 mg/mL), and FRAP was 136.03 mM FeSO₄ equivalents/100g. **Conclusion:** Millets and mango leaves show potential as anti-inflammatory foods. Fortifying millets with mango leaves improved their polyphenol and antioxidant content. Sensory scores do not show any significant difference between the fortified product and the control (Rice idiyappam) shows promise to meet the demand for healthy, ready-to-cook foods.

Keywords: Multi-millet Idiyappam, *Mangifera indica* leaf extract, Polyphenol content, Antioxidant activity, Nutritional composition, Mango leaf fortification, Phenolic content, Flavonoid content, DPPH assay, ABTS assay, FRAP assay, Anti-nutrient content, Sustainable food development, Healthy food market, Sensory evaluation, Fortified food products, Ready-to-cook (RTC) products.

Abstract ID: 201

**ABSTRACT TITLE: COMPARISON OF SENSORY EVALUATION, AND NUTRITIONAL
PROFILING OF MILLET-BASED RECIPES**

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Background: Millets, belonging to the Poaceae family, have been cultivated for thousands of years and are an essential staple in Asia and Africa. Despite their high nutritional value (rich in proteins, dietary fibre, vitamins, and minerals) millet consumption in India has sharply declined due to low palatability and acceptability. This study aimed to develop and standardize the millet-based recipes using pearl, finger and foxtail millets followed by evaluating and comparing the sensory and nutritional properties. **Materials:** Eight millet-based recipes were standardized using Pearl-millet (3), Finger-millet (3), and Foxtail-millet (2). Sensory evaluation was conducted using a 9-point Hedonic scale with a consumer panel, while nutrient analysis was performed to assess both proximate and micronutrient content following standardized protocols. **Results:** Among Pearl-millet-based recipes (Bisibelle Bath, Khichdi, and Pulav), Bisibelle Bath scored the highest overall acceptability (7.95) followed by Khichdi (7.07) and Pulav (6.48). In finger-millet-based recipes (Idly, Laddu, and Malt), Idly had the highest overall acceptability (8.42), with Laddu (7.23) and Malt (6.03), respectively. For Foxtail-millet-based recipes, Pulihora received the highest overall acceptability (8.47), with Pulav (7.50). Nutrient analysis of pearl millet recipes showed that Khichdi had the highest protein (14.31%), while dietary fibre was highest in Pulav (24.72%). Among Finger millet recipes, Idly exhibited the highest protein (12.45%) and fibre (15.41%). Among foxtail millet recipes, Pulihora showed the highest protein (14.79%), and Pulav had the highest fibre (23.56%). Pearl-millet Bisibelle Bath had the highest iron (4.11 mg), while Pulav had the highest zinc (3.11 mg). Finger-millet Malt provided the highest calcium (463.44 mg), closely followed by Idly (462.19 mg). Foxtail-millet Pulihora demonstrated the highest iron at (4.51mg), and Zinc (3.36 mg). **Conclusion:** Foxtail Pulihora scored the highest overall acceptability, followed by Finger-millet Idly and Pearl-millet Bisibelle Bath. Finger-millet Malt and Pearl-millet Pulav received the lowest overall acceptability scores. The findings suggest that Foxtail Pulihora was highest in protein, iron, and zinc, while Pearl-millet Pulav and Bisibelle Bath were high in fibre. Finger-millet Malt exhibited the highest calcium. Considering the sensory scores and nutrient composition, millet-based recipes may replace traditional rice and wheat-based recipes.

Keywords: Millet-based recipes, Sensory evaluation, Nutritional profiling, Pearl millet, Finger millet, Foxtail millet, Proximate analysis, Micronutrient content, Hedonic scale, Protein content, Dietary fiber, Iron content, Zinc content, Calcium content, Acceptability scores

Abstract ID: 203

ABSTRACT TITLE: STUDY ON DRYING OF FENUGREEK MICROGREENS

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Background: Microgreens, including fenugreek, are nutrient-dense, immature plants harvested within 7–21 days of germination. They are valued for their high concentrations of vitamins, minerals, antioxidants, and bioactive compounds like ascorbic acid, carotenoids, and flavonoids, making them functional foods. Fenugreek (*Trigonella foenum-graecum* L.), widely used in culinary and medicinal applications, contains higher levels of total ascorbic acid, flavonoids, and chlorophyll in its microgreen form. Drying fenugreek microgreens is essential for preserving these nutrients and extending shelf life. Proper drying techniques ensure minimal nutrient loss and prevent spoilage, maintaining their health benefits. **Materials:** To analyze the nutrient retention in fenugreek microgreens dried using three methods—freeze drying, cabinet drying, and hot air oven drying—freshly harvested microgreens are first cleaned and divided into three equal batches. Freeze drying involves freezing the microgreens and then subjecting them to low pressure to sublimate moisture. Cabinet drying is conducted at controlled temperatures in a ventilated cabinet dryer, while hot air oven drying involves circulating hot air at a constant temperature. After drying, the samples are analyzed for nutrient content, focusing on vitamins, minerals, antioxidants, and bioactive compounds like ascorbic acid, flavonoids, and phenolics. **Results:** Freeze drying method is expected to retain the highest amount of nutrients, especially heat-sensitive vitamins like ascorbic acid (vitamin C) and flavonoids, due to the absence of high temperatures. Cabinet drying method may result in moderate nutrient retention, as the controlled temperatures and ventilation help reduce nutrient loss compared to hot air oven drying. Hot air oven method, due to exposure to higher temperatures, is likely to result in the most nutrient loss, particularly of heat-sensitive compounds like ascorbic acid and chlorophyll. **Conclusion:** Drying of fenugreek microgreens is an important step in preserving their nutritional value and extending their shelf life. Fenugreek microgreens, like other microgreens, contain high concentrations of nutrients, including vitamins, minerals, and bioactive compounds. The drying process must be carefully controlled to minimize the loss of these beneficial compounds while preventing spoilage

Keywords: Microgreens, Fenugreek, Bioactive components and function

Abstract ID: 204

ABSTRACT TITLE: LEMONGRASS FLAVOURED SOYA PRODUCTS FOR MENOPAUSAL SYMPTOMS

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Background: Menopause is a natural phase in a woman's life, often accompanied by uncomfortable symptoms such as hot flashes, mood swings, and fatigue. As the demand for functional foods that address these concerns grows, combining the nutritional benefits of soya Milk and pearl millet milk with the refreshing flavor of adding lemongrass to present as a valuable products. The main objective of this study to develop a valuable product from the plant source of soya which contains high Phytoestrogen level it can Cured the Menopausal symptoms of the women. **Materials:** This study developed a food product combining the soya milk, pearl millet milk, and lemongrass to alleviate menopause symptoms. Soy milk and pearl millet were prepared by soaking and blending the grains, by straining to obtain the milk. Fresh or the extract of the lemongrass was added for flavor and additional health benefits. Nutritional analysis was conducted to assess phytoestrogen content and overall the nutritional value. The product was tested for the consumer acceptability and potential health benefits among menopausal women **Results:** The developed product demonstrated a significant content of isoflavones and phytoestrogens, indicating a potential reduction in hot flashes and mood swings. Consumer feedback has a favorable taste, with lemongrass enhancing the overall flavor in the developed food Products. Additionally, the product showed promising results in terms of improving digestive health and promoting relaxation, aligning with the objectives of alleviating menopause symptoms. **Conclusion:** The innovative combination of soy milk, pearl millet milk, and lemongrass offers a nutritious, plant-based option specifically designed for women experiencing menopause. This food product not only provides potential symptom relief through its rich phytoestrogen content but also enhances flavor and promotes digestive health, positioning it as a valuable addition to the market for menopausal women.

Keywords: Soya Milk, Pearl Millet Milk, Lemongrass, Menopausal Symptoms for women

Abstract ID: 207

ABSTRACT TITLE: NUTRACEUTICALS OF CUSTARD APPLE SEED FOR THYROID DISORDER

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Background: Custard apple seeds (*Annona squamosa*) contain bioactive components and are shown active in the treatment of thyroid disorders. The seeds are rich in acetogenins, alkaloids, phenolic compounds, and flavonoids, which contribute to their medicinal properties. Acetogenins, known for their cytotoxic properties, can regulate cell growth and may help manage thyroid function by preventing abnormal cell proliferation. Alkaloids in custard apple seeds exhibit anti-inflammatory and antioxidant properties, which can be beneficial in reducing oxidative stress, a known factor in thyroid dysfunction. The phenolic compounds and flavonoids further contribute to their antioxidant capacity, potentially mitigating the damage caused by oxidative stress to thyroid tissues. **Materials:** A structured literature search was performed using Google Scholar to collect studies related to bioactive components of custard apple seeds, with a focus on acetogenesis and its potentials in treating thyroid disorders. Specific searches were conducted using different keywords to ensure comprehensive result. The search, using the keywords "Custard apple seed," yielded 23,700 results. A second search, "Custard apple seed bioactive compound," returned 18,800 results. Continuing with the term "Custard apple seed bioactive component acetogenesis" yielded around 302 results. A final search with the term "Acetogenesis in custard apple for treating thyroid disorder" yielded 25 findings. **Results:** Custard apple, exhibit nutraceutical, phytochemical, biological, and pharmacological activities due to their diverse active compounds, including phenolic compounds, flavonoids, and terpenoids. These fruits provide high nutritional value, rich in proteins, fibers, carbohydrates, vitamins, and essential minerals, making them beneficial for both humans and animals. Research has demonstrated that extracts from the seeds can effectively ameliorate hyperthyroidism in mouse models by regulating serum hormone levels, decreasing the activity of hepatic enzymes associated with thyroid function, and reducing oxidative stress markers like lipid peroxidation. **Conclusion:** Bioactive compounds found in custard apple seeds (*Annona squamosa*) demonstrate significant potential for treating thyroid disorders, particularly hyperthyroidism. Research indicates that these compounds can help regulate hormone levels, reduce oxidative stress, and restore enzymatic balance in affected individuals. The antioxidant properties of these seeds may protect against cellular damage associated with thyroid dysfunction.

Keywords: Acetogenesis, Anti thyroid activity, Nutraceutical, Hyperthyroidism, Cell proliferation.

Abstract ID: 209

ABSTRACT TITLE: DRUMSTICK SEEDS - QUERCETIN: TRADITIONAL ANTI-HYPERTENSIVE NUTRACEUTICAL

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Background: Seeds of the drumstick plant scientifically known as *Moringa oleifera*, renowned for nutrient rich profile, have gained attention for their potential therapeutic properties, including anti-hypertensive effects. These seeds are abundant in antioxidants, particularly flavonoids, and contain bioactive compounds such as glucosinolates, quercetin and isothiocyanates. The compounds exhibit Angiotensin-Converting Enzyme (ACE) inhibitory activity, which helps regulate hypertension.

Materials: A structured literature search was performed using Google Scholar to collect studies related to the bioactive components of drumstick seeds, with a focus on quercetin and its potential in treating anti-hypertension. Specific searches were conducted using different combinations of keywords to ensure comprehensive coverage of literature. The first search, using the keywords “drumstick seeds,” yielded approximately 23,000 results. Narrowing the search with keywords “drumstick seeds bioactive compound,” returned about 20,400 results. Further with “drumstick seeds bioactive component Quercetin” yielded around 3130 results. A final search yielded 182 results with keywords “quercetin in drumstick seeds for anti hypertensive”. The outcomes of the 182 results are consolidated and presented in the study. **Results:** Treating hypertension with drumstick seeds has shown promising results, with quercetin being one of bioactive compounds. The flavanoid quercetin, shows antihypertensive properties through various mechanisms including vasodilation, antioxidant activity, and modulation of nitric oxide production. Studies have suggested that quercetin may help lower blood pressure by inhibiting Angiotensin-Converting Enzyme (ACE) thus reducing oxidative stress. The various nutritional, bio-active compounds and nutraceuticals present in drumstick seeds has shown promising anti-hypertensive potentials. **Conclusion:** Drumstick seed extracts exhibit ACE inhibitory activity, a key mechanism in blood pressure regulation. Many studies assess the antioxidant capacity and ACE inhibition of various formulations, while experiments in hypertensive rat models evaluate their efficacy in reducing blood pressure. The phytochemicals found in drumstick seeds, such as flavonoids, alkaloids, saponins, coumarins, isothiocyanates, phenolic acids, and tannins also contribute to their anti- hypertensive properties.

Keywords: Drumstick seeds, Anti-hypertensive, Quercetin, ACE inhibitory, Glucosinolates.

Abstract ID: 212

ABSTRACT TITLE: APIGENIN IN BASIL LEAF HELPS TREAT DIABETES MELLITUS

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Background: Basil leaf, *Ocimum basilicum* commonly known as sweet tulsi, has been traditionally used in Ayurvedic medicine for various health issues, including diabetes mellitus. Basil leaves contain numerous bioactive compounds, including flavonoids, caryophyllene, apigenin and other essential oils like eugenol and phenolic acids. These compounds exhibit hypoglycemic effects by improving insulin sensitivity and promotes the use of glucose in the body. **Materials:** A structured literature search using Google Scholar to collect studies related to bioactive components of basil leaf, with a focus on apigenin and its potentials in treating diabetes was done. Research, highlights the hypoglycemic properties of basil leaves, particularly when administered using ethanolic extracts. Specific searches were conducted using combinations of keywords to ensure comprehensive coverage of literature. Initially, the search with “basil leaf,” yielded approximately 224,000 results. Next stage using “Basil leaf extract,” returned about 83,000 results. Narrowing down using the term “basil leaf bioactive compounds” yielded around 30,200 results. And a final search done using the term “Bioactive compounds apigenin in basil leaf

treating diabetes” yielded 200 results. Diabetes represents a significant global health concern, and researchers are actively exploring innovative approaches to manage this condition. **Results:** The most important pharmacological uses of basil are anti-cancer activity, radioprotective activity, anti-microbial activity, anti-inflammatory effects, immunomodulatory activity, anti-stress activity, anti-diabetic activity and anti-oxidant activity. Additionally, flavonoids such as apigenin and luteolin contribute to the modulation of glucose metabolism and may enhance the activity of insulin, thereby improving glycemic control. Studies indicate that basil leaf extract significantly reduced fasting blood glucose levels and enhanced insulin sensitivity in diabetic rats, attributed to compounds like rosmarinic acid and eugenol. **Conclusion:** Compounds like eugenol, apigenin, caryophyllene in basil enhances insulin secretion and glucose uptake, contributing to better blood sugar control. Basil leaf powder exhibits significant antidiabetic properties, as evidenced by multiple studies demonstrating its ability to lower blood glucose levels and enhance insulin sensitivity.

Keywords: Basil leaf, Diabetes, Apigenin,

Abstract ID: 213

ABSTRACT TITLE: DEVELOPMENT OF ALTERNANTHERA SESSILIS ENRICHED WEANING FOOD USING BARNYARD MILLET (ECHINOCHLOA FRUMENTACEA)

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Background: Weaning is an essential developmental stage in which infants gradually transit to an adult diet. During this period, replacing cereals with millets in food formulations can significantly improve the intake of micronutrients. Barnyard millet, in particular, is a rich source of protein, iron, antioxidants, flavonoids, essential amino acids, and is naturally gluten-free. In this weaning food preparation *Alternanthera sessilis* commonly known as sessile joyweed or hongone is a medicinal herb with a wide range of health benefits and is a good source of essential nutrients, including vitamins A, C, and E, iron, calcium, and antioxidants that support overall health and well-being. **Materials:** The materials were procured from the local market of Mysore, Karnataka. This study evaluated six formulations (B1-B6) made from barnyard millet, rice flakes powder, green gram dhal powder, skim milk powder, and varying proportions of honagone leaf powder (0% to 5%). The barnyard millet was soaked for 30 min and pressured cooked for 12 min and then dehydrated, powdered and sieved. As soaking and pressure cooking can reduce the anti-nutritional factors and is easily digestible for the infants. The weaning mix was cooked in medium flame for 10-12 min and served using sugar or jaggery. These formulations were analysed for their organoleptic properties. **Results:** The sensory evaluation showed that formulation B4 received the highest score, prompting further analysis of its nutrient composition. Results indicated an increase in protein, iron, calcium, and β -carotene levels, while fat and carbohydrate content decreased, comparable to the control. **Conclusion:** Among all the formulations, the weaning food made from barnyard millet with the addition of 4% hongone leaf powder (B4) was the most accepted in terms of sensory appeal and had a superior nutritional profile.

Keywords: Barnyard millet weaning food Hongone

Abstract ID: 214

ABSTRACT TITLE: DEVELOPMENT OF LADDU FROM BARNYARD MILLET FLOUR (ECHINOCHLOA FRUMENTACEA) AND FLAXSEED FLOUR (LINUM USITATISSIMUM) TO ENHANCE THE MICRONUTRIENTS

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Background: Laddu, is an Indian sweet made from a mixture of gram flour, sugar which is then shaped into a ball. High sugar, low fibre and deficient micronutrients make the product less suitable for health-conscious individuals. Barnyard millet (*Echinochloa frumentacea*) is a low carb, gluten-free crop with high protein, fibre, iron, flavonoids, and key amino acids such as methionine, leucine. Flaxseed (*Linum usitatissimum*) is a rich source of plant lignans such as secoisolariciresinol diglucoside which help to fight against free radicals and lowers blood glucose levels. Linseed is also a rich source of ALA and Omega-3 fatty acids which lowers the cholesterol deposition. The objectives include evaluating the sensory attributes and estimating the proximate composition of the standard and accepted laddu variation to assess its nutritional composition. **Materials:** The materials were procured from the local market of Mysore. The barnyard millet was ground into flour. It was then combined with roasted flaxseed, sesame seeds, sugar, dates paste, and ghee in order to develop laddu. The present study assessed three formulations V1 V2 V3 with barnyard millet flour (0%,50%,100%) and flax seeds powder (5g,10g,15g) incorporation. Sensory analysis was conducted on these formulations to evaluate the organoleptic properties based on 9-point hedonic scale by semi trained panellists (n=35) further proximate analysis of the accepted variation and standard was analysed in duplicates using standard AOAC method. **Results:** The V2 (50%-BMF,10g-FS) formulation was the most accepted among all the variations by panellists. The other variations did not meet the sensory allure with characteristic mild nutty flavour of both BMF and FS. Results indicated an increase in protein, iron calcium and phosphorus while fat and carbohydrates decreased compared to standard. **Conclusion:** Current study developed the healthier version laddu by incorporating BMF and FS with an excellent nutritional profile. Low carb, high protein, fibre, iron, calcium made it a healthier choice over conventionally available laddu.

Keywords: BMF-Barnyard Millet flour, FS-flaxseed, Hedonic scale, ALA-Alpha linolenic acid.

Abstract ID: 215

**ABSTRACT TITLE: DEVELOPMENT OF COOKIES FROM WATERMELON SEED FLOUR
(CITRULLUS LANATUS) ENRICHING MICRONUTRIENTS**

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Background: Cookies are sweet snacks having soft and chewy texture, consumed by all age groups but are high in refined carbohydrates and deficient in micronutrients. Watermelon seeds are great sources of proteins, unsaturated fatty acids and they are also great sources of micronutrients like magnesium, phosphorus, zinc, iron, potassium and sodium. WMS are effective in reducing blood cholesterol, blood pressure and they also help in quick recovery from illness and sharpening your memory. This study is to develop nutritious cookies by partial replacement of all-purpose flour with WMS flour and evaluating the sensory attributes and estimating the proximate composition of the standard and accepted variation to assess its nutritional composition. **Materials:** The raw materials were procured from the local market. The study evaluated a standard and four variations V1, V2, V3 and V4. The refined wheat flour was replaced with WMS flour (0%, 25%, 50%, 75%, 100%). The cookies were prepared by 1) the measured quantity of butter and sugar was creamed to a light texture. 2) Then the flour was added and made into a dough 3) the dough was rolled and cut into desired shape and

was baked in a preheated oven at 170°C for 15 min. The prepared cookies were subjected to sensory analysis based on a 9-point Hedonic scale by a semi trained panelist (n = 20). Proximate composition of the selected variation and standard were analyzed using standard AOAC methods. **Results:** The cookies containing 75% of WMS flour were more acceptable on sensory analysis and proximate analysis of the selected variation indicated an increase in protein, fat, iron, calcium, zinc, phosphorus, magnesium, and potassium while carbohydrate content decreased, compared to the standard. **Conclusion:** The cookies developed with watermelon seed flour (75%) had enhanced nutrients and it can be replaced in traditional cookies to increase the nutrient supply and reduce the hidden hunger for micronutrients.

Keywords: WMS-watermelon seeds, Hedonic scale, AOAC.

Abstract ID: 218

**ABSTRACT TITLE: DEVELOPMENT OF NUTRI BAR USING BARNYARD MILLET FLAKES AND
INCORPORATING ALTERNANTHERA SESSILIS TO ENHANCE THE MICRONUTRIENTS**

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Background: Nutri bars are supplemental bars containing nutrient rich ingredients intended to supply quick energy. Barnyard Millet flakes are an excellent source of protein, fiber, iron, antioxidants, flavonoids, essential amino acids etc. *Alternanthera sessilis* leaves have several medicinal properties and also rich in nutrients like vitamin A, C & E, iron, beta-carotene, calcium etc. In this study the nutri bar developed using barnyard millet flakes by incorporating *Alternanthera sessilis* to combat from micronutrient deficiency. **Materials:** The materials (barnyard Millet flakes, dates, sugar, almonds, chocolate and sesame seeds) are procured from local market of Mysore. The micronutrient-enriched nutri bar was created by first roasting flakes, nuts and then dates were processed into paste by adding sugar and water and mix all the ingredients thoroughly, which were then blended into a coarse powder using a mixer grinder. Finally, this mixture is coated by the chocolate and this formed into the nutri bar. The study is assessed with 5 variation and variation F3, consisting of 97% barnyard millet flakes and 3% *Alternanthera sessilis*, received the highest acceptance. The proximate composition of this selected variation was analyzed in triplicates using standard AOAC methods (2005) and compared to the standard. **Results:** The formulation of the nutri bar, which included 17g of barnyard millet flakes and 3g of honagone leaf powder, received the highest acceptance from a panel of semi-trained tasters (N=21), using 9 point hedonic scale. This selected variation will undergo further nutrient composition analysis. Compared to the standard variation, it showed increases in protein (36.2%), fiber (63.5%), iron (41.9%), and calcium (26.3%), while also reducing carbohydrate level (13.5%). Compared to control. **Conclusion:** Nutri bar developed using barnyard millet flakes and Honagone leaf powder resulting in an improved nutritional profile. With low carbohydrates, high fiber, and gluten-free. It serves as a healthier option for health conscious individuals.

Keywords: Barnyard millet flakes, Gluten-free, *Alternanthera sessilis*, Hedonic scale.

Abstract ID: 219

ABSTRACT TITLE: GRAIN FIT FUSION: INSTANT BEVERAGE TO FOSTER GROWING YEARS. PROPOSED EXPERIMENT BASED INVESTIGATION AIMS AT DESIGNING INSTANT BEVERAGE DRINK AS A FUNCTIONAL FOOD CONTRIBUTING SUBSTANTIAL CALORIFIC AND NUTRITIONAL VALUES FOR GROWING YEARS

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Background: Functional foods have a significant impact on optimizing human health as a part of a person's everyday healthy diet, thus the global demand for functional foods has been growing by 8%

annually **Materials:** Established formulation was designed using a variety of plant based sources like ragi, soya, barley, wheat, flax seeds by means of dry heat and blending techniques. Further formulation is evaluated for sensory and nutritional values. Sensory properties such as taste, texture, appearance, mouth feel and palatability was analyzed using hedonic scale by subjecting to the trained panel members. Nutritional properties were estimated using standard operating protocols **Results:** Instant beverage drink demonstrated significant sensory acceptance from the panel members. On a positive note instant beverage the overall sensory profile has been perceived by the targeted group. Markedly there was a greater nutritional profiles especially macro and micro molecules observed in the established formulation. Formulation comprises substantial energy content contributing to maintain good glycemic response. **Conclusion:** The interest in functional foods has been increased in developed economies as people look for safer way to improve general health and living. Evidently established instant beverage and innovated drink found to be potential with greater amount of energy values and micromolecules meeting the dietary demands of the young growing years. Notably formulation contributes in driving the sustainable health as an elixir to life.

Keywords: Ragi, Nutritional value, Sensory, Hedonic scale, Instant Beverage

Abstract ID: 222

ABSTRACT TITLE: DEVELOPMENT OF MUFFINS FROM PARTIAL REPLACEMENT OF REFINED WHEAT FLOUR BY KODO MILLET (PASPALUM SCROBICULATUM) FLOUR

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Background: Muffins, a widely consumed snack, are often high in refined carbohydrates and lack essential nutrients making them less suitable for health-conscious individuals. Kodo millet (*Paspalum scrobiculatum*), a nutrient-rich, gluten-free grain, offers a healthier alternative to refined wheat flour based traditional muffins. High in fiber and essential minerals like iron, calcium, and phosphorus in kodo millet, supports better digestive health, blood sugar control, and addresses nutrient deficiencies. By replacing refined wheat flour with kodo millet flour, thus tackle key nutritional challenges related to obesity, diabetes, and gluten intolerance, making them a perfect snack for health-conscious individuals. The aim of this study is to develop eggless muffins by partially replacing refined wheat flour (maida) with kodo millet flour (KMF) in variable proportions. The objectives include evaluating the sensory attributes and estimating the proximate composition of the selected muffin variation to assess its nutritional composition. **Materials:** Locally sourced refined wheat flour, kodo millet flour, sugar, milk, curds, baking powder, and cocoa powder were used to prepare muffins. Refined wheat flour was replaced with kodo millet flour (0%, 25%, 50%, 75%, and 100%). Sensory evaluation was conducted

using a 9-point Hedonic scale. Proximate composition of the selected variation was analyzed in triplicates using standard AOAC methods (2005) and compared with the standard. **Results:**

The formulation of muffins containing 75% kodo millet flour was found to be the most accepted among all the variations by semi-trained panelists (n=30). The standard was subjected to proximate analysis in comparison with selected variation. It had increased fat, fiber, iron, calcium, and phosphorus content and reduced carbohydrate levels while maintaining its authentic taste.

Conclusion: The study successfully developed a healthy version of muffins from the inclusion kodo millet flour offering enhanced nutritional profile. Low-Carb and high-fiber with minimized gluten content made it a healthier choice over traditionally available muffins.

Keywords: Paspalum scrobiculatum, Gluten, Nutri-cereals, Hedonic Scale, KMF- Kodo millet flour

Abstract ID: 224

ABSTRACT TITLE: DEVELOPMENT OF HEALTHY MILLET MALT USING FINGER MILLET (ELEUSINE CORACANA) ENRICHED WITH MAKHANA POWDER (EURYALE FEROX)

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Background: Finger millet (*Eleusine coracana*) are a group of cereal grain that belongs to the family Poaceae. It is highly nutritious, rich in antioxidant, antidiabetic and antimicrobial properties. Makhana (*Euryale ferox*) belongs to the Nymphaeaceae family. It is abundant in nutritional and bioactive compounds such as carbohydrates, protein, fiber, vitamins, minerals, polyphenols. Finger millet malt with incorporation of makhana powder made it a nutrient dense meal and are extremely good source of manganese, potassium, magnesium, thiamine, protein and phosphorus. This product was prepared with ragi flour, makhana powder as main ingredients along with buttermilk, jaggery, ghee, nuts and cardamom powder for enhanced flavor. **Materials:** Finger millet malt (FMM) was developed by preparing a pre mix finger millet flour with makhana powder with different proportions, maintaining a proper consistency and all the ingredients, method of preparation remains same. Totally four variations of malt were prepared (FMMV1- FMMV4) (30:30, 40:20, 45:15, 50:10) were evaluated. Developed malt was subjected to sensory evaluation from semi trained panel (n=25) scoring on 1-9 hedonic scale. The best accepted ratio was further evaluated for its nutritional quality. Further control was compared with the standard. **Results:** The combination of finger millet flour and makhana powder V2 (40:20) was highly acceptable, when compared with the standard. The developed malt was enriched with calcium, iron, protein, fiber and the product is gluten free which can be consumed by gluten intolerant individuals. **Conclusion:** A convenient malt containing makhana powder was developed. The product was nutritionally beneficial for diabetic, high blood pressure patients. Compared to the standard product, the developed V2 (40:20) exhibited reduced carbohydrate level and increased fiber content, resulting in a low glycemic index. Furthermore, the developed product is enriched with higher protein, calcium, iron

and phosphorus levels. The addition of nuts in the product resulted in a nutty flavor compared to the standard.

Keywords: Euryale ferox, Finger millet flour, Gluten free, low glycemic index, nutritious drink, hedonic scale.

Abstract ID: 225

ABSTRACT TITLE: OPTIMIZATION OF RECIPES INCORPORATING WHEAT GRASS POWDER INTO MILLET BASED COMPOSITE FLOUR

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Background: Composite flour -blend of flours from cereals, legumes, root crops, with addition of wheat flour. Composite flour offers a balanced profile of essential amino acids, fiber, antioxidants, and mineral content compared to wheat flour. Composite flour formulated by combining wheat grass powder with sprouted millet flour. Cookies, muffins and waffles were standardized. **Materials:** The selected Finger millet was soaked, sprouted for 72 hours, dried in a cabinet dryer for 3 hours at 120°C and powdered. The sprout length was 2.4 cm. One kg of millet yielded 894 g of powder after processing. Wheat was sprouted for 7 days and when sprout was 8 cm, the grass was harvested, dried in a cabinet dryer for 4 hours at 90°C, and powdered and 212 g powder was obtained. The sprouted finger millet and wheat grass powder was analyzed for nutrients and phytochemical components. The sprouted millet flour and wheat grass powder was formulated to form composite flour. Formulation was done in 3 variations, Variation I – 50% Wheat flour and 50% millet flour, Variation II – 40% wheat flour and 60% millet flour and Variation III – 30% wheat flour and 70% millet flour with addition of 2 gram of wheat grass powder. Physico-chemical properties like texture, colour, pH and spread ratio. was analysed for the highly accepted recipes. **Results:** Organoleptic evaluation of recipes was carried out using the formulated flour. Recipes developed from sprouted millet composite flour, Variation III – (30g wheat flour: 70g sprouted millet flour: 2 gram wheat grass powder) was highly acceptable in cookies and muffins. Waffle with variation II (40g wheat flour: 60g sprouted millet flour: 2g wheat grass powder) scored highest score. The nutrients in composite flour were rich in all nutrients compared with sprouted millet flour. The texture of the recipes were a bit harder when compared with standard products. **Conclusion:** Cookies, muffins and waffles developed using composite flour were nutritious and suitable for all age group people.

Keywords: Composite flour, Sprouted finger millet flour, Wheat grass powder, Cookies, Muffins, Waffles and Physico-chemical properties.

Abstract ID: 231

ABSTRACT TITLE: CALCIUM RICH SUPPLEMENT FOR POSTMENOPAUSAL WOMEN

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Background: Calcium deficiency is a common issue among postmenopausal women in India. According to National Institute of Health (2019), 77% of postmenopausal women are calcium deficient in India which is the main cause for osteoporosis. Hence postmenopausal women require calcium- rich supplements. In this study a calcium rich supplement was developed using finger millet (*Eleusine coracana*) which is rich in calcium (364 mg /100 g), fibre and phosphorus and slow- release carbohydrates. Red banana (*Musa acuminata*) provides natural sugars contains phosphorus (22 mg / 100 g), as calcium and phosphorus are important for bone health. The calcium from finger millet strengthens bones, while the potassium in red banana helps maintain bone density. **Materials:** The calcium rich supplement is prepared by extracting milk from finger millet which is dried to powdered form and is further enriched with red banana powder. Two variations were made by mixing different proportion of finger millet milk powder and red banana powder. Variation 1 contains 50 g of finger millet milk powder and 50 g of red banana powder. Variation 2 contains 50 g of finger millet milk powder and 40 g of red banana powder. The variation in the proportion of red banana powder is done to enhance the sweetness of the supplement for better acceptability. The two variations of the supplement were compared with a commercial standard (Ragi malt) available in the market. Sensory evaluation was carried out with 15 semi trained panel members using 9-point Hedonic Scale. The commercial standard (ragi malt) obtained 9. Variation 1 obtained 8.5. Variation 2 obtained 8.2. Variation 1 was most preferred. **Results:** Variation 1 was rated best in higher acceptability of appearance, taste, colour, texture and flavour with 8.5 rating out of 9. **Conclusion:** Calcium and phosphorus are major component of bones and help to maintain bone mass and structure. Calcium-rich supplements prepared from finger millet milk powder and red banana can improve bone density and strength and reduce the risk of fractures, particularly in the hip, spine, and wrist, which are common sites of osteoporotic fractures.

Keywords: Calcium rich supplement, Finger millet, osteoporosis, bone health,

Abstract ID: 232

ABSTRACT TITLE: A COMPARATIVE STUDY ON THE CHANGES OF BMI, DIETARY PATTERN, MENSTRUAL CYCLE AMONG TRIBAL AND NON TRIBAL ADOLESCENT GIRLS

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Background: Adolescence is a phase of tremendous development. The nutritional needs of children and adolescents during advancement are considered to be significant factors determining their physical

progress as well as influencing their state of health . **Materials:** The present investigation examined the relationship between with changes in BMI , dietary pattern and menstrual changes among tribal and non-tribal adolescent girls. A community-based survey was conducted among tribal and non-tribal adolescent girls between the age group of 10-19 years in Gudalur, The Nilgiris district , Tamil Nadu. This cross-sectional nutritional enquiry incorporates clinical patho-physiology, anthropometric monitoring, dietary sequence, , the extent of nutritional knowledge, and demographic circumstances among the tribe and non-tribal school-aged girls. **Results:** The outcomes that were obtained showed that undernutrition persists to be prominent among tribal populations, with 20% of the subjects being undernourished. Tribal respondents had lower mean heights, weights, and BMIs than non-tribal respondents. Tribal participants had a higher percentage of health concerns due to their lower socioeconomic status, insufficient nutrient intake, knowledge gap in nutrition, and inconsistent scheduling of meals. Comparatively more non-tribal individuals than tribal subjects contributed to various physical activities. The association between BMI and physical activity was insignificant. The eating habits of the tribal group were subpar. Tribal girls were more likely to skip meals than non-tribal girls, 35% to 17%, respectively. This frequently results in large BMI differences between these people. BMI variations were observed among participants who consumed meals irregularly. Menstrual related problems are experienced by 28% of Tribal girls and 29% of Non-Tribal girls.. **Conclusion:** Comparatively more non-tribal individuals than tribal subjects contributed to various physical activities. The association between BMI and physical activity was insignificant. The eating habits .Tribal girls were more likely to skip meals than non-tribal girls, 35% to 17%, respectively. This frequently results in large BMI differences between these people. BMI variations were observed among participants who consumed meals irregularly. Menstrual related problems are experienced by 28% of Tribal girls and 29% of Non-Tribal girls..

Keywords: Tribal, Adolescence, BMI, Menstrual changes.

Abstract ID: 237

**ABSTRACT TITLE: SEED CRACKERS PROFILING : SEEDLICIOUS BITE AS THERAPEUTIC
REGIME**

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Background: Plant based seeds are often used as a snack contributing health benefits and neutraceutical properties. In view functional food proved to be a vital regime in enhancing biomechanisms, metabolic process and controlling metabolic disease. **Materials:** Established formulation was designed using a variety of plant-based seeds like pumpkin seeds, sunflower seeds, watermelon seeds, flaxseed and chia seeds by means of soaking and baking techniques. Further formulation is evaluated for sensory and nutritional values. Sensory properties such as taste, texture, appearance, mouth feel and palatability was analyses using hedonic scale by subjecting to the trained panel members. Nutritional properties were estimated using standard operating protocols. **Results:** The study aims at developing seed crackers and estimating functional, sensory, and nutrition profile.

Seed crackers which contain high protein and fiber. Diabetes individual need more protein and fiber . As a result seed crackers helps to get more protein and fiber in a diet. **Conclusion:** Developed seed crackers nutritional profile is: 108kcal of energy, 5g of protein and 4g of fat from 20g of cracker, sensory characteristic of the crackers are significantly was palatable and accepted by the trained panel members by using Hedonic scale Evident established that seed crakes noted to be benefit diabetes subject with low calorie and with high quality protein content.

Keywords: Pumpkin seed, sunflower seeds, watermelon seeds, flaxseed and chai seeds, Nutritional value, sensory, Hedonic scale and seed crackers.

Abstract ID: 238

ABSTRACT TITLE: COMPARISON OF VALUE-ADDED COOKIES PREPARED USING KODO MILLET AND BROWN TOP MILLET

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Background: Modernization has affected food consumption in recent days. Traditional foods are being replaced by new and fortified foods to satisfy better nutrient intake. Cookies are one among the better vehicles for fortification and enrichment with micro and macro nutrients. The present study concentrates on comparison between the cookies prepared using Kodo millet (*Paspalum scrobiculatum*) and Brown top millet (*Brachiaria ramosa*). Millets are nutrient-rich and ideal for addressing food security and malnutrition. The above-mentioned millets are under-utilized millets with low glycemic index, gluten free also with potential health benefits, act as an alternative to refined wheat flour cookies and contribute to sustainable baking practice. **Materials:** Cookies were prepared by doing some modification to the method of Kumar et.al. (2015). Refined wheat flour (RWF), Kodo millet flour (KMF) and Brown top millet flour (BTMF) were used to prepare the product. They were developed from the formulated ratios a) Standard – 100% RWF, b) RWF: KMF 70:30%, 75:35%, 80:20% and c) RWF: BTMF-70:30%, 75:35%, 80:20% respectively. Kodo millet flour (KMF) contains higher amounts of Resistant Starch type 3 (RS3) i.e., 15-20% compared to Refined wheat flour (RWF) <5% which resists digestion in the small intestine. Where as, Brown top millet flour (BTMF) contains high amounts of Methionine and Cyclic hydroxamic acids which exhibits anti-oxidant and anti-diabetic properties. Combining these two flours with refined wheat flour enriches sensory and nutritional quality. **Results:** Sensory evaluation was carried out by the semi trained panel members using a 9-point hedonic scale. Among the prepared cookies, Kodo millet cookies scored the highest result. They had a combination of desirable and lasting vanilla-like aroma coupled with typical baked millet aroma. **Conclusion:** It can be concluded that the product from formulated ratio RWF: KMF 80:20% was the best cookies, highly acceptable and compared favorably with the standard and Brown top millet cookies according to sensory parameters.

Keywords: Cookies, Millet, cookies, Refined wheat flour ,Kodo millet flour, Brown top millet flour.

Abstract ID: 240

ABSTRACT TITLE: DEVELOPMENT AND EVALUATION OF FOXTAIL MILLET (SETARIA ITALICA) AND PEARL MILLET (Pennisetum glaucum) BASED NIPPATTU ENRICHED WITH DRUMSTICK LEAVES

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Background: Nippattu is a traditional South Indian crunchy snack. These are eaten as evening snack and are also made during festivals. In this study, Rice flour was replaced by Foxtail millet and Pearl millet flour. Foxtail millet and Pearl millet are highly nutritious, non-glutinous, offering exceptional health benefits due to their high protein, fiber and mineral content. Drumstick leaves renowned for their antioxidant and anti-inflammatory properties complement these millets nutritional profile. **Materials:** Nippattu was prepared from a blend of foxtail millet, pearl millet flour, drumstick leaves and other ingredients. The various formulations of nippattu were developed in a ratio of (V1:V4) (100:0, 90:10, 80:20 and 70:30). The product formulations were developed from partial replacing rice flour to complete replacement of rice flour, with foxtail millet and pearl millet flour, the developed method and usage of other ingredients remains constant. These different formulations of nippattu were prepared by baking in an oven at 175 °C for 20 minutes. The developed nippattu was subjected to sensory evaluation by semi-trained panelists (n=25) scoring on 9-point hedonic scale. Subsequently, the chosen variation was subjected for nutritional assessment. **Results:** The combination of V1 (100:0) foxtail millet and pearl millet incorporated nippattu was scored highest in terms of texture, taste and overall acceptability. The developed millet based nippattu was enriched in dietary fiber, protein and mineral content. **Conclusion:** Incorporation of foxtail millet and pearl millet flour in nippattu not only improved its nutritional content but also maintained sensory acceptability. The enriched nippattu demonstrated higher level of dietary fiber, protein and micronutrient content, making it more promising option for those who are seeking healthier dietary choices.

Keywords: Baked nippattu, Foxtail millet, Nutritional enrichment, Gluten-free, Health benefits.

Abstract ID: 241

ABSTRACT TITLE: THE DEVELOPMENT AND NUTRITIONAL EVALUATION OF MULTIMILLET BALL USING KODO MILLET (Paspalum scrobiculatum) AND PEARL MILLET (Pennisetum glaucum)

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Background: Multimillet ball is a highly nutritious food rich in energy, protein, fibre, iron. It can be consumed by all age groups, especially by adolescents for muscle growth; pregnant women to prevent anaemia; lactating women to increase milk production. Kodo (*Paspalum scrobiculatum*) and Pearl (*Pennisetum glaucum*) millets are small, seeded cereal grains that are a good source of phosphorus, iron, protein, fibre, B-complex vitamins and minerals compared to staple cereals. These are gluten free, making it a suitable dietary option. Other ingredients used include soybean and fenugreek seeds, making the dish enriched in iron and fibre to support blood sugar control, even in people without diabetes. **Materials:** Multimillet ball is a regional dish made with kodo and pearl millets, soybean and fenugreek flour by steam cooking to prevent nutrient loss. Various formulations of the product was developed with kodo and pearl millet in the ratio of [V1-V4] (35:35, 40:30, 30:40, 50:20). The mixture was steamed for 4 – 5 minutes. Developed multimillet ball was subject to sensory evaluation by semi-trained panellist members (n=30) scoring on 9 - point hedonic scale. The developed product was compared to standard finger millet ball made using ragi flour. Subsequently, the chosen variation was subject to nutritional evaluation. The replacement of finger millet with kodo and pearl millet make the millet ball rich in protein, fibre, and iron. **Results:** The combination of V2 [40:30] multimillet ball attained highest sensory scores and nutritional value. The product was an enriched source of protein, fibre, and iron content. **Conclusion:** The incorporation of kodo, pearl and soybean make the product nutrition-dense. High iron levels benefiting individuals at risk of anaemia; high protein and fibre content to strengthen immune system and promote heart and muscle health; polyphenol content to reduce blood glucose level and prevent obesity. Additionally, fenugreek flour has calcium to reduce risk of osteoporosis in women who have undergone menopause and shorten the duration of menstrual pain, cramps and increase milk production in breastfeeding women.

Keywords: Kodo millet, Pearl millet, Protein, Fibre, Iron.

Abstract ID: 242

ABSTRACT TITLE: DEVELOPMENT OF VALUE-ADDED COOKIES USING GERMINATED KODO MILLET FLOUR

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Background: In recent days, the consumer interest for snacks is shifting towards the food with potential health benefits. Addition of unconventional ingredients in bakery products yield better, acceptable,

healthy and nutritious products. Kodo millet (*Paspalum scrobiculatum*) is known for its high nutritional value, particularly in fiber, essential minerals and bioactive compounds. Germinated kodo millet improve nutritional profile and functional properties of grains by activating enzyme that breakdown anti-nutritional factors and improves anti-oxidant properties. The cookies where, refined wheat flour (RWF) is replaced by 100% whole wheat flour contains more fiber, protein and controls blood sugar levels. The main aim of the study is to develop value-added cookies using germinated kodo millet flour (GKMF) and whole wheat flour (WWF) which could offer superior nutritional benefit without compromising major sensory attributes. **Materials:** Cookies were developed from the formulated ratios RWF: WWF: GKMF 100:0:0; 0:100:0; 80:0:20; 75:0:25; 70:0:30. A standardized cookie recipe and baking procedure were followed. Cookies developed were analysed for sensory attributes. Sensory evaluation was carried out by semi trained panel members, who rated the cookies for appearance, texture, taste and overall acceptability. In addition, texture analysis was carried out to assess hardness and crispness. **Results:** Sensory evaluation was carried out by the semi trained panel members using a 9-point hedonic scale. Among different variations of RWF:WWF:GKMF 70:0:30 showed significantly different scores compared to other ratios and it was highly acceptable by panellists. **Conclusion:** Therefore, it can be concluded that the product developed by formulation ratio RWF: WWF: GKMF 70:0:30 of Maida and Germinated kodo millet was scored high and it was highly acceptable with good sensory qualities with improved nutritional quality, gluten free and healthier than Maida cookies. However, consumption of such products is highly encouraged to promote good health.

Keywords: Cookies, Millet cookies, Refined wheat flour, Kodo millet flour, Germinated kodo millet flour.

Abstract ID: 245

ABSTRACT TITLE: DEVELOPMENT OF CAKE WITH INCORPORATION OF SORGHUM MILLET (SORGHUM BICOLOR L. MOENCH) AND BEETROOT (BETA VULGARIS)

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Background: Cake is a popular baked dessert typically made from maida, sugar, egg, butter and leavening agents. In this study, Maida is replaced by Sorghum flour and Beetroot. Sorghum or Jowar is a gluten free soulful sustenance that bridges ancient traditions. It is known for its high fibre, protein, essential minerals such as potassium, phosphorus, iron, calcium and antioxidants such as phenolic acids, anthocyanin which supports heart health and digestion. Beetroot, known for its vibrant color and myriad health benefits. It is an exquisite cradle of nutrients including protein, vitamin B complex and C, minerals such as potassium, folate and magnesium. It contains antioxidants such as coumarins, carotenoids and flavonoids. The main objective of this study was to develop and enrich the nutritional

quality of cake by formulating and evaluating Sorghum and Beetroot that combines health benefits.

Materials: Jowar Beetroot Cake (JBC) was prepared by substituting maida with sorghum flour, beetroot which improves the nutritional quality. Jaggery powder is used which contain trace amounts vitamins and minerals that supports overall health. Four different formulations (JBC1 to JBC4) were made by varying proportions of sorghum flour (50:0, 30:20, 40:10, 25:25) and concentration of other ingredients remain constant. The JBC was baked in microoven at 180°C for 45 minutes. The developed cake was subjected to sensory evaluation by semi trained panelists (n=25) scoring on 9 point hedonic scale. The best accepted ratio was further evaluated for its nutritional content. **Results:** It was observed that JBC1 (50:0) variation had higher acceptability in terms of sensory aspects and the product was enriched with fibre, protein and micronutrients such as iron, potassium and phosphorus. The cake is denser, less airy and has a deep pink color by the presence of natural pigment in beetroot (Betalains). **Conclusion:** The incorporation of sorghum flour and beetroot yielded a nutrient dense cake. Sorghum flour provided a rich source of fibre and essential minerals, while beetroot contributed natural sweetness and vibrant color. It offers significant fibre, promoting digestive health, bowel movement and improves blood flow.

Keywords: Coumarins, Anthocyanin, Flavanoids, Phenolic acids, Betalains.

Abstract ID: 248

ABSTRACT TITLE: EXPLORATION OF THE NUTRITIONAL COMPOSITION OF DIFFERENT FRACTIONS OF THE RIPE GREEN RHODOMYRTUS TOMENTOSA (AIT) HASSK FRUITS

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Background: *Rhodomyrtus tomentosa* (RT) is a flowering plant which belongs to the family Myrtaceae. This plant is widely spread in Southern and Southeast Asian countries. Due to the difference in geographical location, two varieties have been categorised. The Southeast Asian variety of RT bears purple berries and is studied extensively, whereas the South Asian variety from India bearing green berries remains relatively unexplored. In this context, the present study aims to examine the nutritional potential of the peel, flesh, seed, and whole fruit of RT for food applications. **Materials:** Freeze dried RT fruit, peel, flesh and seed powder was analyzed for its proximate composition using standard AOAC methods. Further, amino acid, fatty acid profiling and mineral composition analysis was carried out using Amino acid analyzer, Gas chromatography-Mass spectrometry and Induction Coupled Plasma-Atomic Emission Spectroscopy, respectively. **Results:** The green RT fruits were found to be a rich source of dietary fibre (72.08 ± 1.93 g/100g) with a prominent composition of insoluble fibre (68.35 ± 2.46 g/100g). The fruit contained lower levels of fat (3.74 ± 0.11 g/100g) and protein (3.42 ± 0.18 g/100g) with both constituents condensed in the seed. The most abundant fatty acid was found to be linolenic acid (74.57 ± 0.8 %). Leucine (10.24 ± 1.54 g%) and glutamate (18.99 ± 0.60 g%) were plentiful in the whole fruit and seed contained the highest amount of these amino acids. The fruits were seen to contain higher levels of potassium (479.32 mg/100g), calcium (297.77 mg/100g) and magnesium (97.39 mg/100g) with the potassium and magnesium being predominant in the flesh. **Conclusion:** These results suggest that the underutilized green fruits of *Rhodomyrtus tomentosa* (Ait) Hassk are a good source of nutrients with the seed contributing to the prominent amount of nutrients. Hence, the green RT fruits have the potential to be utilized as a functional ingredient in food industries.

Keywords: Indian *Rhodomyrtus tomentosa*, Ripe green fruits, Nutritional composition

Abstract ID: 251

ABSTRACT TITLE: DEVELOPMENT AND STABILITY ASSESSMENT OF FLOUR PRE-MIX FORTIFIED WITH OMEGA-3 FATTY ACIDS AND PROTEIN

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Background: Cereal and cereal based products are most common food staples. In general cereals contain carbohydrates (65-75 %), lipids (2-6%) and protein (7-12%). Omega-3 fatty acid and protein are very important and essential nutrients and its nutritional benefits are well established. Incorporation of omega-3 and protein in cereal flour is desirable for improved nutritional outcome. Hence the objective of the present study was to develop flour pre-mix fortified with omega-3 fatty acids and protein for fortification of common flour and stability assessment of developed pre-mix. **Materials:** Plant-based flaxseed was chosen as source of omega-3 fatty acid (Alpha-linolenic acid-ALA), wherein flaxseed was fractionated to get whole flaxseed powder, hull powder, flaxseed cake powder and flaxseed de-hulled powder. These powders were subjected for estimation of fat content and fatty acid analysis by gas chromatography to know the highest ALA containing fraction. For protein, soy, chick-pea, rice and pea powders were used. The preparation of four different pre-mixes was carried out by mixing flaxseed powders and protein powders in 80:20 proportion. These pre-mixes were subjected for fatty acid analysis, protein content and functional assessment as part of characterization. Further stability assessment of pre-mix was carried out as per ICH guidelines using stability chamber ($40^{\circ}\text{C} \pm 2^{\circ}\text{C}/75\% \text{RH} \pm 5\% \text{RH}$) for three months. Parameters such as fatty acid analysis, protein content and functional assessment was carried out at pre-defined time points during stability study. **Results:** Flaxseed de-hulled powder fraction was selected as ALA source wherein fat content was highest (45.03 ± 2.5) maintaining the ALA content close to 55%. Among the pre-mixes, soy protein pre-mix showed highest ALA content (53.59%) with non-significant alterations at the end of stability period. On other hand rice pre-mix, chick-pea pre-mix and pea pre-mix showed significant reduction in omega-3 content ($p < 0.001$). Although there was significant decrease in protein content in all pre-mix ($p < 0.001$), however soy protein could maintain highest protein content. **Conclusion:** In this study, stable omega-3 fatty acid and protein enriched flour pre-mix developed. This pre-mix can be used for omega-3 fatty acid and protein enriched flour-based food products.

Keywords: Omega-3 fatty acid, Protein, flour, cereal, Pre-mix

Abstract ID: 253

ABSTRACT TITLE: INSTANT SOUP MIX POWDER FOR TREATING MENSTRUAL PROBLEM

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Background: Menstrual disorders are physical or emotional problems that affect the normal menstrual cycle and bring about pain, unusually heavy or light bleeding and missed periods. They are one of the most occurring gynaecologic issues that affect women of child bearing age with a global prevalence of 30-70% and one of the frequent reasons women consult physicians worldwide. The cassia auriculata contain anti- inflammatory properties which potentially helps to treat and reduce the menstrual problems. **Materials:** Instant Soup mix powder was prepared using Cassia auriculata flower powder. Toor dhal, Coriander seeds, Curry leaves, Asafoetida, Salt, Cumin seeds, Pepper, Dry Red chilli, Cinnamon Stick, Cassia auriculata flower. Turmeric Powder were added to enhance the taste and flavour. Dry the cassia auriculata flower for one week in sun light. After drying roast all the ingredients and grind the ingredients into fine powder. Sensory evaluation of the Soup mix powder was conducted by fifteen semi-trained panel members, using a 9-point hedonic scale to assess sensory acceptability. **Results:** Cassia auriculata contains anti- inflammatory compounds, which may have potential health totreat the Menstrual problems. This Soup Mix powder was rated best in appearance, colour, flavour, texture, and taste, showcasing excellent overall sensory qualities. **Conclusion:** The Cassia Auriculata Instant soup mix powder has more valuable nutritional benefits and can be incorporated into a diet to promote the health benefits. Regular consumption of soup of cassia auriculata powder may contribute to regulate menstrual cycle due to purported hormonal balancing properties. Cassia auriculata regulatory properties, which help to restore the menstrual regularity in women. This study presents clear evidence that the soup of cassia auriculata flower powder restores the menstrual regularity in women and reduces the menstrual problems.

Keywords: Menstrual problems, Cassia auriculata flower powder, formulation of cassia auriculata flower powder.

Abstract ID: 255

ABSTRACT TITLE: FORMULATION AND STANDARDIZATION OF SPROUTS KULFI

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Background: Sprouts, formed from seeds during the sprouting process, serve as excellent sources of protein, vitamins, and minerals. Their germination leads to the creation of functional foods that can have

a positive impact on health. Kulfi, a traditional Indian frozen dessert, is known for its good taste and nutritional value. It typically consists of milk, cream, dried milk, and condensed milk, often enhanced with non-milk ingredients for sweetening, stabilizing, and flavoring. This study aims to improve the nutritional profile of kulfi by incorporating various types of sprouts. **Materials:** In this research, kulfi prepared without sprouts was used as the control, while the experimental kulfi was created using milk, brown sugar, cardamom powder, cashews, and sprouted green gram. A sensory analysis was performed with 25 semi-trained panelists who evaluated the kulfi based on color, flavor, texture, taste, and overall acceptability. **Results:** From the results of the present investigation, it may be concluded that sprouts could be successfully utilized for the preparation of kulfi. The overall acceptability of the formulated sprouts kulfi is 8.42/9 evaluated by the panel and semi-trained panel members, achieved highest score for overall acceptability and good textural property when compared to the standard. **Conclusion:** As kulfi becomes increasingly popular worldwide, this innovative version with added sprouts aims to provide essential nutrition along with health benefits. The incorporation of sprouts not only improved the sensory quality but also garnered higher scores in several sensory attributes. The blend of green gram sprouted puree positively influenced taste acceptability, making this product feasible for commercial production. Overall, the enhanced nutritional, sensory, and functional characteristics of the sprout-infused kulfi highlight its potential in the market.

Keywords: Sprouts, standardization, formulation, organoleptic evaluation, kulfi.

Abstract ID: 260

ABSTRACT TITLE: EFFECT OF PHYTOCHEMICALS ON THE INHIBITION OF THE MICROBIAL SPOILAGE IN LUTJANUS CAMPECHANUS (RED SNAPPER) FISH

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Background: Red snapper fish are perishable and susceptible to microbial spoilage and the existing preservation methods having limitations, phytochemicals is a promising alternative to preserve fish.

Materials: In this study, two bacterial species were isolated, screened antimicrobial activity of phytochemicals was through ZOI and MIC, investigated the selected compound's growth inhibition in bacteria when compared with control, caused membrane damage in E.coli, blocked the SOD & Catalase enzyme, inhibited induced lipid and protein oxidation, reduced microbial count and MDA & carbonyl content furthermore protected red snapper fish sensory attributes (colour, appearance and texture). **Results:** The isolated red snapper-associated bacteria were identified as *Psychrobacter* sp and *Kurthia gibsonii*. Among phytochemicals cinnamaldehyde exhibited higher antibacterial activity against *Psychrobacter* sp and *Kurthia gibsonii* with a zone of inhibition (19.3-20.3 mm) and minimum inhibitory concentration (1562-3125 µg/mL), fish isolates growth was inhibited by cinnamaldehyde in lag, log and stationary phases when compare with control. Cinnamaldehyde damaged the E.coli cell membrane. Cinnamaldehyde reduced the bacterial count in an acceptable range and reduced the MDA and carbonyl content for up to 12 days, the sensory attributes (colour, appearance and texture) scored

“good” for up to 6 days in red snapper fish **Conclusion:** Cinnamaldehyde inhibits bacterial growth in ZOI, growth curve (lag, log and stationary phase) experiments and even kills the bacteria through MIC, membrane damage, and blocking antioxidant enzymes. Moreover, cinnamaldehyde reduces the bacterial count, MDA and carbonyl content while preserving the sensory properties of red snapper fish. A broader range of red snapper spoilage bacteria was not used in this study and it will be further explored for better preservation strategy

Keywords: Phytochemicals, Cinnamaldehyde, *Lutjanus campechanus*, *Psychrobacter* sp and *Kurthia gibsonii*

Abstract ID: 263

ABSTRACT TITLE: MORINGA INFUSED FEAST: NUTRIENT- PACKED DISSOLVABLE SOUP POUCHES: AN ALTERNATIVE TO INSTANT PLASTIC SOUP POUCHES

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Background: The global food packaging industry is facing significant challenges related to plastic waste and environmental health hazards caused by plastic films. To address these issues, a novel edible soup bag infused with moringa leaves has been developed. This innovative packaging solution eliminates the need for traditional single-use containers and contributes to sustainability. Moringa leaves are rich in essential nutrients like vitamins A, C, E, calcium, potassium, and protein. They also possess antioxidants and antimicrobial compounds, which could enhance both the nutritional value and preservation properties of the edible soup bag. **Materials:** Edible soup bags were formulated using moringa leaf extract and tapioca starch. Tapioca starch was selected for its film-making capabilities, biodegradability, and effective barrier properties. The combination of moringa leaves and tapioca starch aimed to create an eco-friendly, nutrient-dense packaging alternative. The bags were standardized and subjected to organoleptic evaluation by 30 semi-trained panel members using a 9-point hedonic scale to assess the product’s sensory qualities. **Results:** The edible soup bags showed promising results in terms of sustainability and functionality. Moringa leaves enriched the soup bags with valuable nutrients and antimicrobial properties, potentially extending the shelf life of packaged products. The organoleptic evaluation indicated that the edible soup bags were well-received, with positive feedback on taste, texture, and overall sensory appeal from the panel members. Additionally, the bags’ biodegradable nature contributes to reducing plastic waste, aligning with current sustainability goals. **Conclusion:** The development of tapioca starch-based edible soup bags enriched with moringa leaves represents a significant advancement in sustainable packaging and food innovation. This eco-friendly solution addresses environmental concerns by reducing plastic waste while offering consumers a convenient and nutritious meal option. As society continues to prioritize sustainability and health-conscious choices, these edible soup bags have the potential to make a meaningful impact on both the

environment and public health, providing a creative and practical solution to the global plastic pollution problem.

Keywords: Moringa leaves, Edible soup bags, Tapioca starch, Sustainability, Nutritious.

Abstract ID: 264

**ABSTRACT TITLE: CHLOROGENIC ACID AND OXIDATIVE STRESS: BETEL LEAF'S
ROLE IN CANCER PREVENTION**

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Background: Betel leaf scientifically known as Piper betel has been traditionally used in many Asian cultures for its medicinal and nutritional properties. It contains numerous bioactive compounds, including polyphenols, alkaloids, flavonoids, and essential oils. Betel leaves are known for their antimicrobial, antioxidant, anti-inflammatory, and gastro-protective effects. Some key components include Hydroxychavicol, Chavibetol, Eugenol, chlorogenic acid, β -carotene, and α -tocopherol, which have potentials in combating various diseases, especially cancer. **Materials:** A systematic literature search using Google Scholar was done to collect studies related to the bioactive components of betel leaf, and its potential in treating cancer. Search was conducted using keywords to ensure comprehensive result. The keyword "Betel leaf" showed approximately 15,600 results. Closer with keywords "Betel leaf bioactive compounds" prompted about 9050 results. Further with "Betel leaf bioactive component Chlorogenic acid" generated around 863 results. A final search left 699 results with the keywords "Chlorogenic acid in betel leaf for cancer". The outcomes of the 699 results are consolidated and presented in the study. **Results:** Chlorogenic acid, a bioactive compound found in betel leaf, has shown promising anti-cancer properties. It acts as an antioxidant, reducing oxidative stress and prevent DNA damage, which are key factors in cancer progression. Studies assess that chlorogenic acid may inhibit tumour growth by inducing apoptosis (cell death) and suppress the proliferation of cancer cells. Additionally, it exhibits anti-inflammatory properties that help reducing cancer risk. **Conclusion:** Cancer is becoming a serious medical problem due to the chemical pollution in food, air, and water and lifestyle. Therefore, there is a dire need to discover new pharmacologically important compounds which can be used in cancer prevention, therapeutics, or chemotherapy management. Plant sources which have nutraceutical properties and anti-malignant activities need to be identified and explored. Betel leaf shows the potentials to fight against cancer due to its rich antioxidant phytochemical compounds including polyphenols, flavonoids, and alkaloids. Betel leaf plant extract has proven anticancer role against oral cancer, mammary cancer, skin cancer, prostate cancer, and gastric cancer under lab conditions.

Keywords:

Chlorogenic acid, Apoptosis, Cell proliferation, Anticancerous

Abstract ID: 265

ABSTRACT TITLE: EFFECT OF DRY HEAT COOKING METHOD ON THE GLYCEMIC INDEX AND GLYCEMIC LOAD OF FOOD PRODUCTS DEVELOPED USING COMPOSITE FLOUR MIX

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Background: The glycemic index (GI) and glycemic load (GL) of food products are essential factors impacting postprandial blood glucose levels, especially for individuals with diabetes. Dry heat cooking methods, such as baking and roasting, may modify the GI and GL of foods made from composite flour mixes, which incorporates various food ingredients to augment the nutritional value. To assess the effects of different dry heat cooking methods (baked versus roasted products) on the glycemic index and glycemic load of food products developed using composite flour mix. **Materials:** Composite flour mixes were prepared using popped grains- 50 % of Amaranthus hypochondriacs, 25% of foxtail millet, and barnyard millet (2:1:1ratio). Food products, including ladoos and cookies were developed. Roasted CFM was used for preparing ladoos (minimal processed), while cookies, were subjected to baking at 180°C for 20 minutes. Products were evaluated for their Sensory and nutritional properties. The GI was determined using a standard protocol involving healthy participants who consumed test foods providing 50 g of available carbohydrates, after an overnight fast. Incremental area under the curve (iAUC) was calculated by assessing the blood glucose levels at intervals post- consumption (0, 30, 60, 90, and 120 mins). GL was calculated based on the GI and carbohydrate content of the foods. **Results:** Ladoos had a significantly higher levels of protein, calcium, and iron ($p < 0.001$) than cookies. Ladoos and cookies fell within the low GI range (< 55). Cookies exhibited a significantly lower GI (mean GI = 32) compared to roasted products (mean GI = 45) $p < 0.001$. However, GL of 22 for cookies and 30 for ladoos indicated a high glycemic load. **Conclusion:** Baking appears to be a more effective method for producing lower-GI foods, which can be beneficial for dietary management in diabetic populations. Glycemic load of the products provides a more accurate impression of how much that food can affect the blood glucose level. The GL values varied depending on the serving size and cooking method, with baked products consistently showing lower GL values.

Keywords: Glycemic index, glycemic load, Dry heat cooking, Roasting, Popping, Baking. Incremental area under the curve, blood glucose levels

Abstract ID: 266

ABSTRACT TITLE: DEVELOPMENT OF HOMEMADE BUTTER INCORPORATED WITH ROSEMARY LEAVES POWDER

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Background: In the present trend, the sudden onset of contagious diseases and high incidence of chronic diseases, necessitates the functional processing of foods with nutritive value. Butter is a probiotic dairy product with pleasant flavour. The rich fat content in butter is suitable to solubilise the fat soluble bioactive compounds such as Isoprenoids and Phenolics, which are present in Rosemary leaves (*Rosmarinus officinalis*) for health benefits such as antioxidant, diuretic, anti inflammatory. Hence the present study was attempted to standardise the incorporation of Rosemary leaves powder in butter and analyse the nutrient content. **Materials:** Butter was processed by whipping the cream (30% fat) by electric beater, separation of fat globules clumped together in to butter and water. Butter was then incorporated with Rosemary leaves powder at 0.5, 2.5 and 5 percent levels and labelled as variation 1, 2, and 3 respectively. Sensory evaluation by Nine point hedonic rating test was performed by a sensory panel of 30 semi trained members. Nutrients analysis for Energy, Carbohydrate, Protein, Fat, were done by standard tests. Statistical analysis using descriptive and one way ANOVA with Duncan test were performed to find out the significance of difference in sensory and nutritional characteristics with the effect of incorporation of Rosemary Leaves powder. **Results:** Sensory evaluation showed that the mean sensory scores were 8.33, 8.76 and 7.60 for variation1, variation 2 and variation3 respectively and variation 2 was scored with high acceptability score than other variations as compared to control butter. The mean difference in sensory scores among three variations as compared to control butter was significant by one way ANOVA ($p < 0.05$) and DMRT showed that variation2 was comparable consumer acceptability to control butter ($p > 0.05$). Nutrient such energy, carbohydrate, protein, fat, calcium, (IU) were increased in butter with the increase in the level of incorporation of Rosemary leaves powder in butter as compared to control butter ($P < 0.05$) by one way ANOVA and DMRT test at 5 per cent level of significance. **Conclusion:** Butter with 2.5g rosemary powder had better micronutrients than control butter. Further analysis needed in functional compounds. **Keywords:** Antioxidant, Rosemary leaves

Abstract ID: 267

ABSTRACT TITLE: EFFECT OF COMPLETE AND PARTIAL GELATINIZATION ON THE GLYCEMIC INDEX AND GLYCEMIC LOAD OF MEAL ITEMS PREPARED BY INCORPORATING COMPOSITE FLOUR MIX

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Background: Gelatinization, the process of starch granules absorbing water, imbibing, and swelling upon heating, significantly influences the digestibility of starches in composite flour mixes. Research indicates an inverse correlation between the degree of gelatinization and the glycemic index. Foods that undergo complete gelatinization tend to have a lower GI compared to those with partial gelatinization. **Objectives:** This study investigates the effects of complete and partial gelatinization on the GI and GL of meal items prepared with composite flour mixes. **Materials:** Composite flour mixes were prepared using popped grains- 50 % of amaranthus hypochondriacs, 25% of foxtail millet, and barnyard millet (2:1:1 ratio). Meal items, including porridge (complete gelatinization) and pancakes (partial gelatinization), were prepared with two cooking methods. Healthy adult participants consumed standardized portions providing 50 g of available carbohydrates, and blood glucose levels were measured at intervals (0, 30, 60, 90, and 120 mins) post-consumption to calculate the iAUC for both GI and GL. **Results:** Meal item-Porridge subjected to complete gelatinization exhibited a significantly lower GI (mean GI = 64) compared to those with pancakes-partial gelatinization (mean GI = 82). The GL was also reduced in completely gelatinized products, suggesting a more favorable glycemic response. **Conclusion:** The degree of gelatinization plays a significant role in modulating the glycemic index and load of meal items made from composite flour mixes. Complete gelatinization is associated with lower GI and GL values, making it a beneficial cooking method for developing diabetic-friendly foods. **Keywords:** Glycemic Index-GI, Glycemic Load-GL, Incremental Area Under the Curve-IUAC, Blood Glucose levels, complete gelatinization, Partial Gelatinization.

Abstract ID: 268

ABSTRACT TITLE: ORAL DISSOLVING STRIPS (ODS) USING PAPAYA LEAF EXTRACT

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Background: Oral dissolving strips (ODS) are an innovative drug delivery system designed to dissolve quickly in the mouth, providing a convenient alternative to traditional tablets, particularly beneficial for those who struggle with swallowing. Emerging in the late 20th century alongside advancements in polymer science, ODS offers rapid absorption and improved bioavailability, making them ideal for pharmaceutical and nutraceutical applications. Incorporating papaya leaf extract, known for its digestive, anti-inflammatory, and immune-supporting properties, into these strips enhances their appeal, aligning with the growing consumer interest in natural remedies. **Materials:** To prepare oral dissolving strips using papaya leaf extract, first extract the active compounds, combine the extract with film-forming hydrocolloids, Plasticizers, Flavouring agent, Saliva stimulating agent, adding sweeteners and optional flavoring agents to improve taste, and mix until uniform. Casting the mixture in a thin layer. Once dried, allow it to cool, then cut into small strips. **Results:** The preparation of ODS using papaya leaf extract yielded a thin, flexible film that dissolved effectively in the mouth, demonstrating the desired

characteristics of ODS. Upon testing, the strips exhibited a rapid dissolution time of approximately 30-60 seconds, allowing for quick release of the bioactive compounds. Sensory evaluation indicated a moderately pleasant taste, The film maintained structural integrity during handling and storage, showing no signs of brittleness or moisture absorption after several weeks in an airtight container. Overall, the formulation was effective, combining the health benefits of papaya leaves with the convenience of an oral dissolving format, suggesting potential for further development and consumer acceptance. **Conclusion:** The formulation of ODS using papaya leaf extract successfully demonstrated the feasibility of combining modern delivery systems with traditional herbal remedies. The strips exhibited rapid dissolution and maintained the bioactive properties of the papaya leaves, providing a convenient and palatable option for consumers seeking natural health benefits. Overall, this innovative approach not only highlights the potential of papaya leaf extract as a valuable ingredient in functional foods and supplements. The promising results indicate a viable product that could cater to the growing demand for easy-to-use, plant-based health solutions.

Keywords: Papaya leaf extract, Disintegration, ODS, Anti- inflammatory

Abstract ID: 269

ABSTRACT TITLE: ASSESSMENT OF KNOWLEDGE AND CONSUMPTION PATTERN OF PROBIOTIC FOODS AMONG COLLEGE GOING WOMEN STUDENTS

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Background:

Probiotic foods are functional aspect of fermented foods which are ethnic food of India. Invasion of western foods and consequent ill health problems necessitate the research on traditional probiotic foods. The purpose of the study was to assess the knowledge and consumption of probiotic foods among college going students. **Materials:** A total of 100 undergraduate and postgraduate women students from the branches of Nutrition, Life Science and Arts and Social Science were selected by Snowball sampling method from Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore. A questionnaire on knowledge and consumption pattern of probiotic foods containing 13 items including frequency of traditional probiotic foods was constructed based on related literature. The questionnaire was distributed through online among subjects of the study to elicit responses. After collection, data were classified and organized based on background personal information. Appropriate descriptive and one way ANOVA were statistical tests to analyse data using SPSS version 21. **Results:** Out of the total 100 undergraduate and postgraduate students, 39.1 per cent were from Nutrition, 25 per cent from Life Science and 35.9 per cent from Arts and Social Sciences. From the knowledge domain of questionnaire, 87 per cent of respondents were aware of the term probiotics, 60 per cent were known the impact of probiotics on gastrointestinal health, 90.2 per

cent knew the role of probiotics in the improvement of health and 68.5 per cent reported for the improvement of nutrition. From the consumption pattern, probiotic foods such as curd, buttermilk, curd rice raita, were reported for daily consumption by the average 50 per cent of respondents whereas those foods not consumed daily by the average 25 per cent of respondents. Cheese, Ice cream and Butter had the high frequency of consumption once in a month by 25 per cent of respondents. **Conclusion:** College women were aware of the health benefits of probiotics, yet one-fourth did not consume them daily, despite common options like curd and buttermilk. This calls for promoting probiotic consumption among these students.

Keywords: Probiotics, Consumption, Knowledge, Frequency

Abstract ID: 270

ABSTRACT TITLE: OPTIMIZATION OF PROTEIN AND IRON RICH FORMULATION FOR UNDERWEIGHT SCHOOL GOING CHILDREN

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Background: Underweight is one of the triple-burden of malnutrition which is most unremarkably seen among school going children. Around 32.1% of children around the age of 5 years are found underweight in India and other malnourishment associated with underweight. Black gram (Vigna mungo) is a very important source of protein and holds 341 calories of energy, provides 25.21 g of protein per 100 g after consumption and iron, comprising 7.57 mg of the recommended daily intake. It is an excellent source of vitamin B6, thiamine, pantothenic acid, riboflavin and niacin. Hence a low cost protein and iron rich formulation with additional nutrient formula was developed in combination with dry dates, jaggery and cocoa powder to enhance flavor to the supplement. **Materials:** Protein rich supplement for underweight school going children is prepared by sprouting the black gram, drying and grinding into powder. A protein and iron rich formula with different ration was prepared in combination with dry dates, jaggery and cocoa powder and evaluated for acceptability testing among the selected children (30 no.), nutrient content and storage studies. The most acceptable formula was sprouted black gram flour 100 g with 25g of jaggery, 30g of dry dates and 15g of cocoa powder. **Results:** The expected result from the research is the supplement should be acceptable by the school going children and there should be gain in weight of the children also improvement in their nutritional status. Results showed that during storage, obtained values were found to be in standard range for total plate count and it was observed that the formulated products packed in polyethylene pouches could be stored up to 45 days during the study period at room temperature safely and may be extended further. **Conclusion:** Protein rich supplement made with sprouted black gram flour, jaggery, dry dates and cocoa powder provides health benefits for underweight school going children, crucially in weight gaining, preventing PEM, anemia and maintaining the overall health. Thus preventive measures for stunting and wasting by focusing on nutrient rich supplement, improved diet quality for the children.

Keywords: Protein rich supplement, underweight, school going children, anemia, PEM.

Abstract ID: 271

ABSTRACT TITLE: CHICKPEA EDIBLE CUPS: FUN AND SUSTAINABLE SIPS FOR KIDS

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Background: Child growth and development is a multifaceted process that commences in utero and continues till adulthood. Nutrition plays a vital role in the growth and development of children. On the other hand, there is an increased disposal of single-use plastics. To address this issue, chickpea edible cup is formulated to bridge the gap between nutrition and sustainability. **Materials:** Chickpea (*Cicer arietinum* L.) annual plant of the family Fabaceae is mainly grown in semiarid and temperate regions. Chickpeas are a type of pulse that are grown worldwide and are regarded as an affordable, high-protein food. Therefore, chickpea is incorporated in an edible cup for the ease of nutritional intake as well as on the notes of sustainability. Edible cups are a unique and environmentally friendly solution to the problem of waste generated by disposable cups. This edible cup was composed of chickpea flour, jaggery and dates powder in the ratio of 2:1:0.5. **Results:** It had a firm appearance with mild brown color providing a nutty flavor and a sweet taste. A nutrient analysis and microbial analysis were conducted for chickpea edible cups. A chickpea cup yields 76.53 kcal of energy along with 1.44g of protein, 0.87g of fat and 15.72g of carbohydrates. Microbial analysis ensured no contamination by raw materials utilized to prepare the cups. **Conclusion:** These edible cups are enticing for children which is packed with nutrition. The use of edible cups also addresses the concept of sustainability at a young age. This initiative will aid for raising a responsible youngster for the future generation. Thus, chickpea edible cup is a commixture of healthy snack for children and a sustainable product for the environment.

Keywords: Growth and development, Nutrition, Chickpeas, Sustainability.

Abstract ID: 273

ABSTRACT TITLE: LEAFY TREAT: CRAFTING EDIBLE FILMS FROM JAMUN LEAVES

EXTRACT

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Background: Plastics, a polymer either natural or synthetic can be made into different shapes and sizes, for making cutleries, plates, containers due to their unique characteristics. Microplastics on entering the body via ingestion gets accumulated in the organs and tissues interfering with biological process, leading to chronic inflammation. On the other hand, recycled plastics often contain higher levels of chemicals including toxic flame retardants, benzene, carcinogens, brominated and chlorinated dioxins, etc. Environmental concerns lead to the creation of edible films offering the important advantage of being biodegradable and environmental friendly. The product was an alternate to single use plastics. It will have strong marketing appeal. Incorporating jamun leaf extract into edible film is carried out to develop functional and sustainable packaging solutions. It offers both nutritional benefits and extended shelf life for packaged food products. **Materials:** Jamun leaves, starch (10:1). **Methods** - Film casting technique. The film casting solution was prepared and poured on the conveyer belt. It is allowed to dry and Continuous film was thus obtained. Capability to improve food preservation and processing techniques and to be effective carrier for bioactive compounds can be met by incorporating jamun (black berry) leaves. Jamun is used as a medication to treat various metabolic issues including diabetes, hyperlipidemia, hypertension, obesity, etc. Jamun leaves is selected for its bioactive compound, antimicrobial property and easy availability. The main bioactive compound includes phenolic acids, esters, flavanols, anthocyanins, and procyanidins and is the richest sources of chlorogenic acid. **Results:** Products packaged with health-promoting materials like edible starch film containing jamun leaf extract can have strong marketing appeal, attracting environmentally conscious consumers seeking healthier and more sustainable food options. **Conclusion:** Combining tapioca with jamun leaves extract can enhance the nutritional content of edible films. It helps in improving digestion, regulating blood sugar levels, and reducing inflammation. The nutritional compounds in the leaf extract can be transferred to the food they wrap, providing additional health benefits.

Keywords: Microplastics, Bioactive compounds, antimicrobial property, Jamun leaves

Abstract ID: 274

ABSTRACT TITLE: HIGH-FIBER CRACKERS: ENHANCING NUTRITIONAL VALUE AND ENSURING LONG-TERM STORAGE STABILITY

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Background: Crackers are a popular snack food with widespread appeal due to their versatility and convenience. However, they are low in nutrients and dietary fiber, which may limit their health benefits. There's a growing interest in formulating healthier versions of crackers by incorporating whole grains, legumes, herbs, and other nutrient-rich ingredients. High-fiber crackers, in particular, have garnered attention as they may help boost dietary fiber intake, which is essential for maintaining digestive health.

Materials: Chickpea, horse gram, whole wheat flour, sunflower oil, Agathi (*Sesbania grandiflora*)

leaves, and spices were all procured from the local market and were processed accordingly. The dried samples were ground to a fine powder and stored in airtight containers for further use. Chemicals and reagents used for the study were of analytical grade. All the analysis were carried out in duplicates.

Results: The crackers were optimised based on their mean sensory scores. The proximate analysis of the optimised crackers resulted in similar values. On storage, the free fatty acid (%) and peroxide value (meq/kg of fat) were lesser in the samples containing Agathi leaf powder, in comparison with the control. Among the three samples, one of them had the highest value of total dietary fiber (21.4 ± 0.40 g/100g). The glucose adsorption capacity of the optimised crackers increased with the increase in the glucose concentration (14.5 ± 0.03 , 43.82 ± 0.12 , 22.64 ± 0.08 mM/dL in 50mM glucose concentration). Among the three samples, one of them had the highest level of unavailable glucose (52.65 ± 3.56 g/100g), as indicated by the analysis of starch fractions. **Conclusion:** All three cracker varieties showed good sensory and nutritional qualities, as they offer health benefits due to their high fiber and protein levels along with their ability to moderate blood glucose. Also, the inclusion of Agathi leaf powder enhanced the storage stability of the crackers, possibly by reducing lipid oxidation, without showing any adverse effect on the glucose adsorption capacity. These findings suggest that these crackers may be suitable as a healthier alternative to other snacks, especially for diabetics who can consume them guilt-free.

Keywords: High-fiber, Cracker, Diabetes, *Sesbania grandiflora*.

Abstract ID: 276

ABSTRACT TITLE: MAKING OF HANDMADE PAPER FROM ONION PEELS: A STEP TOWARDS SUSTAINABILITY

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Background: Ever increasing population, demands for more food and also generates more food waste making it important to devise methods to make utility products from waste. One such widely used product is paper, where the production contributes to reduced green cover on the planet. Making paper from fruit and vegetable peels discarded as inedibles, can contribute in protecting our green covers and also to meet UN sustainable development goals of 'Responsible Consumption and Production', 'Climate Action' and 'Life on Land'. This study aims to make handmade paper from onion peels generated in the college food laboratory, its analysis for quality and suitability for writing.

Materials: Feasibility study was carried out by making onion peels pulp to form a sheet. In the first experiment, two samples of pulp were treated with diluted solutions of Sodium Hypochlorite (NaOCl) with Acetic Acid and Hydrogen Peroxide (H₂O₂) with Sodium Hydroxide (NaOH) respectively, for bleaching. H₂O₂ was observed to be a better bleaching agent as compared to NaOCl. In the second experiment, bleaching was carried out using NaOH and H₂O₂ solution of higher concentration. Significant increase in whiteness of the pulp was observed. In the third experiment, two sets of pulp samples were treated with H₂O₂ and NaOH solutions in different ratios, for bleaching. Deckle printing

frames were used to form sheets, which were dried and analyzed for their whiteness using a whiteness meter along with performance of various inks on them. **Results:** Handmade paper sheets can be produced from onion peels. H₂O₂ with NaOH was effective in bleaching the pulp. Heating the pulp increased the rate of the bleaching process. Whiteness of the pulp increased with reduced quantity of the NaOH solution. The paper gave best performance while writing with marker pen, gel pen and fiber point pen. **Conclusion:** It can be concluded that it is feasible to make handmade paper from onion peels. This would help in sustainable development, and reduce carbon footprint on the account of conventional paper manufacturing.

Keywords: Sustainability, Handmade paper, Environment, Carbon footprint, Vegetable peels

Abstract ID: 277

ABSTRACT TITLE: DEVELOPMENT OF BROWNIE: TO ENRICH IRON FROM BARNYARD MILLET FLOUR (ECHINOCHLOA FRUMENTACEA)

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BACKGROUND: Brownie Is A Widely Consumed Snack That Is Often High In Refined Carbohydrates And Lack Essential Nutrients Making Them Less Suitable For Health Conscious Individuals. Barnyard Millet Is A Rich Source Of Protein, Iron, Antioxidants, Flavonoids, Essential Amino Acids, And Is Naturally Gluten Free. By Replacing Wheat Flour With Barnyard Millet Flour, Thus Tackle Key Nutritional Changes Related To Obesity. The Aim Of This Study Is To Develop Brownie By Partially Replacing Wheat Flour With Barnyard Millet Flour In Variable Proportions. The Objectives Include Evaluating The Sensory Attributes And Estimating The Proximate Composition Of Selected Brownie Variation To Assess Nutritional Composition. **Materials:** Locally Sourced Wheat Flour, Barnyard Millet Flour, Sugar, Milk, Egg, Cocoa Powder, Were Used To Prepare Brownie. Wheat Flour (0%, 25%, 50%, 75%, 100%). Sensory Evaluation Was Conducted Using 9 Point Hedonic Scale. Proximate Composition Of Standard And Selected Variation Was Analysed In Triplicates Using Standard AOAC Methods (2005) And Compared With The Standard. **Results:** The Formulation Of Brownie Containing 75% Barnyard Millet Flour Was Found To Be The Most Accepted Among All The Variations By Semi Trained Panellists (n=25). It Has Increased Fat, Dietary Fibre, Phosphorus And Iron And Reduced Carbohydrates And Energy. **Conclusion:** Inclusion Of Barnyard Millet Flour Offered Enhanced Nutritional Profile. Low Carb And High Fibre With No Gluten Content Brownie Making It A Healthier Choice Over Traditionally Available Brownie.

Keywords: Echinochloa Frumentacea, Sanwa, Proximate Composition, Celiac Disease

Abstract ID: 282

ABSTRACT TITLE: A REVIEW ON FOOD ADDITIVES AND ITS IMPACT ON HEALTH STATUS OF CHILDREN

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Background: Data from recent surveys show that a large proportion of processed snacks, beverages, and packaged foods consumed by children contain various food additives. The consumption of food additives in children, has increased significantly with the raising consumption of processed food. While additives are approved for consumption within certain regulatory limits, studies have raised concerns about their health impacts. **Materials:** Research papers on consumption on food additives among children and its impact on health was obtained from the database such as PubMed, google scholar and research gate published from the year 2000 onwards. **Results:** Studies indicate that children are ingesting excess of food additives by consuming various process food and junk foods in a day. some food additives may interfere with the endocrine system of children can cause hormonal imbalance that affects the growth, and development of the child. Excess intake can reduce immune response and also cause changes to the thyroid hormones, which is crucial for metabolism, digestion and brain development. Overall, the findings suggested that excessive consumption of highly processed foods or products that use high amount of food additives raises many health concerns among children such as 10% of asthma, obesity, 44% of developing an allergy, 24% of hyperactivity and other chronic non-communicable diseases in younger children who are more vulnerable to harmful effects due to their development stages. **Conclusion:** Children are not little adults, they have different sensitivity. Food additives are chemicals in the food supply which are closely regulated to ensure they do not provide any risk to human health. This review emphasizes the need for a more holistic investigation of exposure patterns and intake levels of food additives by children

Keywords: food additives, children, processed food, health,

Abstract ID: 283

ABSTRACT TITLE: PREVENTION OF ANEMIA IN ADOLESCENT GIRLS WITH BEET ROOT MALT

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Background: The objective of this study is to meet the daily requirement of iron for every adolescent girl through an iron-rich supplement. **Objective:** The objective of this study is to meet the daily requirement of iron for every adolescent girl through an iron-rich supplement. **Materials:** An iron-rich

supplement was prepared using beetroot extracted and jaggery. Beetroot is chosen for its iron content, enhanced absorption, folate content, and antioxidant properties. Three variations were created with different compositions of beetroot extract and jaggery to determine the ideal ingredient ratio. Sensory evaluation of the three variations was conducted by fifteen semi-trained panel members using a 9-point hedonic scale to assess sensory acceptability, and also the beetroot malt was given to an anaemic adolescent girl with a haemoglobin level of 7 mg/dl for 3 months, and the variation in the blood level is noted. **Results:** Among the three variations, the one containing 75% beetroot extract and 25% jaggery received the highest sensory acceptability, scoring 8.4 out of 9. This variation was rated best in appearance, color, flavor, texture, taste, showcasing excellent overall sensory qualities. It shows that the blood level of anemic teenage girls has increased. **Conclusion:** Beetroot malt serves as a good supplement of protein, both in terms of nutrition and taste. The jaggery added will also be a good alternate source of protein as well as sweetness. Because it is flavorful and high in nutrients, this beetroot malt is a great drink for adolescent children to have in the morning and evening. The iron content in haemoglobin after the regular consumption of beetroot malt for three months is checked and the blood level raised into 9 mg/dl. Beetroot malt serves as a good supplement of protein, both in terms of nutrition and taste. The jaggery added will also be a good alternate source of protein as well as sweetness. Because it is flavorful and high in nutrients, this beetroot malt is a great drink for adolescent children to have in the morning and evening. The iron content in haemoglobin after the regular consumption of beetroot malt for three months is checked and the blood level raised into 9 mg/dl.

Keywords: Protein rich, Beetroot, Jaggery, Supplement, Anaemia.

Abstract ID: 284

ABSTRACT TITLE: PREPARATION AND FORMULATION OF COUNTRY BORAGE CANDY TO TREAT COLDS AND COUGHS

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Background: The significance of biodiversity in medicinal plant use, as about 80% of the global population depends on botanical remedies. Conventional treatments for colds focus on symptom relief, with natural cures often lacking thorough pharmacological evaluation. Historically, herbal medicines have been used to treat colds and respiratory infections. Plants containing compounds like polyphenols and flavonoids have shown effectiveness in combating viral infections. Remedies such as Echinacea, and Coleus aromaticus (Karpooravalli or country borage), along with supplements like zinc and vitamin C, have demonstrated beneficial effects in treating upper respiratory tract infections. The common cold is a mild, self-limiting respiratory infection with symptoms like cough, sneezing, and nasal congestion.

Materials: Fresh Karpooravalli leaves (coleus aromaticus), mint, and ginger were sourced from the local market. The ingredients were washed, sliced, ground separately, and strained to extract the juice.

Brown sugar was measured and added to a pan along with the extracts. The mixture was boiled over low-medium heat with continuous stirring until it thickened and formed crystals when tested in cold water. The mixture was then poured into molds and allowed to cool at room temperature. Once hardened, the candies were transferred to an airtight container for storage **Results:** The sensory evaluation of borage candy disclose that Variation I (9.3%) outperformed the other samples across most parameters, especially in appearance, color, flavor, taste, and overall acceptability, making it the most preferred. Variation II scored lower in several areas, making it the least favourable, while the standard and Variation III (6.9%) were moderately accepted. **Conclusion:** The formulation of candy using borage, mint, and ginger offers potential health benefits, particularly for alleviating respiratory issues such as coughs and colds. The natural properties of these ingredients, including their antioxidant and anti-inflammatory effects, contribute to soothing symptoms and improving overall health. Additionally, the nutritional value of borage, ginger, and mint rich in essential vitamins and minerals enhances their therapeutic potential. And can be used as a supplementation for those who are suffering with colds, coughs and respiratory issues.

Keywords: Borage candy, ginger, mint, antioxidants, anti-inflammatory, respiratory Health, botanical pharmaceuticals.

Abstract ID: 296

ABSTRACT TITLE: GUMMIES ON YELLOW PUMPKIN

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Background: Pumpkins, particularly yellow varieties, have gained popularity not only as a seasonal food but also for their nutritional benefits. Rich in vitamins A, C, and E, as well as antioxidants and dietary fiber, pumpkins are recognized for their potential health advantages, including improved immunity, skin health, and digestive support. The development of yellow pumpkin gummies also aligns with growing interest in plant-based diets and the use of natural ingredients in food products. By utilizing real pumpkin puree or extracts, manufacturers can provide a product that appeals to both the taste buds and health needs of consumers. **Materials:** The methodology for yellow pumpkin gummies includes selecting ingredients, mixing and heating the puree with gelling agents, molding, and setting. Quality is evaluated through sensory tests and nutritional analysis, while consumer feedback informs refinements, with all processes documented. **Results:** These gummies offer a convenient and enjoyable way to supplement one's diet with essential nutrients found in yellow pumpkin. Yellow pumpkin gummies can serve as a dietary supplement for individuals looking to boost their intake of essential nutrients, particularly vitamin A, vitamin C, and fiber, which are abundant in yellow pumpkin. While commercially available gummies come in a variety of flavors and formulations, those infused with yellow pumpkin

offer a unique nutritional profile. Unlike traditional gummies, which may rely on artificial colors and flavors, yellow pumpkin gummies derive their vibrant hue and flavor from natural sources. Additionally, they provide added nutritional value to the inclusion of yellow pumpkin extract or puree, distinguishing them as a healthier alternative. Gummies using yellow pumpkin will have 7.13 g/100g of protein, 141.85 g/100g of energy, 28.24 of iron to it. **Conclusion:** Yellow pumpkin gummies have broad appeal across different age groups, and the gummies are poised to make a significant impact in the food and supplement industry. Gummies using yellow pumpkins are made with natural ingredients, including yellow pumpkin extract or puree, which provides the vibrant color and unique flavor. They attract consumers looking for both flavor and nutritional value in their snacks.

Keywords: Yellow pumpkin, Gummies, Nutritious, Vitamin A, Supplement

Abstract ID: 297

**ABSTRACT TITLE: OPTIMIZATION OF RECIPES INCORPORATING WHEAT GRASS POWDER
INTO MILLET BASED COMPOSITE FLOUR**

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Background: Composite flour -blend of flours from cereals, legumes, root crops, with addition of wheat flour. Composite flour offers a balanced profile of essential amino acids, fiber, antioxidants, and mineral content compared to wheat flour. Composite flour formulated by combining wheat grass powder with sprouted millet flour. Cookies, muffins and waffles were standardized. **Materials:** The selected Finger millet was soaked, sprouted for 72 hours, dried in cabinet dryer for 3 hours at 120°C and powdered. The sprout length was 2.4 cm. One kg of millet yielded 894 g of powder after processing. Wheat was sprouted for 7 days and when sprout was 8 cm, the grass was harvested, dried in a cabinet dryer for 4 hours at 90°C, and powdered and 212 g powder was obtained. The sprouted finger millet and wheat grass powder was analyzed for nutrients and phytochemical components. The sprouted millet flour and wheat grass powder was formulated to form composite flour. Formulation was done in 3 variations, Variation I – 50% Wheat flour and 50% millet flour, Variation II – 40% wheat flour and 60% millet flour and Variation III – 30% wheat flour and 70% millet flour with addition of 2 gram of wheat grass powder. Physico-chemical properties like texture, colour, pH and spread ratio. was analysed for the highly accepted recipes. **Results:** Organoleptic evaluation of recipes was carried out using the formulated flour. Recipes developed from sprouted millet composite flour, Variation III – (30g wheat flour: 70g sprouted millet flour: 2 gram wheat grass powder) was highly acceptable in cookies and muffins. Waffle with variation II (40g wheat flour: 60g sprouted millet flour: 2g wheat grass powder) scored highest score. The nutrients in composite flour were rich in all nutrients compared with sprouted millet flour. The texture of the recipes were harder when compared with standard products.

Conclusion: Cookies, muffins and waffles developed using composite flour were nutritious and suitable for all age group people.

Keywords: Composite flour, Sprouted finger millet flour, Wheat grass powder, Cookies, Muffins, Waffles and Physico-chemical properties.

Abstract ID: 302

**ABSTRACT TITLE: DEVELOPMENT OF COOKIES FROM BARNYARD MILLET FLOUR
(ECHINOCHLOA ESCULENTA) ENRICHING MICRONUTRIENTS**

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Background: Cookies are sweet snacks having soft and chewy texture, consumed by all age groups but are high in refined carbohydrates and deficient in micronutrients. BMflour are excellent sources of dietary fibre, great source of proteins and micronutrients like zinc, iron, calcium, than other major cereals. BMF are effective in reducing blood cholesterol, lowers the blood pressure and the also help in the development and repair of body cells. **Materials and methods:** The raw materials (all-purpose flour, sugar, butter and barnyard millet flour) were procured from the local market. The study evaluated a standard and four variations V1, V2, V3 and V4. The refined wheat flour was replaced with BM flour (0%, 15%, 30%, 45%, 100%). The cookies were prepared by 1) the measured quantity of butter and sugar was creamed to a light texture. 2) Then the flour was added and made into a dough 3) the dough

was rolled into desired shape and was baked in a preheated oven at 170°C for 20 min. The prepared cookies were subjected to sensory analysis based on 9-point Hedonic scale by semi trained panellist (n = 10). Proximate composition of the selected variation and standard were analysed using standard AOAC methods. **Results:** The cookies containing 50% of BM flour was more acceptable on sensory analysis and proximate analysis of the selected variation indicated an increase in micro and macronutrients compared to the standard. **Conclusion:** The cookies developed with BMF (50%) had enhanced nutrients and it can be replaced in traditional cookies to increase the nutrient supply and reduce the hidden hunger for micronutrients.

Keywords: BMF- barnyard, Millet flour, Hedonic scale, AOAC.

Abstract ID: 303

**ABSTRACT TITLE: THE GUT MICROBIOME AND PEDIATRIC UNDERNUTRITION: A
COMPREHENSIVE REVIEW OF EMERGING INSIGHTS**

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Background: Undernutrition is a significant public health challenge in low-middle-income countries including India. Gut dysbiosis commonly occurs in these children which impedes the benefits of interventions. The nature and quality of the gut microbiome influence the normal growth and health of these children. However, much remains unknown regarding the gut microbial profiles of these children. Thus, the present review aimed to explore and summarize the gut microbiome profiles of under-six, undernourished children **Materials:** A literature search of original articles was conducted in Science Direct, PubMed, Scopus, EBSCO, and Web of Science. PRISMA 2020 guidelines were followed to conduct the review preparation. The inclusion criteria were: under-six undernourished children (i.e. stunted, underweight, and wasted) including children with Severe (SAM) or Moderate Acute Malnutrition (MAM) from low-middle-income countries. The gut microbiome profiles were explored (i.e. types of microbial flora) in the observational studies published in English between 2000 to the present. Following the literature search, duplicates were removed, abstract and title screening was conducted and based on the eligibility criteria final articles were selected for preparation of the review. Also, the quality of the included articles was assessed using the appropriate checklist. The data was extracted to an EXCEL sheet for further analysis **Results:** Out of 25 articles, duplicate (n=1) and based on eligibility (n=6) were excluded to have the final number (n=19). The results showed that stunted children had immature microbiota including the genus of *Desulfovibrio* and *Campylobacteriales*. The lack of *Bifidobacterium* species in the gut led to metabolic abnormalities in the brain, liver and muscles with impaired growth and altered bone morphology. In underweight children, unhealthy gut microbiota reduced the production of amino acids, short-chain fatty acids and microbial fermentation products that favoured nutrient absorption. The differences in dietary patterns led to the lack of *Actinobacteria*. The abundance of *Proteobacteria* that causes inflammatory bowel disease and *Clostridium innocuum*, an opportunistic organism in immunocompromised hosts, were found in SAM and MAM children. **Conclusion:** There is a need to explore the relationship between gut microbiome and diet that could improve the undernutrition in children.

Keywords: Stunting, wasting, Severe acute malnutrition, Moderate Acute Malnutrition, Gut microbiota

Abstract ID: 305

**ABSTRACT TITLE: CHLOROGENIC ACID AND OXIDATIVE STRESS: BETEL LEAF'S
ROLE IN CANCER PREVENTION**

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Background: The development of nutrient-rich, convenient, and cost-effective snacks is crucial for addressing modern nutritional challenges. This research focuses on creating finger millet-based extruded snack to enhance their nutritional value. Finger millet (*Eleusine coracana*) is high in fiber, calcium, and antioxidants. **Materials:** The hot extrusion process was optimized by varying temperature, moisture content, and screw speed. Extruded snacks were formulated with 85%, 90%, and 95% finger millet combined with corn, compared to a control of 100% corn. Physicochemical properties and nutritional analyses were conducted to assess macronutrients, dietary fiber, and minerals, particularly calcium. **Results:** Results showed that optimized parameters significantly impacted the physical and sensory qualities of the snacks. The 90% finger millet snack contained 57.93% carbohydrates, 9.64% protein, 14.6% fat, and 5.55% crude fiber, with a calcium content of 203.92 mg/100g. In contrast, the 100% corn control exhibited 82.3% carbohydrates, 8.2% protein, 13.6% fat, 1.7% crude fiber, and low calcium content. **Conclusion:** This study demonstrates the potential of finger millet as a valuable ingredient for health-focused extruded snacks.

Keywords:

Finger millet, Macronutrients, Nutrition, Calcium

Abstract ID: 316

ABSTRACT TITLE: MINERAL COMPOSITION AND ANTIMICROBIAL ACTIVITY OF THE PARBOILED WHITE RICE FERMENTED IN TRADITIONAL UNGLAZED CLAY POT (MANPAANAI) FOR GUT HEALTH

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Background: The Clay, as the important food contact material (FCM) of the traditional unglazed clay cookware, may influence the mineral composition and antimicrobial activity of the foods, fermented in it. The clay minerals present in the cookware provide a favourable atmosphere for the growth of the probiotics, which have their role in balancing the microbiome and promoting gut health. The aim of the present study is to investigate the Mineral composition, heavy metals, and antimicrobial activity of the white rice fermented in the traditional unglazed clay pot (manpaanai). **Materials:** The traditional unglazed clay pot (manpaanai) was purchased at Trichy district. The unglazed manpaanai weighing 878.5 g was used for cooking and fermenting the parboiled white rice sample (250 g). The rice was cooked to reach its doneness (at 23 min, 100°C). Then cooled, added fresh water (750 ml), and set for the controlled fermentation at ambient temperature. The pH (calorimetric method) was determined. The Mineral composition of the fermented rice was analyzed for calcium, phosphorus, sodium, potassium (IS:1479,12760), iron, zinc (FSSAI, 2016), and magnesium (IS:5949), and toxic metals like aluminum, mercury, and lead (FSSAI, 2016). The antimicrobial activity was studied by agar well diffusion method.

Results: The results depicted that the rice fermented (after 24 hours) in the unglazed traditional clay pot, showed a trace increase in the micronutrients like iron (0.28 mg/100 g), phosphorus (4.38 mg/100 g), and sodium (4.66 mg/100 g) at pH 4.58. The retention of calcium, magnesium and potassium content was observed in the fermented rice. The presence of toxic metals like aluminum, mercury, and lead was found to be “below detectable level”. The zone of inhibition of fermented rice showed antimicrobial activity against *Staphylococcus aureus* (10±0.70) *E.coli* (10.85±0.49) at the concentration of 500µg/ml.

Conclusion: Thus, traditional unglazed clay cookware has the vital role in influencing the mineral composition and antimicrobial activity of the fermented parboiled white rice.

Keywords: Traditional clay pot, fermented rice, micronutrients, antimicrobial activity.

Abstract ID: 321

**ABSTRACT TITLE: INCORPORATING RAGI AND AMARANTH MICROGREEN POWDER IN
FERMENTED IDLI**

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Background: Micronutrient deficiencies, or “hidden hunger,” are a significant global health issue, especially in regions where diets rely heavily on staple foods with limited nutrient diversity. Idli, a popular South Indian fermented dish, is nutritionally rich in carbohydrates but lacks sufficient levels of essential vitamins and minerals. Microgreens, particularly from ragi and amaranth are emerging as potent nutrient sources due to their high concentrations of calcium, iron, vitamins, and antioxidants. This study explores the fortification of idli with ragi and amaranth microgreen powders to enhance its nutritional value while maintaining its traditional sensory qualities. **Materials:** Ragi and amaranth microgreens were cultivated under controlled conditions and harvested at the optimal growth stage (7–14 days). The microgreens were air-dried and ground into fine powders. Two idli batters were prepared: a control batter with traditional rice and black gram, and an experimental batter incorporating microgreen powders. After fermentation, the idli samples were steamed, and nutritional analysis was conducted to assess the levels of calcium, iron, vitamins, antioxidants, fiber. Sensory evaluation was performed by a trained panel to assess texture, flavor, and overall acceptability. **Results:** The inclusion of ragi and amaranth microgreen powders in the idli batter led to significant improvements in nutritional content and exhibited higher levels of essential micronutrients such as calcium, iron, and vitamins (A and C), alongside increased antioxidant activity and phytochemical content. **Conclusion:** The incorporation of ragi and amaranth microgreen powders significantly enhanced the nutritional profile of idli, increasing its content of essential micronutrients such as calcium and iron without disrupting fermentation and this fortification method offers a practical and culturally acceptable way to address micronutrient deficiencies through a widely consumed traditional food.

Keywords: Microgreens, ragi, amaranth, fermentation, fortified idli

Abstract ID: 327

**ABSTRACT TITLE: EFFECT OF PROCESSING ON PHYSICOCHEMICAL CHARACTERISTIC OF
“CHITTIMUTHYALU”- A ZINC RICH RICE LANDRACE**

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Background: Chittimuthyalu (*Oryza sativa* L.) is a small size aromatic rice landrace commonly grown in the southern India. It is known for its relatively high zinc content compared to other rice varieties. Therefore, the present study was carried out to evaluate the effect of parboiling, different degrees of milling (5%, 10%, and 15%) and cooking on physical characteristics and comprehensive nutritional profile of Chittimuthyalu. **Materials:** Chittimuthyalu supplied from ICAR-IIRR, Hyderabad, was parboiled using the CFTRI method and de-husked. Brown rice was milled and grounded into powder. All analyses were done using AOAC standard methods and assay kits. **Results:** Scanning electron micrographs revealed that milling and parboiling alters the morphology and crystalline structure of rice grains. This is mainly shown by the removal of the bran layer and the disruption of starch granules. All macronutrients were found to decreased with each degree of milling (DOM) while available carbohydrate and total starch increased proportionally. In non- parboiled rice (NPR), 15% DOM showed highest loss in ash (60%), fat (49%), protein (11%) and dietary fibre (46%). In contrast, loss in nutrients was less in parboiled rice (PR) with loss of 54% ash, 30% fat, 10% protein and 26% dietary fibre at 15% DOM. Parboiling also altered starch profile of brown rice with increase in slowly digestible starch, resistant starch, and amylose content. In NPR, there was a loss of 67% iron, 47% zinc, 55% magnesium and 45% phosphorous at 15% DOM. Conversely, the magnitude of loss was less in PR, with a loss of 64% iron, 50% magnesium and 36% phosphorous, except for zinc, where the loss was 65%. Pressure cooking of rice didn't show significant impact on its macronutrient content. Whereas mineral content decreased with cooking in both NPR and PR. Retention of iron and zinc was lowest in 15% cooked NPR and 15% cooked PR, respectively. **Conclusion:** The findings of this study will help to optimize the DOM for Chittimuthyalu and understand the magnitude of the effect of cooking on the nutrient content of Chittimuthyalu to obtain rice with high nutritional quality.

Keywords: Milling, Parboiling, Minerals, Pressure cooking, Starch

Abstract ID: 332

**ABSTRACT TITLE: STUDY ON THE EFFECT OF GERMINATION OF FOXTAIL MILLET AND
FINGER MILLET ON THE NUTRITION ENRICHMENT OF PIZZA BASE**

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Background: The rising demand for nutritionally enhanced, gluten-reduced foods has sparked interest in developing alternative pizza bases using nutrient-rich, gluten-free grains. This study develops a pizza base from whole wheat flour, germinated foxtail millet, and germinated finger millet. The aim is to address lifestyle-related disorders like obesity and diabetes, while promoting underutilized, nutrient-dense millets. Inclusion of millets enhances the pizza base's nutritional profile, boosting dietary fiber, essential amino acids, and minerals like calcium and iron, while reducing gluten. Whole wheat flour is included for its higher fiber content, catering to the growing consumer demand for healthier alternatives.

Materials: Millets were brought from local shop. The grains were washed and soaked in water for 8-12 hours and allowed to germinate for 48-72 hours. The germination process was carried out to improve the digestibility and reduce anti-nutritional factors in the millets. The germinated grains were then dried using a hot air oven and then grinded to make flour. The pizza base was formulated using a combination of whole wheat flour, germinated foxtail millet, and germinated ragi in various proportions. Nutritional analysis included measuring dietary fiber, mineral content, and antioxidant activity. Sensory evaluation was conducted to assess consumer acceptance of the taste, texture, and appearance. The functional and structural characteristics of the base were also analyzed. **Results:** The developed pizza base showed a marked increase in dietary fiber, essential minerals such as calcium, iron, and magnesium and antioxidant properties compared to a conventional base. Germination improved the digestibility and nutritional profile of foxtail millet and ragi by reducing anti-nutritional factors. Additionally, sensory analysis revealed high consumer acceptability for taste and texture. **Conclusion:** The study successfully developed a nutritionally superior pizza base using whole wheat flour, germinated foxtail millet, and germinated ragi. The results demonstrate its potential as a functional food that promotes better health without compromising sensory quality.

Keywords: Whole wheat flour, germinated foxtail millet, germinated finger millet (ragi), functional pizza base, bioactive compounds, dietary fiber, micronutrient bioavailability, antioxidant activity, innovative functional foods

Abstract ID: 333

ABSTRACT TITLE: "UNDERSTANDING CLEAN LABEL PERCEPTIONS: A STUDY OF CONSUMERS AND FOOD BUSINESS OPERATORS"

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Background: The clean label trend is gaining global importance, but in India, it remains underdeveloped due to a lack of regulatory standards. Clean label foods emphasize transparency and simplicity in ingredients, seen by consumers as healthier and safer. Despite growing demand, Food manufacturers face challenges in reformulating products, and the absence of clear regulations complicates the adoption of clean label practices. This study aims to assess consumer and FBO perceptions. **Materials:** A cross-sectional study gathered data from 278 participants, including 139

consumers and 139 FBO and it was calculated using Cochran, to assess perceptions of clean labeling. A KAP questionnaire for FBOs was developed based on a literature review and used Volunteer response sampling. The data was analyzed using SPSS, with Non-Parametric Multiple Linear Regression to model complex, non-linear relationships. Socio-demographic factors such as age and health status were included in the analysis. **Results:** The tertile score comparison showed 62% of FBOs had poor awareness of clean labels, averaging 9, versus 35% of consumers, who averaged 12. Only 24% of FBOs and 21% of consumers were familiar with the term. FBOs confused clean labels with organic products, while consumers associated them with the absence of artificial ingredients. On sustainability, 41% of FBOs and 43% of consumers were uncertain, with a third in both groups supporting it. FBOs and consumers differed on willingness to pay more for clean label foods, with 38% of FBOs against higher pricing and 28% of consumers willing to pay extra. **Conclusion:** The study reveals a knowledge gap between consumers and FBOs regarding clean labels. Consumers associate clean labels with absence of artificial ingredients, while FBOs often confuse them with organic products. Bridging this gap is crucial to aligning FBO offerings with consumer expectations and promoting clean label initiatives.

Keywords: Clean labels, consumer awareness, Food business Operator, Food labeling, Natural ingredients, No preservatives, Sustainability.

Abstract ID: 340

ABSTRACT TITLE: ASSESSMENT OF FOOD WASTE IN RESTAURANTS IN PUNE ALONG THE SUPPLY CHAIN “A FOOD SYSTEMS APPROACH”

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Background: India is a food surplus country, but many struggle for a single meal a day. Around 40% of food that is produced in India is wasted majorly from households and 2nd largest contributor to food waste being restaurants. But very limited studies are available which quantify food waste generated here. It is also important to understand the various reasons for food waste to ensure reduced waste generation and effective mitigation. **Materials:** A mixed method of study was done. A quantitative study with pre-tested, content validated questionnaire was conducted. The sample size was 9 owing to the time constraint and permissions by restaurants. Restaurants were divided based on star rating and were located in Pune city. The Qualitative enquiry-based interview was conducted with 2 industry experts and their opinion on food waste was collected based on their observations during audits. SPSS software version 29 was used to analyse the data. Percentages, frequencies and Fischer Exact test were used for analysis. **Results:** The study revealed a significant amount of food, approximately 10.5 kilograms per day, is wasted. The highest waste generation occurred during the months of April to June, accounting for 44% of the total waste. Sides, dal, rice, and roti were the most frequently wasted items. Customer plate waste, contributing to 63.6% of the total waste, was identified as the primary cause, followed by food spoilage. Offering various portion sizes, demand forecasting, and displaying waste amounts were deemed effective strategies for reducing waste. Government regulations, manpower shortages, and non-avoidable waste (66%) were cited as barriers. The study found a correlation

between star ratings and waste amounts, with 3-star and higher-rated restaurants exhibiting less waste due to robust waste management practices. A majority of restaurants expressed interest in participating in food recycling programs. **Conclusion:** Food waste has various negative social, economic and environmental impacts. Effective training for the staff can reduce the food waste at restaurants. The actual waste generated is believed to be much higher than what is reported and needs further study and research.

Keywords: Food waste, Waste by customers, Waste generation

Abstract ID: 345

ABSTRACT TITLE: DEVELOPMENT AND CHARACTERIZATION OF CORN SILK TEA: A NOVEL HERBAL BEVERAGE WITH NUTRIENT AND ANTIOXIDANT PROPERTIES

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Background: Corn silk, an underappreciated by-product of corn, has been rediscovered as a valuable herb with potential therapeutic benefits. This study aimed to develop a tea from corn silk, assess its sensory acceptability, and evaluate its nutrient and antioxidant properties. **Materials:** Corn silk was carefully collected, processed, and ground into a fine powder. Instant corn silk tea was prepared in various formulations with ginger powder, then sensory evaluation, nutrient analysis, and antioxidant assays were conducted. **Results:** The results showed that the optimal formulation (Variation III) containing 1.8 g corn silk and 0.2 g ginger powder was highly acceptable to consumers. Notably, this formulation exhibited significant antioxidant capacity (170 μ g AAE/g), flavonoid content (0.8 mg/g), and phenolic compounds (7.5 mg/g). **Conclusion:** This study demonstrates the potential of corn silk tea as a healthy alternative to regular milk tea, warranting further clinical evaluations to substantiate its healthcare claims and therapeutic benefits for human consumption.

Keywords: Corn Silk Tea, Ginger powder, Nutrients, Phenolic compounds, flavonoids.

Abstract ID: 354

ABSTRACT TITLE: ASSESSING THE DIETARY PREFERENCES AND HEALTH CHALLENGES OF OLDER ADULTS: INSIGHTS FROM A SURVEY

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Background: As global populations age, understanding the lifestyle and dietary behaviours of seniors is increasingly vital due to their unique health challenges, including chronic diseases and social isolation. This study aims to identify the nutritional needs of older adults, particularly those living independently, by exploring their health status, meal preferences, and eating difficulties to inform the development of targeted nutritional products and interventions. **Materials:** To assess the dietary habits and health of the senior citizens aged 62-85 years (n=99), data was collected via a google form, a detailed questionnaire was formed, which included health conditions, preference for meal types, knowledge of meal substitutes, and challenges faced while eating. **Results:** The survey included

responses (n=99) from older persons, ages 62 to 85. The sample population consisted of 62.6% (n=62) females and 37.4% (n=37) males. The main health conditions reported were diabetes and hypertension. Among the respondents, 52 identified as vegetarians, while 47 were non-vegetarians. In terms of meal preference, the majority (58%) considered lunch to be their main meal, compared to only 17.3% who favored breakfast. More than half of the respondents (56.3%) were unfamiliar with meal substitutes, while 28.7% were familiar, and 15% were unsure. Most respondents did not use meal substitutes at present. Regarding dental health, 10% had dentures, and 9% had lost their teeth. Additionally, 10% of respondents experienced difficulty eating, with 39.2% finding hard food particularly challenging. Sleep disorders were reported by 18.6% of respondents, with insomnia being a common issue. Only 7.2% of the sample received help during meals, and 1% had difficulty holding utensils. **Conclusion:** The study highlights the need for targeted nutritional products, especially ready-to-cook meals, to support the health and ease of meal preparation for isolated or abandoned senior citizens.

Keywords: senior citizens, metabolic disorders, life style, meal patterns, nutrition products.

Abstract ID: 356

**ABSTRACT TITLE: DEVELOPMENT OF SOY-MILLET MILK BLENDS FOR VEGAN YOGURT:
IMPACT ON FERMENTATION AND SENSORYÂ PROPERTIES.**

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Background: There is increasing interest in plant-based products due to lactose intolerance, allergies, and ethical or environmental reasons. Vegan yogurt offers a nutritious, sustainable alternative to dairy yogurt, and soymilk, being rich in protein and essential nutrients, is a viable option for such products. The challenge lies in achieving desirable sensory characteristics and overcoming issues such as texture and phase separation. **Materials:** The research used three different ratios of soymilk to millet milk (90:10, 80:20, 100:0). The extracted plant milks were inoculated with *Streptococcus thermophilus* and *Lactobacillus delbrueckii* subsp. *bulgaricus*. After incubation for six hours, sensory evaluations and pH measurements were conducted to assess the yogurt's quality. **Results:** The 80:20 ratio of soymilk to millet milk yielded the most favorable sensory properties and the lowest pH, indicating successful fermentation and a desirable balance of flavors and textures. This blend provided the best result in terms of consumer acceptability. **Conclusion:** The study demonstrated the potential of combining soy and millet milk to produce a high-quality vegan yogurt. The successful fermentation and favorable sensory characteristics suggest that this blend could serve as a promising dairy alternative. **Keywords:** vegan yogurt, soymilk, millet milk, fermentation, sensory evaluation, plant-based yogurt.

Abstract ID: 359

**ABSTRACT TITLE: DEVELOPMENT AND QUALITY EVALUATION OF NOVEL
CHOCOLATE ENERGY BAR USING SPROUTED RAGI POWDER**

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A wide variety of different types of protein bars are available in many countries. Each are made using different combinations and with different nutritional properties. Malnutrition is a major problem faced by different age groups. This project was conducted to prepare a multi nutrient rich chocolate coated energy bar. The aim of this project was to develop a novel chocolate. "Choco Ragi Bite" bar supplying sufficient energy to the body. The ingredients like sprouted Ragi, raisins, flax seed, Nuts (almonds, peanut, cashew nut) dark chocolate, were used to make this energy bar. Very important feature of this research is that, this nutrient bar is sweetened with honey. So, its iron content is also increased. For additional iron content, deseeded dates and figs are added. We planned to develop an energy bar, that is very convenient and healthy Ready To Eat food which supplies balanced nutrients (protein, fat, minerals, vitamins, calories and carbohydrates) that reduces malnutrition in children and adolescents suffering from anaemic condition. This product is also aimed to help all ages as a multi nutrient rich meal replacement bar, especially for travellers, for gym goers, athletes, can be used as a hospital snack for pregnant women, for children as a healthy replacement for junk foods and is highly palatable and cost effective. **Results:** The result of the present study entitled "Development and Quality Evaluation of Novel Chocolate Energy Bar by using sprouted Ragi powder" can be detailed under the following heads: Haemoglobin estimation in the campus Evaluation of the sensory attributes of the developed product Nutrient analysis of energy bar Shelf-life study Nutritional outcome of the product Popularization of developed recipes.

Keywords: Ragi - sprouting - alternative healthy bite

Abstract ID: 371

**ABSTRACT TITLE: EDIBLE COATINGS- PROMISING SOLUTION FOR SHELF-LIFE
PROLONGATION OF FRESH FRUITS: A SYSTEMATIC NARRATIVE REVIEW**

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Background: Edible coatings consist of thin layers of edible materials coated to fresh fruits to extend their shelf-life and preserve quality. **Materials:** The search for eligible research papers was conducted in two databases such as PubMed and ScienceDirect. The full text research articles published in English language between January 2014 to September 2024 was conducted using well defined search strategy and inclusion exclusion criteria. Rayyan software was used for removing the duplicate articles and title and abstract and full text screening of research articles by two independent reviewers. In case of any discrepancy a third reviewer was connected to solve the discrepancy. The data from the included studies was extracted and tabulated in well-defined excel spreadsheets and results were synthesized. **Results:** A total of 3,020 articles were initially identified and 1,501 duplicates were removed. Title and abstract screening was conducted for 1,519 articles followed by full-text screening of 33 articles and finally 31 papers were included in the review. Out of 31 studies four studies were on bananas, five on apples, five on strawberries, three on tomatoes, two studies each on pineapple, grapes, and guava, one study each on cherries, cantaloupe, starfruit, blackberries, oranges, mandarin and sweet lemons,

nectarine fruit and kiwis. The results revealed that application of edible coatings extended the shelf life from 6-30 days for bananas, 7-35 days for apples, 5-15 days for strawberries, 10-20 days for tomatoes and 10-15 days for pineapples, grapes, and guavas: 10-30 days for cherries, cantaloupe, starfruit, blackberries, oranges, mandarin and sweet lemons, nectarine fruit and kiwis. The application of edible coatings enhanced UV shielding, reduced weight, and water loss, maintained fruit firmness, physical damage protection, enhanced tensile strength, improved freshness, reduced the microbial spoilage, enhanced antifungal activity, delayed ripening and browning in fresh fruits. Chitosan was mostly used as edible coating for fresh fruits. **Conclusion:** Edible coatings provide a sustainable solution to prolong the shelf life of fresh fruits, reduce their wastage and ensure their availability for consumption thus contributing to improved health outcomes.

Keywords: Edible coating, Shelf life prolongation, Fruits , Nano emulsion, Chitosan, Antimicrobial

Abstract ID: 373

ABSTRACT TITLE: “EXPLORING WOMEN’S INSIGHTS: KNOWLEDGE, ATTITUDES, AND PRACTICES SURROUNDING FORTIFIED FOOD PRODUCTS IN PUNE”

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Background: Food fortification is the addition of essential micronutrients to staple foods, and this enhances the nutritional quality of these foods with minimal risks for public health. The WHO and FSSAI both emphasize food fortification as a means of dealing with micronutrient deficiencies in women and children in India, who suffer from anemia in 58.4% of children and 53.1% of women. This is a relatively low-cost intervention without diet change requirements. Awareness of fortified foods reduces malnutrition. FSSAI initiated implementation of fortification for double-fortified salt, milk, edible oil, rice and wheat flour. As women constitute the predominant group vulnerable to higher risks of micronutrient deficiencies, being the primary caregivers for children, and influencing child health, women have been the focus of this study. Analysis is based on analyzing KAP regarding fortified foods among women in Pune. Various factors influencing these perceptions have been considered.

Materials: The Knowledge, Attitude and Practices among women aged ranges from 18 to 60 years with mean age of $24\hat{A}\pm 1.52$ years in Pune was assessed by single interview and simple random sampling, and the total sample size was 141. Socio demographic details were collected by using the Kuppuswamy scale. A Structured, Pretested and Content Validated KAP questionnaire measured knowledge, attitudes, and practices scored as low, moderate, or high. Factor analysis revealed those components that affect KAP are product cost, education, socio-economic status, and age. Statistical analysis has been done through MS Excel and SPSS and also Chi Square Test was Used **Results:** The study revealed that 75.2% of the respondents were aware of fortification, but 73.2% correctly defined it. Though they agreed to consume fortified foods to the extent of 64.4%, their purchasing frequency was low. KAP scores for participants indicated moderate knowledge and attitude among participants. Educational interventions need to be highly targeted. **Conclusion:** Moderate awareness and understanding of food fortification and its benefits have been found, but misconceptions prevail.

Educational efforts should therefore be directed at dispelling myths and improving the awareness keeping in view the affordability and availability of fortified foods in local markets.

Keywords: Food Fortification, Micronutrients, Micronutrient Deficiency, Malnutrition, Fortified Food Products, Knowledge, Attitude, Practice.

Abstract ID: 375

**ABSTRACT TITLE: EFFECT OF COLD PLASMA TREATMENT ON AFLATOXIN
DECONTAMINATION AND QUALITY ASPECTS OF RED CHILLIES**

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Background: To evaluate the effect of cold plasma technology on aflatoxin decontamination and nutritional composition of red chillies. **Materials:** Red chilli samples were divided into two sets; one set was treated with cold plasma, while the other remained untreated. Red chilli samples were treated with cold plasma at applied voltages of 20 kV, 25 kV, and 30 kV for various time intervals (1, 5, 10, 15 minutes) with a fixed inter-electrode gap of 6 cm. A simple completely randomized design (CRD) was employed for both the treatments and control to identify the most effective cold plasma treatment.

Results: It was observed that exposure to plasma significantly modified the sample's nutritional, anti nutritional and bioactive properties. Maximum reduction in tannins, oxalates and phytic acid was observed at 30 kV for 15 mins. Cold plasma treatment significantly improved protein, fat, total phenolic content and flavanoid content in samples treated with cold plasma as compared to untreated samples. Based on the observations, the sample treated with 30 kV for 15 minutes was found to be the most effective in achieving an ideal reduction of aflatoxin while retaining key nutritional components.

Conclusion: This study demonstrates the impact of cold plasma treatment on the nutritional composition, anti nutritional factors and bioactive components of red chillies. Cold plasma treatment can significantly improve the bioactive components at higher voltage and higher treatment time. It also improved the protein, and fat content, as observed in 30 kV-15 min-treated sample. Apart from this, CP treatment has positively influenced the aflatoxin content and anti nutritional factors. Therefore, CP treatment could be used as an alternative to heat or chemical treatment to reduce aflatoxin content and anti nutritional factors without degrading the nutritional properties. It can be concluded that CP treatment can be an emerging technology for reducing the aflatoxin content of the red chillies and promoting industrial applications.

Keywords: Cold plasma treatment, red chillies, aflatoxin, nutritional compositions, antinutrient factors

Abstract ID: 378

**ABSTRACT TITLE: SAFEGUARDING FOOD PLATES: EVALUATING AWARENESS AND
PRACTICES OF FOOD ADULTERATION AMONG RURAL**

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Background: Food adulteration is a growing and serious issue in India, with rising rates of contamination. This study aimed to assess the awareness and purchasing behaviors of rural women concerning food adulteration, particularly in Mulshi taluka, Pune district, where research on this topic is limited. The primary objective of this research was to gauge the understanding of food adulteration among rural women and to gain insights into their consumer practices and personal encounters with adulterated food. **Materials & Methods:** This cross-sectional study was conducted among women participants aged 18 to 50 years in Mulshi taluka, Pune district, Maharashtra, India. Data were collected from rural women using a structured, validated questionnaire administered through one-on-one interviews, using simple random sampling. A total of 386 responses were obtained. Descriptive statistics and the Chi-square test were applied to analyze the collected data using Microsoft (MS) Excel and Statistical Package for the Social Sciences (SPSS). **Results:** The majority of respondents (61.7%) had a low knowledge score regarding food adulteration, while (37.6%) showed moderate knowledge, and only (0.8%) demonstrated a high knowledge score. Common adulterants reported included water in milk, insects in wheat, and pesticides in fruits and vegetables. Consumer purchasing practices were generally poor, with (57.5%) of women preferring local kirana shops due to perceived better quality, whereas (22.8%) encountered adulterated items from ration shops such as bugs, stones, insects, etc. Only (3.1%) of participants were aware of food adulteration laws and regulations. Notably, (43%) of women made household purchasing decisions, with price being a key factor (36.8%) in food selection. **Conclusion:** This study highlighted a lack of awareness and knowledge regarding food adulteration, and the consumer practices followed by rural women were found to be poor. They play a significant role in the seller-consumer cycle as they purchase products for themselves and their families. Therefore, raising community awareness and implementing interventional actions for the health and well-being of the community is essential.

Abstract ID: 379

ABSTRACT TITLE: DEVELOPMENT OF READY-TO-EAT PRODUCTS USING SWEET CORN: A NOVEL APPROACH

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Background: Sweet corn (*Zea mays saccharata*) has become increasingly popular in India due to its appealing flavor, nutritional profile, and versatile culinary applications. However, the availability of ready-to-eat (RTE) products featuring sweet corn remains limited, despite a rising demand for convenient, healthy food options. This study explores the potential of developing RTE products using sweet corn, focusing on sweet corn chunks, sweet corn ice cream, and sweet corn extruded chips. These innovations aim to meet consumer needs for quick, nutritious, and novel food products. **Materials and Methods:** Sweet corn was sourced from local markets and processed into three RTE products. Sweet corn chunks were prepared by blanching the kernels, cutting them into bite-sized pieces, and packaging them for immediate consumption. Sweet corn ice cream was formulated by blending sweet corn puree into a standard ice cream base. Finally, sweet corn extruded chips were developed by mixing sweet corn flour with other ingredients, which were then extruded to create light, crunchy chips. Each

product was evaluated for sensory attributes, including taste, texture, aroma, and overall acceptability.

Results: The sensory evaluation indicated that all three products were well-received across all measured parameters. Sweet corn ice cream garnered particular attention for its novel flavor combination, while sweet corn chunks and extruded chips were praised for their ease of consumption and texture. The high acceptability scores demonstrate the potential for these products to appeal to a broad consumer base. **Conclusion:** This study highlights the successful development of RTE products using sweet corn, addressing a gap in the Indian market for sweet corn-based convenience foods. The positive reception of these products in sensory evaluations suggests that they could perform well in the market, providing consumers with nutritious and innovative food options. Further research is recommended to optimize the shelf life and nutritional benefits of these products, as well as to explore the potential for large-scale production.

Key Words: Sweet corn, ready-to-eat (RTE), sensory evaluation, ice cream, extruded chips.

Abstract ID: 381

ABSTRACT TITLE: IMPACT OF VARIOUS INDIAN CULINARY PRACTICES ON THE RETENTION OF MINERALS IN GREEN LEAFY VEGETABLES

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Background: Incorporating green leafy vegetables (GLVs) into diet boosts vital minerals, supporting overall health. While cooking enhances palatability, methods like steaming, microwaving retain nutrients compared to prolonged boiling. Investigating various home cooking techniques affect mineral content of GLVs is essential, as educating the Indian community on improved preparation methods can minimize nutrient losses. This study is undertaken to compare the nutritional content of organic and conventionally grown vegetables across different culinary practices. **Materials and methods:** Samples were sourced from different markets in twin cities of Hyderabad and Secunderabad, pooled, cleaned, washed, and air-dried to prevent oxidative damage. About 200 g of each sample was prepared in triplicates, employing six cooking methods: cooking with and without lid, microwave cooking, sautéing, steaming, and deep frying, with meticulous recording of cooking times. The mineral composition of GLVs commonly consumed in India was evaluated using Inductively Coupled Plasma Mass Spectrometry (ICP-MS). **Results:** The study concluded that organic samples generally contain higher mineral levels compared to conventional ones, particularly when cooked with a lid or steamed. The minerals analyzed are Zinc, Copper, Iron, calcium and Magnesium. Zinc content in conventional samples ranged from 0.46 to 0.83 mg/100g, while organic samples showed 0.93 to 1.13 mg/100g, with boiling with a lid and steaming being the most effective methods. Calcium and magnesium levels were notably high in both Organic Moringa and Amaranthus, with steaming yielding 129.53 mg/100g (conventional Moringa) and 147.15 mg/100g (organic Moringa), as well as 295.94 mg/100g (conventional Amaranthus) and 263.56 mg/100g (organic Amaranthus). Iron content was highest in raw Moringa (8.97 mg/100g for conventional and 9.32 mg/100g for organic), while boiling with a lid yielded 5.96 mg/100g for

conventional and 6.06 mg/100g for organic Green Amaranthus. Deep-frying with groundnut oil showed better iron content than sunflower oil in conventional Amaranthus samples. **Conclusion:** Raw samples generally have higher mineral content than cooked ones but in some samples cooking destroys antinutrients increasing the mineral content after cooking. Organic foods show slightly more minerals than conventional, with cooking methods like steaming and boiling with lid retaining more.

Abstract ID: 384

Exploring The Accessibility Of Information On Food Labels For Person With Visual Impairment: A Step Towards Inclusive Food And Nutritional Literacy

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Background: Nutrition education for visually impaired individuals (VII) of packaged food largely depends on their ability to read food labels (FL). FL provides crucial information for consumers to make informed choices regarding safety and quality of food products. In 2023, FSSAI advisory suggested incorporating QR code on food products which encompasses comprehensive details. **Aims and Objectives:** To gain in depth understanding of VII experiences related to FL and analyse the presence of QR code in Indian market and suggest universally accessible FL for all. **Methodology:** The study was qualitative. Six VII aged 18-60 years were selected using purposive sampling and interviewed regarding role of FLs in food procurement and preparation. A preliminary market survey was conducted to check for presence of QR code and information provided. Based on this a proposal for accessible food labelling design was developed. **Results:** It was found two VI read FLs. It was seen assistance from others or technology was taken to read labels. In case of assistive technology two reported ease in using and one felt it was complex. Five preferred online shopping. In online platforms only certain information was accessible and information like ingredients, nutrient content, etc. was inaccessible. All suggested braille labelling will be helpful, especially for price, expiry date, allergen information. Out of 120 food products assessed only 33 products had QR code but none had comprehensive details related to ingredients, nutritional information, manufacturing dates, expiry dates, etc. Rather this QR code directed towards company's websites, games, or provided only manufacturing unit or recipe information. Thus, we propose a technology that provides QR code or barcode-based audio labelling. We also suggest this technology should encompass information in multilingual and simplified manner to make it accessible to all. **Conclusion:** The current practices of food labelling are not specifically favourable for VII. We suggest policies should make it mandatory to provide information like price, expiry date and product name in tactile or audio format. To improve this scenario an app that is universal could be developed in addition to visual presentation enabling use of multi-sensory cues and catering to diverse language and intellectual capacities.

Keywords- Visually impaired, Accessible, Food label, Inclusive

Abstract ID: 386

ABSTRACT TITLE: FORMATION AND STANDARDIZATION OF GLUTEN FREE COOKIES MADE FROM BUCKWHEAT (FOGOPYTRUM ESCULENTUM) FLOUR

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Background: The consumer demand is increasing for composite flour base bakery products like cookies and biscuits. The incorporation of buckwheat flour into rice, corn, flour can prove to be essential in composite flour base cookies. It has beneficial nutraceutical properties and its gluten-free nature can play important role in preventing celiac problem. **Methods:** The physicochemical properties of buckwheat flour and rice, corn, flour, were studied and cookies were prepared with the incorporation of buckwheat flour in 100, 50, 75 % concentration with other flour to measure the quality and acceptability of cookies. **Results:** As the concentration of buckwheat flour was increased, spread ratio of cookies decreased. With the increase in the level of buckwheat flour in the formulation, the sensory scores for texture, appearance, flavor of cookies decreased. The score of flavors reduced significantly to 5.71 at higher concentration, possibly due to presence of flavonoids compound (Rutin) having bitter taste on buckwheat flour. The cookies formed with addition of 75% buckwheat and 100% Wheat got high overall acceptability score respectively. The present study was conducted to the development of buckwheat cookies supplemented with wheat flour. Dehulling and milling of common buckwheat was conducted to obtain flour. Obtained buckwheat and wheat flour were examined for their proximate compositions. Buckwheat flour contained 11.6% moisture, 15.79% crude protein, 1.81% crude fat, 1.83% ash, 0.70% crude fiber content 68.27% N.F.E while wheat flour found having moisture content 13.12%, crude fiber content 1.93%, crude fat 1.42%, crude protein content 12.53%, ash content 1.57% and 69.43% N.F.E respectively. Wheat flour at 10, 20, 30, 40 and 50% ratio, was incorporated with buckwheat flour to make composite flour and the developed cookies were analyzed for proximate analyze. Supplementation of wheat flour significantly influenced the proximate of buckwheat flour bas cookies. Moisture contents, crude fiber contents and N.F.E (Nitrogen Free Extract) increased whereas crude fat contents, crude protein contents and ash content decreased.

Keyword- Buckwheat flour ,Cookies, nutraceutical properties, physicochemical properties

Abstract ID: 392

ABSTRACT TITLE: DEVELOPMENT OF PROTEIN ENRICHED MILLET NOODLES USING SESAME SEED CAKE

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Background: Noodles are popular because of their ease of preparation, low cost, and relatively long shelf life. Changing food habits, increasing population and urbanization have led to increasing consumption of noodles worldwide. The present study focuses on the preparation of millet-based noodles incorporated with sesame seed cake that cater to the demand for high protein and nutritious alternatives. The composite millet noodles were prepared by blending flours of kodo millet (*Paspalum scrobiculatum*) and barnyard millet (*Echinochloa frumentaceae*) flours with defatted sesame seed cake and natural binders to achieve the desired texture. **Materials and Methods:** Cleaned minor millets of kodo and barnyard were processed by soaking, steaming, drying and milling to obtain flour. They were blended in equal proportions along with sesame seed cake, black gram flour, refined wheat flour and other minor ingredients. The flour was conditioned with moisture and extruded through single screw extruder followed by steaming and drying. The standardized sesame millet noodles were evaluated for nutritional composition and sensory acceptability. **Results:** Millet noodles were found to be a good source of protein (18%), calcium (83.10 mg/100 g), iron (8.58 mg/100 g) and phosphorus (223.7 mg/100 g). The formulated noodles after cooking and seasoning with oil and spices were found to be highly acceptable on a 9-point hedonic scale. **Conclusion:** Incorporation of sesame seed cake in millet noodles improved the sensory quality and protein content of noodles. The noodles also possessed higher mineral contents (Iron and Calcium) than the control millet noodles. These noodles can be promoted as a healthy functional alternative for refined wheat flour-based noodles. Plant based proteins can be successfully utilized as an alternative to animal proteins for meeting protein energy malnutrition in rural/marginal regions affecting the majority of the population.

Abstract ID: 393

ABSTRACT TITLE: NUMERICAL OPTIMIZATION OF NUTRITIOUS GLUTEN-FREE CHAPATTI FROM UNDERUTILIZED SOURCES FOR CELIAC DISEASE

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Background: The increasing prevalence of celiac disease necessitates the development of nutritious gluten-free alternatives, particularly staple foods such as chapatti, a traditional Indian flatbread. This study explores the optimization of gluten-free chapatti using underutilized sources like barnyard millet and horse gram, combined with sesame seed and rice flour, which are not only gluten-free but also rich in essential nutrients and bioactive compounds. The research aims to identify optimal ingredient combinations and processing techniques to enhance the nutritional profile, texture, and sensory qualities of gluten-free chapatti. **Material & Methods:** Techniques such as response surface methodology was utilized to assess the impact of various formulations of chapatti on protein content, iron content, *in vitro* protein digestibility, *in vitro* iron bioavailability, extensibility, hardness and sensory overall acceptability. Prior to the optimization process, barnyard millet and horse gram were processed through roasting or germination. A total of 17 different formulations were evaluated, considering the blend ratio of barnyard millet flour to horse gram flour (X1), dough keeping time (X2), and xanthan gum concentration (X3) as independent variables. Optimized gluten free chapatti was compared with

commercially available gluten free flour chapatti (control) for nutritional, sensory and textural parameters. **Result:** The optimization process, conducted based on specific criteria, involved a comprehensive exploration of all viable solutions. The most desirable solution, achieving a desirability value of 0.67, was selected for meeting all established requirements. The optimized values indicated that a blend ratio of 1.5:1, a dough keeping time of 68 minutes, and the incorporation of xanthan gum at 1.5% of the composite flour constituted a highly acceptable combination. Optimized chapatti exhibited significantly higher protein, total ash, iron, fibre, *in vitro* iron bioavailability in comparison to control chapatti. Sensory evaluation results indicated that while the optimized chapatti was well-received across all sensory parameters, it scored lower than the control chapatti. **Conclusion:** This formulation successfully led to the development of a nutritious gluten-free chapatti without compromising its nutritional value, textural parameters, or sensory characteristics that meets the dietary needs of individuals with celiac disease while promoting the utilization of underutilized crops.

Abstract ID: 395

ABSTRACT TITLE: DEVELOPMENT OF VALUEADDED PEANUT CHIKKI

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India, known for its diverse food habits, boasts a variety of traditional foods, including many sweet products. Chikki stands out as one of the most popular traditional snacks, typically made with peanuts and jaggery. It is enjoyed by people of all age groups, particularly during December and January. The present study aims to create a healthier, value-added chikki by incorporating a high-nutritional combination while ensuring it remains tasty. The value-added chikki is prepared using dates, peanuts, and roasted Bengal gram, all rich in nutrients. Sensory evaluation was conducted using a 9-point hedonic scale to assess the preferences, and both the best sample and the control were evaluated for proximate analysis. The acceptance of the chikki samples was evaluated in four variations: T1 (90:10:100), T2 (80:20:100), T3 (70:30:100), and T4 (60:40:100), with the traditional jaggery and peanut chikki serving as the control. Among all the samples, T3 (70:30:100) was the most favored by participants.

Abstract ID: 398

ABSTRACT TITLE: EFFECT OF HYDROTHERMAL PROCESSING ON CARBOHYDRATE PROFILE AND ESTIMATED GLYCAEMIC INDEX OF PEARL MILLET (*Pennisetum glaucum*)

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Pearl millet carbohydrates are majorly composed of 55-65% starch, free sugars, oligosaccharides and dietary fibres. Processing of millet is known to alter its nutritional profile. The present study was carried

out to explore the impact of hydrothermal processing and cooking on carbohydrate profile of pearl millet. Scanning electron microscopy revealed a loss of starch granules during soaking with an increase in dietary fibre content. Moreover denaturation of starch molecules during hydrothermal processing was also observed. Available carbohydrate, total starch and free sugar content of pearl millet was found to be 64.94 ± 1.17 g/100g, 1.34 ± 0.09 g/100g and 63.22 ± 0.73 g/100g respectively. Acidified hydrothermal processing displayed maximum reduction in carbohydrates (5%), total starch (3%) and free sugars (52%) while cooking doesn't show any significant change. Starch profile of raw pearl millet revealed 43% slowly digestible starch (SDS), 51% rapidly digestible starch (RDS) and 6% resistant starch (RS). Hydrothermal processing significantly reduced RDS content upto 15% while SDS and RS content rises up to 6% and 26% respectively. Upon cooking starch profile of sample was significantly altered, with drastic increase in RDS up to 79% whereas SDS and RS reduced up to 15 and 5% respectively. Hydrothermal treatments significantly increase total dietary fibre content up to 14%. Estimated glycaemic index (eGI) of cooked pearl millet was 58.77 ± 0.74 which reduced significantly in acidified hydrothermally processed + cooked sample (56.72 ± 0.49). Corelation analysis revealed strong negative relation (significant at $p < 0.05$ and < 0.01) between eGI and TDF, SDS and RS while RDS showed strong positive relation (significant at $p < 0.05$ and < 0.01).

Abstract ID:400

ABSTRACT TITLE: UNVEILING NUTRITIONAL VALUE: PROXIMATE COMPOSITION, FUNCTIONAL POTENTIAL AND NUTRITIONAL VALUE OF *HIBISCUS SABDARIFFA* STEM

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Background: Hibiscus sabdariffa L. is an annual herbaceous plant well known to be a South Indian leafy vegetable. It is used for various food products, beverages and have many more medicinal properties like anti-scorbutic, emollient, diuretic, refrigerant, sedative, anti-hypersensitive, anti-atherosclerotic, anti-oxidant worldwide. It is a member of the Malvaceae family and is frequently referred to as Rosella or Roselle. There are about 300 species of Rosella found in tropical and subtropical regions. Depending on the tint of the sepals, Rosella comes in a variety of colours. The stem, leaves, calyces, and seeds of Hibiscus sabdariffa L. are grown for their industrial, medical, and other uses. **Objectives:** The present study is aimed to assess the physico-chemical, nutritional, and functional properties of Roselle stem powder. The present investigation showed that the fresh Roselle stem are generally acceptable as good source of nutrients and antioxidant potentials. **Methods:** The plant sample was collected in local market and dried in room temperature for 4-5days and grinded to a powdered form. The powdered sample was used for soxhlet extraction using ethanol and used for further analysis using standard AOAC Book method. **Results:** Results showed that the powdered stem sample exhibits a good nutritional profile, particularly high in potassium and fibre, which are beneficial for cardiovascular and digestive health. While it provides moderate levels of minerals such as calcium,

magnesium, and iron, it remains a valuable supplement for supporting overall health. **Conclusion:** It is an excellent source of dietary phytochemicals such as polyphenols, steroids, flavonoids, saponins, anthocyanins.

Keywords: Hibiscus sabdariffa, Roselle stem, Soxhlet extraction, Functional properties.

FREE COMMUNICATION - POSTER PRESENTATIONS

15th November 2024

Time: 11.45 am to 12.15 noon

SESSION 2- SPORTS NUTRITION

No	Abstract ID	Presenter name	Affiliation	City	Email	Title of Presentation
1	27	Ms KanmaniKM	Jamal Mohamed College (Autonomous)	Tiruchirapalli	kanmanimurugan232@gmail.com	Optimizing Cricket Performance: A Novel Nutri-Bar Formulation with Kenaf Leaf Powder to Enhance Energy, Endurance and Nutritional Support for Cricketers
2	85	Mr Roothvic R	JSS Academy of Higher Education & Research	Mysuru	vjroothvic@gmail.com	Energizing the Future: The Revolutionary way that Nutrigenomics is Transforming Athletic Performance
3	130	Dr Supriya V	Department of Clinical Nutrition, SRIHER (DU)	Chennai	supriya.v@sriramachandra.edu.in	Nutrition Education Intervention in The Enhancement of Knowledge Attitude and Dietary Practices of Athletic Men and Women
4	170	Dr Namratha Pai Kotebagilu	Manipal Academy of Higher Education	Manipal	namratha.paik@manipal.edu	Impact of Belly Dance and Nutrition Education on anthropometric, physical, and mental health indicators among selected college-going adults
5	173	Ms Renu Yadav	Simply Sport Foundation	Lonavala	yadavrenu131@gmail.com	Nutritional Assessment and Analysis of Energy Availability Among Sports Climbers of Varying Age Groups
6	256	Ms Vibha Shree M	ICMR - National Institute of Nutrition	Hyderabad	vibhashreemanoahar@gmail.com	Estimation of Energy Expenditure using Heart Rate Monitoring in Athletes
7	278	Ms Athira K	Avinashilingam Institute for Home science and Higher Education for women	Coimbatore	23phfdf001@avinuty.ac.in	Physical fitness, nutritional status and dietary pattern of women athletes
8	285	Ms Preksha M	JSS AHER	Mysore	thrishamanjesh@gmail.com	Assessment of Nutrient Supplement Consumption Patterns Among Gym- Goers

9	383	Dr Geetanjali Bhide	Dr Geetanjali Bhide's Nutrition and Research LLP	Pune	geetanjali.bhide@gmail.com	Impact of a community-based intervention combining intermittent fasting and exercise on weight loss and metabolic health
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Abstract ID-27

ABSTRACT TITLE: OPTIMIZING CRICKET PERFORMANCE: A NOVEL NUTRI-BAR FORMULATION WITH KENAF LEAF POWDER TO ENHANCE ENERGY, ENDURANCE AND NUTRITIONAL SUPPORT FOR CRICKETERS

Ms. Kanmani K M

Ms. Kanmani K M, postgraduate student at jamal mohamed college (autonomous), 7, racecourse road, kaja nagar, tiruchirapalli, tamilnadu, kanmanimurugan232@gmail.com

Background: Cricket is a high-intensity sport requiring optimal energy, endurance, and nutritional support. Current snack options often lack essential nutrients, leading to suboptimal performance. Kenaf leaf (*Hibiscus Cannabinus* L.) is a tropical plant with a rich history of use in traditional medicine, food, and fiber production. It is a valuable resource that offers numerous health benefits, culinary applications and potential industrial uses. **Materials:** A novel Nutri-bar formulation was developed incorporating Kenaf leaf powder, dark chocolate and millets by no-bake method. The bar's nutritional content like energy, carbohydrates, protein, fat and minerals like iron and Vitamin C were analyzed, and its sensory aspects were evaluated with 20 cricketers. **Results:** The Nutribar group demonstrated significant improvements in energy levels and nutritional support. The Kenaf leaf powder contributed to enhanced antioxidant activity, while dark chocolate provided a natural energy boost. Millets added sustained energy and fiber. Participants reported satisfaction on basis of sensory evaluation. The analysis found that the Nutri bar is an excellent source for balanced diet. **Conclusion:** The novel Nutribar formulation offers a scientifically-backed snack solution for cricketers, providing optimal energy, endurance, and nutritional support. Its unique blend of Kenaf leaf powder, dark chocolate, and millets makes it an ideal choice for athletes seeking a performance-enhancing snack. The findings suggest potential applications in other high-intensity sports. Further research can explore the Nutribar's effects on different athlete populations and performance metrics. This innovative snack solution has the potential to revolutionize sports nutrition and support athletes in achieving peak performance.

Keywords: Cricket, Nutribar, Endurance, Snack, Sports Nutrition

Abstract ID-85

ABSTRACT TITLE: ENERGIZING THE FUTURE: THE REVOLUTIONARY WAY THAT NUTRIGENOMICS IS TRANSFORMING ATHLETIC PERFORMANCE

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Background: Nutrigenomics, the science of understanding the interaction between nutrition and an individual's genetic profile, is fundamentally transforming athletic performance by offering a tailored approach to diet and training. **Methods & Materials:** A MEDLINE search was performed using the terms “nutrigenomics”, “health benefits”, “sports”, “athletes” and “exercise”. The study protocol, which investigated personalized science leverages genetic data to identify how specific nutrients affect an athlete's metabolism, muscle function, and overall health was designed to comply with the recommended reporting items for systematic review and meta-analysis (PRISMA) criteria. A systematic search was conducted in the following databases: PubMed, Google Scholar, Medline, Embase, IndMED Cochrane Library, Scopus, and Web of Science. Literature was also searched from proceedings of sports nutrition and nutrition conferences, workshop, google, Indian English-language, newspapers and print media. A comprehensive review of initiatives providing concurrent dietary and sports nutrition intervention has noted that the details of dietary treatments are not well-described in the peer-reviewed literature. **Result:** This paper provided an overview of the current science linking genetic variation to nutritional or supplemental needs with a focus on sport performance. One of the ultimate goals in the field of personalized sport nutrition is the design of tailored nutritional recommendations to improve direct and indirect factors that influence athletic performance. More specifically, personalized nutrition pursuits aim to develop more comprehensive and dynamic nutritional and supplement recommendations based on shifting, interacting parameters in an athlete's internal and external (sport) environment throughout their athletic career and beyond. Currently, there are few gene-diet interaction studies that have directly measured performance outcomes and been conducted in competitive athletes, so this should be a focus of future research. Genetic testing for personalized nutrition may, therefore, be an additional tool that can be implemented into the practice of sport clinicians, nutritionists and coaches to guide nutritional counseling and meal planning with the aim of optimizing athletic performance. **Conclusion:** As the science behind nutrigenomics continues to grow, its integration with broader sports performance strategies will likely shape the future of athletic training, creating a generation of athletes who can reach their full genetic potential.

Keywords: sports nutrition, genetic testing, nutrigenomics, nutrigenetics, personalised nutrition, and ergogenic aids.

Abstract ID -130

ABSTRACT TITLE: NUTRITION EDUCATION INTERVENTION IN THE ENHANCEMENT OF KNOWLEDGE ATTITUDE AND DIETARY PRACTICES OF ATHLETIC MEN AND WOMEN

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2- Associate Professor (Retd) at PSG College, Coimbatore, Tamilnadu

Background: Generous knowledge on nutrition for athletes and coaches becomes imperative. In spite of enhancement, athletes crosswise stay ignorant of the consequence their nutritional habits. Knowledge, attitude and practices (KAP) regarding food intake of athletes become essential more so for their winning edge. The main aim is to determine whether the nutrition education intervention positively impacts athletes' sports nutrition knowledge, attitude and dietary practices, thus enhancing their performance. **Methods & Materials:** One and hundred seventy-eight athletes were screened using a structured KAP questionnaire highlighting the various sports nutrition concepts. 20 athletic men and women were selected for nutritional intervention and educational aids were developed and the impact was assessed using the same KAP before and after intervention. The results were analyzed using SPSS package (version 15). **Results:** The mean age of athletic men and women was 18 ± 3.2 yrs. 60 % of the subjects were females and 40% males. Mean height was 165.5 ± 3.2 cms and weight 61.2 ± 2.1 kgs. The participants played the sport for an average of 6 hrs every day. The mean KAP scores before nutrition education was 48.7 ± 6.05 while the scores after nutrition education were 62.5 ± 5.4 , thus indicating an improvement. Knowledge correlated well with attitude ($p < 0.05$), knowledge and nutrition practices ($p < 0.001$). There seems to be no significant correlation between knowledge and practice. **Conclusion:** The results of the study demonstrate that nutrition education interventions may serve as effective tools for increasing nutrition knowledge among athlete fraternity.

Keywords: athletic performance, knowledge, attitude, diet

Abstract ID- 170

ABSTRACT TITLE: IMPACT OF BELLY DANCE AND NUTRITION EDUCATION ON ANTHROPOMETRIC, PHYSICAL, AND MENTAL HEALTH INDICATORS AMONG SELECTED COLLEGE-GOING ADULTS

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Background: Belly dance is an art and dance form which includes rhythmic movement of the hips and torso. Though the origin of belly dance is believed to be in the middle eastern region, it has spread throughout the world and is adopted as a form of dance and exercise. The impact of belly dance on health has been studied in various health conditions. This intervention study focused on evaluating the impact of belly dance and nutrition education on anthropometric, physical, and mental health indicators among selected college-going adults of Manipal. **Materials and Methods:** The study adopted random

sampling technique. Participants involved in any other form of physical activity were excluded. Among 49 participants who agreed to participate, 21 provided consent and were randomly grouped into two groups viz., Belly dance (BD) group and, Belly dancing with Nutrition education (BDNE) group. Both the groups received 3 hours of belly dancing training per week and completed 8 weeks of intervention period. BDNE group received a comprehensive education on dietary intake, food groups and balanced diet concept along with the belly dance training. Tools such as Self-developed questionnaire to elicit anthropometry, 24-hour recall and food frequency; DASS 21 for mental health and IPAQ long form 23 for assessing the physical activity level were used to collect the data. The results were compared between the groups at three intervals viz, baseline, follow up 1 and 2. **Results:** There was no significant difference observed between BD and BDNE groups for the mean anthropometric parameters such as weight, BMI; waist, mid-thigh, calf, hip circumferences; and the physical activity scores. However, participants in the BDNE group showed significantly lesser stress scores at follow up 1 ($F=0.016$, $P=0.034$) and follow up 2 ($F=0.629$, $P=0.018$) as compared to BD group. **Conclusion:** Belly dance along with Nutrition Education significantly reduced the stress scores and improved mental health in college-going adults. Belly dance training with higher intensity and extended intervention period may have beneficial effects on anthropometric parameters and physical activity level.

Keywords: Belly dance, Nutrition Education, Mental Health, Physical activity, Anthropometry, Nutrition Intervention

Abstract ID- 173

**ABSTRACT TITLE: NUTRITIONAL ASSESSMENT AND ANALYSIS OF ENERGY AVAILABILITY
AMONG SPORTS CLIMBERS OF VARYING AGE GROUPS**

Ms Renu Yadav

Ms Renu Yadav, Program Manager and Sports Nutritionist at Simply Sport Foundation, Bangalore, Karnataka, yadavrenu131@gmail.com

Background: The increasing popularity of sport climbing, including bouldering, lead, and speed climbing, highlights the importance of understanding the nutritional needs of athletes involved in these physically demanding activities. This study aims to evaluate the nutritional status and energy availability of young sport climbers across different age groups and competition levels. **Materials:** A cross-sectional study was conducted with 81 young sport climbers (56 males, 25 females) aged 7–18 years, categorized into three age groups. Anthropometric data, body composition using bioelectrical impedance analysis (BIA), and dietary intake through a three-day 24-hour dietary recall were assessed. Exercise energy expenditure (EEE) was calculated based on physical activity levels, and the Eating Attitudes Test (EAT-26) was used to assess disordered eating. **Results:** The mean height and weight for the 7-10 year group were 136.8 cm and 31.5 kg, 149.2 cm and 44.1 kg for the 11-14 group, and 164.5 cm and 57.3 kg for the 15-18 group. MUAC increased with age, from 12.6 cm (7-10) to 17.2 cm (15-18). Among 7-10 year-olds, 89% had normal weight, while 25% of 11-14 year-olds were overweight. Waist-to-height ratios indicated 33% of 11-14 year-olds were at risk. The EAT-26 highlighted a 36% risk for eating disorders in the 11-14 group. Energy availability was low (< 30 kcal/kg) in 22.2% of 7-10 year-

olds, 19.4% of 11-14 year-olds, and 30.6% of 15-18 year-olds. **Conclusion:** The findings highlight the need for personalised nutrition and energy intake strategies for young sport climbers, as the high physical demands of the sport increase the risk of low energy availability, potentially impacting performance and health. Anthropometric and body composition data indicated significant variation across the age groups, reflecting diverse body types among athletes participating in the same sport. While overt eating disorders may not be prevalent, disordered eating patterns were observed, emphasising the importance of tailored nutritional guidance in this population.

Keywords: Young sport climbers face varying nutritional challenges, including low energy availability and disordered eating patterns, emphasizing the need for personalized nutrition strategies to support performance and health.

Abstract ID- 256

**ABSTRACT TITLE: ESTIMATION OF ENERGY EXPENDITURE USING HEART RATE
MONITORING IN ATHLETES**

Ms Vibha Shree M

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Background: Estimating energy expenditure (EE) in athletes is crucial for optimizing performance, recovery, and nutritional balance. Heart rate (HR) monitoring is a commonly used method for assessing

EE, particularly in field settings where direct measurements like oxygen consumption (VO_2) are difficult to obtain. This study aims to estimate EE using HR monitoring, validated against VO_2 measurements collected under controlled and field conditions, to determine the accuracy of this method for athlete training sessions. **Materials:** The study was conducted in two phases. In the first phase, athletes ran on a Controlled Environment Physical Treadmill (CEPT) where the running speed was progressively

increased. HR and VO_2 data were collected at various speed intervals. VO_2 was measured using a portable metabolic system (K5). This established a relationship between HR and oxygen consumption under controlled conditions. In the second phase, HR data were collected during field training sessions, and VO_2 was again measured using the K5 system. The HR data from the field were used to estimate VO_2 consumption by applying the HR- VO_2 relationship derived from the CEPT data. **Results:** Preliminary analysis indicates a minimal variance between estimated oxygen consumption (derived from HR data)

and the direct VO_2 measurements from the K5. This suggests that HR monitoring can be a reliable method for estimating oxygen consumption, and by extension, EE, during field training. Accurate estimation of EE allows athletes to better manage their energy input and output, which is critical for maintaining performance and preventing fatigue or over-training. **Conclusion:** The findings show that

HR monitoring, when calibrated against VO_2 data, offers a practical and reliable tool for estimating energy expenditure in athletes during field training. Further research may explore broader applications of this method across different sports and training intensities.

Keywords: Energy Expenditure, Heart Rate Monitoring, Performance Enhancement

Abstract ID: 278

**ABSTRACT TITLE: PHYSICAL FITNESS, NUTRITIONAL STATUS AND DIETARY PATTERN OF
WOMEN ATHLETES**

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2- Professor at Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, Tamil Nadu.

Background: Sports in India embody the nations cultural diversity and unite people, promoting physical fitness, mental well-being, and discipline. Nutrition is vital in sports, fuelling peak performance, endurance. For female athletes, optimal nutrition bridges the gap between potential and success.

Objective: The study assessed the nutritional status and performance of 105 female athletes from Avinashilingam Institute, Coimbatore, selected via purposive sampling. **Methods and Materials:** Nutritional status was evaluated through Anthropometric, Biochemical, and Dietary assessments. Physical fitness variables, including Muscular Strength, Flexibility, Muscular Endurance, and Cardiovascular Endurance, were measured along with physiological variables such as Blood Pressure, Respiratory Rate, Vital Capacity, SpO₂, and VO₂ Max. **Results:** The study revealed that 48% of the subjects were in the normal BMI range ($M \pm SD = 21 \pm 0.9$), while 38% fell into the underweight category ($M \pm SD = 17 \pm 0.5$), and 15% were classified as overweight. Data showed that 42% of the subjects were anaemic ($M \pm SD = 9.2 \pm 0.9$). The highest skinfold values were observed in the thigh, calf, and abdomen, while the subscapular area had the lowest. Trunk and lower body segments had the highest partial sum scores ($M \pm SD = 30.1 \pm 6.6$), with hockey, football, and table tennis players showing the highest fat percentages. Physical fitness variables such as muscular strength, assessed by the plank test, showed that the subjects' performance was average ($M \pm SD = 2.25 \pm 0.4$ s). For Muscular Endurance and Flexibility, the Sit-Up Test ($M \pm SD = 38 \pm 3$) and Sit and Reach Test ($M \pm SD = 12 \pm 2$) were used, and the subjects' performance was above average. Cardiovascular endurance, analysed using the 12-minute Cooper Test ($M \pm SD = 1700 \pm 55$), showed good performance when compared to reference norms. Physiological variables such as vital capacity ($M \pm SD = 175 \pm 25$) and VO₂ Max ($M \pm SD = 26 \pm 3.06$) were average. The majority of subjects lacked a balanced diet, with insufficient intake of fruits, vegetables, dairy, and pulses, affecting their physical fitness and health. **Conclusion:** The study highlighted suboptimal nutrition among female athletes, with 42% anaemic and many underweight or overweight, impacting their fitness. Despite good physical test results, poor diet affected overall health. A balanced, nutrient-rich diet is crucial for boosting energy, strength, and endurance while reducing injury risk, supporting long-term health and peak performance.

Key words: Sports fitness, Sports performance, Nutrition, Female Athletes

Abstract ID -285

**ABSTRACT TITLE: ASSESSMENT OF NUTRIENT SUPPLEMENT CONSUMPTION PATTERNS
AMONG GYM- GOERS**

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Background: In India, recently there is tremendous increases in the use of dietary supplements in gym goers for improving body composition and fitness, often without consulting nutritionist. The side effects can be simple - dehydration, headaches, digestive issues, or severe - high blood pressure, kidney and liver damage and hormonal imbalance. This study aimed at assessing the type and intake patterns of nutrition supplements among gym-goers and fitness practitioners. **Materials:** The cross-sectional survey included male gym-goers (18-40 yr) without any clinical condition with exception of overweight/obesity and exercise injury recovery regimen. The data on their anthropometric measurements (height, weight, BMI, WHR), intensity and duration of exercise was collected using structured and standardized questionnaire. Additionally, the food intake pattern, use of nutritional supplement, and mode of information for supplement intake, dosage & time was collected. The supplement intake were used to assess the trends and type of nutrition supplement consumed and its impact on their performance. **Results:** Among 75 male participants, 50% were involved in high, 30.9% in moderate, and 14.7% in low physical activity regimen. The duration of exercise range was 5 hrs/wk (n=49.3%), 2-5 hrs/wk (n=31.9%) and 1-2 hr/wk (n=14.5%). About 52.9% of the participants consumed protein supplements, 47.1% consumed vitamin and omega-3 supplements. Majority of participants were consuming supplements at post workout period, 47.1% of took milk-based protein, 20.6% take iso whey protein. Whereas the pre work out supplements included creatine monohydrate-19.1%, black coffee - 20.6%, 10.3% - peanut butter/brown butter, 16.2% - iso whey protein, and 11.8% -boiled egg without yolk. **Conclusion:** The observations suggest that the participants depend on nutritional supplements during workout and source of information is mostly through social media. It is important for gym practitioners to get recommendations from nutritionist/dietician for tailor-made optimum supplement regimen suiting to their requirements and avoid adverse effects of higher dosage. Adequate intake of food and supplements, in-combination will increase endurance and performance levels, also to achieve the goal of building and fitness.

Keywords: Gym, dietary supplements, physical activity, protein, male.

Abstract ID -383

**ABSTRACT TITLE: IMPACT OF A COMMUNITY-BASED INTERVENTION COMBINING
INTERMITTENT FASTING AND EXERCISE ON WEIGHT LOSS AND METABOLIC HEALTH**

Dr Geetanjali Bhide¹

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Background: Intermittent fasting(IF) and exercise interventions are widely recognized for weight loss. However, many individuals fail to adhere to these strategies and give up soon due to lack of a structured program, poor monitoring and support. Community based interventions however can motivate

individuals to adopt dietary changes and exercise interventions and enhance compliance. The combined impact of IF and exercise intervention and their effect on weight loss and metabolic health in a community setting is not yet studied in India. The present intervention was planned to assess the effect of IF and exercise (endurance & resistance training) on weight loss and metabolic health of middle-aged people residing in Pune. **Methods:** The intervention was planned for 12 weeks. IF (16:8) meal plan, exercise regimen- endurance training(run/walk/jog) and resistance training protocol was explained to participants by the nutritionist and coach in a group session. Participants aged 30 to 45years females(n=9) and males(n=8) residing in Pune volunteered to participate in the study. Blood profile, medical clearance and informed consent was obtained. Participants shared images of meals and feedback was given daily. Participants did endurance training every alternate day and resistance training group sessions were guided and conducted online by the coach. Nutrition education group session was conducted every week. Participants reported fasting duration, water intake, snacking in eating window, sleep and stress levels every night. Body weight and waist circumference were recorded every Monday. Leaderboard of weekly progress was shared with participants every week. Participants completed the 12-week program. However, only 11 participants got their blood tests done. Statistical analysis-median and inter quartile range (IQR, 25th percentile and 75% percentile) were used for descriptive analysis. Wilcoxon-Signed rank test was used to test the differences pre and post for anthropometry, inflammatory markers, blood glucose and lipid profile. Statistical significance was set as $p \leq 0.05$ was analysed using SPSS 21.0. **Results:** The study participants both males and females were able to sustain 16.26h of fasting due to the community- based approach. Regular feedback on foods consumed helped them to make better food choices. Participants consumed 2 major meals and 1 or 2 snacks in the eating window. The median (IQR) exercise duration(resistance/endurance) was 50.9minutes per day. Online resistance training and daily recording of endurance sessions helped participants to comply to the exercise regimen. The compliance was evident from weight loss. The median weights pre and post-interventions were 68.3kg (IQR=63.0, 90.0) and 64.3 Kg(IQR=55.6, 80.6) respectively, waist circumference was reduced from 94cm to 91.4 cm. The metabolic health parameters also showed a remarkable improvement. HbA1C was reduced from 5.9% to 5.4% and HsCRP was reduced from 3.42mg/dl to 1.5mg/dl. HDL cholesterol increased($p < 0.048$) and triglyceride levels were reduced($p < 0.003$). The intervention also helped to improve self-reported parameters-sleep from 4 to 9h, stress levels reduced and energy levels increased. However, the sample size was small and combined effect of intermittent fasting, exercise intervention in a community setting needs to be studied on all larger population. **Conclusion:** The present study demonstrates the potential of IF and exercise intervention to help weight loss, improve metabolic health. Community based intervention is a sustainable approach to help people achieve health and fitness goals.

Keywords: Intermittent fasting, metabolic health, exercise strength and endurance

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Ms. Preetu Mishra

Nutrition Specialist,
UNICEF India Country Office

"Our youth hold the key to a healthier future. As they learn to make informed choices and develop sustainable nutrition habits, they become powerful change agents within their families, communities and beyond. At UNICEF, we believe that empowering young people with the knowledge and resources for nutritious choices is essential. Healthy dietary practices—like balanced meals rich in fruits, vegetables, whole grains, and proteins—are the foundation for their growth and well-being. Reducing sugary beverages and food high in fat, salt, sugar and ultra-processed foods and opting for nutrient-dense snacks complemented by physical activity can help prevent lifestyle diseases that threaten so many today.

This journey requires a collaborative, transdisciplinary approach, bringing together insights from science, policy, education, and community health and nutrition. Together, we can shape a world where every young person is equipped to make choices that lead to a healthier, more resilient future."

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Sorghum United, USA



Mr. Nate Blum

Sorghum United, Nebraska 68523 USA

The Role of Sorghum and Millets in Reshaping Global Food and Agriculture Paradigms

Recently published peer-reviewed research from academic institutions around the world concur regarding previously unrecognized health and nutritional benefits of sorghum and millets in human and animal diets. Further scientific papers have also been published which detail environmentally sustainable attributes of sorghum and millets as they pertain to water, wildlife, and soil health, as well as being an optimal tool for carbon sequestration. This research, coupled with increasing consumer demand and awareness through the 2023 International Year of Millets, has created the conditions by which existing food and agricultural paradigms might be challenged to better address food security, climate change, and access to value-added markets for small-holder and conventional farmers around the world.

Biography:

Nate Blum serves as the Chief Executive Officer of BlüMilo and Sorghum United. Sorghum United is an international NGO serving to advance education and markets development for sorghum and adjacent small grains. Mr. Blum is passionate about the mission of Sorghum United due to the solutions for food security, nutrition, environmental sustainability, and rural economic disparity that these ancient grains represent. He is an expert on grain sorghum production and marketing, with a focus on value-added agriculture processing for sorghum-based products.

Mr. Blum has represented the sorghum and millets industry in thirty-two countries, spanning every habitable continent, as well as at the United Nations FAO. He has also worked with international stakeholders in regard to the United Nations' Sustainable Development Goals, hosting an Independent Food Systems Summit (August 2021). Mr. Blum served as the Executive Director of the Nebraska Grain Sorghum Board and the Nebraska Sorghum Producers Association from 2019 to 2023.

Mr. Blum serves on the USDA Grains, Feed, and Oilseeds Ag Trade Advisory Committee (ATAC). The ATAC advised trade policy to the office of the US Trade Representative. He also serves on the Private Sector Mechanism (PSM) advising the United Nations Committee on Food Security (CFS). He is an Alumnus of the University of Nebraska (Class of 2019), the Nebraska Leadership, Education, Agriculture, Development (LEAD) Program (Class XXXVI), and also served as the Vice president of the Nebraska LEAD Alumni Association.

Mr. Blum received a bachelor's degree in psychology from the University of Nebraska. He also enjoys volunteering, mentoring, and organizing community events in his free time.

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Diabetes Epidemic in India and Role of Nutritional Supplements

Per the ICMR INDIAB study prevalence of diabetes in India is 101.3 million and another 136 million are prediabetic. The increasing prevalence of type 2 diabetes mellitus (T2DM) is associated with micro- and macrovascular complications resulting in increased healthcare costs, making it a public health burden in India. Along with pharmacotherapy balanced and well-structured nutrition plays a critical role in management of diabetes. Detailed nutritional screening, counselling, assistance from trained nutritionists is important in optimal management of diabetes. Clinical guidelines for managing T2DM recommend medical nutrition therapy and dietary counselling by nutritionists in consultation with physicians to complement treatment for T2DM. Meal replacement with diabetes specific nutritional supplements (DSNS) can be an effective strategy in glycemic management of T2DM. DSNS are specialized formulations consisting of macro- and micronutrients and have low glycemic index that can support in achieving glycemic control, and weight management. Studies have demonstrated that DSNS accompanied by dietary counselling has helped to improve glycemic levels and anthropometric measurements in Indian T2DM patients. In a survey conducted among Indian health care professionals (HCPs), most HCPs observed that addition of DSNS can help patients achieve reduction in blood glucose levels. However, the major challenge in advising DSNS for HCPs was the lack of time and resources. Support from nutritionists for nutritional counselling can be a strategy to improve outcomes in diabetic patients.

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Food Future Foundation



Mr. Pawan Kumar Agarwal
Director, Food Future Foundation

"I am very excited to join the 56th Annual NSI Conference at Pune and engage in meaningful discussions on **India's Health and Nutrition Future**. As we address the triple burden of malnutrition, there is much we can learn from global examples like Japan's holistic approach to food education and lifelong wellness. By integrating culture, taste, and science, I believe we can create a healthier, more resilient future for India, and I look forward to exploring these opportunities with all of you."





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