39th Scientific Conference

Strategic Alliance to Combat Malnutrition:

Whole of Government, Whole of Society Approach

Programme and Abstracts

30 – 31 July 2024

AVANTÉ Hotel, Bandar Utama, Petaling Jaya, Selangor

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Contents

Conference Secretariat

VERSACOMM (263773-W)

12-A, Jalan PJS 8/4, Mentari Plaza, Bandar Sunway,
46150 Petaling Jaya, Selangor.
Tel: 03-5632 3301 Fax: 03-5638 9909
Email: versahealth@versa-group.com

Organising Committee of 39th NSM Scientific Conference

Chair : **Dr Tee E Siong** *(Immediate-Past President)*

Members : **Assoc Prof Dr Mahenderan Appukutty** *(President)*

Prof Dr Hamid Jan Jan Mohamed *(Vice-President)*

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Dr Tan Sue Yee *(Council Member)*

Mr Mohd Shah Kamarudin *(Council Member)*

Message from Chair

of the Organising Committee of the 39th Annual Scientific Conference of the Nutrition Society of Malaysia (NSM)

On behalf of the Conference Organising Committee, I welcome everyone to the 39th Annual Scientific Conference of the Nutrition Society of Malaysia (NSM)!

We are thrilled to have you all join us again this year. Being the main nutrition professional body in the country, the NSM is proud to be able to continue organising this annual scientific event, which serves as an important annual platform for nutritionists in the nation to come together to share knowledge and experiences and network.

The NSM conference aims to provide this platform to facilitate the exchange of knowledge and experience, providing a space for in-depth discussion towards the theme of the 39th NSM Scientific Conference namely, "Strategic Alliance to Combat Malnutrition: Whole of Government, Whole of Society Approach". The conference aims to share emerging findings, data, and insights derived from recent nutritional programmes and research. The conference strives to bring together key stakeholders, creating a synergy that is crucial for devising comprehensive holistic strategies to address and overcome the challenges of malnutrition in Malaysia.

For this Conference, we are excited to have a diverse range of 38 oral presentations, from a mixture of international and local speakers from the academia, government agencies and private sector. In addition to the oral presentations, there are also about 100 poster presentations covering a wide range of nutrition-based research. We hope everyone will be able to benefit from the insightful and inspiring knowledge sharing. We encourage everyone to take the opportunity to view all the conference materials and scientific posters and to visit the exhibition booths to make the best of this event.

I take this opportunity to place on record our sincere gratitude to all who have contributed to the successful organisation of this Conference which includes all speakers, poster presenters, participants, sponsors as well as the secretariat of the Conference. My sincere appreciation to the 20th Council Members of NSM for their full cooperation in organising this Conference.

Make the best of this platform and have a fruitful conference!

Tee E Siong, PhD
Chair of the Organising Committee
Immediate-Past President

Acknowledgements

The Nutrition Society of Malaysia gratefully acknowledges contributions from the following to the 39th Scientific Conference:

Major Sponsors

- BENEO-Institute
- dsm-firmenich
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Malaysia Nutrition Leadership Programme (MyNLP)

The MyNLP is an initiative and brainchild of the Nutrition Society of Malaysia which focuses on honing the participants application and soft skills and acquiring the requisite knack towards enhancing leadership competency among nutrition professionals.

Rationale of MyNLP

The National Plan of Action for Nutrition (NPAN) of Malaysia has emphasised the importance of strengthening institutional and community capacity for nutrition. Availability of well trained human resources is crucial for successful execution of the NPAN Malaysia. The NSM is committed to contribute towards the effective implementation of the NPANM III (2006-2025).

NSM is organising MyNLP to establish critical mass of capable nutrition leaders in Malaysia.

Programme Objectives

Assists the development of future leaders in the field of human nutritional sciences through proper training

Provides knowledge and skills towards enhancing leadership skills and foster greater communication and networking among young nutrition professionals

Provides a platform of convergence to connect and provide networking opportunities among food and nutrition professionals across the country and also within the South East Asian Region

Programmes and Workshops

It is envisioned that MyNLP is able to support NPANM III by empowering aspiring professionals in the field of food and nutrition with essential knowledge, skills, and network to lead others in improving nutrition in Malaysia.

Follow our upcoming activities at www.nutriweb.org.my and email us at mynlp@nutriweb.org.my for further enquiries.

SEA PHN

Southeast Asia Public Health Nutrition Network

A collaboration among

Food and Nutrition Society of Indonesia

Nutrition Society of Malaysia

Nutrition Foundation of the Philippines, Inc

Nutrition Association of Thailand under the Patronage of Her Royal Highness Princess Maha Chakri Sirindhorn

Vietnam Nutrition Association

The **Southeast Asia Public Health Nutrition (SEA-PHN)** Network is a partnership of key stakeholders in the region, namely nutrition societies and corporate partners to promote public health nutrition among the population and alleviating nutrition problems in the region.

Please visit our website at http://sea-phn.org for more information.

Sign up for Free to download nutrition related documents at our resource area.

Key Activities of the Network

Good Nutrition – Key to Healthy Children (GNKHC) Programme

Good Nutrition Key to Healthy Children

Teaching Materials of the GNKHC Nutrition Module

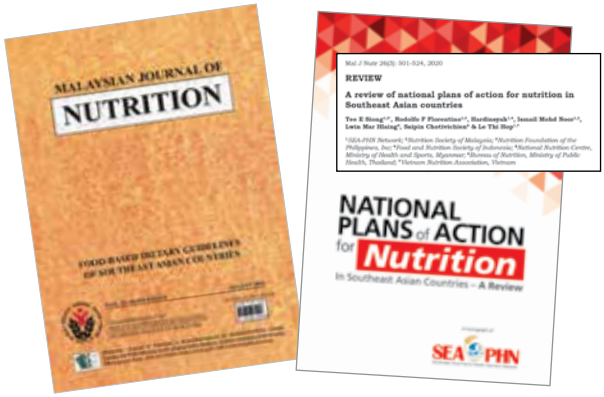
Teacher's Guidebook and Student's Workbook

Learning Slides

Materials for Interactive activities

Parent's leaflet

Research publications



Mal J Nutr 29(2): 163-241, 2023

SPECIAL INVITED REVIEW

Review of recommended energy and nutrient intake values in Southeast Asian countries

E Siong Tee[1,2*], Rodolfo F Florentino[1,3], Nalinee Chongviriyaphan[1,4], Hardinsyah Ridwan[1,5], Mahenderan Appukutty [1,2] & Truong Tuyet Mai[1,6]

[1]Southeast Asia Public Health Nutrition Network; [2]Nutrition Society of Malaysia; [3]Nutrition Foundation of the Philippines, Inc; [4]Nutrition Association of Thailand, [5]Food and Nutrition Society of Indonesia; [6]Vietnam Nutrition Association

Webinar Series

SEA PHN
Southeast Asia Public Health Nutrition Network

2nd SEA-PHN

SOUTHEAST ASIA PUBLIC HEALTH NUTRITION CONFERENCE

"NUTRITION IN FOSTERING HEALTH AND WELL-BEING"

11-13 November 2024 | Arnoma Grand Bangkok, Thailand

Follow us :

www.sea-phn.com

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Vietnam Nutrition Association

Under the auspices of : SEA PHN Southeast Asia Public Health Nutrition Network

Supported by : TCEB Thailand Convention & Exhibition Bureau

Nutrition Society of Malaysia

IMPROVING LIVES *through* NUTRITION

As a professional organisation, we are guided by a simple belief – the more people understand food and nutrition, the better they can care for their health and well-being.

For that reason, we support the advancement of research, sharing practical insights and important discoveries for the benefits for all.

We also support the Government's efforts in promoting healthy nutrition in the society to combat nutrient deficiencies as well as diet-related chronic diseases in the country (e.g. obesity, diabetes, hypertension and coronary heart disease).

In caring for the community, we continuously disseminate practical nutrition information to the young and old alike, guiding them to discover the benefits of good nutrition and a healthy lifestyle.

We are committed to improve lives through nutrition. It's our way of serving Malaysians.

Established in 1985, the Nutrition Society of Malaysia (NSM) is a non-profit scientific organisation that facilitates networking among its 500 professional members and engages in the following scientific and community nutrition promotion activities to achieve its goal.

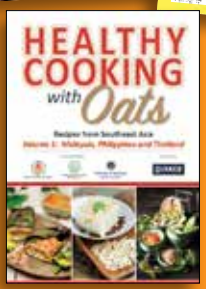
For more information, visit our website:
www.nutriweb.org.my

Our Activities

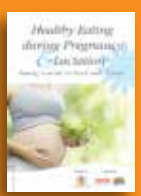
- Organise annual scientific conferences
- Conduct scientific update sessions
- Advice to government health & regulatory authorities & scientific bodies
- Research on specific community groups
- Lead the Southeast Asia Public Health Nutrition (SEA-PHN) Network
- Conduct nutrition promotion programmes in collaboration with other professional organisations and corporate companies
  - specific target groups especially women, infants and children (eg Healthy Kids, Mi-Care, MyNutriBaby, Positive Parenting)
  - community-based promotion programmes eg Nutrition Month Malaysia, Probiotics Education Programme
- Establish a comprehensive and authoritative website on nutrition for Malaysians

Our Major Publications

- Malaysian Journal of Nutrition
- Berita NSM (newsletter)
- Series of recipe books
  - Healthy Cooking with Oats. Recipes from SEA. Vol 1. Malaysia, Philippines, Thailand
  - Junior Chef Cookbook Vol 1. Let's Play Healthy Cooking.
  - Nutritionists' Choice Cookbook (Vol 1: Healthy Recipes for Your Little Ones. Vol 2: Resipi Untuk Seisi Keluarga)
  - Resipi Sihat, Pilihan Bijak (Vol 1 & 2)
- Various educational booklets and leaflets on dietary guidelines and specific foods
- Nutrition Month Malaysia booklets on healthy eating and active living (www.nutritionmonthmalaysia.org.my)

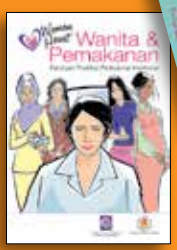


Junior Chef Cookbook Vol 1. Let's Play Healthy Cooking, Nutritionists' Choice Cookbook (Vol 1 & 2), Resipi Sihat, Pilihan Bijak (Vol 1 & 2), Healthy Cooking with Oats



Healthy Eating During Pregnancy & Lactation

Wonders of Whole Grains



Women@Heart *Wanita & Pemakanan* manual for professionals and leaflets for public

Malaysian Dietary Guidelines leaflets

Breastfeed with Confidence | Baby's First Bites | Healthy Spoonfuls for Toddlers

Official Opening

DAY 1 **TUESDAY, 30 JULY, 2024**

0800 hrs **Registration**

0900 hrs	**Official Opening & Presentation of NSM Prizes & Awards** **Grand Ballroom**

0900 hrs **Welcome Remarks and Official Opening by**
Assoc Prof Dr Mahenderan Appukutty
President, Nutrition Society of Malaysia (NSM)

0910 hrs **Presentation of NSM Prizes & Awards**
- NSM Undergraduate and Postgraduate Prizes
- NSM Publication Prizes
- NSM Fellow Award

1000 hrs **Coffee Break/Poster & Exhibition Viewing**

Conference Scientific Programme

DAY 1 **TUESDAY, 30 JULY, 2024**

KEYNOTE LECTURE 1
Chairperson: Tee E Siong
Nutrition Society of Malaysia

1030 hrs **Strategies for the prevention and control of childhood obesity and chronic diseases**
Prof Dr Youfa Wang
University Distinguished Professor; Vice President, Xi'an Jiaotong University Health Science Centre
[Recorded presentation]

SYMPOSIUM 1: Nutrition for Maternal, Infant & Young Children
Chairperson : Mahenderan Appukutty
Universiti Teknologi MARA, Malaysia

1115 hrs **Double burden of malnutrition in Malaysia – an update from NHMS 2023**
Sulhariza Husni Zain
Institute of Public Health, National Institute of Health, Ministry of Health Malaysia

MySNPP improved food environment and body weight status of primary school children
Teo Choon Huey
Nutrition Society of Malaysia, on behalf of the MySNPP Working Group

Building UK-SEA partnership – Research on nutrition policies and action plans in Malaysia to promote the implementation of double burden of malnutrition prevention in school-age children
Chin Yit Siew
Universiti Putra Malaysia, on behalf of the UoL-NSM-ILSI-UPM Research Team

Cardiorespiratory fitness and cardiometabolic risk in Malaysian children aged 6 to 12 years: Findings from SEANUTS II Malaysia
Chan Kai Sze
Centre for Community Health Studies (ReaCH), Faculty of Health Sciences, Universiti Kebangsaan Malaysia

INVITED LECTURE 1
Sponsored by BENEO-Institute
Chairperson: Mohd Redzwan bin Sabran
Universiti Putra Malaysia

1245 hrs **The gut health connection: Microbiota crosstalk and the role of prebiotics**
Goh Peen Ern
Senior Manager Nutrition Communication, BENEO-Institute/ BENEO Asia Pacific Pte Ltd

1330 hrs **Lunch/Poster & Exhibition Viewing**

SYMPOSIUM 2: Food Environment & Nutrition
Chairperson : Wee Bee Suan
Universiti Sultan Zainal Abidin, Malaysia

1430 hrs **Food security & sustainable food consumption among adolescents in Malaysia: Preliminary findings from the Sustainable Food Consumption (SEASFC) study**
Serene Tung En Hui
Department of Nutrition and Dietetics, School of Health Sciences, IMU University, Malaysia

Food security, diet quality and nutritional status among mother-child pairs in Orang Asli in Terengganu, Malaysia
Wong Chee Yen
School of Nutrition and Dietetics, Faculty of Health Sciences, Universiti Sultan Zainal Abidin, Malaysia

Bridging food waste and consumption behaviours: Insights for a sustainable food system
Satvinder Kaur D/O Nachatar Singh
Department of Food Science and Nutrition, Faculty of Applied Sciences, UCSI University, Malaysia

INVITED LECTURE 2
Sponsored by dsm-firmenich
Chairperson: Loh Su Peng
Universiti Putra Malaysia

1530 hrs **The power of strategic partnerships in achieving zero hunger**
Judy Boucek
Nutrition Improvement Regional Lead, dsm-firmenich

YOUNG RESEARCHERS' SYMPOSIUM
Chairperson: Gan Wan Ying
Universiti Putra Malaysia

1615 hrs **Feeding round the clock: A novel perspective from the Chrono-DM™ study to explore chrononutrition and its association with glycaemic outcomes in Malaysian adults with prediabetes**
Chong GY, Satvinder Kaur, Ruzita Abd Talib, Loy SL, Tan HY, Rosmiza Binti Abdullah, Hanisah Binti Mahmud, Siah WY, Tan LK, Kee CC, Koo HC
Faculty of Applied Sciences, Tunku Abdul Rahman University of Management and Technology, Malaysia

1625 hrs **Does seasonality play a role in adolescent malnutrition in low-income communities?**
Tay Janice Ee Fang, Tung Serene En Hui, Satvinder Kaur, Gan Wan Ying, Che'Ya Nik Norasma, Tan Choon Hui
Department of Food Science and Nutrition, Faculty of Applied Sciences, UCSI University, Malaysia

1635 hrs **Dietary pattern related to colorectal cancer (CRC) risk using validated CRC-focused food frequency questionnaire for Malaysian patients**
Ainaa Almardhiyah Abd Rashid, Lydiatul Shima Ashari, Nor Hamizah Shafiee, Mohd Razif Shahril, Lee Yeong Yeh, Raja Affendi Raja Ali, and Hamid Jan Jan Mohamed
School of Health Sciences, Health Campus, Universiti Sains Malaysia

1645 hrs **Effectiveness of 12 weeks Trim and Triumph (TNT) challenge among overweight and obese office workers**
Muhamad Hishamudin Mohmad Hasim, Christopher Thiam Seong Lim, Yin Sze Lim, Shi-Hui Cheng
School of Biosciences, Faculty of Science and Engineering, University of Nottingham MalaysiaLinear programming of optimized complementary diet recommendation for young children (12 – 24 months)

1655 hrs **Development of a digitally-assisted peer-support lifestyle intervention to mitigate cardiovascular disease risk in a low-income community (MYCardio- PEER)**
Lim Geok Pei, Jamuna Rani Appalasamy, Badariah Ahmad, Quek Kia Fatt, Amutha Ramadas
Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia

1705 hrs **Linear programming of optimized complementary diet recommendation for young children (12 - 24 months)**
Yasmina Ahmad Uzhir, Zalilah Mohd Shariff, Nurzalinda Zalbahar, Chin Yit Siew
Department of Nutrition, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

1715 hrs **Bitter taste sensitivity, TAS2R38 gene polymorphisms and obesity risk among Malay children in the Klang Valley – a preliminary result**
Lie Yen Gan, Pei Nee Chong, Meenal Mavinkurve, Rati Jani, Nenad Naumovski, Chee Onn Leong, Muhammad Redha Bin Abdullah Zawawi, Wai Yew Yang
School of Postgraduate, IMU University, Malaysia

1725 hrs **An interactive Malaysian Childhood Healthy Lifestyle (I-MaCHeL) Programme to improve weight-related behaviour of preschool child-parent dyads: Cluster randomised controlled trial**
Ahmad Faezi Ab Rashid, Sharifah Wajihah Wafa Syed Saadun Tarek Wafa, Ruzita Abd Talib, Nor Mazlina Abu Bakar
School of Nutrition and Dietetics, Faculty of Health Sciences, Universiti Sultan Zainal Abidin, Malaysia

1735 hrs **Assessing the impact of CoPT Nutri Trail: A web-based nutrition education module on adiposity and obesity-related behaviors among primary school children In Kuala Lumpur**
Norhasniza Y, Mohd Izwan M, Amirah I, and Ruzita AT
Centre for Community Health Studies (ReaCH), Faculty of Health Sciences, Universiti Kebangsaan Malaysia

1745 hrs **End of Day 1**

DAY 2 WEDNESDAY, 31 JULY, 2024

0800 hrs **Poster & Exhibition viewing**

NUTRITION UPDATE 1
Chairperson: Sharifah Intan Zainun Sharif Ishak
Management and Science University, Malaysia

0900 hrs **Nutrition In Community Engagement (NICE) as continuous teaching and learning pedagogy in training nutritionists**
Yasmin Beng Houi Ooi, Ramlah Mohd Rosli George, Noor Atiqah Aizan Abdul Kadir, Norliyana Aris, Ban Hock Khor
Nutrition in Community Engagement (NICE) Living Laboratory, Faculty of Food Science and Nutrition, Universiti Malaysia Sabah

0915 hrs **Unveiling the mechanisms linking dietary patterns to 10-year cardiovascular diseases risk in Malaysian Type 2 diabetes patients: An integrative analysis using unsupervised and supervised dimension reduction techniques and path modeling**
Alvin Jun Hao Lim, Catriona Kar Yuen Ong, Yu Qiong Chin, Cordelia Kheng May Lim, Imliya Ibrahim, Shakil Ahmed, Sreelakshmi Sankara Narayanan, Nurul Husna Shafie, Yook Chin Chia, Tilakavati Karupaiah, Zulfitri Azuan Mat Daud
Department of Dietetics, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

0930 hrs **Acceptance of insects as food: Comparison between Malaysia and Japan**
Lim See Meng, Masaharu Kagawa, Jyh Eiin Wong, Mari Shinde, Fumihiko Tochinai, Bee Koon Poh
Nutritional Sciences Programme & Centre for Community Health Studies (ReaCH), Faculty of Health Sciences, Universiti Kebangsaan Malaysia

0945 hrs **Are Malaysian adults meeting the food group recommendations? Findings of the Malaysian Healthy Diet Online Survey (MHDOS)**
Wong Jyh Eiin, Woon Fui Chee, Chin Yit Siew, Teh Wai Siew, Rusidah Selamat, Ahmad Ali Zainuddin, Gilly Hendrie, Tee E Siong
Centre for Community Health Studies (ReaCH), Faculty of Health Sciences, Universiti Kebangsaan on behalf of MHDOS Research Team

1000 hrs **Coffee Break/Poster Viewing/Trade Exhibition**

KEYNOTE LECTURE 2
Chairperson: Hamid Jan Jan Mohamed
Universiti Sains Malaysia

1030 hrs **Promoting healthy food in the school environment**
Mr Zainal bin Abas
Deputy Director General of Education Malaysia
(School Operations Sector)

SYMPOSIUM 3: Nutrition of Older Persons
Chairperson: Satvinder Kaur
UCSI University, Malaysia

1115 hrs **Frailty Intervention through Nutrition Education and Exercise (FINE) – a health promotion intervention to prevent frailty and improve frailty status among pre-frail elderly**
Siti Nur'asyura Binti Adznam
Department of Nutrition, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

Chrononutrional effect of artichoke and inulin on blood glucose, microbiome, muscle/bone volumes in elderly person
Shigenobu Shibata
Graduate School of Biomedical and Health Sciences, Hiroshima University, Japan

Effects of square-stepping exercise and art therapy on nutritional status, cognitive and psychological well-being of older adults with Parkinson's disease
Nurliyana Abdul Razak
Department of Food Science and Nutrition, Faculty of Applied Sciences, UCSI University, Malaysia

Effectiveness of *Cosmos Caudatus* extract in improving sarcopenia indices, dietary intake and physical fitness among older adults with probable sarcopenia and sarcopenia in Kelantan
Divya Vanoh
School of Health Sciences, Health Campus, Universiti Sains Malaysia

INVITED LECTURE 3
Sponsored by dsm-firmenich
Chairperson: Wong Jyh Eiin
Universiti Kebangsaan Malaysia

1245 hrs **Enhancing health span: What are the micronutrient gaps and proposed nutrition strategies**
Ek Kai Lin
Head of Science Translation & Advocacy, Asia Pacific, dsm-firmenich

1330 hrs **Lunch/Poster & Exhibition Viewing**

INVITED LECTURE 4
Sponsored by Homesoy
Chairperson: Tan Sue Yee
Nutrition Society of Malaysia

1430 hrs **The truth about soya: A review of nutrition, health effects and addressing misconceptions**
Soo Sek Yow
Head of Nutrition Unit, Ace Canning Corporation Sdn Bhd

SYMPOSIUM 4: Community Lifestyle Intervention Programme
Chairperson: Roseline Yap
Nutrition Society of Malaysia

1515 hrs **Mitigating aflatoxin dietary exposure with probiotics: findings from human intervention trials**
Mohd Redzwan bin Sabran
Department of Nutrition, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

Cultivating AWESOME school children: the NGTS initiative in Malaysia
Yong Heng Yaw
Division of Nutrition and Dietetics, School of Health Sciences, IMU University, Malaysia

Culinary nutrition education for promoting healthy eating among kids
Ng Choon Ming
Department of Food Science and Nutrition, Faculty of Applied Sciences, UCSI University, Malaysia

Comparative cardiometabolic effects of diets with red palm olein, extra virgin coconut oil, and extra virgin olive oil in individuals with central obesity: a randomised trial
Radhika Loganathan
Malaysian Palm Oil Board

NUTRITION UPDATE 2
Chairperson: Wong Chee Yen
Universiti Sultan Zainal Abidin, Malaysia

1645 hrs **Metabolic-predicted obesity phenotypes and risk of colorectal cancer in Malaysia: Decoding the obesity paradox**
Vaidehi Ulaganathan, Mirnalini Kandiah, Digsha Augundhooa, Mahla Chambari, Siti Madihah Muhammad Royani, Kughaneshwary Silvermany, Safiya Adullahi Nuur, Zainab Alkabbani, Baskaran Gunasekaran
Department of Food Science and Nutrition, Faculty of Applied Sciences, UCSI University, Malaysia

1700 hrs **Association between obesity and physical activity among young adults in urban and semi-urban settings in Perak, Malaysia**
Divya Sivapregas, Eddy Seong Guan Cheah, Annaletchumy Loganathan, Phoon Lee Quen, Karani Santhanakrishnan Vimaleswaran, Anto Cordelia Tanislaus Antony Dhanapa
Faculty of Science, Universiti Tunku Abdul Rahman, Malaysia

1715 hrs **Winter melon aqueous extract supplementation modulates body composition and insulin sensitivity in patients with type 2 diabetes**
Che Anis Jauharah Binti Che Mohd Zin,Wan Mohd Izani Wan Mohamed, Nurzalina Abdul Karim Khan, Wan Rosli Wan Ishak
School of Health Sciences, Health Campus, Universiti Sains Malaysia

1730 hrs **Effect of *Lignosus Rhinocerus and Eurycoma Longifolia* supplementation on anaerobic sports performance in athletes: Preliminary findings**
Fadzel Wong Chee Ping
Faculty of Food Science and Nutrition, Universiti Malaysia Sabah

PRIZE GIVING AND CLOSING CEREMONY
Chairperson: Hamid Jan Jan Mohamed
Vice-President, Nutrition Society of Malaysia

1745 hrs **Young Researchers' Symposium and Best Poster (Postgraduate and Undergraduate) Prizes**

1830 hrs **End of Conference**

See you at the 40th NSM Scientific Conference, 2025!

Conference Information

REGISTRATION COUNTER

Registration Counter is located in front of the **Grand Ballroom (Level 1), AVANTÉ Hotel, Bandar Utama, Petaling Jaya.** Opening hours of the Registration Counter:

- 30th July 2024: 7:45 am – 4:00 pm
- 31st July 2024: 8:30 am – 12:00 noon

SCIENTIFIC SESSIONS

All scientific sessions shall be held in the **Grand Ballroom, AVANTÉ Hotel.**

POSTER PRESENTATIONS

Scientific poster presentations shall be held at the **Foyer in front of the Grand Ballroom.** Opening hours:

- 30th July 2024: 8:00 am – 6:00 pm
- 31st July 2024: 8:00 am – 6:00 pm

TRADE EXHIBITION

The trade exhibition is located at the **Foyer in front of the Grand Ballroom.** Opening hours:

- 30th July 2024: 8:00 am – 6:00 pm
- 31st July 2024: 8:00 am – 5:00 pm

OFFICIAL LANGUAGE

The official language of the conference is **English**.

CERTIFICATE OF ATTENDANCE

E-Certificate of attendance will be given to all registered delegates. The certificates will be uploaded on the conference website within 30 days after the Conference (by 30th August 2024). Participants may download the certificates from the website by following the instruction given on the website. Special certificates will be given to those who participated in the Young Researchers' Symposium, Nutrition Update sessions and Poster Presentations.

NAME BADGES

Registered delegates are required to wear their name badges at all times during the Conference for identification and security purposes. Admission to all Conference sessions and meals is based on name badges.

LUNCH & COFFEE BREAKS

Lunch boxes will be served on both days at the **Grand Ballroom, AVANTÉ Hotel.**

Morning and afternoon refreshments shall be served around the trade exhibition areas at the **Grand Ballroom, AVANTÉ Hotel.**

NOTE FOR SPEAKERS:

Submission of slides and preview

Speakers of Day 1 sessions are requested to submit their presentation materials to the **Speaker Preview Room** during registration in the morning of Day 1. Speakers of Day 2 sessions are requested to submit their presentations before the end of Day 1.

Please inform the Conference Secretariat staff once you have submitted the presentation materials.

Speaker Preview Room is located at the **Secretariat Room**.
Opening hours:

- 30th July 2024: 8:00 am – 6:00 pm
- 31st July 2024: 8:00 am – 5:00 pm

Please be present at the **Grand Ballroom** at least ***15 minutes*** prior to the start of your session and identify yourself to the secretariat staff.

NOTE FOR CHAIRPERSONS

Please be present at the **Grand Ballroom** at least ***15 minutes*** prior to the start of your session.

MOBILE PHONE

As a courtesy to all delegates and speakers, mobile phones and other electronic devices must be operated in silent/vibration mode throughout the Conference sessions. No telephone conversations are permitted in the session rooms.

WI-FI

WI-FI is available throughout the hotel. The password will be provided during the conference.

PARKING

For participants driving to the venue, you may park at the parking lot of 1-Powerhouse/ AVANTÉ Hotel, Bandar Utama, Petaling Jaya, Selangor. Only cashless payment is accepted. Have your card (Touch 'n Go/Bank card) validated at the conference area to get a flat rate of RM7.00 per day for the parking fee.

BREASTFEEDING ROOM

A dedicated breastfeeding room is not available at the hotel.
Note: We will discuss with the hotel to explore using one of the rooms for this purpose

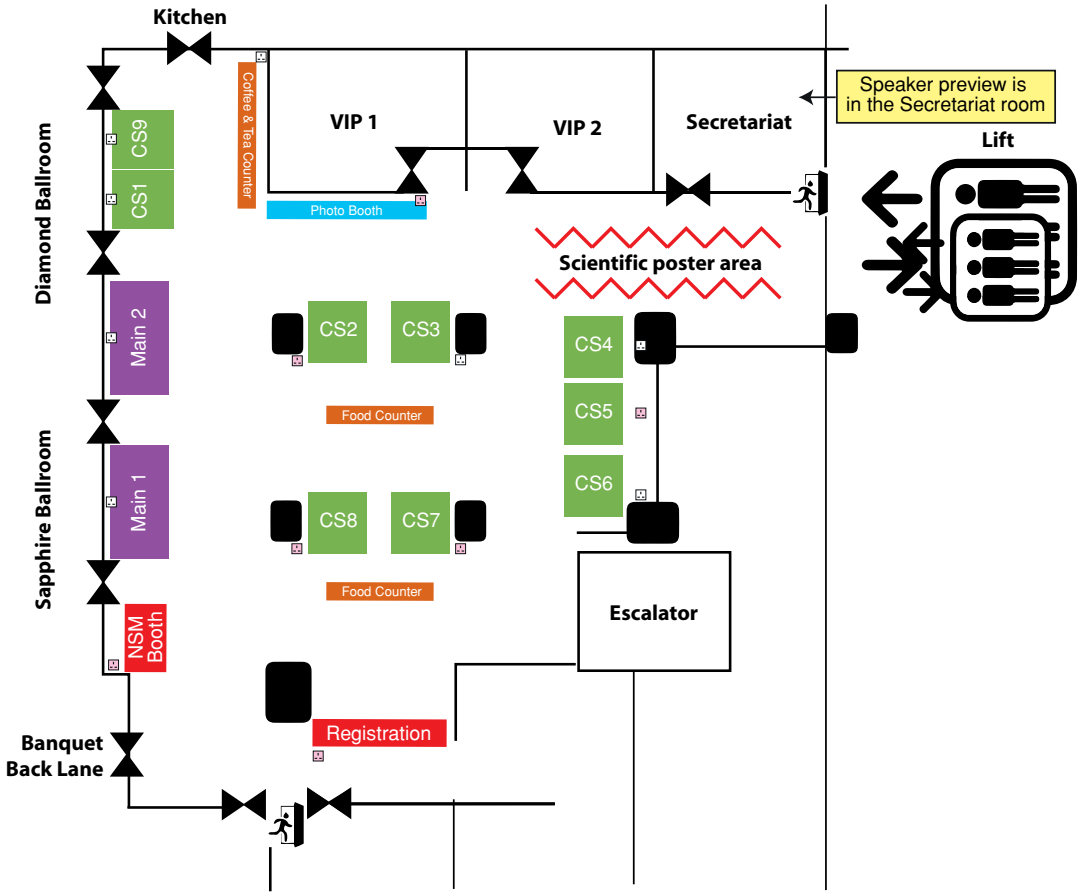
PRAYER ROOM

Surau is located at the **Ground Floor of the AVANTÉ Hotel.**

LIABILITY

The Organising Committee will not assume any responsibility for accidents, losses or damages, as well as for delays or modifications to the Conference programme.

Event Layout & Exhibitor Area Layout



Booth No	Company name
Main 1	dsm-firmenich
Main 2	Ace Canning (HOMESOY)
CS1	Abbott Laboratories Sdn Bhd
CS2	Anlene Malaysia (Fonterra)
CS3	Herbalife Malaysia
CS4	Dutch Lady Milk Industries
CS5	Vitagen
CS6	Pharm-D
CS7	Ajinomoto (Malaysia) Berhad
CS8	Yakult (Malaysia) Sdn Bhd
CS9	MELILEA INTERNATIONAL GROUP OF COMPANIES

NSM Awards/ Prizes 2024

NSM Postgraduate and Undergraduate Prizes 2024

Two types of NSM Prizes are awarded under the Education Fund of the Nutrition Society of Malaysia, according to the By-Laws of the Society. The NSM Postgraduate Prize is awarded for a thesis accepted for a PhD or MSc degree whereas the Undergraduate Prize is awarded for a thesis accepted for a basic/first degree. Each prize comprises a cash award and a certificate, as follows: RM1,000 for a PhD thesis, RM750 for MSc thesis and RM500 for undergraduate prize.

In 2024, NSM is awarding three Postgraduate Prizes: one for PhD and two for MSc, with a total cash award of RM2,500. Nine undergraduates receive Undergraduate Prizes with a total cash award of RM 4,500. The total cash award for both categories of thesis prizes this year is RM7,000.

The recipients for the PhD thesis prize are:

1. **Dr Nur Aqilah Amalina Jaafar**
   Development of extended Theory of Planned Behaviour (ETPB) factorial model for organic food consumption among Malaysian adults
   Supervisor: *Prof Dr Norhasmah Sulaiman*
   Co-supervisor(s): *Dr Mohd Redzwan Sabran, Dr Shamsul Azahari Zainal Badari*
   University: *Faculty of Medicine and Health Sciences, Universiti Putra Malaysia*

The recipients for the MSc thesis prizes are:

1. **Fiona Ann Christianus**
   Efficacy of an online nutrition education intervention and its impact on nutrition knowledge, attitude, practice and nutritional status among students of Universiti Malaysia Sabah
   Supervisor: *Dr Ramlah George @ Mohd Rosli*
   Co-supervisor: *Dr Yasmin Ooi Beng Houi*
   University: *Faculty of Food Science and Nutrition, University Malaysia Sabah*

2. **Erica Ooi Ming Yi**
   Haemoglobin, HbA1C level and nutritional status of pregnant mothers on haematinics and its association with birth weight of neonates among selected urban B40 population group: a prospective cohort study
   Supervisor: *Assoc Prof Dr Snigdha Misra*
   Co-supervisor: *Dr Tan Seok Shin, Assoc Prof Rokiah Don*
   University: *School of Health Sciences, IIMU University, Malaysia*

The recipients for the Undergraduate thesis prizes are:

1. **Amanda Lim Wen Hui**
   Ultra-processed food consumption and its contribution to energy and macronutrients intake among university students in Klang Valley
   Supervisor: *Dr Serene Tung En Hui*
   Co-supervisor: *Prof Dr Norimah Abdul Karim, Dr Sangeetha Shyam, Dr Yang Wai Yew*
   University: *School of Health Sciences, IMU University, Malaysia*

2. **Koh Su Yuan**
   Maternal nutrition knowledge, infant feeding practices and linear growth of 6-12 months old infants in Kuala Lumpur and Putrajaya
   Supervisor: *Dr Nurliyana Binti Abdul Razak*
   Co-supervisor: *Assoc Prof Dr Satvinder Kaur*
   University: *Faculty of Applied Sciences, UCSI University, Malaysia*

3. **Alice Chen**
   Nutritional status and dietary fatty acid intake among children from low income households in Sabah: a cross-sectional study
   Supervisor: *Dr Khor Ban Hock*
   University: *Faculty of Food Science and Nutrition, University Malaysia Sabah*

4. **Nur Syazwani Binti Mohammed**
   Assessment of dietary, physical activity and sedentary behavioural practices pattern on nutritional status of collegiate students during the Movement Control Order (MCO) and the post COVID-19 period in Malaysia
   Supervisor: *Assoc Prof Dr Foo Leng Huat*
   University: *School of Health Sciences, Universiti Sains Malaysia*

5. **Teng Kang Ni**
   Promoting healthy eating habits among non-healthcare university students via social media-based intervention: a quasi-experimental design
   Supervisor: *Dr Cheng Shi Hui*
   University: *Faculty of Science, University of Nottingham Malaysia*

6. **Nurdina Afiqah Zainal**
   The relationship between nutritional status and DNA damage in women experiencing infertility in Malaysia
   Supervisor: *Assoc Prof Dr Razinah Sharif*
   Co-supervisor: *Assoc Prof Dr Hanis Mastura Yahya, Assoc Prof Dr Mohd Razif Shahril*
   University: *Faculty of Health Sciences, Universiti Kebangsaan Malaysia*

7. **Puteri Iylia Asilah Binti Shahril**
   Comparison of food insecurity and the risk of eating disorders by relative weight change status of Malaysian youths throughout the COVID-19 pandemic
   Supervisor: *Dr Tan Seok Tyug*
   University: *Faculty of Health and Life Sciences, Management & Science University Malaysia.*

8. **Nur Arifah binti Zulkifli**
   Association between minimum dietary diversity and nutritional status among young children in Terengganu
   Supervisor: *Assoc Prof Dr Wee Bee Suan*
   University: *Faculty of Health Sciences, Universiti Sultan Zainal Abidin*

9. **Agnes Seow Jing Mun**
   Sociodemographic factors and lifestyle factors with vitamin D status among hospitalized children aged 2-12 years in selected private hospitals in Seremban
   Supervisor: *Assoc Prof Dr Gan Wan Ying*
   University: *Faculty of Medicine and Health Sciences, Universiti Putra Malaysia*

NSM Publication Prize 2024

The NSM Publication Prizes are aimed at encouraging and promoting local research publications in nutrition science among NSM members. Prizes are awarded by the Nutrition Society of Malaysia with financial support from Corporate Members of the Society. In 2024, two Corporate Members of NSM supported this initiative, namely Fonterra Brands (Malaysia) Sdn Bhd (C1879) and Herbalife Malaysia (C2195).

Fonterra sponsored a prize for one category of NSM Publication Prize for the year 2024, namely Mobility and Musculoskeletal Health and Nutrition. The intention was to provide one award each year, each carrying a cash prize of RM2,000 and a certificate by NSM.

Herbalife Malaysia offered to sponsor prizes for three categories of the NSM Publication Prize in different fields of nutrition research, namely (i) Roles of Dietary Fibre in Health, (ii) Intervention for Promoting Healthy Ageing, and (iii) Interventions for Promoting Nutritional Status of General Population. For each category, the intention was to provide 1 award for each year, each to carry a cash prize of RM2,000 and a certificate by NSM.

NSM Publication Prize: Mobility and Musculoskeletal Health and Nutrition

For the category of Mobility and Musculoskeletal Health and Nutrition sponsored by Fonterra Brands (Malaysia) Sdn Bhd, three publications were submitted by 2 members for consideration by NSM. The Selection Committee decided to award the prize to 1 applicant, with the following details:

Name of recipient: ***Dr Kanimolli Arasu*** [02350]
School of Health Sciences, IMU University, Malaysia

Publication: Effect of soluble corn fibre and calcium supplementation on bone mineral content and bone mineral density in preadolescent Malaysian children – a double-blind randomised controlled trial (PREBONE-Kids Study)
https://doi.org/10.1007/s00198-023-06702-0

NSM Publication Prize: Interventions for Promoting Nutritional Status of General Population

For thecategory of Interventions for Promoting Nutritional Status of General Population sponsored by Herbalife Malaysia, two publications were submitted by 1 member for consideration by NSM. The Selection Committee decided to award the prize to the applicant, with the following details:

Name of recipient: ***Ng Choon Ming*** [L2339]
Department of Food Science and Nutrition, Faculty of Applied Sciences, UCSI University

Publication: Culinary nutrition education improves home food availability and psychosocial factors related to healthy meal preparation among children
https://doi.org/10.1016/j.jneb.2021.04.006

NSM Young Researchers' Symposium Prizes 2024

Winners of the Young Researchers' Symposium are awarded a certificate and the following cash prizes:

1st Prize – RM400
2nd Prize – RM300
3rd Prize – RM200
2 Consolation Prizes of RM100 each

Prizes for 2024, totalling RM1,100 are provided by International Life Sciences Institute (ILSI) Southeast Asia Region.

NSM Poster Competition Prizes 2024

This poster competition is for Postgraduates and Undergraduates. Winners are awarded a certificate and the following cash prizes:

Postgraduate prizes (7 winners):
1st Prize – RM300
2nd Prize – RM200
3rd Prize – RM150
4 Consolation Prizes of RM100 each

Undergraduate prizes (10 winners):
1st Prize – RM200
2nd Prize – RM150
3rd Prize – RM100
7 Consolation Prizes of RM50 each

Prizes for 2024, totalling RM800 are provided by International Life Sciences Institute (ILSI) Southeast Asia Region.

List of Scientific Posters

Scientific posters have been grouped into the following themes:

A: Nutritional Status, Consumption Pattern & Disease
B: Community Nutrition Promotion, Education & Interventions
C: Clinical Nutrition / Intervention Trials
D: Nutrients & Other Components in Foods/Products
E: Experimental Nutrition (animal and in-vitro studies)
F: Food Science & Technology

Different posters will be displayed on the 2 days conference. Do visit poster area on both days.

Poster Presentation

Group A: Nutritional Status, Consumption Pattern & Disease

A01 Diet quality and nutrient intakes of primary school children in Sabah: A cross-sectional study
Abdul Hakim bin Abdul Wahid, Alice Chen, Ban Hock Khor, Nur Batrisyia Rafiz Azuan, Nur'Ain Mardhiyah Harun, Yasmin Beng Houi Ooi

A02 Factors associated with body weight status among women with polycystic ovarian syndrome (PCOS) in Jordan
Ahlam Ali Yousef Rawashdeh, Divya Vanoh, Hafzan Yusoff, Manal Badrasawi

A03 The prevalence of hypertension and its associated risk factors among young adults in Klang Valley, Malaysia
Ang Yeow Nyin, Mohamad Hakeem Mohd Ridzuwan

A04 Double burden of malnutrition and its association with sociodemographic characteristics among orang asli mother-child pairs Terengganu
Cheng Er Fang

A05 Association between serum short-chain fatty acids, bone health and diet quality in Malaysian children from the prebone-kids study
Cheow Yi Qi, Chong Chun Wie, Kanimolli A/P Arasu, Khaw Kooi Yeong, Winnie Chee Siew Swee

A06 Elucidating the link between eating jetlag and diet quality among pregnant women in Kuala Lumpur
Chin May Xin, Kok Ee Yin, Satvinder Kaur

A07 Sleep patterns among paediatric cancer patients receiving treatment at Hospital Tunku Azizah, Kuala Lumpur
Chin Zi Rui, Nurul Farhana Rahmat, Phang Chin Yi, Poh Bee Koon, Wong Jyh Eiin, Zulaiha Muda

A08 Associations of parental, child, and home food environmental factors with body weight status among school-aged adolescents in Bera, Pahang
Choo Pau Le, Gan Wan Ying

A09 The prevalence, characteristic and dietary intake of warded patients consuming out-of-hospital food at hospital Universiti Sains Malaysia
Coh Hui Qin, Hamid Jan Jan Mohamed

A10 Associations between sociodemographic and health factors with food security in the first trimester of pregnancy: A preliminary finding of the MYBIOTA cohort study
Eow Shiang Yen, Lee Ling Jun, Gan Wan Ying, Loh Su Peng, Chin Yit Siew, Leslie Than Thian Lung

A11 Correlation between macronutrients intake and cognitive performance among undergraduate students in Kuala Nerus, Terengganu
Fatin Munirah binti Sabatul Hamdi, Marhazlina binti Mohamad

A12 Comparison of hydration status among adults in the urban vs. rural areas in Selangor, Malaysia
Gan Wan Ying, Salma Faeza Ahmad Fuzi, Fazirah Binti Samah, Loh Su Peng, Norhasmah Sulaiman

A13 Body composition and fitness difference between senior and junior male national artistic gymnasts
Chai Wen Jin, Foo Kai Li, Tommy Wong Kee Kiat

A14 Dietary zinc intake and factors associated with sleep quality among pregnant women visited to the Hospital Sultan Abdul Aziz Shah, Selangor, Malaysia
Hee Wen Yao

A15 Association between diet quality and stunting among indigenous (orang asli) children in Terengganu, Malaysia
Izzahfathiah binti Jamadulin

A16 Comparison of lifestyle factors among adults practising plant-based diet vs omnivorous diet in Klang Valley
Ammu Kutty Gk Radhakrishnan, Chan Yoke Mun, Chin Yit Siew, Joseph Cheah Mun Hong, Lim Poh Ying, Mahenderan Appukutty, Muhammad Hariz Ikhwan Abdul Halim, Nurul Riena Asyiqin Mohd Sobri, Raja Nurkhalisa Nadhrah Raja Hairuddin, Siti Nurfarhani Shamsul, Siti Sabariah Buhari, Tan De Hui

A17 Factors associated with nutrition literacy among school-aged adolescents in Kota Setar, Kedah
Gan Wan Ying, Khoo Lu Ying

A18 Is chronotype associated with pregnancy symptoms, chrononutrition habits, and mood among pregnant women in Kuala Lumpur, Malaysia?
Kok Ee Yin, Masaki Takahashi, Nurliyana Abdul Razak, Nurul Husna Mohd Shukri, Satvinder Kaur

A19 Association between diet quality and dietary habits with anaemia status among UCSI University female students
Lee Ee Rong, Satvinder Kaur D/O Nachatar Singh

A20 Nutritional status and dietary intake of paediatric leukaemia survivors followed up at Hospital Tunku Azizah, Kuala Lumpur
Aida Aliah Abu Bakar, Liaw Jian Xin, Nurul Farhana Rahmat, Phang Chin Yi, Poh Bee Koon, Zulaiha Muda

A21 Assessment of food environment based on non-discretionary and discretionary food sales at wet markets in Kuala Lumpur
Anis Munirah Mohd Sakri, Sameeha Binti Mohd Jamil, Lim Pei Xian, Poh Bee Koon

A22 Association of academic self-efficacy, perceived academic stress, and future anxiety among undergraduate students in UCSI University
Lim Pei Ying, Shashikala Sivapathy

A23 Factors associated with food addiction among undergraduate students in Universiti Putra Malaysia
Gan Wan Ying, Lim Wei Long

A24 Factors associated with hydration status of elite team sport players in Penang
Lim Xin Ying, Loo Lean Hiong, Nurliyana Binti Abdul Razak, Tania Lee Xu Yar

A25 Satiety responsiveness is related to weight-for-length z-score in one-month-old infants: A preliminary finding from a mother-infant cohort study
Leslie Thian Lung Than, Ling Jun Lee, Norazlin Kamal Nor, Shiang Yen Eow, Su Peng Loh, Wan Ying Gan

A26 Can food-based recommendations developed based on national standard food portion sizes improve the dietary adequacy of undernourished urban poor children aged two to five years from Seremban preschools by using linear programming approach?
Miow Yee Xuen

A27 Association between food security and dietary intake among indigenous (orang asli) mothers and children aged 6-59.9 months in Terengganu
Muhammad Izzat Haziq Idris

A28 Food security, diet quality and their associations with nutritional status among orang asli women in Terengganu
Chin Yi Ying, Nik Nurul Alya binti Hamdan, Nur Qistina Hawani binti Hasmawi, Wong Chee Yen

A29 Association between sociodemographic factors, personal factors, food security status and diet quality among government employees in Selangor
Norhasmah Sulaiman, Nur Afiqah Mohammad Anshor, Nur Damia Mohd Raihan

A30 Perceived stress and eating behaviours among university students: A cross-sectional study
Norliyana Aris, Nurul Farhana Sabarudin

A31 Association between physical activity and nutritional status among orang asli women in Terengganu
Nik Nurul Alya binti Hamdan, Nur Qistina Hawani binti Hasmawi, Wee Bee Suan, Wong Chee Yen

A32 Meal timing, energy and macronutrient intake and body mass index status among degree and diploma nursing students of health campus in Universiti Sains Malaysia
Hafzan Binti Yusoff, Nur Arifah Binti Shahul Hameed

A33 The relationship between patients' satisfaction and plate waste in hospital food service at Hospital Universiti Sains Malaysia
Nurul Fatin Nadirah Mohammad Shahril, Zafirah Mohd Nor

A34 Poor adherence to Malaysian dietary guidelines among primary school children in Peninsular Malaysia
Khouw Ilse, Lee Shoo Thien, On Behalf Of The SEANUTS II Malaysia Study Group, Poh Bee Koon, Safii Nik Shanita, Teh Sh U Chin, Wong Jyh Eiin, Yeo Giin Shang

A35 Dietary glycaemic index, body mass index and waist circumference among young adults studying at university
Ramlah George, Susana Chong Jia Jia

A36 Variations in maternal nutritional intake and diet quality between workdays and workfree days among pregnant women in Malaysia
Saki Kurimoto, Satvinder Kaur, Ee Yin Kok

A37 Determinants of vegetable and fruit intake among overweight and obese adolescents in Selangor
Lau May Yee, Nur Zakiah Binti Saat, Ruzita binti Abd Talib, Shaliza Amierra binti Shahridzal

A38 Association between food neophobia and fruits and vegetables intake among preschool children in Kuala Nerus, Terengganu
Sharifah Wajihah Wafa binti Syed Saadun Tarek Wafa, Siti Sarah binti Aidil

A39 Factors associated with body weight status among young children aged 6-36 months in Johor Bahru and Kulai, Johor
Suzaimahanim binti Othman

A40 Factors associated with health-related quality of life (hrqol) among undergraduate students in Kuala Lumpur and Selangor
Chin Yit Siew, Sharifah Intan Zainun Sharif Ishak, Syarifah Aqilah binti Salleh

A41 Associations of child, parental and household factors with cognitive performance among children aged 4 to 6 years old in KEMAS preschools in Selangor
Gan Wan Ying, Teo Yun Shi

A42 Comparison on nutritional status, eating behaviour and perceived stress during examination and non-examination weeks among students in Universiti Malaysia Sabah (UMS)
Norliyana Binti Aris, Wong Yu Ni

A43 Relationship between academic stress, sleep quality, and depression among undergraduate students at UCSI university, Kuala Lumpur.
Yap Rou En

A44 An index of protein price and quality for Kota Kinabalu, Sabah
Yasmin Ooi Beng Houi, Yeo Hui May

Group B: Community Nutrition Promotion, Education & Interventions

B01 Effect of nutrition communication, empowerment and leadership (NUTRICEL) programme on nutrition advocacy skills, healthy lifestyle knowledge and self-efficacy in nutrition students
Ang Zheng Feng, Chin Yit Siew, Diyana Nawar Kasimon, Lim Poh Ying, Nurzalinda Zalbahar

B02 Factors associated with breastfeeding self-efficacy among mothers after birth in Hospital Sultan Abdul Aziz Shah
Anis Iffah Asri, Nurul Husna Mohd Shukri, Zurina Zainudin

B03 Development and validation of a food atlas
Annette Ling Tzi Xuan, Yasmin Ooi Beng Houi

B04 Effectiveness of a nutrition program in improving knowledge, attitude and practice among caregivers of under-five children from urban poor in Kuala Lumpur
Chek Lok Poh, Chin Yit Siew, Gan Wan Ying, Norhasmah Binti Sulaiman

B05 A content analysis of nutrition-related misinformation on social media
Connie Dieng Sing Yee, Khor Ban Hock, Yasmin Ooi Beng Houi

B06 Factors associated with sedentary behaviour among secondary school students in Petaling Perdana, Selangor, Malaysia
Hazizi Abu Saad, Mohamad Farhan Haikal Farid

B07 Development and validation of a digital photographic food atlas of Malaysian foods as a portion size estimation aid
Chong Pei Nee, Chong Wan Tong, Coren Chang Yu Huey, Jim Mee Sha, Lee Yi Yi, Natasha Khoo Yuen Teng

B08 Consumer food choice and factors affecting them at wet markets in Kuala Lumpur, Malaysia
Anis Munirah Mohd Sakri, Justine Wong Jia Yuen, Poh Bee Koon, Sameeha Mohd Jamil, You Huay Woon

B09 Predicting sedentary behaviour among the elderly in Malaysia using machine learning: Findings from national health and morbidity surveys 2018
Cheah Yong Kang, Kee Chee Cheong, Lim Hui Li, Mohd Azahadi Omar, Najjah Tohar, Nuur Hafizah Md. Iderus, Sharifah Nazeera Syed Anera, Sumarni Mohd Ghazali, Tan Lay Kim, Teh Chien Huey

B10 Adherence to 24-hour movement behaviours and its relationship with motor skills and executive function among 3- to 4-year-old preschoolers in Selangor, Malaysia
Denise Koh, Kirrthana Rasantharan, Wong Jyh Eiin

B11 A systematic review of health outcomes associated with sustainable diets
Baskaran Gunasekaran, Digsha Augundhoa, Mahla Chambari, Vaidehi Ulaganathan, Zainab Alkabani

B12 Stocking decisions of food and beverages among wet market retailers in urban poor areas of Kuala Lumpur: A qualitative study
Bee Koon Poh, Fong Siu Hiew, Mohd Jamil Sameeha, Mohd Sakri Anis Munirah

B13 Association between sociodemographic factors, cost of living, financial problems, financial literacy, materialism and food security status among government employees in Selangor
Norhasmah Sulaiman, Nur Afiqah Mohammad Anshor, Nur Damia Mohd Raihan

B14 Impact of the Putra community nutrition ambassador programme (PUTRACNAP) on nutritional knowledge and family relationships among children and their mothers from urban-poor background
Juju Nakasha Jaafar, Norhasmah Sulaiman, Nur Amalin Juhari, Nurzalinda Zalbahar@Zabaha, Poh Ying Lim, Sukanya Sereenonchai, Yit Siew Chin, Yoke Mun Chan

B15 Associations of sociodemographic factors, burnout and barriers with Baby-Friendly Hospital Initiative (BFHI) compliance among healthcare providers in a teaching university hospital
Nur Nadhirah Shuhaili, Nurul Husna Mohd Shukri, Zurina Zainuddin

B16 Development and validation of digital nutrition education materials for parents of pre-schoolers
Poh Bee Koon, Poon Siao Shuan

B17 Impact of exercise intensity on appetite regulation and acylated ghrelin responses – in female university students: a randomized crossover study
Shim Yih Sheng, Cheng Shi Hui

B18 Nutrition label literacy among adolescents in east coast of Peninsular Malaysia
Hanis Mastura Yahya, Norazmir Md Nor, Nurul Amnani Hassan, Poh Bee Koon, Raduan Sharif, Ruzita Abd Talib, Syaza Kamarudin

B19 Syndemic of food insecurity, micronutrient deficiency and poor mental health in pregnant women: Protocol and preliminary findings
Chen Po Ling, Cheng Shi Hui, Habibah Abdul Hamid, Lee Siew Siew, Lim See Meng, Loh Su Peng, Ng Zhi Xiang, Tan Weng Kuan Kimberly

B20 Effects of whole grain breakfast beverages on satiety and body weight: a randomised controlled trial among UCSI University students with bowel disorders
Nurliyana Abdul Razak, Tan Yang

B21 Validation of a weight management programme model: Experts assessment
Hanif Farhan Mohd Rasdi, Ruzita Abd. Talib, Tatiana Suhaimi

B22 Nutrition label literacy: A study of adolescents aged 13-16 from selected schools in Kuala Lumpur
Vaishnaveey D/O Gurumoothy

B23 Impact of nutritional intervention on obesity indices in students at Shanxi Normal University, China
Mahenderan Appukutty, Wangning, Yit Siew Chin

B24 Toybox study Malaysia: Exploring barriers and enablers in teaching healthy behaviour education among Malaysian preschool teachers
Abd Talib Ruzita, Bee Koon Poh, Carolyn Summerbell, Cecilia A. Essau, Denise Koh, Edward Leigh Gibson, Julia Ai Cheng Lee, Sue Reeves, Whye Lian Cheah, Yatiman Noor Hafizah, Yi Ting Chong

B25 Factors associated with awareness of menu calorie labelling among consumers in selected fast food restaurants in Putrajaya
Siti Raihana Shafie, Gan Wan Ying, Naqibah Zainal Arif

Group C: Clinical Nutrition/Intervention Trials

C01 Effectiveness of a locally grown anthocyanin-rich red-pigmented rice as a sustainable staple food for cardiometabolic health in adults with type 2 diabetes: Primary findings from the RICH study
Alvin Jun Hao Lim, Catriona Kar Yuen Ong, Cordelia Kheng May Lim, Elise Mognard, Faiz Daud, Fazliana Mansor, Hui Ching Low, Imliya Ibrahim, Mohd Fairulnizal Md Noh, Mohd Naeem Mohd Nawi, Sameeha Jamil, Sreelakshmi Sankara Narayanan, Tilakavati Karupaiah, Wickneswari Ratnam, Yong Ling Sou, Yu Qiong Chin, Yuh Fen Pung, Zulfitri Azuan Mat Daud

C02 Highlighting the dietitian's role in enhancing quality of life: a motivational interviewing approach for patient with morbid obesity
Coh Hui Qin, Nur Adilah Muhammadun Basar

C03 Developing and validating a hybrid model of logistic regression and artificial neural network for predicting protein-energy wasting among hemodialysis patients in the era of artificial intelligence
Alvin Jun Hao Lim, Cordelia Kheng May Lim, Qian Qian Hoong, Nurul Iman Hafizah Adanan, Sharmela Sahathevan, Ban Hock Khor, Lee Fang Teong, Sreelakshmi Sankara Narayanan, Tilakavati Karupaiah, Zulfitri Azuan Mat Daud

C04 Effects of cooled rice storage on postprandial glucose levels in healthy adults
Kyoko Fujihira, Masaki Takahashi, Saeka Fuke, Saki Kurimoto

Group D: Nutrients & Other Components in Foods/Products

D01 Nutrient quality of plant-based alternatives (PBA) of milk products in selected hypermarkets
Chan Zi Xuan, Serene Tung En Hui, Snigdha Misra

D02 Comparison of total sugar and individual sugars in bubble milk teas from different franchises
Chong Xin Yi, Siti Raihanah Shafie

D03 Nutrition and labelling characteristics in association with the healthiness of ready-to-eat foods in major supermarket chains in Malaysia
Baskaran Gunasekaran, Chow Sen Heng, Mahla Chambari, Nichelin Tanechi, Vaidehi Ulaganathan

D04 Antioxidant properties, mineral content, glycaemic index, and glycaemic load of coconut and nipa sap water harvested in Marang, Terengganu
Abbe Maleyki Mhd Jalil, Ghaidaa' Binti Zakaria, Laila Ruwaida Mohd Zainuddin, Napisah Hussin

D05 Determination of infants growth-related micrornas (MIRNAS) abundance in human breast milk and their associations with maternal-infant characteristics
Goi Ruo Xuan

D06 Impact of heating time and temperature on peroxide value, anisidine value, and vitamin D3 stability in fortified palm oil
Ho Jia Yu, Loh Su Peng

D07 Determination of total phenolic content, total flavonoid content and antioxidant activity of shiitake mushrooms (*Lentinula edodes*) with different drying methods
Lim Jia Ming, Nurul Husna Shafie

D09 Nutrient quality of selected plant-based alternative meat products available in hypermarkets around Bukit Jalil
Luqman Fitri Bin Feizal Mahathir, Serene Tung En Hui, Snighdha Misra

D10 The physicochemical, nutritional and sensorial properties of duck sausage cooked by a sous-vide, boiling and steaming method.
Marina binti Abdul Manaf, Muhammad Saifulhafizuddin bin Yusmadi, Wan Rosli Bin Wan Ishak

D11 Effects of drying on the total phenolic content, total flavonoid content, and antioxidant activity of red and white dragon fruits
Neoh Shu Yen, Nurul Husna Shafie

D12 Factors associated with the healthiness of ready-to-cook products available in grocery chains in Malaysia
Baskaran Gunasekaran, Chow Sen Heng, Mahla Chambari, Nichelin Tanechi, Vaidehi Ulaganathan

D13 The physicochemical, nutritional, and sensorial properties of lamb meatball cooked by boiling, steaming, and sous-vide
Marina Binti Abdul Manaf, Nurul Nadiah Aqilah Binti Muzaffar, Wan Rosli Bin Wan Ishak

D14 Utilisation of *Kappaphycus alvarezii* as a potential fat replacer on the physicochemical, nutritional, and sensorial properties of chicken-based patty
Nurul Najwa Binti Zulkibli, Wan Rosli Wan Ishak

D15 Physicochemical properties and sensory acceptance of crackers incorporated with different formulation of *Moringa oleifera* leaves
Laila Ruwaida binti Mohd Zainuddin, Napisah Hussin, Nurul Wahyu Ezzani binti Abdul Salam

D16 Proximate composition and sensory acceptability of MRQ 74 rice bran bread
Mohd Adzim Khalili bin Rohin, Norhaslinda binti Ridzwan, Norhayati binti Abd Hadi, Siti Nadhirah binti Ismail

D17 The association of safe dose recommendation caffeine intake and session of ingestion during sports competition among athletes
Abdul Hadi Abd Rahman, Ahmad Rohi Ghazali, Mohd Izham Mohamad, Nik Shanita Safii, Nor Farah Mohamad Fauzi, Sitti Junaina Musa

D18 Antioxidant content and activity in avrils (flesh) and rags of *cempedak* (*Artocarpus integer*) and *nangka* (*Artocarpus heterophyllus*)
Azrina binti Azlan, Tan Khai Chu

D19 Nutrient quality of products of animal origin (pao) available in selected hypermarkets around Bukit Jalil
Serene Tung En Hui, Snigdha Misra, Tan Yi Tseng

D20 Differential effects of cooking methods on ascorbic acid, phenolics, flavonoids, and antioxidant activity in Chinese yam
Loh Su Peng, Teng Ru Jun

D21 Sugar analysis in tea-based sweetened beverages by using different analytical methods
Loh Su Peng, Yeu Cheng Yee

Group E: Experimental Nutrition (animal and in-vitro studies)

E01 Exploring the efficacy of *Aspalathus linearis* and *Citrus bergamia* in combating hypercholesterolemia and obesity: enzyme inhibition, antioxidant activity, and phytocompound analysis
Asveene Chandran, Baskaran Gunasekaran, Shamala Salvamani, Vaidehi Ulaganathan

E02 Molecular docking of bioactive compounds derived from *Manilkara zapota (L.) P.* Royen in EGFR/NF-κB signaling in proliferation of human hepatocellular carcinoma (HepG2) cells
Iffah N Azurah binti Mohd Hazni, Tan Bee Ling

E03 Health benefits of different types of banana peel extracts on cell culture
Dr. Sachie Nakatani, Nur Syafiqah binti Mohamad, Prof. Dr. Kenji Kobata, Sarina Sariman

E04 Exploring the effect of chickpea (*Cicer arietinum L.*) extract on adipocyte functions
Ang Yeow Nyin, Kenji Kobata, Nurul Alieya binti Mohd Arif Leow, Sachie Nakatani

Group F: Food Science & Technology

F01 Determination of mutagenicity effects in plant-based burgers
Che Aiman Bin Che Ri, Noor Soffalina Seng, Noorul Syuhadah Razali, Razinah Sharif @ Mohd Sharif

F02 The effects of sous-vide and conventional cooking methods on physicochemical, nutritional, and sensorial properties of meatballs made of local beef
Nur Ainaa Binti Aziz

F03 Quantification of selected polyphenols in honey using uhplc-pda: Method development and validation
Suraiami Binti Mustar

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1 Mitchell W.K., et al. Front Physiol. 2012; 3:260. 2 Bee, H.L. and Bjorklund, B.R. The Journey of adulthood. Ch. 12. 2000.
3 Singh-Manoux A., et al. BMJ. 2012; 344:d7622. 4 Arboleya, S. et al. Front. Microbiol. 2016; 7: 5.

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*Tinggi Dalam Nutrien: Tinggi Kandungan Protein, Kalsium, Zat Besi, Magnesium, Vitamin A, D3, E, K1, B1, B2, B3, B6, B12 dan C.

^80% nutrien harian: Memenuhi sekurang-kurangnya 80% daripada sekurang-kurangnya 80% daripada keperluan nutrien yang disyorkan di Malaysia (Malaysia RNI 2017) seperti Kalsium, Fosforus, Zat besi, Magnesium, Zink, Vitamin A, D3, E, K1, B1, B2, B3, B6, B12 dan C.

^EAA: 9 Asid Amino Perlu atau Essential Amino Acids (EAA)

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[1]Source Euromonitor; CH2024ed, weight management & wellbeing definition; combined % RSP share GBO for 2023
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2 Alarcon PA, et al. Clin Pediatr (Phila). 2003;42(3):209-17. Significant difference in height gain at 60 days between children 3-5 years at nutritional risk who received PediaSure plus dietary counseling, and those who received dietary counseling alone.

* Based on the Expert Evaluation Study conducted on behalf of Abbott Laboratories (Malaysia) Sdn. Bhd. from 10th July 2023 to 21st July 2023 among 52 Pediatricians in Malaysia.

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1. Rania Mohamed Abdou, Maha Fathey. Evaluation of early postpartum fenugreek supplementation on expressed breast milk volume and prolactin levels variation. Egyptian Pediatric Association Gazette. Volume 66, Issue 3, 2018, Pages 57-60. ISSN 1110-6638, https://doi.org/10.1016/j.epag.2018.07.003.
2. Drugs and Lactation Database (LactMed®) [Internet]. Bethesda (MD): National Institute of Child Health and Human Development; 2006. Lecithin. [Updated 2023 Feb 15]. Available from: https://www.ncbi.nlm.nih.gov/books/NBK501772/
3. Šuligoj, Tanja et al. "Effects of Human Milk Oligosaccharides on the Adult Gut Microbiota and Barrier Function." Nutrients vol. 12,9 2808. 13 Sep. 2020, doi:10.3390/nu12092808

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Sarkawi, M., Raja Ali, R. A., Abd Wahab, N., & Mokhtar, N. M. (2021) Influence of Lactobacillus containing cultured milk drink to depression scores in irritable bowel syndrome subjects. J. Gastroenterol. and Hepatol., 36(10), 247. https://doi.org/10.1111/jgh.15607

Mokhtar, N. M., Jaafar, N. M., Chan, S., et al IDDF2018-ABS-0203 Modulation of intestinal dysbiosis in patients with constipation-predominant irritable bowel syndrome using lactobacillus-containing cultured milk drink Gut 2018;67:A70. https://gut.bmj.com/content/67/Suppl_2/A70.2

*Clinical research done by the GUT Research Group, Faculty of Medicine, UKM

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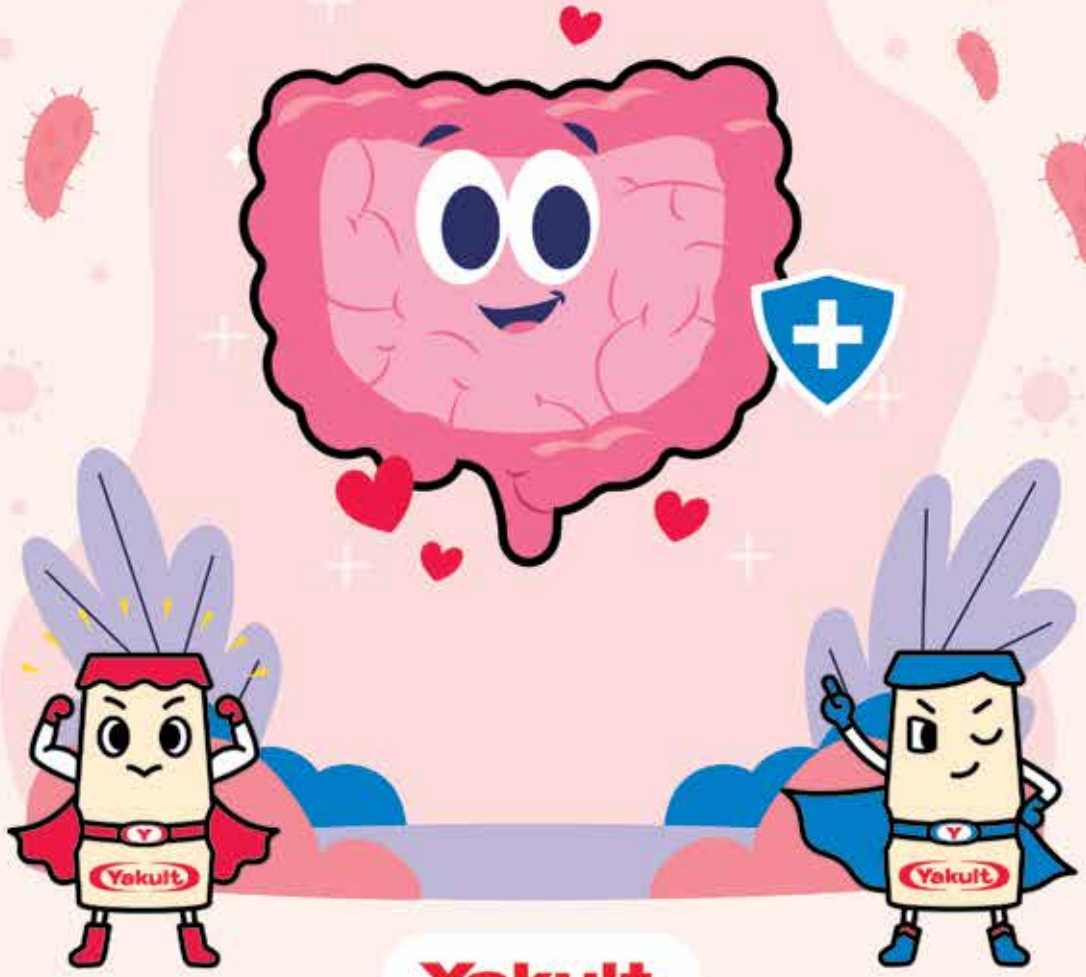

Yakult

Seminar on Soy Protein Promotion, Utilization and Health

Aug 6, 2024
08:00 AM - 16:15 PM

Crowne Plaza Kuala Lumpur City Centre, Kuala Lumpur, Malaysia

08:00 - 08:45 hr
Registration

08:45 - 09:05 hr
Welcome Remarks

Mrs Yeong Boon Yee, Senior Technical Consultant, USSEC SEA

Associcate Prof Dr. Mahenderan Appukutty, President, Nutrition Society of Malaysia

09:05 - 09:35 hr
Research & Development on Soy Protein-Based Meat Alternatives

Dr. Musaalbakri Principal Research Officer, Food Science & Technology Research Centre, Malaysian Agricultural Research & Development Institute (MARDI)

09:35 - 10:05 hr
Soy Proteins: Applications and Advantages

Mr. Jacob Golbitz, Managing Director, Agromeris, USA

10:05 - 10:30 hr
Soya Protein Superiority: What's in Your Plant-Based Beverages?

Ms Soo Sek Yow Ace Canning, Malaysia

10:30 - 11:00 hr
Q&A and Morning Tea break

11:00 - 11:25 hr
The use of Soybean Splits and Full Fat Soybean Flour to improve the manufacturing of soymilk, tofu and tempeh.
Latest on High Oleic Soybean in Soy Food Processing

Mr. Choong Wai Sum, Soon Soon Oilmills Sdn Bhd

11:25 - 11:50 hr
Nutritional Composition, Bioactive Compounds, and Health Benefit of Tempe Consumption

Prof. Made Astawan, Senior Lecturer, IPB University, Indonesia.

11:50 - 12:10 hr
Collaborative Efforts to Improve Tempe Industry in Indonesia

Dr. Dady Maskar, Technical Consultant, USSEC SE Asia, Indonesia.

12:10 - 12:55 hr
Hands-on Tempe Making Session

Facilitated by USSEC SE Asia's Indonesia team

12:55 - 14:00 hr
Lunch

14:00 - 15:00 hr
Culinary Demonstration of Soy Food

Ms Lee Zhi Ling, Nutritionist

15:15 - 16:15 hr
Panel Discussion on Collaboration Efforts to Promote Soy Benefits in Malaysia Challenges & opportunities

Moderator: Dr. Tee E Siong, Immediate-Past President, Nutrition Society of Malaysia

16:15 hr
Afternoon Tea break and End of Event

Scan QR code to register

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Family Carnivals

- Organised 12 major fun-filled carnivals and 3 virtual fairs

School & Kindergarten Roadshows

- Visited 160 primary schools and provided healthy eating and active living messages
- Visited 175 kindergartens and conducted interactive nutrition activities

Publications for Public

- Published 15 practical nutrition guidebooks, 5 recipe books and 1 mini-booklet

Educational Materials for School Children & Preschoolers

- Published comic book and activity book for primary school children
- Published DVD and worksheets for preschoolers

Educational Press Articles

- Published over 102 articles in English, Bahasa Malaysia & Chinese newspapers

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- Disseminated messages through radio, television & website

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NSM Nutrition Roadshows 2.0

A Nutrition Promotion Programme of the Nutrition Society of Malaysia

Improving Lives through Nutrition

Focusing on

Healthy Eating

Active Living

Objectives

- inspire and empower the community with the knowledge and skills to practise healthy eating and active living
- foster community awareness on the importance of assessing their nutritional status regularly
- serve as capacity building and partnership platform for nutritionists in promoting optimal nutritional well-being of Malaysians

Two main approaches and activities

COMMUNITY OUTREACH ROADSHOWS

- *Nutrition screening*
- *Brief nutrition consultation*
- *Interactive nutrition promotion activities*
- *Dissemination of nutrition educational materials*

ONLINE NUTRITION PROMOTION

(Fb, IG & TikTok)

- *Nutrition Educational Information (Tips, Healthy Eating Reminders, NutriQuote)*
- *Healthy Recipe cards and Cooking demonstration by Nutritionist*
- *Interactive Activities (NutriFun Quiz)*
- *Special events & activities on Healthy Cooking & Active Living*

Improving Lives Through Nutrition

NSM Roadshows 2.0: Nutrition Promotion Programme

For more information: www.nutriweb.org.my

nsmnutritionroadshows2

Abstracts

Keynote Lecture 1

Strategies for prevention and control of childhood obesity and chronic diseases

Youfa Wang

University Distinguished Professor, Vice President, Xi'an Jiaotong University Health Science Center, Xi'an, China

Obesity and chronic diseases have become a major threat to public health worldwide and some countries and population groups are more seriously affected. The prevention of childhood obesity is critical for the prevention and control of the growing global epidemic of obesity and chronic diseases. The WHO has made recommendations of specific actions for fighting obesity in young people, which range from development of comprehensive national policies to specific actions called on children and their parents. School is a key setting for many actions to be successful and sustainable. Strong government support, supportive school environment, effective parenting, and good role models from adults who work with children are among the key factors to help children to develop lifelong healthful eating and physical activity habits, to prevent obesity and many other chronic diseases. Treatment services should be provided to people who have developed obesity and chronic diseases, while such patients need be empowered to seek such services. Vulnerable groups such as those from low social economic status families and those have limited access to health services need special attention and support.

Symposium 1

Double burden of malnutrition in Malaysia – an update from NHMS 2023

Sulhariza Husni Zain, Khairul Hasnan Amali, Ahmad Ali Zainuddin, Halizah Mat Rifin, Noor Ani Ahmad

Institute for Public Health, National Institute of Health, Ministry of Health Malaysia, Selangor, Malaysia

Rapid nutrition transition driven by the economic growth and change in lifestyle has affected dietary practices. This transition has caused the coexistence of undernutrition (wasting, stunting and underweight) and overnutrition (overweight, obesity and diet-related non-communicable diseases; NCDs) within the same individuals, households, or countries known as the double burden of malnutrition (DBM).

The DBM phenomenon in Malaysia is prominent, with an increasing trend of overweight and obesity among adults, adolescents, and older children, accompanied by the persistence

of undernutrition in children. The National Health and Morbidity Survey (NHMS) 2023, focusing on NCDs, revealed that more than half (54.5%) of the adult (≥18 years) population in Malaysia had abdominal obesity, an increment of 2.0% compared to 2019. In parallel, 32.6% were overweight and 21.8% were obese, compared to 30.4% and 19.7% in 2019, respectively. Diabetes prevalence was 15.6% with a steady increase of known diabetes (9.7%). However, there was a decrease in the prevalence of undiagnosed diabetes (5.9%) compared to the previous survey in 2019 (8.9%). Similarly, the prevalence of undiagnosed hypertension was lower (11.9%) compared to 2019 (14.1%), while known cases of hypertension increased significantly, resulting in a plateaued total hypertension prevalence of 29.2%**.** The prevalence of hypercholesterolemia decreased to 33.3%, but the prevalence of known hypercholesterolemia increased to 15.5%, with a decrease in the prevalence of unknown cases to 18.1% compared to 2019. The decline in the prevalence of undiagnosed NCDs could be attributed to the early screening campaign vigorously promoted under the national health screening initiative. However, the prevalence of overnutrition in adults has shown an alarming trend, impeding efforts to decrease the burden of NCDs, as outlined in the SDGs and the national target in NSP-NCD.

Another aspect contributing to the DBM in Malaysia is the overnutrition status among adolescents. The NHMS 2022: Adolescent Health Survey (AHS) reported that the prevalence of overweight and obesity among adolescents was 16.2% and 14.3%, respectively. On the other hand, adolescents in Malaysia still duel with undernutrition, whereby 6.8% experiencing stunting and 8.3% experiencing thinness. Despite the epidemiological transition in the country, undernutrition issues persist among children under five representing the dynamic relationship of Malaysia's DBM. About 21.2% of children under five were stunting, 15.3% were underweight, and 11.0% were wasting. Additionally, 5.9% were overweight or had a weight-for-height z-score (WHZ) of >2 SD.

An upward trend is observed in all forms of malnutrition in Malaysia across all age groups, with notable increases in the rates of NCDs, overweight, obesity, stunting, thinness, and wasting. This has contributed to the high burden of double malnutrition in the country. Given that the shift from underweight to obesity can occur rapidly, and both conditions share common drivers such as early life nutrition, diet quality, food environments, and socioeconomic factors, simultaneous double-duty actions are required to address both undernutrition and overnutrition concerns related to overweight, obesity, and diet-related NCDs.

MySNPP improved food environment & body weight status of primary school children

***Teo Choon Huey*[1], *Tee E Siong*[1], *Chin Yit Siew*[1,2], *Goh Hwee Teng*[3], *Koo Shi Jia*[4], *Ng Shirley*[4]**

[1]Nutrition Society of Malaysia; [2]Research Centre of Excellence, Nutrition and Non-Communicable Diseases, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia; [3]Tangkak District Health Department; [4]Muar District Health Department

Introduction: Malaysian children lack adequate knowledge of food and nutrition. They also face challenges in applying their knowledge in school, particularly due to lack of availability of healthier foods in school canteens. The Malaysia School Nutrition Promotion Programme (MySNPP) aims to provide nutrition knowledge to children and facilitate a supportive environment to encourage healthy eating. The MySNPP comprises two components: (1) delivery of nutrition education to primary school children using the "Good Nutrition Key to Healthy Children (GNKHC)" modules (2) provision of nutritious meal to the children during school recess. This presentation shares the programme concept, implementation approaches and experiences from the MySNPP (Year 2021 till 2023) in 16

schools across three districts in Johore. **Methods:** A total of 16 primary schools, involving 1,283 children and 140 teachers, completed the nutrition education camps (both online and on-ground). **Results:** Pre- and post-questionnaires indicated that the children made significant improvements in nutrition knowledge, attitudes, and practice scores ($p<0.05$). After the programme, the prevalence of overweight and obesity was found to have reduced. Furthermore, there was positive feedback from the main stakeholders of the programme. School principals and presidents of Parent Teacher Association (PTA) were pleased that the MySNPP was not just providing nutritious meals for the children, but also imparted social and moral values during the mealtime. Further, canteen caterers expressed that preparing one menu in a day was much easier than before. The children responded that the meals given were sufficient and they looked forward to different menus every day. At the same time, the majority of the parents gave positive feedback on the programme. **Conclusion:** The school authorities had positive experiences with the MySNPP and appreciated the benefits gained from MySNPP. Therefore, it is highly recommended to extend the programme to all primary schools in Malaysia.

Building UK-SEA partnership – Research on nutrition policies and action plans in Malaysia to promote the implementation of double burden of malnutrition prevention in school-age children

Yit Siew Chin*[1,2,3], *E Siong Tee*[1], *Yun Yun Gong*[4], *Pui Yee Tan*[4], *Sue Yee Tan*[1,5] – *on behalf of UoL-NSM-ILSI-UPM Research Team

[1]Nutrition Society of Malaysia, [2]Department of Nutrition, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia; [3]Research Center of Excellence Nutrition and Non-communicable Diseases, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia; [4]School of Food Science and Nutrition, University of Leeds, United Kingdom; [5]International Life Sciences Institute South-East Asia Region

The double burden of malnutrition (DBM) is a global health challenge, characterised by the coexistence of undernutrition and overnutrition. DBM in children is a pressing issue that compromises physical growth, cognitive development, and overall health, leading to increased economic and health burdens on society. In Malaysia, DBM among school-age children is exacerbated by food insecurity, poverty, and lack of nutrition knowledge. This study extends a Biotechnology and Biological Sciences Research Council (BBSRC) Global Challenges Research Fund (GCRF) project titled "Addressing micronutrient deficiencies associated with the double burden of childhood malnutrition, a combined food system framework", which aimed to identify effective strategies for addressing DBM through a food system-based approach. This study proposes to forge new partnerships in more Southeast Asia (SEA) countries, particularly Malaysia, which is significantly affected by DBM among SEA countries. The research aims to develop informed policy recommendations and interventions for Malaysia by considering socio-economic, cultural, and environmental influences on nutrition and food security.

The study employs an Integrative Mixed-Methods Design, consisting of three components: i) a document review to understand the current landscape, ii) key informant interviews (KII) and focus group discussions (FGD) involving key stakeholders from government, NGOs, and the private sector, and iii) a strategy review workshop to facilitate collaboration among stakeholders from Malaysia and Southeast Asia using Participatory Action Research (PAR) principles. The document review will provide a contextual understanding, while KIIs and

FGDs will gather insights from policymakers, programme managers, and community leaders. These interviews, offering flexibility in format and language, will continue until data saturation is achieved. The strategy review workshop will foster active participation and dialogue, enabling stakeholders to inform strategic decisions related to child nutrition and food security.

The findings will help stakeholders identify strengths and gaps in current policies and programmes, guiding efforts to enhance strategies. By fostering collaborative engagement and knowledge exchange, this approach will support the development of effective policies and programmes to improve childhood nutrition and food security in Malaysia. This presentation will share the preliminary findings of the study.

Cardiorespiratory fitness and cardiometabolic risk in Malaysian Children aged 6 to 12 years: Findings from SEANUTS II Malaysia

***Chan KS*[1], Farah NMF[1,2], Koh D[2,3], Wong JE[1,2], Khouw I[4] and Poh BK[1,2] on behalf of the SEANUTS II Malaysia Study Group**

[1]Centre for Community Health Studies (ReaCH), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, 50300 Kuala Lumpur; [2]Obesity-UKM Research Group, Universiti Kebangsaan Malaysia, 43650 UKM Bangi; [3]Centre for Education & Community Well-being, Faculty of Education, Universiti Kebangsaan Malaysia, 43650 UKM Bangi; [4]FrieslandCampina, Amersfoort, The Netherlands

Introduction: Cardiovascular disease and metabolic syndrome are relatively rare in children; however, the associated risk factors can emerge early in childhood. Studies have shown that poor physical fitness in children is associated with the development of cardiometabolic risk (CMR) factors. Thus, the present study aimed to assess cardiorespiratory fitness (CRF), and its association with CMR in Malaysian children aged 6 to 12 years. **Methods:** This study was part of the second South East Asian Nutrition Surveys (SEANUTS II). A sub-sample of 1358 children from Peninsular Malaysia (mean age = 9.7±1.7 years, 54% female) were included in this study. CRF was assessed with 15-meter shuttle run. Assessment of CMR factors included waist circumference (WC), blood pressure (BP), high-density lipoprotein (HDL), triglyceride (TG), and fasting blood glucose (FBG). A metabolic risk score was then calculated using the aforementioned CMR factors. Association between CRF and CMR factors was determined by regression modelling, while the LMS method was used to develop age and sex-specific percentiles for CRF. **Results:** Overall, approximately 30% of children were overweight and obese, and boys had significantly higher body-mass-index-for-age (BAZ) than girls (p=0.001). In addition, boys tended to have superior CRF levels (p=0.001) compared to girls. The most prevalent CMR factors were elevated WC (25.2%), followed by elevated TG (5.1%) and reduced HDL (4.7%). Higher CRF was associated with a lower overall metabolic score, as well as lower WC, SBP, and TG, and higher HDL levels in the adjusted model. Percentile analysis showed that CRF levels decreased with age. Children with low CRF, i.e. <25th percentile, were found to have increased risk of CMR. **Conclusion:** CRF of children in this study were found to be low compared to European countries. Higher CRF is associated with better cardiometabolic profile, suggesting that strategies to improve CRF among children are warranted.

Invited Lecture 1

The gut health connection: microbiota crosstalk and the role of prebiotics

Goh Peen Ern

Senior Manager Nutrition Communication, BENEO-Institute/BENEO Asia Pacific Pte Ltd

The human gastrointestinal tract is the most densely colonised ecosystem in the body, teeming with trillions of microbiota. Over the past few decades, the field of human gut microbiota research has been evolving rapidly, becoming a topic of great scientific and public interest. The gut microbiota plays a vital role in human health, including aiding in digestion and absorption of nutrients, supporting bowel regularity, synthesising vitamins, producing valuable metabolites such as short-chain fatty acids, regulating satiety, mood, immunity, and metabolism. Diet is one of the most important factors that can modify the gut microbiota, and specific changes can be achieved with prebiotics. The International Scientific Association for Probiotics and Prebiotics (ISAPP) defines prebiotics as "a substrate that is selectively utilised by host microorganisms conferring a health benefit". Given the stringent selectivity criteria and the requirement for health benefits to be demonstrated in well-controlled human clinical studies, chicory root fibres (inulin and oligofructose) are among the few proven prebiotics, backed by nearly 30 years of human clinical research.

This presentation will underscore the recent advancements on the gut health connection, the cross-talk between the gut microbiota and its influence on human health, particularly the role of prebiotic chicory root fibres. Some of the key health benefits of chicory root fibres include their impact on the gut-brain axis influencing mood and satiety, the gut-immune axis, gut-pancreas axis and blood glucose management, and the gut-bone axis on bone health. Prebiotic chicory root fibres positively impact human health by influencing the gut microbiota. Insights from this presentation can guide healthcare professionals and food manufacturers to navigate the current state of knowledge on prebiotics, enabling tailored advice and the development of healthier products for Malaysians.

Food security and sustainable food consumption among adolescents in Malaysia: preliminary findings from the sustainable food consumption (SEASFC) study

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Introduction: Adolescents worldwide are being affected by the inadequacies of global food systems. Poor diet quality contributing to malnutrition among adolescents globally, impacting their health and growth, and serving as the cornerstone for vibrant communities. This study aims to determine the food security status of adolescents and their knowledge, attitude and practices towards sustainable food consumption in the region. These preliminary findings are from the Southeast Asia Sustainable Food Consumption (SEASFC) study, focusing specifically on adolescents in Malaysia. **Methods:** This research is a mixed-method study conducted across multiple centres, with participating sites in Malaysia, Indonesia, and the Philippines. In Malaysia, the cross-sectional study conducted in the Klang Valley, Malaysia with 682 adolescents participating. A self-administered questionnaire assessed food security status, knowledge, attitude and practices regarding sustainable food consumption and dietary habits, which were further categorised and scored for climate friendly dietary scores (CFDS). **Results:** Only 5.3% of the adolescents had low food security status, 9% were with good knowledge, while 48% and 44% of adolescents had low attitudes and practices regarding sustainable food consumption. Regarding CFDS, the adolescents in this study were practiced less climate friendly diet (-2.14 ± 2.31). Knowledge ($r=0.132$; $p<0.001$) and practices ($r=0.148$; $p<0.001$) regarding sustainable food consumption were positively correlated with climate-friendly dietary scores, while no relationships were found for attitude and food security scores. **Conclusion:** Findings from this study provides an insight as baseline data for advancing sustainable food consumption and food security initiatives among adolescents in Malaysia.

Bridging food waste and consumption behaviours: insights for a sustainable food system

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Introduction: Food waste and consumption behaviours are critical issues impacting environmental sustainability, food security, and economic stability globally. In Malaysia, food waste is a significant problem, with 16,720 tonnes produced daily, constituting 44% of total waste. Addressing this issue is crucial for achieving Sustainable Development Goal 12.3, which emphasises sustainable consumption and production patterns. This study aimed to determine the current consumption and food waste management behaviours inside and outside of home, and interest in doing more of selected actions in the future of Malaysians. **Methods:** A 2021 online survey of 1,073 Malaysian consumers examined current consumption and food waste management behaviours both inside and outside the home, along with future interests in sustainable practices. **Results:** Malaysians prefer poultry when dining out and seafood when eating at home. There is a 10-20% higher consumption of vegetables, fruits, nuts, and natural/non-processed foods at home compared to dining out. Preferences for locally grown food and convenience also influence food choices. Challenges to healthy and sustainable food choices include high prices, limited options, lack of information, and family preferences. Social support and self-control are significant factors in overcoming these barriers. The study highlighted portion sizes and ingredient management as critical aspects of food waste management, with many consumers practicing and showing interest in saving leftovers for future consumption. Mindful shopping and storage practices are essential, with consumers frequently performing inventory checks and monitoring food shelf-life. Future trends indicate an increased emphasis on these practices. While Malaysians demonstrate awareness of proper leftover management by using food for another day and freezing it, some inappropriate practices persist, such as feeding leftovers to strays and discarding them as general waste, with many planning to continue these practices. **Conclusion:** By understanding current domestic consumption behaviours and consumer profiles, stakeholders can identify opportunities to foster a more sustainable food system in Malaysia.

Food security, diet quality, and nutritional status among *Orang Asli* mother-child pairs in Terengganu, Malaysia

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Introduction: The *Orang Asli* (OA) indigenous peoples of Peninsular Malaysia face multifaceted socio-economic and environmental challenges that significantly impact their food security, diet quality, and nutritional status. This cross-sectional study examines the factors influencing nutritional status among OA mother-child pairs in Terengganu. **Methods:** A total of 91 eligible pairs of mothers (aged 16 to 40 years) and children (aged 6 to 59 months) were purposively recruited from *Kampung Sungai Berua* and *Kampung Sungai Pergam* in Terengganu. Food security was assessed using the Malay version of the Radimer/ Cornell Hunger and Food Insecurity Instrument. Dietary data were collected through 24-

hour diet recalls over three non-consecutive days, and diet quality was evaluated using the Malaysian Healthy Eating Index (M-HEI). The nutritional status of the mother-child pairs at the household level was determined based on maternal body mass index (BMI) categories according to Asian cut-offs and child height-for-age status: normal, undernutrition, overnutrition, and double burden of malnutrition (DBM). Data analysis was performed using multinomial logistic regression. **Results:** Stunting affected approximately 42.9% of children, while 58.2% of mothers were classified as overweight or obese. Overnutrition was the most prevalent condition among mother-child pairs (33.0%), followed by DBM at 25.3%, undernutrition at 20.9%, and normal nutritional status at 20.9%. Both mothers and children exhibited suboptimal dietary patterns characterized by a significantly low intake of vegetables (79.1-93.4%), fruits (95.6-97.8%), and protein-rich foods such as eggs (68.8%), legumes and nuts (100%), and dairy products (75-100%), alongside a high consumption of sodium (60.4%). Most mother-child pairs (97.8%) experienced food insecurity. In the multinomial logistic regression model, lower birth weight was significantly associated with undernutrition (Adjusted OR: 0.03, 95% CI: 0.00–0.38). Residence in *Kampung Sungai Pergam* compared to *Kampung Sungai Berua* was significantly associated with higher odds of overnutrition (Adjusted OR: 21.12, 95% CI: 1.56–286.21). Children who consumed less than the recommended meat intake had significantly lower odds of DBM (Adjusted OR: 0.03, 95% CI: 0.00–0.34) compared to those who exceeded the recommendation. Higher maternal fruit intake was significantly associated with lower odds of DBM (Adjusted OR: 0.10, 95% CI: 0.02–0.64). **Conclusion:** The findings of this study highlight the severe nutritional challenges faced by OA mother-child pairs in Terengganu, characterized by a high prevalence of both undernutrition and overnutrition. The suboptimal dietary patterns and widespread food insecurity underscore the urgent need for targeted interventions to improve food security, diet quality, and overall nutritional status among this vulnerable population. Public health initiatives should prioritize culturally sensitive approaches to address the unique socio-economic and environmental barriers that contribute to these nutritional disparities.

Invited Lecture 2

The power of strategic partnerships in achieving zero hunger

Judy Boucek

Nutrition Improvement Regional Lead, dsm-firmenich

Achieving zero hunger (SDG2) positively impacts economies, health, education, equality, contributing to a better future for all. Tackling malnutrition and food insecurity is most effective when we bring together diverse expertise and resources from public sector, development partners and private sector. Judy will draw on her extensive experience and discuss the vital role of partnerships in advancing SDG2 and showcase successful collaborations that are driving significant progress and improving nutritional outcomes.

Feeding round the clock: A novel perspective from the Chrono-DM™ study to explore chrononutrition and its association with glycaemic outcomes in Malaysian adults with prediabetes

***Chong Guey Yong*[1], *Satvinder Kaur*[2], *Ruzita Abd Talib*[3], *Loy See Ling*[4,5], *Tan HY*[1], *Rosmiza Binti Abdullah*[6], *Hanisah Binti Mahmud*[6], *Siah Woan Yie*[6], *Tan Lay Kim*[7], *Kee Chee Cheong*[7], *Koo Hui Chin*[1]**

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Introduction: Chrononutrition, focusing on the timing of food intake, is an evolving field of research with significant implications on human health. Yet, the optimal timing for glycaemic control remains uncertain. This study aimed to explore the association between chrononutrition and glycaemic outcomes in Malaysian adults with prediabetes. **Methods:** This prospective longitudinal study recruited a total of 120 individuals with prediabetes in Malacca healthcare clinics, with the mean age of 54 ± 18 years. Sociodemographic data, anthropometric measurements, body composition, 3-day dietary record and light exposure (Harvard light exposure questionnaire) were collected. Fasting plasma glucose (FPG), 2-hour postprandial glucose (2hPPG) and glycated haemoglobin (HbA1c)) and ambulatory glucose profile through continuous glucose monitoring (CGM) were obtained. **Results:** Participants were categorized as two groups based on solar time: daytime eaters (eating within 0700h and 1900h) and non-daytime eaters (eating beyond 0700h and 1900h). Of the participants, 83% were non-daytime eaters, while 17% were categorized as daytime eaters. For CGM measures, non-daytime eaters significantly contributed to higher glucose management index (mmol/mol)(β: 2.52, 95% CI: 1.10, 3.93), and higher overall mean glucose level across 24-hour (mmol/L) with 3-day dietary compliance (β: 0.61, 95% CI: 0.23, 0.99). These associations persisted after adjusting for socio-demographic, lifestyle factors, macronutrients, and energy intake. **Conclusion:** Our findings highlight the detrimental impact of eating outside the time frame of 0700h to 1900h on glycaemic outcomes among individuals with prediabetes. These findings reinforce the importance of meal timing in metabolic regulation and calls for proactive measures from policymakers and health authorities to integrate this knowledge into public health strategies. **Funding:** The researchers appreciate the Ministry of Higher Education of Malaysia for providing support under the Fundamental Research Grant Scheme (FRGS/1/2021/SKK06/TARUC/02/1).

Does seasonality play a role in adolescent malnutrition in low-income communities?

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Introduction: Understanding the seasonality of malnutrition and its underlying factors across individual, household, and community levels may help determine the opportunities for strategic adaptation to enhance climate change resilience in vulnerable populations in Malaysia. This study examined how food security, lifestyle, and neighbourhood environment factors influenced nutritional status across seasons of Malaysian adolescents from low-income communities. **Methods:** This cohort study involved 164 adolescents aged 10-17 from 12 People Housing Programme during the Northeast Monsoon (wet season) and followed through the Southwest Monsoon (dry season). Data on sociodemographic characteristics, food security, lifestyle, and perceived neighbourhood environment were collected using a self-administrative questionnaire. Standard procedures were applied for anthropometric, dietary, and haemoglobin level assessments. The spatial distribution of neighbourhood food and built establishment were determined. **Results:** The generalised linear mixed model revealed significant seasonal interaction with various spatial environment factors influencing nutritional status (p<0.05), in which the spatial food environment is more likely to affect the BAZ, HAZ, waist circumference and haemoglobin level across seasons. The negative interaction effects between perceived neighbourhood food environment and season affected HAZ (p=0.008). Higher physical fitness levels had lower waist circumference across seasons (p<0.05). Household food security status (p=0.016) and mean nutrient adequacy ratio (p=0.034) influenced haemoglobin levels across seasons. **Conclusion:** The interaction between spatial and perceived environmental factors, food security, dietary intake, and physical fitness with seasonality on the nutritional status in various combinations provided new insight into where seasonality played a role in adolescent malnutrition. This finding warrants the relevant stakeholders considering the seasonal factor contributing to malnutrition and neighbourhood environmental effects in addressing malnutrition and unhealthy lifestyles among adolescents from underserved communities.

Dietary pattern related to colorectal cancer (CRC) risk using validated CRC-focused food frequency questionnaire for Malaysian patients

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Introduction: Colorectal cancer (CRC) is the second most common diagnosed cancer in Malaysia while the third in worldwide and Asia. Dietary consumption is one of the factors related to CRC incidence. This study aimed to develop food frequency questionnaire (FFQ) focused CRC and predict dietary pattern associated with CRC. **Methods:** The developed FFQ was consisted of 142 food items modified from an established FFQ used in the national survey. It includes specific questions to measure the consumption of food sources related to CRC development. 100 adults aged 30 to 70 years from Kuala Lumpur and Kota Bharu were recruited through voluntary participation. FFQ was administered twice to evaluate reproducibility (FFQ1 and FFQ2), while the validity was assessed by comparing FFQ against the 3-day Food Record (FR). Then, validated FFQ was assessed on 264 patients aged 18 to 80 years old from two teaching hospitals in Peninsular Malaysia through purposive sampling. Cases were those patients having histopathologically proven CRC, while controls were those without. **Results:** The Spearman correlation showed moderate agreement between FFQ and FR while moderate to strong correlation between FFQs. The limit of agreement using Bland Altman plot was acceptable for both validity and reproducibility. The classification into the same and adjacent quartiles was between 62 to 75% for validity and 77 to 89% for reproducibility assessment. Then, the validated FFQ was implemented among patients, and four major dietary patterns identified: the Allergenic diet, Plant-based diet, Processed diet, and Energy dense diet pattern. After adjusting for potential covariates, the Processed diet pattern was consistently associated with CRC (OR = 3.45; 95% CI = 1.25–9.52; P = 0.017). **Conclusion:** The FFQ was validated and was reproducible for the determination of energy and macronutrients intake for Malaysians and adherence to the Processed diet pattern was associated with CRC.

Effectiveness of 12 weeks Trim and Triumph (TNT) challenge among overweight and obese office workers

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Introduction: The prevalence of overweight and obesity among Malaysian adults has increased to 54.4%, according to NHMS 2023. Malaysians are also suffering from three major NCDs alongside obesity, which can lead to severe complications if left untreated. Prevention strategies such as weight loss programs, have been shown to lower the risk of developing such health issues. Our study aims to determine the effectiveness of the TNT challenge on anthropometry characteristics, metabolic parameters, sleep quality, and quality of life of overweight and obese office workers. **Methods:** A total of 40 overweight and obese participants, without significant health concerns, with an average age of 35 ± 5.49 years, and a body mass index (BMI) of 32.80 ± 5.75 kg/m^2, were enrolled in a 12 weeks challenge. This program comprises of 36 sessions featuring intense workouts, dietary guidance, and fitness assessments with the supervision of fitness trainers and a nutritionist. Anthropometry measurements, blood tests, and questionnaires were assessed before and after the program to evaluate outcomes for all participants. **Results:** After 12 weeks, significant differences were observed in weight (-5.62 ± 2.45 kg), BMI (-2.21 ± 0.99 kg/m2), body fat mass (-3.91 ± 2.19 kg), body fat percentage (-2.11 ± 2.12 %), total blood cholesterol (-0.41± 0.79 mmol/L), and LDL level (-0.28 ± 0.75 mmol/L) ($p < 0.05$), indicating decreases in these parameters. Additionally, sleep quality (-1.05 ± 2.24) and quality of life (1.16 ± 1.21) are also significantly improved. **Conclusion:** Our intervention reveals significant improvements in weight, fat mass, blood cholesterol, sleep quality and quality of life of the office workers after following this challenge. Our study provides insights on effective weight management strategies that can be applied in various settings in promoting health and wellness. Further research should investigate the long-term effects and maintenance of weight loss achieved after 12 weeks.

Development of a digitally-assisted peer-support lifestyle intervention to mitigate cardiovascular disease risk in a low-income community (MYCardio-PEER)

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Introduction: Cardiovascular diseases (CVD) is one of the global leading causes of mortality. Due to limited access to preventive healthcare, low-income communities are disproportionately burdened by CVD risks. This study aimed to develop MYCardio-PEER, a digitally-assisted peer-support lifestyle intervention to reduce CVD risk in low-income communities. **Methods**: MYCardio-PEER was developed based on the Integrated Theory of Behaviour Change. Key intervention components were identified through a comprehensive review of scientific evidence and national guidelines. Subsequently, these components were translated into bite-sized educational videos, infographics, and interactive activities targeting knowledge, nutrition, and lifestyle behaviours related to CVD. The created content was

validated to ensure cultural suitability and relevance. Community-based peer leaders were selected and trained to deliver the program effectively. **Results**: The result is an engaging 8-week lifestyle program comprising digital materials and interactive activities facilitated by trained peer leaders. MYCardio-PEER provides accessible lifestyle information and social support tailored to the specific needs of low-income communities in mitigating CVD risks. The program is currently being tested for feasibility within the targeted community. **Conclusion**: MYCardio-PEER represents an innovative approach integrating peer support and digital technology to prevent CVD. By leveraging community members as peer leaders and offering tailored digital content, the program caters to the unique needs of low-income populations, thus improving engagement in heart-healthy behaviours and reducing CVD risk. MYCardio-PEER holds promise as a scalable solution to reducing CVD risk factors and improving the health outcomes of underserved populations.

Linear programming of optimized complementary diet recommendation for young children (12 – 24 months)

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Introduction: Optimal nutrition during complementary feeding period is crucial to support child growth and foster better child development. Quantity and quality of complementary foods are associated with food cost and socioeconomic status (SES). This study aims to utilize linear programming (LP) to develop SES-specific food-based complementary feeding recommendations (CFRs) for 12- to 24-month-old children. **Methods:** A cross-sectional survey was conducted in low (n= 200) and middle (n=112) SES households in Selangor, Malaysia. Dietary intake was obtained using a 24-hour diet recall. These data were used to define the LP model parameters which include a list of foods, median serving sizes, and minimum and maximum number of servings per week. LP analysis was performed using the Optifood tool to identify nutrients whose requirements could not be met given current dietary practices, and to test and compare CFRs between LSES and MSES group. **Results:** LP analysis identified calcium as an absolute problem nutrient in both SES groups. Through careful selection of nutrient-dense foods, the developed CFRs achieved nutrient adequacy for 11 of the 13 nutrients modelled. Calcium and iron remained inadequate in MSES while calcium and folate remained inadequate in LSES group. **Conclusion:** The draft CFRs developed using LP can improve the micronutrient content of complementary diets among 12–24-month-old children in Selangor but they may not ensure dietary adequacy for all nutrients. Hence, alternative strategies are needed to close the identified nutrient gaps.

Bitter taste sensitivity, TAS2R38 gene polymorphisms and obesity risk among Malay children in the Klang Valley – a preliminary result

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Introduction: Genetics polymorphisms modulate bitter taste sensitivity and increase the risk of picky eating behaviour. Obesity affects 30% of Malaysian children and results from a complex gene-environment interactions. The relationship between factors such as taste sensitivity, genetic variants and childhood obesity was underexplored. This paper aims to determine the relationship between bitter taste sensitivity, TAS2R38 polymorphisms, and obesity risk among Malay children. **Method:** Taste sensitivity of Malay children aged 9-12 years from schools and communities in the Klang Valley was determined using control, 6-n-propylthiouracil (PROP) and phenylthiocarbamide (PTC) taste strips and the Labelled Magnitude Scale [0 (no taste) to 100 (strongest taste)]. Whole-exome sequencing was conducted on saliva samples (2 mL). The allele frequency for 3 targeted bitter taste variants of TAS2R38 polymorphism (rs713598, rs1726866, rs10246939) was calculated. Anthropometric measurements were taken, and body mass index (BMI) was calculated. Taste sensitivity between carriers and non-carriers of the targeted alleles, and obesity risk was determined. **Result:** The preliminary results showed median BMI for 60 children was 18.5 kg/m^2 (IQR, 7.3). Taste sensitivity was 2.0 (10.0) for control, 77.0 (50.0) for PROP and 80.0 (60.0) for PTC. Allele carrier frequency was rs713598 (n=47), rs1726866 (n=30) and rs10246939 (n=49).Minor allele carriers (rs713598 and rs10246939) had significantly stronger bitter taste: [rs713598, PROP (carrier: 80.0 (40.0) versus non-carrier: 60.0 (38.0), p=0.015), and PTC (carrier: 90.0 (28.0) versus non-carrier: 23.0 (48.0), p<0.001)], [rs10246939, PROP (carrier: 80.0 (45.0) versus non-carrier: 60.0 (54.0), p=0.013) and PTC (carrier: 89.0 (33.0) versus non carrier: 20.0 (30.0) , p<0.001)]. The targeted variants had no impact on obesity risk [rs713598, OR:0.4, (95% CI: 0.1-1.3); rs1726866 OR:1.3, (95% CI: 0.5-3.6); rs10246939 OR: 0.3, (95% CI: 0.1-1.3)]. **Conclusion:** Malay children carrying minor alleles (rs713598 and rs10246939) had stronger bitter taste sensitivity. However, these alleles were not significantly associated with obesity risk.

An Interactive Malaysian Childhood Healthy Lifestyle (I-MaCHeL) Programme to improve weight-related behaviour of preschool child-parent dyads: cluster randomised controlled trial

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Introduction: There is a paucity of weight-related interventions specifically targeting preschool-aged children in Malaysia. This study aims to evaluate the effectiveness of the Interactive Malaysian Childhood Healthy Lifestyle *(i-MaCHeL*) intervention programme in improving weight-related behaviours among preschool child-parent dyads. **Methods:** The *i-MaCHeL* programme was a single-blind, theory-driven intervention, two-group cluster randomised controlled trial (RCT) targeting weight-related behaviours of preschool child-parent dyads. A total of 460 child-parent dyads from 12 preschools in Terengganu, Malaysia, were recruited. The intervention group (n=230) received the *i-MaCHeL* web-based programme and associated classroom activities, while the control group (n=230) received the standard preschool health education curriculum and access to general health newsletters. Assessments were conducted at baseline, 3-month, and 9-month, measuring children's BMI z-score, dietary intake, physical activity, screen time, health-related quality of life, parental role modelling, parental self-efficacy, and parental policies. General linear model repeated measure analysis was used to determine between- and within-group differences, adjusting for potential covariates. **Results:** The intervention group exhibited significantly lower screen time compared to the control group at 3 months [intervention=115.79(60.59), control=128.43(62.81) mins/day, P=0.033]. At 9 months, dietary assessments revealed higher total dietary fibre [intervention=4.62(2.18), control=3.74(1.95) gram/day, P<0.001] and vitamin C intake [intervention=36.53(21.64), control=30.61(17.41) mg/day, P=0.002] in the intervention group. Additionally, improvements were observed in parental role modelling [intervention=3.67(0.54), control=3.50(0.56), P=0.001], policies [intervention=4.00(0.59), control=3.84(0.65), P=0.007], and self-efficacy [intervention=7.68(1.21), control=7.41(1.15), P=0.014] related to physical activity as well as parental role modelling related to healthy eating [intervention=3.69(0.44), control=3.59(0.49), P=0.040]. **Conclusion:** The *i-MaCHeL* programme effectively improved the weight-related behaviours among preschool child-parent dyads. This study provides novel, evidence-based insights into the development and evaluation of web-based interventions targeting child-parent dyads in Malaysia.

Assessing the impact of CoPT nutri trail: a web-based nutrition education module on adiposity and obesity-related behaviours among primary school children in Kuala Lumpur

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Introduction: Providing teachers, parents, and canteen operators with a web-based nutritional guide aims to strengthen the school community's ability to change diet-related behaviors and prevent obesity in children. This study examined the effectiveness of the web-based nutrition education module, CoPT Nutri Trail, in a school-based intervention to improve adiposity status and modify obesity-related behaviors in overweight and obese children. **Methodology**: The study employed a quasi-experimental design involving 57 obese child-parent pairs from two primary schools in Kuala Lumpur. Participants were divided into intervention (n=29) and control groups (n=28). The CoPT Nutri Trail website provided the nutrition education module, which teachers, parents, and canteen operators used to carry out activities for the intervention group. They accessed the module through a specific user login, and participants completed all activities within 12 weeks. The teacher's module focuses on nutrition and physical activity to instil healthy habits in children. The module for canteen operators emphasised the preparation of nutritious school meals. While the parents create healthy meals, promote regular exercise, and monitor their children's BMI. Children in the control group (CG) continued the existing health-related routines. The researchers measured the BMI *z*-score, body fat, waist circumference, dietary intake, physical activity, and screen time of both groups at baseline and 12 weeks post-baseline. Mixed ANOVA was employed to determine the effectiveness of the intervention. **Results**: The results demonstrate a significant difference in the reduction of waist circumference [($F(1,55)=5.883$, $p=0.019$, $\eta_p^2=0.097$)], BMI *z*-score, [($F(1,55)=7.341$, $p=0.009$, $\eta_p^2=0.118$)], fat percentage [($F(1,55)=8.378$, $p=0.005$, $\eta_p^2=0.132$)], reduced screen time [($F(1,55)=6.269$, $p=0.015$, $\eta_p^2=0.102$)], increased moderate to vigorous physical activity [($F(1,55)=5.188$, $p=0.027$, $\eta_p^2=0.086$)], and increased intake of plain water [($F(1,55)=0.093$, $p=0.009$, $\eta_p^2=0.002$)], reduced unhealthy food [($F(1,55)=7.166$, $p=0.010$, $\eta_p^2=0.115$)] among children in intervention as compared to control before and after intervention. However, no significant effect was observed for vegetable and fruit intake and sugary drinks. **Conclusion**: CoPT Nutri Trail has shown promise as an efficient approach to involve the school community and encourage their involvement in obesity prevention efforts. It serves as a valuable addition to the range of strategies for promoting healthy eating for children.

Nutrition Update 1

Nutrition in Community Engagement (NICE) as continuous teaching and learning pedagogy in training nutritionists

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Introduction: With the enforcement of the Allied Health Profession (AHP) Act 2016, undergraduate nutrition programmes offered by institutions of higher learning must be accredited. We describe a programme in the training of future nutritionists conducted within an undergraduate nutrition degree accredited under AHP and the Malaysian Qualification Agency, which incorporates a compulsory continuous community engagement in every semester of study. Nutrition in Community Engagement (NICE) promotes good nutrition and conveys nutrition information among members of the community, and allows students to experience various nutrition related problems throughout the lifecycle in real life setting. **Methods:** Groups of 2 to 3 students are assigned to a nutrition lecturer mentor from first semester until final year of study. The mentor must be a AHP registered nutritionist or dietitian. Each group is matched to a volunteer child client and his/her family for 3.5 years of the undergraduate study period. One course module is identified in each semester, in which students and lecturer mentor identify nutrition related problems in the clients, students propose and discuss intervention solutions with their mentor, implements them with clients under supervision of their mentor, analyse the success / failure of that solution, reflect on the learning, and follow-up from that point in another course module in the following semester. Students remain with the same clients throughout their study. All NICE activities and assessments are aligned with the respective course module learning outcomes. **Results:** At the end of 3.5 years, clients are given an overall report card with recommendations for continuous practice of good nutrition and healthy lifestyle. The most common problems are stunting, obesity, and picky eating in children and adults. The continuity of interaction with the same clients allows for good rapport and a safe environment for continuous learning for both students and clients. By now, three cohorts of NICE trainees and clients have graduated. **Conclusion:** NICE contributes to undergraduate nutrition training and clients from the community benefit from nutrition and healthy lifestyle education from evidence-based practitioners.

Unveiling the mechanisms linking dietary patterns to 10-year cardiovascular disease risk in Malaysian type 2 diabetes patients: An integrative analysis using unsupervised and supervised dimension reduction techniques and path modeling

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Introduction: Diet plays a crucial role in modulating cardiovascular disease (CVD) risk in type 2 diabetes (T2D) patients. Dietary pattern (DP) offers superior insights into how real-world eating patterns associate with long-term CVD risk. This study aims to identify DPs associated with 10-year CVD risk in Malaysian T2D patients and explore the mechanisms behind these associations. **Methods:** This cross-sectional study recruited 201 T2D patients from six clinics in the Klang Valley. Cardiometabolic parameters, including adiposity, glycaemic, insulin, and inflammatory markers, blood pressure and lipid profiles, were assessed. The 10-year CVD risk was evaluated using the validated T2D-specific UKPDS Cardiac Risk Engine. DPs were established using 3-day diet records by both Principal Component Analysis (PCA) and Reduced Rank Regression (RRR). Univariate General Linear Model was used to examine the associations between tertiles of DPs and 10-year CVD risk, adjusting for sociodemographic factors. Path analysis was used to examine the mediating effects of cardiometabolic markers on the DP-CVD relationship. **Results:** Out of six DPs identified (5 PCA-derived and 1 RRR-derived), two showed significant associations ($p<0.05$) with 10-year CVD risk. The 'Soybean-Plant-Legume-Nibbles-Discretionary-Dairy' (SPLeNDiD) pattern exhibited a significant inverse association with 10-year CVD risk (12.0% in T1 → 8.9% in T3, $P_{trend}=0.028$). Conversely, increased adherence to the 'Refined Grain-Red Meat-Tea & Coffee-SSB' (ReGReTS) pattern was associated with an increased 10-year CVD risk (6.3% in T1 → 11.3% in T3, $P_{trend}=0.001$). Glycaemic markers (*SIE* = 0.034, $p=0.005$), waist-to-hip ratio (*SIE* = 0.066, $p=0.010$), and plasma triglyceride (*SIE* = 0.049, $p=0.037$) significantly mediated the relationship between the 'ReGReTS' pattern and 10-year CVD risk. Whereas the SPLeNDiD-CVD relationship was significantly mediated by systolic blood pressure (*SIE* = -0.067, $p=0.038$). **Conclusion:** This study provides critical insights into how DP influences long-term CVD risk in Malaysian T2D patients, emphasizing the potential for dietary modifications to reduce CVD risk.

Acceptance of insects as food: Comparison between Malaysia and Japan

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Introduction: Entomophagy, or the practice of eating insects, has been widely practiced by many countries around the world, including Malaysia and Japan. Edible insects tend to be nutritious and are considered more sustainable and environmentally friendly than livestock protein sources. However, there has been no study comparing the acceptance of insects as food in Malaysia and Japan. This study aimed to compare the acceptance of insects as food and the factors influencing it among young adults in Malaysia and Japan. **Methods:** A total of 1,954 adults aged between 18 and 30 years (1,071 Malaysians and 883 Japanese) were recruited for this cross-sectional study. Online questionnaires were used to collect information on socio-demographics and the acceptance of insects as food. Statistical analyses were performed using Chi-square, Wilcoxon signed-rank post-hoc and Mann-Whitney U tests. **Results:** Less than 10% of young adults in Malaysia and Japan were willing to eat insects as food, and only 6.5% were ready to adopt eating insects in daily life. A higher proportion of Malaysians (10.5%) were willing to accept insects as food compared to Japanese (7.6%, $p=0.024$). However, Japanese (9.5%) found adopting eating insects in daily live as acceptable compared to than Malaysians (3.9%, $p<0.001$). In Malaysia, the primary reason for the willingness to eat insects was food safety (11.5%), while in Japan, it was the caloric and nutritional value (17.8%). The main reason for the unwillingness to eat insects in both countries was their appearance (Malaysia: 17.1%; Japan: 27.9%). **Conclusion:** The acceptance of insects as food is low among young adults in Malaysia and Japan. Marketing strategies should be tailored to the factors influencing acceptance to effectively promote entomophagy in both countries. Further studies should focus on transforming insects into more palatable forms.

Are Malaysian adults meeting the food group recommendations? Findings of the Malaysian Healthy Diet Online Survey (MHDOS)

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Introduction: Meeting national food-based dietary guidelines is an indicator of good diet quality and ensures optimal diet adequacy. However, since the release of the Malaysian Dietary Guidelines (MDG2020), the national achievement of Malaysians in meeting the food group recommendations would only be assessed in the National Health and Morbidity Survey 2024. This study aims to examine the current food group intakes of Malaysian adults aged 18-59 years and compare them with the MDG2020, using data from the Malaysian Healthy Diet Online Survey (MHDOS). MHDOS is an online survey administered between December 2022 till August 2023 to collect information on the quantity, quality, and variety of foods consumed. Upon completion of this free survey, respondents received a diet quality score that reflects their overall compliance with the MDG2020 and feedback on how to improve their scores. **Methods:** A total of 11,113 participants (mean age 33.7 ± 10.1 years, 73% women) from 13 states and 3 federal territories of Malaysia participated in the MHDOS and whose complete data were included in the analysis. Based on self-reported food frequency and quantity for major food groups, along with the mean number of servings, the percentage of participants meeting the MDG2020 food group recommendation was determined. **Results:** On average, the participants consumed 1.1 servings of fruits, 3.7 of vegetables, 4.2 of rice and other cereals, 4.1 of fish, poultry, meat, eggs or legumes and 1.0 servings of milk and milk products daily. The intake of these five food groups was significantly higher among women compared to men (all $p<0.001$). The percentages of participants meeting the MDG2020 daily recommended intake were 37% for fruits, 17% for vegetables, and 11% for both fruits and vegetables. Less than 10% of the participants met the recommendations for rice and other cereals, fish, poultry, meat, eggs or legumes, and milk and milk products. The proportion of women meeting the recommended servings was higher than men for fruits and vegetables, but lower for protein-rich foods. **Conclusion:** This is one of the largest surveys of food intake among Malaysian adults and those meeting the national recommendations for the five major food groups were still not satisfactory. Efforts to improve dietary practices to align with the MDG2020 should be encouraged.

Symposium 3

Frailty Intervention through Nutrition Education and Exercise (F.I.N.E) – a health promotion intervention to prevent frailty and improve frailty status among pre-frail and frail elderly

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Introduction: Prevention of frailty is a major concern in geriatric due to its high prevalence and various adverse health outcomes among elderly population. Abundant trials study reported that diet and physical activity modification are two predominant ways that effective in reversing frailty. In Malaysia, the prevalence of frail elderly is within the range of 5.7% to 56.5%, whereas pre-frailty is 57.9% to 72.8%. This become the ultimate reason, an action should be taken to tackle down this issue. Therefore, the present study aims to prevent and improve the frailty status among older adults through a health promotion intervention. **Methods:** FINE program is 12-week, two-armed, cluster randomized controlled trial participated by individual aged 60 years and above with pre-frail and frail status. It was conducted in a randomly selected PPR flats in Kuala Lumpur. The intervention includes the nutrition education and multicomponent exercise training. The primary outcome is the frailty changes evaluated using Fried Phenotype Criteria measured at week 0, week 12 and week 24. Data was analysed using GM of 2-way repeated ANCOVA**. Results:** A total of 57 older adults participated and were randomized into two groups (intervention, n: 28; controlled, n: 29). The mean age was 66.9 ± 5.0 years old and majority were female (80.7%), Malay (91.2%), and has prefrail status (73.3%). The present study found a significant effect of the interaction between time and group for frailty score ($p<0.001$) that indicated the frailty score in both groups change over time yet in a different way. Further post hoc test revealed a significant difference between groups at week 12 ($p<0.001$) and within only the intervention group from week 0 to week 12 ($p<0.05$) and remain to week 24 ($p<0.001$). **Conclusion:** The FINE program is effective in preventing and improving frailty status and enhances physical function and performance.

Chrono-nutritional effect of artichoke and inulin on blood glucose, microbiome, muscle/ bone volumes in elderly person

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Since the elderly are at high risk of metabolic syndrome and frailty, it is important to prevent these diseases through food/nutritional intake and exercise. Elderly subjects were given 5 g of Jerusalem artichoke (JA) powder, which is rich in inulin, a soluble dietary fiber, for breakfast or dinner. The breakfast JA group not only moderated blood glucose at breakfast, but also moderated blood glucose at lunch and dinner due to the second meal

effect. On the other hand, the JA dinner group suppressed blood glucose levels only at dinner. The effect of JA suppression on blood glucose levels was positively related to an increase in the Bacteroides phylum, while the effect of JA suppression on blood glucose levels was positively related to a decrease in the Firmicutes phylum. These effects were more effective in the breakfast JA group. Breakfast JA intake had a stronger effect on constipation relief than dinner intake. When elderly people took inulin in the morning and rowed twice a week for 3 months, inulin alone or in combination with exercise prevented the decline in lean body mass and bone mineral density due to aging. In addition, research and intervention studies in mice and humans have shown that breakfast protein intake is more effective than dinner intake in preventing sarcopenia. These data suggest that soluble fibers and protein intake at breakfast is key feeding habits for elderly health promotion.

In addition, the more varied the time of day of exercise in the elderly, the greater the BMI and the greater the percentage of adiposity. When morning and evening exercise was compared in the elderly, morning exercise was associated with lower LDL and LDL/HDL. In other words, the results suggest that regular exercise in the morning is protective against metabolic syndrome in the elderly.

Effects of square-stepping exercise and art therapy on nutritional status, cognitive and psychological well-being of older adults with Parkinson's disease

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Introduction: Parkinson's disease (PD) is a neurodegenerative disorder characterized by progressive motor- and non-motor symptoms such as postural instability and cognitive decline. This often leads to increase in dependency, social isolation, as well as poor nutritional status and quality of life. Growing evidence showed that non-pharmacological interventions such as exercise and art therapy may provide an affordable relief of motor and non-motor symptoms of PD patients. **Methods:** This randomised controlled trial aims to determine the effects of Square-Stepping Exercise (SSE) and art therapy (ART) in improving nutritional status, cognitive, and psychological well-being of older adults with PD. In this on-going study, participants are recruited from the Malaysian Parkinson's Disease Association (MPDA) centre and are screened for eligibility (aged ≥50 years old, PD stage 1-3, no/mild cognitive impairment). After that, they are randomly allocated into either SSE, ART, or control group. All groups receive caregiver support as the standard care. The SSE and ART groups receive the intervention twice a week for 8 weeks (one-hour per session) at the MPDA centre, while the control group only receive the caregiver support. Nutritional status is assessed using Mini Nutritional Assessment. Cognitive functions are assessed using Mini Mental State Examination, Wechsler Memory Scale, and Comprehensive Trail Making Test. While, psychological well-being includes assessments on depression, anxiety, and quality of life. **Results:** Data from the pre-test (n=9) showed that 37.5% of the participants were at-risk of malnutrition, 22.2% had mild cognitive impairment, 55.5% had anxiety, and 22.2% had mild/moderate depression. The study is currently on-going. **Conclusion:** Older adults with PD are at risk for malnutrition, cognitive impairment, and psychological disorders. This intervention study is expected to be able to improve nutritional status, cognitive and psychological well-being of older adults with PD.

Effectiveness of *Cosmos caudatus* extract in improving sarcopenia indices, dietary intake and physical fitness among older adults with probable sarcopenia and sarcopenia in Kelantan

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Introduction: Sarcopenia, characterized by muscle loss, is an increasing public health concern due to its effects on older adults' health. Herbal supplementation is widely used in improving health parameters among sarcopenia older adults. This study aimed to unravel the mechanisms of a widely used local plant, *Cosmos caudatus* extract in improving dietary intake, physical fitness and sarcopenia indices among older adults with probable sarcopenia and sarcopenia. **Methods:** This was a two-armed double-blind, placebo-controlled randomized trial that has been conducted among older adults in Kelantan, for a period of 12 weeks. A total of 92 older adults diagnosed with probable sarcopenia and sarcopenia were enrolled, where 47 subjects were required in the intervention group and 45 subjects in the placebo group. The intervention group had received 500 mg/day of *Cosmos caudatus* supplementation, while the placebo group were given 500 mg/day of maltodextrin. Study outcomes including sarcopenia indices (muscle strength, muscle mass, and physical performance), dietary intake, and physical fitness were obtained**.** Repeated measure ANOVA had been employed using intention-to-treat analysis. This study was registered with the Australian New Zealand Clinical Trials Registry (ANZCTR) with the registration number ACTRN: ACTRN1262300004660p. **Results:** Physical fitness tests revealed no significant interaction effect for all the physical fitness test between the treatment and control group. The control group showed significant improvement in percentage muscle mass as compared to the intervention group (p-value=0.045; partial eta square:0.49; power: 0.565) and dietary components except fibre did not show significant improvement between the groups. Fibre intake was significantly higher than the control group. However, pantothenic acid intake was higher in the intervention group. **Conclusion:** *Cosmos caudatus* supplementation did not show significant changes in physical fitness, sarcopenia indices and nutrient intake except pantothenic acid. Further proteomic analysis is necessary to investigate the potential of this supplement in modulating the biological processes.

Invited Lecture 3

Enhancing health span: what are the micronutrient gaps and proposed nutrition strategies

Kai Lin Ek

Head of Science Translation & Advocacy, Asia Pacific*, dsm-firmenich*

In recent decades, global life expectancies have risen significantly. However, life expectancy as a measure of population health does not reflect years of healthy life as an increase in life expectancy is accompanied by a marked increase in chronic diseases and population aging. Optimal nutrition throughout life is essential for health and quality of life. Maintaining adequate nutritional intake is critical in maintenance of health, especially with current diverse dietary patterns. While micronutrient deficiency becomes less prevalent in the developed world, micronutrient insufficiency, in which no clinically diagnosable symptoms are observed, are still prevalent. Sufficient intakes of micronutrients such as vitamins, minerals and omega-3s have been shown to hold potential in specific health areas, including heart, eye and brain health, as well as bone health and immunity. In addition to evaluating impact of micronutrient intake on individual health, we will discuss its public health cost implication as well as scientific insights on the impact of sufficient micronutrient intake on health across age groups. In this session, dsm-firmenich will share also results from Nutriview, a proprietary database tool that compares actual population intake against recommended nutrient intakes of 13 micronutrients across 11 countries in Asia-Pacific.

Invited Lecture 4

The truth about soya: a review of nutrition, health effects and addressing misconceptions

Soo Sek Yow

Head of Nutrition Unit, Ace Canning Corporation Sdn Bhd

As a topic of considerable interest and discussion in the fields of nutrition and health, soya is often presented with challenges due to extensive and sometimes contradictory research accumulated over the past three decades. In light of the growing popularity of plant-based diets, understanding soya is essential for making informed dietary decisions and harnessing its nutritional and functional benefits. In addition, with the increasing proliferation of information on social media platforms, nutritionists play a pivotal role in disseminating accurate, evidence-based nutrition to the public.

This presentation will review soya nutrition and provide insights into the latest research. It will highlight on the protein properties as well as the positive health effects of soya, such as its cholesterol-lowering properties and the influence of isoflavones on breast cancer risk. Additionally, we will address common myths and misconceptions about soya, including fears of feminization in men, association with gout and concerns about genetically modified organisms, through evidence-based approach.

Symposium 4

Mitigating aflatoxin dietary exposure with probiotics: findings from human intervention trials

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Introduction: Human dietary aflatoxin exposure, especially aflatoxin B_1 (AFB_1) is ubiquitous as this food contaminant has been found to contaminate food commodities such as spices, herbs, and grains. Besides, studies have reported significant contribution of AFB_1 on disease pathogenesis as evidenced in animal and cross-sectional studies. Therefore, implementing effective intervention strategies to mitigate human dietary AFB_1 exposure is crucial. Probiotics are living microorganisms that provide health benefits to the host when ingested in sufficient quantities. They have been shown to effectively reduce AFB_1 biomarkers by forming complexes with the toxin, which aids in its elimination through fecal excretion. This presentation provides findings of two human intervention studies conducted in Malaysia using probiotics *Lacticaseibacillus paracasei* strain Shirota (LcS) as a potential AFB_1 adsorbents. **Methods:** Subjects who met the eligibility criteria and had detectable AFB_1 biomarkers during screening were chosen at random to be either in the probiotics or the placebo group. Samples of serum and urine were collected to measure the levels of AFB_1 biomarkers. **Results:** Both studies demonstrated that LcS decreased AFB_1 biomarkers, particularly for longer intervention periods. Up to 77% reduction of urinary aflatoxin M_1 (AFM_1), a metabolite of AFB_1 was seen with the LcS treatment, corroborating the previous findings in the animal models. **Conclusion**: The change of human dietary AFB_1 exposure over time warrants the need of continuous probiotics consumption, not just for the prevention of this food contaminant, but for the improvement of gut health. Hence, integrating probiotics into a balanced lifestyle that includes a nutritious diet, regular exercise, and sufficient sleep contributes to overall health and well-being by fostering a healthy gut environment.

Cultivating AWESOME school children: the NGTS initiative in Malaysia

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The Nutrition Goes to School (NGTS) program is a key initiative of SEAMEO RECFON designed to cultivate AWESOME (Active, Well-nourished, and Smart Of ME) school children and adolescents in Southeast Asian region. This school-based multisectoral program

underscores the pivotal role of schools as effective platforms for character-building education centered around sound nutritional practices, both in school and at home. The NGTS Program comprises four major components: (1) Nutrition Education, (2) Healthy School Canteen, (3) School Garden, and (4) Nutrition Entrepreneurship. Piloted in Indonesia and currently active in 150 schools across all education levels since 2017 including in Cambodia and Lao PDR, NGTS Malaysia is a collaborative effort between IMU and SEAMEO RECFON. In 2023, NGTS Malaysia was implemented at the REAL International School and Private School (Cheras Campus). Phase 1 of 2023 saw three activities: the School Readiness Assessment, which assessed the functionality of school health programs, facilities, and commitments; a Stakeholder Meeting to define the NGTS Program framework and roles; and NGTS Training to the principal, senior management officer, canteen owner and teachers, aiming to integrate food and nutrition education into school activities. Action plan of the teachers have been developed. The project is currently in Stage 2, focusing on implementation and monitoring.

Culinary nutrition education for promoting healthy eating among kids

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Introduction: Unhealthy dietary practices and the rising global childhood obesity trends call for an effective strategy to promote healthy eating among children. Promisingly, experiential culinary nutrition education has emerged as a potential approach yet its long-term effectiveness remains less explored. **Methods:** The randomized-controlled trial aimed to evaluate the effectiveness of a culinary nutrition program among Malaysian children aged 10-11 years at post-intervention and 3-month follow-up (n=83). The 12-week intervention comprised a parent-child session on home food availability, followed by 5 hands-on healthy meal preparation sessions conducted fortnightly. Data on children's psychosocial factors related to healthy meal preparation (knowledge, attitude, practice, self-efficacy), home food availability and dietary practices were collected using validated and reliable guided forms. Weight status (BMI-for-age, waist circumference, body fat) was measured using the standard protocol. **Results**: At 3-month follow-up, repeated measures ANOVA demonstrated improvements among the intervention group with greater knowledge, attitude, practice and self-efficacy scores compared to control group ($p<0.001$). Similarly, favourable outcomes were observed in the availability of fruits, vegetables, healthful foods and less healthful foods at home, favouring the intervention group across the three time-points ($p<0.05$). The change in individual and home environment factors reflected in healthier dietary practices seen in the significant group and time interaction effect ($p<0.001$) where the intervention group consumed whole grains, fruits, and vegetables more frequently, while the frequency consumption of the control group remained relatively stable over time. Likewise, desirable change was seen favouring the intervention group in terms of refined grains, processed foods, and sweetened beverages frequency consumption ($p<0.001$), and overall diet variety at dinnertime ($p=0.017$). Nevertheless, limited change in weight status was observed between groups. **Conclusion:** In sum, the study findings highlighted the prospect of culinary nutrition education in advocating healthy eating among children. Thus, similar programs deserve implementation ideally with the support of related stakeholders.

Comparative cardiometabolic effects of diets with red palm olein, extra virgin coconut oil, and extra virgin olive oil in individuals with central obesity: a randomised trial

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Introduction: Dietary fats with an abundance of phytonutrients have garnered public attention beyond fatty acids per se. The study was set to investigate the impact of consuming diets with red palm olein (RPOO), extra virgin coconut oil (EVCO) and extra virgin olive oil (EVOO, as a control) on cardiometabolic risk biomarkers and lipid profile. **Methods:** We recruited a total of 156 individuals with central obesity, aged 25-45 years, with waist circumference ≥ 90 cm for men and ≥ 80 cm for women in a parallel single-blind 3-arm randomised controlled trial. The participants consumed isocaloric diets (~ 2400 kcal) enriched with respective test fats (RPOO, EVCO or EVOO) for a 12-week duration. **Results:** The mean of the primary outcome plasma high sensitivity C-reactive protein (hs-CRP) was statistically similar between the three diets after a 12-week intervention. The RPOO diet demonstrated comparable effects on LDL and HDL cholesterol subfractions to both the EVOO and EVCO diets, although the EVOO diet resulted in a significantly lower mean LDL cholesterol level. The RPOO diet group showed elevated mean α and β-carotenes levels compared with EVCO and EVOO diet groups ($P < 0.05$), corresponding with the rich carotenoid and tocopherol contents in RPOO. **Conclusion:** The three oils, each of which has unique phytonutrient and fatty acid compositions, manifested statistically similar cardiometabolic effects in individuals with central obesity at risk of developing cardiovascular diseases with distinct circulating antioxidant properties.

Nutrition Update 2

Metabolic-predicted obesity phenotypes and risk of colorectal cancer in Malaysia: Decoding the obesity paradox

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Background: In Malaysia, the 'obesity paradox' reveals a higher proportion of obese individuals not developing metabolic dysfunctions, highlighting a research gap in understanding the link between obesity and colorectal cancer (CRC) risk. The diverse obesity-related metabolites contribute to a complex metabolic landscape, potentially

influencing CRC risk. This multicentric retrospective matched case-control study explores the association between the metabolic-predicted obesity phenotypes (MetSOBs) and CRC risk in selected hospitals. **Methods**: A total of 140 histologically confirmed CRC cases and 280 matched cancer-free controls were recruited from five public hospitals in Malaysia. They were categorized into MetSOBs phenotypes according to the metabolic syndrome (MetS) criteria as defined by the International Diabetes Federation and BMI (≥ 25 kg/ m2): metabolically healthy normal weight (MHNW), metabolically unhealthy normal weight (MUNW), metabolically healthy overweight/obese (MHO) and metabolically unhealthy overweight/obese (MUO). Cox regression was employed to determine the association between MetSOBs and the risk of CRC. **Results:** MetS was significantly more prevalent among cases compared to controls (57.1% vs. 39.3%; $\chi 2$=12.01. p = 0.001). The prevalence of overweight was 27.9%, while obesity was 11.4% among the CRC cases. MUNW and MUO subjects were more prevalent among those aged <60 years old, females, Malays, and those with higher monthly income. With metabolic dysfunction defined as ≥3 MetS criteria, CRC cases had significantly higher proportions of MUNW (28.6% vs. 15.7%) and MUO (28.6% vs. 23.6%) phenotypes than cancer-free controls ($\chi 2$ = 14.16, p = 0.003). MUNW subjects had a 2.8-times higher odds of CRC risk (AOR=2.27, 95% CI = 1.56, 4.93) while MUO subjects had 79% increased odds of CRC risk, compared to MHNW subjects (AOR = 1.79, 95% CI = 1.04, 3.08). **Conclusion**: This pioneering research established MetSOBs phenotypes as a valuable tool for predicting CRC in the Malaysian population for personalized risk assessments and innovative preventive interventions.

Association between obesity and physical activity among young adults in urban and semi-urban settings in Perak, Malaysia

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Introduction: The National Health and Morbidity Survey Malaysia 2023 reported that 31.2% of adults are overweight and 22.2% are obese. Studies have shown that a significant number of Malaysians (37.3%) are physically inactive, which increases the risk of obesity. This study aims to explore the association between obesity and physical activity among young adults in urban and semi-urban settings in Perak, Malaysia. **Methods:** Data for this study was collected from four educational institutions in Perak using a multi-stage sampling strategy. Validated instruments were used to assess the socio-demographic profiles of students. Anthropometric measurements including height, weight, waist circumference, and hip circumference were measured following WHO protocols adjusted for Asian populations. The principal cut-off points for obesity indices followed the WHO standards. Physical activity levels were assessed using the Global Physical Activity Questionnaire (GPAQ). The data analysis was performed using SPSS version 22.0. **Results:** The salient findings show that 33.7% of the study population is either overweight or obese and 29.6% is categorised as abdominally obese. Logistic regression analysis revealed that engaging in vigorous recreational activities was associated with a 0.1% decrease in the odds of general obesity per unit increase in activity (*95% CI*: 0.998-0.999, *p*=0.001). These activities were linked to a reduced likelihood of abdominal obesity, with an odds ratio of 0.999 (*95% CI*: 0.999-1.000, *p*=0.040). However, physical activities in the work and transport domains

did not show significant associations with obesity indices. **Conclusions:** Lower levels of physical activity are associated with higher BMI levels in this population group and warrants intervention aimed at the prevention of obesity in this target group.

Winter melon aqueous extract supplementation modulates body composition and insulin sensitivity in patients with type 2 diabetes

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Introduction: Winter melon (*Benincasa hispida*), a member of cucurbit family, is a popular vegetable among Asian people. Several prior evidence suggested benefit of using winter melon in diabetes with a safe pharmacological profile for long-term oral consumption. This study was proposed to explore changes in body compositions and insulin sensitivity with winter melon aqueous extract supplementation in patients with type 2 diabetes. **Methods:** The round fruit of winter melon was collected and the pulp was extracted in filtered water at 60°C for 30 minutes. The extract was spray-dried and formulated into powdered drink. A randomised placebo-controlled study was conducted involving 50 participants diagnosed with type 2 diabetes from outpatient clinic at Hospital Universiti Sains Malaysia. Anthropometry and blood parameters of the participants were measured at baseline and 12 weeks after initiation of intervention. Insulin resistance was computed using the homeostatic model assessment (HOMA) method. **Results:** The intervention with powdered drink containing winter melon aqueous extract increased mean body weight of the participants (Δ 0.27 kg, 95% CI: -0.54, 1.07) but not in placebo group (Δ -0.81 kg, 95% CI: -1.64, 0.03). Interestingly, body composition analysis revealed an increase in mean lean body mass within the intervention group (Δ 0.16 kg, 95% CI: -0.33, 0.64) but reduced in placebo group (Δ -0.43 kg, 95% CI: -0.98, 0.13). There was a decrease in insulin resistance observed in the intervention group, quantified by HOMA-IR index (6.2 vs 5.4, p=0.404). Pancreatic beta-cell activity in the pancreas was also augmented within the intervention group (79.9 vs 95.0, p=0.414). **Conclusion:** Winter melon aqueous extract has the potential to ameliorate body composition and insulin sensitivity among patients with type 2 diabetes and may be an attractive candidate for development of functional food products. Further investigations are warranted to confirm current findings.

Effect of *Lignosus Rhinocerus* and *Eurycoma Longifolia* supplementation on anaerobic sports performance in athletes: preliminary findings

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Introduction: Athletes often consume various supplements to improve their athletic performance. *Lignosus Rhinocerus* and *Eurycoma Longifolia* are the popular supplements consumed by athletes to improve their exercise performance during training and sports competition. To date, there were several studies which found ergogenic effects of *Lignosus Rhinocerus* and *Eurycoma Longifolia* supplementation on endurance sports but there was still scanty information on anaerobic sports performance. Therefore, the objective of this study was to determine the effects of *Lignosus Rhinocerus* and *Eurycoma Longifolia* supplementation on Running-Based Anaerobic Sprint Test (RAST) in athletes. **Methods**: Seven male athletes (age: 21.3 ± 1.2 years; body mass index (BMI): 20.5 ± 2.5 $kg.m^{-2}$; body fat percentage: 13.8 ± 2.2 %) participated in this randomised cross-over trial. Participants consumed *Lignosus Rhinocerus* and *Eurycoma Longifolia* or placebo for 6 days prior to the Running-Based Anaerobic Sprint Test (RAST). On the experimental trial, participants consumed *Lignosus Rhinocerus* and *Eurycoma Longifolia* supplements 1-hour before the RAST test. Time to complete RAST test, power output, average power, maximum and minimum power, relative peak power, fatigue index, and anaerobic capacity were measured in the trials. The wash out period between the trials was one week. Data was expressed in mean ± standard deviation**.** Paired-t test was used to compare anaerobic sports performance between the trials. **Results:** This study found no significant difference in time to complete RAST test, power output, average power, maximum and minimum power, relative peak power, fatigue index, and anaerobic capacity between the trials ($p>0.05$). It was shown that short term supplementation of *Lignosus Rhinocerus* and *Eurycoma Longifolia* had no ergogenic effects on anaerobic sports performance in athletes.

Poster Presentations

Group A: Nutritional Status, Consumption Pattern & Disease

A01 Diet quality and nutrient intakes of primary school children in Sabah: A cross-sectional study

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Introduction: Diet quality is an evaluation of the adherence of dietary intake to current national dietary guidelines and the Healthy Eating Index (HEI) is one of the indices commonly used in assessing diet quality. Studies have shown that diet quality indices are associated with favourable health-related outcomes in children However, there is a scarcity of studies examining diet quality among children in Sabah. Therefore, this study aimed to determine the diet quality and nutrient intakes among children in Sabah. **Methods:** This cross-sectional study was conducted among children from age 7 to 12 years, who were recruited from two primary schools in Kota Kinabalu and Tawau via convenient sampling. A 24-hour diet recall was used to assess dietary intake, and nutrient intakes were analysed based on the Malaysian Food Composition Database. A New Healthy Eating Index (N-HEI) was developed according to the Malaysian Dietary Guidelines 2020 and was used to assess diet quality. The N-HEI consisted of 9 adequacy and 4 moderation components, with a total score ranging from 0 to 100. The diet quality was categorized as good (≤49), need improvement (50-80) or poor (≥80). **Results:** From a total of 196 children, 88.3% of them had poor diet quality and 11.7% were categorised as need improvement. Children from the poor diet quality category had lower score for total fruit (p<0.001), whole fruit (p<0.001), total vegetable (p<0.001), total protein food (p=0.003), seafood and plant protein (p<0.001), refined grain (p<0.001), and added sugar (p=0.027) of the N-HEI component. In addition, these children had lower consumption of energy (p<0.001), carbohydrate (p=0.004), protein (p<0.001), potassium (p<0.001), vitamin A (p=0.008), vitamin C (p=0.006), thiamin (p=0.003), riboflavin (p=0.002), niacin (p<0.001). **Conclusion:** The diet quality of the children in Sabah was poor and nutrition interventions are warranted to improve the dietary habits of this population.

A02 Factors associated with body weight status among women with polycystic ovarian syndrome (PCOS) in Jordan

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Introduction: Polycystic ovarian syndrome (PCOS) is an endocrine metabolic disorder, affecting women of reproductive age. Women with PCOS exhibit symptoms such as hyperandrogenism, hirsutism, irregular menstrual cycles, and polycystic ovaries. PCOS is associated with weight gain, obesity, insulin resistance and non-communicable diseases.

Thus, the aim of this study was to identify the possible factors associated body weight among PCOS women in Jordan. **Method:** This was a cross-sectional study conducted among PCOS women residing in three governorates in Jordan. The study sample was 120 PCOS women. Parameters collected in this study were socio-demography, anthropometry, body composition, adherence to Mediterranean diet, physical activity, quality of life, general well-being. The data was analyzed using adjusted logistic regression model. **Results:** A total of 45 women (37.5%) were underweight or of normal weight, while 75 women (62.5%) were overweight or obese. The average age of the underweight and normal weight group was 28(9%) years, whereas the average age of the overweight and obese group was 27(8%) years. Most of the PCOS women (48.3%) had low physical activity. Adherence to the Mediterranean diet was observed in 20.0(16.7%) of the participants, while non-adherence was higher 27.0(22.5%). Multivariate analysis revealed that higher education years (OR = 0.304, 95%CI: 0.114-0.810) and having good quality of life (OR= 0.601, 95%CI: 0.400-0.905) were protective factors against weight gain. However, larger waist circumference (OR= 1.420, 95%CI: 1.162-1.734) were found to significantly increase body mass index, Medas adherence, sugar, vitamin D, iron, duration of diseases, and selenium showed no effect on BMI. **Conclusion:** Abdominal obesity, low education and poor quality of life contributes to increasing BMI among PCOS women that may lead to various non-communicable diseases. Future studies should focus on intervention programs for educating PCOS women on healthy lifestyle.

A03 The prevalence of hypertension and its associated risk factors among young adults in Klang Valley, Malaysia

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Introduction: Hypertension is a significant global public health concern, with rising rates among young adults, especially in Malaysia, highlighting the need to study its prevalence and risk factors. The aim of this study is to assess the prevalence of hypertension and its associated risk factors among young adults in Klang Valley. **Methods:** This cross-sectional study involved 149 Malaysian residents of the Klang Valley, aged 18 to 25 years (82 men and 67 women). Standardized protocols to measure anthropometrics, body composition and blood pressure, alongside gathering socio-demographic information. Physical activity levels were assessed using the International Physical Activity Questionnaire-Short Form. The Diet Quality Questionnaire (DQQ) was utilized to evaluate participants' dietary quality. **Results:** Males had higher weight, height, and systolic blood pressure compared to females ($p<0.001$), while females showed higher body fat percentage and diastolic blood pressure ($p<0.001$). Among participants, 34.2% were overweight and 40.3% were obese based on BMI. The prevalence of hypertension was 24.8%. Males had significantly higher odds of hypertension compared to females (OR: 7.874, 95% CI: 2.469-25.109). Individuals with overweight/obesity were also more likely to be hypertensive (OR: 0.002, 95% CI: 0.001-0.025). Having a DDQ score below 10 was associated with higher odds of hypertension (OR: 3.691, 95% CI: 1.141-11.938). Marital status, physical activity, alcohol consumption, and smoking did not show significant associations with hypertension. **Conclusion:** Hypertension was prevalent among young adults in Klang Valley. Factors such as sex, weight status (specifically overweight and obesity), and dietary patterns with lower scores on the DDQ were significantly associated with hypertension among young adults in Malaysia. These findings highlight the importance of addressing these factors in public health strategies aimed at reducing hypertension prevalence in the young Malaysian adults.

A04 Double burden of malnutrition and its association with sociodemographic characteristics among *Orang Asli* mother-child pairs in Terengganu

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Introduction: The double burden of malnutrition (DBM), characterised by the coexistence of overweight/obesity in mothers and stunting in their children (OWOBM/STC) within the same household, poses a significant public health challenge. This phenomenon is notably prevalent among the indigenous populations (*Orang Asli*, OA) in Peninsular Malaysia. This cross-sectional study aims to investigate the association between the sociodemographic characteristics and nutritional status of OA mothers and their children in Terengganu. **Methods**: Ninety-one mother-child pairs meeting specific criteria were purposively recruited from two OA villages, namely *Kampung Sungai Berua* and *Kampung Sungai Pergam* in Terengganu. Sociodemographic data were collected through face-to-face interviews. Anthropometry comprised weight and height for mothers, whilst weight and height/length for children. Nutritional status was assessed using maternal body mass index (BMI) categories for Asian cut-off and child height-for-age status. Statistical analysis employed Pearson chi-square and Fisher's exact tests. **Results**: The mothers had an average age of 26.5±5.6 years (range 16-40 years), while the children averaged 36.8±17.7 months (range 6-59.9 months). Approximately 42.9% of children were stunted, and 58.2% of mothers were overweight/obese. Overnutrition was the highest among the mother-child pairs (33.0%), followed by DBM (25.3%), undernutrition (20.9%), and normal pairs (20.9%). A higher proportion of undernutrition mother-child pairs was significantly associated with having only one child in the family ($p=0.02$), younger mothers (≤ 24 years old) ($p=0.01$), low birth weight children ($p<0.001$), and those residing in *Kampung Sungai Berua* ($p<0.001$). Conversely, pairs with at least two children ($p=0.02$) and residence in *Kampung Sungai Pergam* ($p<0.001$) exhibited higher proportions of overnutrition or DBM. **Conclusion**: This study highlights a significant association between sociodemographic characteristics and the nutritional status of mother-child pairs in Terengganu. Effective interventions targeting village location, number of children, maternal age, and childbirth weight are essential to address malnutrition in this vulnerable population.

A05 Association between serum short-chain fatty acids, bone health and diet quality in Malaysian children from the PREBONE-KIDS Study

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Introduction: The relationship between short-chain fatty acids (SCFAs), bone parameters including bone mineral density (BMD) and bone mineral content (BMC), and dietary pattern is a burgeoning area of interest in nutritional science and bone health research. SCFAs, primarily produced through the fermentation of indigestible carbohydrate by gut

microbiota, have been suggested to play a role in bone health. Therefore, this study aims to investigate the associations between SCFA levels, bone parameters and diet quality in Malaysian children. **Methods:** This secondary data analysis of the PREBONE-Kids study included 243 pre-adolescent children aged 9-11 in Kuala Lumpur. BMD and BMC were measured using DXA. Dietary intake and total adherence to the diet quality indexes including the Malaysian Healthy Eating Index (M-HEI) and the Mediterranean Diet Quality Index in children and adolescents (KIDMED) were assessed. Serum SCFAs including acetic acid, propionic acid and butyric acid were measured by gas-chromatography flame-ionisation detection. **Results:** Overall, about 70% participants had poor diet quality based upon M-HEI and KIDMED. A significant correlation between overall scores of M-HEI and KIDMED ($r=0.408$, $p<0.001$) was found. Participants with higher M-HEI or KIDMED scores had significantly better BMD and BMC. Adherence to the Mediterranean-style diet (KIDMED score) was a significant predictor of BMD ($\beta=0.146$, $p<0.001$) and BMC ($\beta=0.067$, $p=0.011$). However, no significant associations were observed between serum SCFAs levels, BMD/BMC and diet quality. **Conclusions:** This study highlights the importance of good diet quality in maintaining bone health, although the potential role of SCFAs as a link between diet and bone density was not determined.

A06 Elucidating the link between eating jetlag and diet quality among pregnant women in Kuala Lumpur

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Introduction: Eating jetlag (EJL), marked by irregular meal timing could disrupt metabolism and cause unhealthy eating habits, consequently impacting diet choices. Research on its implications has focused on non-pregnant populations, leaving maternal health unexplored. Low diet quality among pregnant women in Malaysia is a growing concern, linked to potential adverse effects. Hence, this study aimed to determine EJL and its association with pregnant women's diet quality and intake. **Methods:** This was a cross-sectional study using convenience sampling that recruited pregnant women from government antenatal clinics. Data collection included sociodemographic questionnaires, 2-day 24-hour diet recalls, and meal timing variations between workdays (WD) and workfree days (WFD) to assess EJL. Dietary intake was analysed using Nutritionist Pro software and the modified Healthy Eating Index for Malaysians to assess diet quality. Descriptive analysis and independent sample t-tests were utilised for analysis. **Results:** A total of 271 pregnant women participated, with a mean age of 29 years, mostly Malay, have tertiary education, and from moderate household income. Most pregnant women reported significant delayed meal timing on WFD, except for dinner. There was no difference in diet quality between WD and WFD, with a mean score of 38.04% for WD and 38.18% for WFD. Dietary analysis showed inadequacies in iron, calcium, and folate, and pregnant women generally failed to meet recommended servings of fruits, vegetables, legumes, and dairy. Pregnant women who were eating jetlaggers consumed more dairy compared to non-eating jetlaggers. Pregnant women who experienced first meal EJL on WFD had a significantly lower diet quality score. **Conclusions:** Findings indicate inadequate intake of essential nutrients and poor diet quality among pregnant women. EJL was associated with diet quality and intake, highlighting the need for regular meal patterns for optimal prenatal nutrition. Future research should explore factors to eating jetlag and imparting meal regularity during pregnancy.

A07 Sleep patterns among paediatric cancer patients receiving treatment at Hospital Tunku Azizah, Kuala Lumpur

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Introduction: Paediatric cancer patients undergoing treatment at hospitals often experience sleep disturbances, which can adversely affect their overall well-being and recovery. Hence, this study aimed to assess sleep patterns of paediatric cancer patients receiving treatment at Hospital Tunku Azizah, Kuala Lumpur. **Methods:** A cross-sectional study involving 34 cancer patients aged 2.00-15.99 years was conducted in Hospital Tunku Azizah (HTA) using total population sampling approach. Sleep pattern was assessed using Children's Sleep Habits Questionnaire (CSHQ), comprising bedtime resistance, sleep onset delay, sleep duration, sleep anxiety, night wakings, parasomnias, sleep-disordered breathing, and daytime sleepiness domains. Sleep data were compared against the Canadian 24-Hour Movement Guidelines, which recommend 11 to 14 hours of sleep daily for children aged 2 years, 10 to 13 hours for 3 to 4 year olds, 9 to 11 hours for 5 to 13 year olds, and 8 to 10 hours for 14-17 year olds. **Results:** Mean total sleep duration was 10.41 ± 2.42 hours. Majority of subjects (70.6%) met recommended total sleeping hours. There were no significant differences between age groups in bedtime, wake-up time, nap time and total sleep hours. Children with haematological cancers woke up significantly earlier by an average of 50 minutes compared to those with solid tumours ($p<0.05$). No significance differences were found in CSHQ domains between sexes and types of cancer. However, bedtime resistance, sleep anxiety, parasomnias, sleep-disordered breathing, and daytime sleepiness showed significant differences among age groups ($p<0.05$). **Conclusion:** Paediatric cancer patients in this study generally had good sleep patterns, with the majority meeting sleep recommendations. To further support their well-being, it is essential to maintain these healthy sleep habits and continuously monitor sleep quality, ensuring that any sleep-related issues are promptly addressed through age and condition-appropriate interventions tailored specifically for paediatric cancer patients.

A08 Associations of parental, child, and home food environmental factors with body weight status among school-aged adolescents in Bera, Pahang

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Introduction: Adolescence is a crucial transition from childhood to adulthood, when maintaining established health behaviours becomes critical. Adolescents who are overweight/obese or underweight experience not only physical but also psychosocial consequences that affect their overall well-being. This study aimed to determine the associations of parental, child, and home food environmental factors with body weight status among school-aged adolescents in Bera, Pahang. **Methods:** This was a cross-sectional study involving secondary school adolescents aged 13 to 17 years. A total of 397 adolescents (mean age: 14.48 ± 1.06 years) from two randomly selected secondary schools in Bera, Pahang participated in this study. Adolescents completed a set of self-

administered questionnaire on background information, nutrition literacy, food habits, weight-related self-stigma, meal consumption pattern, home food availability, and family mealtime environment. Their parents also completed another set of questionnaire on background information and household food security. Weight and height of the adolescents were retrieved from their *Ujian SEGAK* record measured by teachers. **Results:** The mean BMI-for-age z-score (BAZ) was -0.13±1.52, with 11.1% of the adolescents were underweight and 25.7% were overweight/obese. Father's BMI (r=0.299, p<0.01), mother's BMI (r=0.336, p<0.01), weight-related self-stigma (r=0.314, p<0.001), healthy home food availability (r=-0.103, p=0.044), priority (r=-0.116, p=0.022), atmosphere (r=-0.141, p=0.005), and structure (r=-0.116, p=0.023) of the family mealtime were significantly correlated with BAZ. However, there were no associations found between monthly household income, parental educational level, age, sex, ethnicity, nutrition literacy, meal consumption pattern, food habits, unhealthy home food environment, household food security level, and frequency of family mealtime with BAZ (p>0.05). **Conclusion:** This study highlights the importance of addressing weight-related self-stigma, promoting healthy home food availability, and fostering quality family mealtime environment in interventions aimed at managing and improving body weight status of adolescents.

A09 The prevalence, characteristic and dietary intake of warded patients consuming out-of-hospital food at Hospital Universiti Sains Malaysia

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Introduction: Hospital food is planned carefully by dietitians based on the medical and nutrition diagnosis of warded patients. The consumption of out-of-hospital food is increasing due to several reasons. This practice may affect recovery process of patients due to unfavourable nutritional content in out-of-hospital food. This study aimed to determine the prevalence and characteristics of out-of-hospital food consumption among warded patients in Hospital Universiti Sains Malaysia (HUSM). **Methods:** This cross-sectional study was conducted among 156 warded patients aged 18 to 65 years old in HUSM. Socio-demographic background was obtained through a questionnaire. 24-hour dietary recall questionnaire was utilised to record data on dietary intake. Out-of-hospital food (OHF) was defined as any food that was not prepared by hospital kitchen while patients who consumed OHF for at least one meal were classified into out-of-hospital-food group (OFG). Energy and nutrient intake were analysed using Nutritionist ProTM Diet Analysis Software. Weight and height were measured. Weight status was determined based on WHO BMI classification for general population. **Results:** A total of 90% of respondents were classified as OFG and had significantly higher energy (p=0.002), carbohydrates (p<0.001) and fibre (p=0.015) intake than those who were classified as hospital food group (HFG). The commonly consumed out-of-hospital food and drinks were fried local *kuih-muih*, banana fritters, fried chicken, fish and chicken cooked in coconut gravy (*gulai*), fried rice and *mee-hoon* soup. Sex (p<0.001) and educational level (p=0.016) were associated with the out-of-hospital food consumption during hospitalisation. **Conclusion:** Almost all respondents consumed out-of-hospital food during admission and the practice was related to higher energy, carbohydrates and fibre intake. Interventions are needed to promote the consumption of hospital diet to ensure healthy and adequate nutrition is obtained during hospitalisation.

A10 Associations between sociodemographic and health factors with food security in the first trimester of pregnancy: a preliminary finding of the MYBIOTA cohort study

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Introduction: Food security of pregnant women is important in protecting against adverse pregnancy-related outcomes and improving overall nutritional well-being of mothers and infants. This study examined the food security status of pregnant women and its association with sociodemographic and health factors in the first trimester of pregnancy. **Methods:** A total of 71 pregnant women aged 20-42 years from a private clinic in Kajang completed a self-administered questionnaire on sociodemographic background, food security, experiences of nausea and vomiting, stress during pregnancy, constipation, and physical activity. Their pre-pregnancy body weight, current body weight, and height were obtained from medical records. **Results:** A total of 73.2% of mothers reported high or marginal food security, while 25.4% reported low food security, and only 1.4% reported very low food security. Multiple logistic regression analyses showed that older pregnant women (95% CI: 0.76-1.00) and those with tertiary educational (95% CI: 0.10-0.98) were 0.87 and 0.31 times less likely to develop food insecurity, respectively. **Conclusion:** Screening for food security and provision of nutrition support during antenatal care are recommended to minimize the long-term impact of food insecurity on pregnant mothers and their infants.

A11 Correlation between macronutrients intake and cognitive performance among undergraduate students in Kuala Nerus, Terengganu

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Introduction: The pressing issue of failing to meet the Recommended Nutrient Intake 2017 (RNI 2017) among undergraduate students poses serious health consequences and poor cognitive performance in early adulthood, which subsequently serves as preliminary indicator of neurodegenerative disease later in life. Thus, this study aimed to investigate the correlation between macronutrients intake and cognitive performance among undergraduate students in Kuala Nerus, Terengganu. **Methods**: A total of 188 students (male=9.6%, female=90.4%) aged between 18–30 years old, who met the inclusion and exclusion criteria were recruited to participate in this cross-sectional study using convenience sampling. Students were required to fill in a set of questionnaires consisting of 1) sociodemographic data, 2) a semi quantitative Food Frequency Questionnaire (FFQ) for macronutrients intake assessment, and 3) Trail Making Test (TMT) and Stroop Color and Word Test (SCWT) for assessment of cognitive performance. **Results**: Findings showed that daily mean (SD) intake of carbohydrates and fat were 351.88 (159.90) g and 95.82 (44.69) g, respectively. While median (IQR) intake of protein was 89.00 (56.77) g. Students took mean duration of 20.06 (6.86) s to complete TMT-A, 42.16 (13.86) s for TMT-B, 18.92 (3.08) s for SCWT-W, 29.35 (5.34) s for SCWT-C, while longer duration for SCWT-CW, 44.6 (11.21) s. There was a significant correlation between carbohydrates intake and time taken

to complete TMT-A (r=0.23, p=0.002). As the intake of carbohydrates increases, the time taken to complete TMT-A also increases. **Conclusion**: It is imperative to explore the impact of balanced nutrient intake on optimal cognitive performance, particularly in reducing excessive carbohydrate intake which can have detrimental effects. Dietary interventions focused on improving macronutrient balance could be an effective strategy to enhance cognitive processing and mitigate health consequences in young adults.

A12 Comparison of hydration status among adults in the urban vs. rural areas in Selangor, Malaysia

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Introduction: Adequate hydration is crucial for health, but data on hydration status in Malaysian adults is scarce. This study compared hydration status between urban and rural adults in Selangor, Malaysia. **Methods:** We conducted a cross-sectional study with 377 healthy adults (18-59 years) residing near UPM. Participants were recruited from urban (n=189) and rural (n=188) areas using purposive sampling. Sociodemographic data was collected, and hydration status was assessed using urine (first morning and 24-hour samples) and blood tests (plasma osmolality, blood count, and renal function). Urine specific gravity (USG), urine osmolality (U_{OSM}), urine volume, and color were measured. All the results were then compared to hydration biomarkers. **Results:** The study found significant differences in urine specific gravity (USG) and urine osmolality (U_{OSM}) of 24-hour urine samples between urban and rural adults (χ^2=27.872, p=0.000; χ^2=25.983, p=0.000). For blood assessment, only the estimated glomerular filtration rate (eGFR) showed significant differences between urban and rural adults (χ^2=11.908, p=0.003). Factor analysis revealed that urine measurements, both first morning urine (FMU) and 24-hour urine (24hU), strongly reflect hydration status, supported by Eigenvalues (quality scores)>1 and strong factors in the scree plot. Moreover, both USG and U_{OSM} in FMU had a strong positive correlation matrix of 0.052, indicating that as USG increases, U_{OSM} also increases, underscoring the reliability of urine assessments over blood test for measuring hydration status. **Conclusions:** The study found significant differences in hydration status in USG, U_{OSM} and eGFR between adults living in urban and rural areas.

A13 Body composition and fitness difference between senior and junior male national artistic gymnasts

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Introduction: Gymnastic is a sport requiring high strength and power. Age 18 years is the cut-off age between juniors and seniors. The aim of this study was to compare the body composition and fitness level between senior and junior male artistic gymnasts (MAG). **Methods:** This study was conducted on 11 MAGs (6 seniors aged 21.1±0.4 years old and 5 juniors aged 15.4±0.5 years old). Anthropometry assessment was performed in accordance to ISAK protocol and body composition was estimated. Standing broad jump (SBJ) and countermovement jump (CMJ) were done to assess power; 20-meter speed test and Yoyo Endurance Level 1 were done to assess speed and aerobic capacity respectively. Multiple specific sports testing was done to evaluate gymnasts' performance based on their routines.

Results: No significant difference in mean weight and height were observed between seniors (58.3±6.2kg; 163.5±5.5cm) and juniors (51.1±4.8kg; 162.6±6.5cm). Seniors' mean BMI (21.7±1.0kg/m^2) was significantly (P<0.001) higher than juniors (19.2±0.4 kg/m^2). Seniors' mean SUM7 (33.1±5.6mm) was not significantly different from juniors (33.4±3.2mm), suggesting the muscle mass of seniors was higher. Overall, somatotype for seniors (1.5-6.3-2.2) was balanced mesomorph, while juniors (1.4-6.2-3.5) was ecto-mesomorph. However, the ectomorph value of juniors (3.5±0.5) were significantly (p<0.001) higher than seniors (2.2±0.2). Mean corrected arm girth of seniors (33.3±0.9cm) was significantly (p<0.05) higher than juniors (30.7±1.6cm), suggesting that seniors' arms were more muscular. However, seniors' (33.9±2.1cm) and juniors' (32.5±1.2cm) corrected calf girth were not showing significant difference. In relation to fitness, seniors' (52.7±3.0cm) mean CMJ were significantly (P<0.001) higher than juniors (41.4±2.6cm). For mean SBJ and predicted mean VO^2 max, seniors (261.8±14.2cm; 44.3±4.2mL/kg/min) and juniors (247.6±8.8cm; 42.3±3.9mL/kg/min) had no significant difference. Seniors' mean speed (3.1±0.1s) was significantly (P<0.05) higher than juniors (2.9±0.1s). For sports specific testing, repetition of max dip swing of seniors (12.6±1.1) was significantly (P<0.05) more than juniors (9.0±3.1), suggesting that seniors have better arm strength endurance. **Conclusion:** Senior gymnasts had more muscle mass than juniors as their BMI was higher with no significant difference in body fat. Their arm strength endurance, leg power in CMJ and speed were better than juniors. Training programme for juniors should aim to improve their overall muscle mass.

A14 Dietary zinc intake and factors associated with sleep quality among pregnant women who visited Hospital Sultan Abdul Aziz Shah, Selangor, Malaysia

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Introduction: Maternal and foetal health during pregnancy are significantly influenced by sleep quality. Understanding the factors including nutrition factor such as dietary zinc intake that affect sleep quality is vital to enhance maternal and foetal health outcomes. However, the relationship between dietary zinc intake and sleep quality in pregnant women has not been fully investigated. Therefore, this study aimed to determine the association between dietary zinc intake and sleep quality among pregnant women. **Methods:** A cross-sectional study using convenience sampling recruited pregnant women from Hospital Sultan Abdul Aziz Shah. Data including socio-demographic information, pregnancy history, and supplement intake were collected using a self-administered questionnaire. A semi-quantitative food frequency questionnaire (FFQ) was used to assess the dietary zinc intake while sleep quality was assessed using Pittsburgh Sleep Quality Index (PSQI). Bivariate and multivariable logistics regression analysis were employed to analyse factors associated

with inadequate dietary zinc intake and poor sleep quality. **Results:** The findings showed that more than one-third of pregnant women (37.7%) had inadequate dietary zinc intake and about two-third (63.8%) had poor sleep quality. Lower monthly expenditure for food (AOR=3.45; 95% CI:1.49, 7.96) was significantly associated with inadequate dietary zinc intake. Maternal age (AOR=1.15; 95% CI:1.01, 1.30), household income B40 (AOR=6.24; 95% CI:1.54, 25.33), primigravida (AOR=4.29; 95% CI:1.51, 12.19), history of stillbirth (AOR=3.57; 95% CI:1.20, 10.61) were significantly associated with poor sleep quality. There was no significant association between dietary zinc intake and sleep quality among the pregnant women. **Conclusion:** This study demonstrated a high prevalence of poor sleep quality among pregnant women. Financial constraints and pregnancy characteristics play a crucial role in maternal sleep quality. These findings support the need for targeted interventions and support to improve the sleep quality of pregnant women. Additional studies are required to further examine the effect of dietary zinc intake on sleep quality in pregnant women.

A15 Association between diet quality and stunting among indigenous (*Orang Asli*) children in Terengganu, Malaysia

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Introduction: Childhood stunting is a significant barrier to human development and a major health issue among *Orang Asli* (OA) children in Peninsular Malaysia. Ensuring adequate dietary intake during the first two years of life is crucial for future growth. This study aims to determine the association between diet quality and stunting among indigenous OA children in Terengganu, Malaysia. **Methods:** A total of 94 eligible OA children aged 6–59.9 months were purposively recruited. Face-to-face interviews were conducted. Anthropometric measurements were taken using standard procedures, and the Malaysia Healthy Eating Index (MHEI) was assessed based on 24-hour diet recalls over three non-consecutive days. Multiple logistic regression was employed. **Results:** The children had an average age of 37.3±17.6 months, with a high prevalence of severe stunting (14.9%) and moderate stunting (27.7%). Most (89.4%) had poor diet quality, indicated by an average MHEI score of 41.4±8.7, with limited intake of whole grains, legumes, nuts, fruits, meat, poultry, and eggs, and high sodium intake. They frequently consumed total grains and fish, and generally adhered to the recommended energy intake from fat and added sugar. Results of multiple logistic regression showed that children living in *Kampung Sungai Berua* were less likely to be stunted than those living in *Kampung Sungai Pergam* (p<0.05), but diet quality was not significantly associated with child stunting. In depth analysis has shown significant interaction between village location and diet quality with child stunting (Adjusted odd ratios: 1.163; 95% confidence interval: 1.04-1.31). **Conclusion:** The findings highlight the urgent need for targeted interventions to improve the accessibility and consumption of nutrient-rich foods among OA communities in Terengganu. Addressing these nutritional gaps is crucial for enhancing the overall health and well-being of OA children.

A16 Comparison of lifestyle factors among adults practising plant-based diet *vs* omnivorous diet in Klang Valley

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Introduction: A plant-based diet has been increasingly adopted as an alternative to the omnivorous diet. However, there are limited literatures on the differences in lifestyle factors among Malaysian adults with different dietary practices. Hence, this study aimed to compare the lifestyle-related factors among adults practising a plant-based diet with those who practise an omnivorous diet in Klang Valley, Malaysia. **Methods:** A total of 193 adults (plant-based diet = 54.9%; omnivorous diet = 45.1%) were recruited through convenient sampling from 4 selected communities in the Klang Valley area and were administered with a set of questionnaires assessing socio-demographic factors, alcohol consumption, smoking behaviour, eating behaviours, and physical activity. **Results:** Findings showed significant differences between diet type in lunch intake (U = 3532.0, p = 0.042), supper intake (U = 2759.0, p<0.001), eating out frequency (t = -4.685, p<0.001), and fast-food intake (U = 1808.5, p<0.001), with adults who consumed plant-based diet having more frequent lunch intake, lower supper intake, eating out frequency and lower fast-food intake. Findings also showed significant association between diet type and alcohol consumption (χ^2 = 17.914, p = 0.001), past smoking behaviour (χ^2 = 15.178, p = 0.001), meal companion (χ^2 = 18.045, p < 0.001) and supplement intake (χ^2 = 7.064, p = 0.029), with adults who consumed plant-based diet showed lower number with alcohol consumption, past smoking behaviour, having meal companion, and more of them consumed supplement. No significant difference and association were observed in METs (U = 4048.0, p = 0.883) and physical activity level (χ^2 = 2.005, p = 0.571), respectively. **Conclusion:** The present study highlights that adults practising a plant-based diet exhibit healthier lifestyles by having more frequent lunch intake, lower supper, eating-out, and fast-food intake, while having lower number with alcohol consumption and with past smoking behaviour compared to their counterparts.

A17 Factors associated with nutrition literacy among school-aged adolescents in Kota Setar, Kedah

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Introduction: Nutrition literacy plays a crucial role for making informed food decisions and developing healthy eating habits, particularly among school-aged adolescents who are in a critical phase of physical and cognitive development. This cross-sectional study aimed to determine factors associated with nutrition literacy among school-aged adolescents in Kota Setar, Kedah. **Methods:** A total of 408 adolescents aged 14.42±0.06

years (52.0% males and 48.0% females) participated in this study. Parents completed a self-administered questionnaire on sociodemographic background and household food security, while adolescents completed another set of self-administered questionnaires on sociodemographic, nutrition literacy, social support, home food availability, family meal frequency, dietary habits, disordered eating, dietary self-efficacy and meal patterns. Weight and height of the adolescents were obtained from the *Standard Kecergasan Fizikal Kebangsaan Untuk Murid Sekolah Malaysia* (SEGAK) data. **Results:** The mean nutrition literacy score was 72.07±7.20 out of a total score of 110, with the highest mean score in the critical nutrition literacy (28.93±3.72) subscale, followed by functional nutrition literacy (23.47±4.28) and interactive nutrition literacy (19.67±4.15) subscales. Approximately 19.0% of adolescents experienced food insecurity, while 36.5% reported disordered eating. Skipping breakfast was most common (67.4%), followed by skipping dinner (52.7%) and lunch (51.0%) at least once a day. The prevalence of underweight and overweight/obesity was 7.1% and 13.0%, respectively. Multiple linear regression analysis revealed that older age (β=0.11, p=0.043), Malay ethnicity (β=0.24, p<0.001), higher social support for healthy eating (β=0.13, p=0.019), frequent family meals (β=0.12, p=0.023) and healthier dietary habits (β=0.24, p< 0.001) were significantly associated with higher total nutrition literacy scores, explaining 17.6% of the variance. **Conclusion:** These findings highlighted the importance of health promotion programs improve nutrition literacy among adolescents by providing accurate and accessible nutrition information through school curricula, workshops, and digital platforms.

A18 Is chronotype associated with pregnancy symptoms, chrononutrition habits, and mood among pregnant women in Kuala Lumpur, Malaysia?

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Introduction: Understanding the role of chronotype and emotional wellbeing with pregnancy symptoms which alters sleep-wake schedule and food intake can be beneficial in developing guidelines to improve maternal health outcomes. This study aims to determine the association between chronotype, pregnancy symptoms, chrononutrition habits, and mood among pregnant women in Kuala Lumpur, Malaysia. **Methods:** This was part of an ongoing prospective cohort study done among 111 pregnant women recruited from maternal and child health clinics in Kuala Lumpur, Malaysia. Chrononutrition habits and weekly frequency of pregnancy symptoms (FPS_{Wk}) affecting sleep-wake timing and first mealtime were captured using the validated Chrononutrition Profile Questionnaire-Pregnancy (CPQ-P). Morningness Eveningness Questionnaire (MEQ) was used to determine the chronotype of participants while mood was assessed using the Positive and Negative Affect Schedule (PANAS).**Results:** The mean age of participants was 30.60±4.57 years, with 63% Malay and 45% had middle household income. Prevalence of breakfast skipping was 13%. Majority had a snack after last meal (88%). One out of four pregnant women woke up at night to eat. Participants experienced disturbance in wake time (54%) sleep time (62%), and first mealtime (33%) due to pregnancy-related symptoms at least once per week. Majority participants had intermediate chronotype (63%), followed by morningness (31%) then eveningness (6%). Participants had low positive affect (23.73±7.19) and high negative affect scores (20.05±6.64) compared with other studies. Morningness was associated with higher positive affect (B=0.191, p=0.035), lower breakfast skipping by 1.7 days (p<0.001), and reduced FPS_{Wk} affecting first mealtime (B=-0.785, p=0.024). Increased FPS_{Wk} affecting

wake time (B=0.751, p=0.002), sleep time (B=0.567, p=0.008), and first mealtime (B=0.936, p=0.001) was associated with increased negative affect. **Conclusion:** Morningness was associated with healthier habits, reduced disruptions to meal timing, and better mood. Hence, it is important to address chrononutrition and pregnancy symptoms in future interventions to improve maternal health outcomes.

A19 Association between diet quality and dietary habits with anaemia status among UCSI University female students

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Introduction: Anaemia is a growing global threat affecting various populations, with young female adults particularly vulnerable due to iron loss during menstruation, poor diet quality and dietary habits. Poor dietary habits lead to insufficient iron intake, exacerbating the risk of anaemia among this population. This study aimed to determine the association between diet quality and dietary habits with anaemia status among UCSI University female students. **Methods:** This was a cross-sectional study involving 203 university students aged between 18 to 25 years, conducted from May 2023 to September 2023. A self-administered online questionnaire was used to assess sociodemographic background and dietary habits, using the Chrono Nutrition Questionnaire. Anaemia status was ascertained by assessing haemoglobin level using HemoCue haemoglobin analyser 201^{+}. A 2-days 24-hour diet recall was conducted to determine dietary intake and further translated into diet quality using the S-MHEI. **Results:** Anaemia was found in 51% of participants, with 27% classified as mildly anaemic. About 63% had poor diet quality, and none of the components met the Malaysian dietary guidelines, except for total grain and meat/poultry/egg. Over half skipped breakfast at least once per week (79%) and had at least twice per week of night eating (57%). Skipping breakfast is associated with a higher prevalence of anaemia (χ^2 = 6.42, p = 0.011). Higher night eating frequency is linked to increased anaemia prevalence (χ^2 = 6.98, p = 0.030), especially among those eating at night 2 to 3 days per week. No significant differences were found between diet quality and its components with anaemia status. **Conclusion:** Study findings revealed significant associations between breakfast skipping and night eating with anaemia status among the participants. Based on the findings, simple dietary changes like consuming breakfast daily and reducing nighttime eating were suggested. Further research should focus on developing effective behavioural interventions.

A20 Nutritional status and dietary intake of paediatric leukaemia survivors followed up at Hospital Tunku Azizah, Kuala Lumpur

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Introduction: Paediatric cancer survivors face a higher risk of malnutrition due to treatment effects and post-treatment dietary behaviours, yet specific dietary guidelines for this group are lacking. This study aimed to assess nutritional status and dietary intake of paediatric leukaemia survivors. **Methods**: This cross-sectional study involved 40 paediatric leukaemia

survivors aged 4 to 31 years (mean 17.4 ± 7.2 years) undergoing follow-up check-ups at Hospital Tunku Azizah (HTA), Kuala Lumpur. Nutritional status was evaluated through anthropometric measurements. BMI-for-age was used to classify nutritional status: for children 2-5 years old (z-score of <-2SD for underweight, -2SD to +1SD normal weight, and >+2SD obese/overweight); for children 5-19 years old (z-score of <-2SD underweight, -2SD to +1SD normal weight, and >+1SD obese/overweight); for adults aged above 19 years (BMI <18.5 kg/m² for underweight, 18.5-24.9 kg/m² normal weight, and ≥25 kg/m² overweight/obesity). Dietary intake was evaluated using 3-day dietary records and compared with Malaysian Recommended Nutrient Intakes (RNI 2017). **Results**: 60% of paediatric leukaemia survivors maintained normal body weight, with 7.5% underweight, 20% overweight and 12.5% obese, with no significant differences in anthropometric characteristics between boys and girls. Dietary intake did not meet recommendations, with more than half not meeting Malaysian RNI for energy (62.5%), vitamin C (80%), calcium (95%), iron (65%), and folate (100%). **Conclusion**: The majority of paediatric leukaemia survivors had normal body weight; however, a notable proportion were either underweight or overweight/obese. Additionally, many survivors did not meet Malaysian RNI for essential nutrients such as energy, vitamins and minerals. Targeted nutritional guidelines and interventions are important to ensure paediatric cancer survivors receive adequate nutrition to support their recovery and long-term health.

A21 Assessment of food environment based on non-discretionary and discretionary food sales at wet markets in Kuala Lumpur

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Introduction: Food environment is a main determinant that affect food choices. Wet markets remain an important part of the food environment in many countries and continue to play a key role in daily food accessibility, despite the growing presence of modern retailers in our country. Therefore, this study aims to evaluate the food environment at wet markets in urban poor area in Kuala Lumpur, focussing on non-discretionary and discretionary foods. **Methods:** A cross-sectional study was conducted through direct observation and measurement of 13 wet markets, selected using purposive sampling from Batu/Kepong (n=6) and Bandar Tun Razak (n=7) parliamentary constituencies. This study measured the space allocated to non-discretionary and discretionary foods at display bins, shelf space, hanging, outside shelves, refrigeration and checkout sections, adapted using MAPP-S tool. **Results:** The most commonly available food categories in wet markets are non-discretionary foods, including vegetables (23.20%), fish and seafood (22.93%), meat and poultry (17.36%), and fruits (16.48%). The display bin section has the highest availability of both non-discretionary (94.58%) and discretionary foods (53.44%) compared to other sections. Significant differences ($p<0.05$) for total space allocated were found when comparing availability of non-discretionary and discretionary foods across different food placement sections. All sections featured more non-discretionary than discretionary foods, except for the shelf section. No significant differences were found in availability of non-discretionary and discretionary foods between the two parliamentary constituencies studied, with non-discretionary foods more prevalent overall. **Conclusion:** Wet markets in Kuala Lumpur predominantly offer more non-discretionary than discretionary foods. These findings are crucial for policymakers as they can inform the development of strategies to further support and enhance healthy eating environments, thereby helping to reduce the prevalence of overweight and obesity in the country.

A22 Association of academic self-efficacy, perceived academic stress, and future anxiety among undergraduate students in UCSI University

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Introduction: Future anxiety may arise from negative perceptions among university students, like low academic self-efficacy and high academic stress. Additionally, anxiety is linked to various adverse eating-related health outcomes and behaviours, including obesity, and anorexia nervosa. This is especially evident among university students who often experience heightened anxiety of stressors encountered in the university environment. Therefore, this study aimed to determine the association of academic self-efficacy, perceived academic stress, and future anxiety among undergraduate students in UCSI University. **Methods:** This online cross-sectional study was conducted among 366 UCSI university students aged 18 to 24 years. The self-administered questionnaire comprised of socio-demographic background, level of academic self-efficacy, perception of academic stress scale, and future anxiety scale. **Results:** Most respondents recruited were females (66.7%), Chinese (85.5%), Year 3 (41.8%), Applied Sciences students (28.4%), living with family or friends (78.4%), and full time students (79.2%). Majority had a monthly allowance or salary below RM500 (42.9%), and do not smoke (94.0%) or consume alcohol (79.2%). The mean score of academic self-efficacy was 74.42±10.67, with 89.1% confident in meeting assignment deadlines. The mean score of perceived academic stress was 56.37±8.01, attributed largely to unrealistic expectations from teachers (41.5%) and parents (46.5%). The mean score of future anxiety was 69.93±20.48, with 61.5% feeling anxious about life crises or difficulties. Academic self-efficacy showed no relationship with future anxiety ($r=0.036$, $p>0.05$), whereas perceived academic stress showed moderate significance ($r=0.494$, $p<0.001$). **Conclusion:** The findings provide essential baseline data for future research and suggest intervention targeting reducing academic stress and future anxiety levels in order to prevent adverse eating related behaviors among university students. Further longitudinal studies are required to validate these findings and establish casual links between these variables.

A23 Factors associated with food addiction among undergraduate students in Universiti Putra Malaysia

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Introduction: Food addiction refers to hedonic eating patterns characterized by the consumption of highly pleasurable meals, typically including foods with elevated levels of salt, fat, and sugar that exceed the body's normal energy needs. University students are a high-risk population for this problematic eating behaviour. Thus, this cross-sectional study aimed to determine the associations of personal factors, behavioural factors, and psychological factors with food addiction among undergraduate students in Universiti Putra Malaysia. **Methods:** A total of 350 university students (31.1% male, 68.9% female) with a mean age of 20.90 ± 1.60 years from six randomly selected courses participated

in this study. An online self-administered questionnaire using Google Form was used to collect information on sociodemographic background, food addiction, disordered eating, chronotype, internet use, meal patterns, food consumption, depression, anxiety and stress, weight stigma, body size satisfaction and insomnia. **Results**: Approximately 15.4% of the university students experienced different levels of food addiction, with 0.3% had mild, 2.0% had moderate and 13.1% had severe food addiction. Multiple linear regression results showed that duration spent outdoor (β=-0.102, p=0.027), internet use (β=0.298, p<0.001), weight stigma (β=0.171, p=0.001), frequency of dinner intake (β=-0.154, p=0.001), consumption of greens/vegetables (β=-0.113, p=0.015) and hamburgers and/or sausages (β=0.183, p<0.001) significantly predicted food addiction. **Conclusion**: This study highlights the issue of food addiction and emphasizes the need for interventions and programs to improve eating behaviours of university students. Future interventions focusing on reducing internet use, promoting outdoor activities, tackling weight stigma, encouraging healthy meal patterns and promoting the consumption of healthy foods such as vegetables could potentially help to reduce food addiction among university students.

A24 Factors associated with hydration status of elite team sport players in Penang

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Introduction: Optimal hydration status plays a crucial role in sports performance, recovery, and injury prevention among athletes. Due to the high-intensity training, long exercise duration and the necessity for additional equipment, team sport players are at a high risk for dehydration. This study aimed to determine factors associated with hydration status of elite team sport players in Penang. **Methods:** A total of 96 elite team sport players aged 18 to 24 years old and registered under *Sukan Malaysia* (SUKMA) 2024 training squad for Penang contingent participated in the study. Sociodemographic background, nutrition education experience, type of sports played, training duration, hydration knowledge, attitude towards hydration and fluid intake behaviour were assessed using questionnaires. Weight and height were measured, and body mass index (BMI) was calculated. Body fat percentage and skeletal muscle mass were assessed using body composition analyser (InBody 230). Urine samples (30 – 50mL) were taken from the players before and after training and assessed using a digital hand-held refractometer. Dehydration was defined as having a Urine Specific Gravity (USG) of ≥ 1.020. **Results:** More than half of the players were dehydrated before (57.3%) and after (65.6%) training. Higher BMI (r=0.203, p=0.047) and lower fluid intake behaviour score (r=-0.205, p=0.046) were associated with higher USG reading after training, indicating poorer hydration status. After training, players who trained indoors also had poorer hydration status (M=1.024, SD=0.006) than those who trained outdoors (M=1.020, SD=0.009) (t=2.899, p=0.005). BMI (B=0.002, SE=0.001, p=0.006), skeletal muscle mass (B=-0.001, SE=0.000, p=0.011) and training environment (indoor) (B=0.005, SE=0.002, p=0.040) were significant predictors of hydration status (USG reading) after training among the team sport players. **Conclusion:** Body composition, fluid intake behaviour and training environment influenced hydration status of team sport players. Future studies should examine hydration status of players in different playing positions across different team sports.

A25 Satiety responsiveness is related to weight-for-length *z*-score in one-month-old infants: A preliminary finding from a mother-infant cohort study

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Introduction: Appetitive traits, including enjoyment of food, food responsiveness, slowness in eating, and satiety responsiveness have been linked to energy intake and potential risk for later obesity in children. For example, higher satiety responsiveness, indicating a higher ability to regulate food intake in response to satiety, is linked to a lower risk of being overweight/obese. However, appetitive traits in early infancy and their relationships with growth status remain unclear. These preliminary findings are part of an ongoing cohort study involving pregnant mothers in their first trimester and infants up to 12 months old in Malaysia. The present analysis aimed to determine the relationship between appetitive traits and growth status of infants aged one month. **Methods:** This analysis involved 34 infants aged one month. The socio-demographic background was obtained from parents through a questionnaire. Appetitive traits were assessed using a Baby Eating Behaviour Questionnaire (BEBQ). Body weight and recumbent length were extracted from health record books. Z-scores for weight-for-age (WAZ), weight-for-length (WLZ), and length-for-age (LAZ) were determined and classified using WHO Anthro software. **Results:** The mean satiety responsiveness was 13.0 (SD = 2.5). The means WAZ, WLZ, and LAZ were -0.39 (SD = 0.85), -0.30 (SD = 1.30), and -0.17 (SD = 1.23), respectively. There was a positive correlation between satiety responsiveness and WLZ (r_s = 0.409, p<0.05). However, no significant correlations were found between other appetitive traits and WAZ, WLZ, and LAZ. **Conclusion:** Infants aged one month with higher satiety responsiveness were more likely to maintain healthy weight relative to their length. More studies should be conducted to examine the relationship between appetitive traits during early infancy and their growth status in later childhood.

A26 Can food-based recommendations developed based on national standard food portion sizes improve the dietary adequacy of undernourished urban poor children aged two to five years from Seremban preschools by using Linear Programming approach?

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Introduction: This cross-sectional study aimed to compare the dietary adequacy of 168 undernourished urban poor children aged two to five years in Seremban by evaluating the nutrient achievements in the final food-based recommendations (FBRs) developed using actual and national food portion sizes through a linear programming (LP) approach.

Methods: Dietary intake of undernourished children was assessed using a 3-day non-consecutive 24-hour dietary recall. FBRs were developed by LP approach using WHO Optifood software. **Results:** In the final FBRs developed using children's actual food portion sizes, children aged two to three years could not achieve 65% Recommended Nutrient Intake (RNI) for folate (32.8%), zinc (50.7%), and iron (58.5%), and could not achieve 100% RNI for vitamin B12 (81.6%), calcium (91.0%), and vitamin B6 (92.8%). However, the %RNI coverage in the final FBRs developed by LP approach improved to >65% for zinc (70.1%), folate (72.0%), and iron (88.1%), and >100% for vitamin B12 (101.8%) and calcium (103.6%) based on the national standard food portion sizes. In contrast, in the final FBRs developed using children's actual food portion sizes, children aged four to five years could not achieve 65% RNI for folate (42.8%) and zinc (63.2%) and could not achieve 100% RNI for vitamin B12 (90.9%) and calcium (94.0%). However, the %RNI coverage in the final FBRs developed by LP approach improved to >65% for folate (65.0%) and zinc (69.4%), and >100% for vitamin B12 (115.6%) based on the national standard food portion sizes. For both age groups, all nutrients in the FBRs developed based on the national standard food portion sizes achieved ≥65% RNI. **Conclusion:** These findings underscore the potential of national standard food portion sizes to significantly enhance dietary adequacy among undernourished urban poor children.

A27 Association between food security and dietary intake among indigenous (*Orang Asli*) mothers and children aged 6–59.9 months in Terengganu

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Introduction: Food insecurity and inadequate dietary intake are significant public nutrition issues affecting indigenous communities, including Malaysia's *Orang Asli* (OA) populations. This cross-sectional study investigates the association between food insecurity and dietary diversity among OA mothers and children in Terengganu, Malaysia. **Methods:** Ninety-one OA mother-child pairs from *Kampung Sungai Berua and Kampung Sungai Pergam* were purposively sampled. Data were collected via face-to-face interviews. Food security was assessed using the Malay version of the Radimer/Cornell Hunger and Food Insecurity Instrument. Dietary diversity scores (DDS) were calculated based on three non-consecutive days of 24-hour diet recalls, using the Women's Dietary Diversity Score for mothers and the Minimum Dietary Diversity Score for children. **Results:** The mothers had an average age of 26.5±5.6 years (range 16-40 years) while the children averaged 36.8±17.7 months (range 6-59.9 months). The study found high food insecurity among OA mother-child pairs (97.8%), with significant levels of child hunger (54.9%), individual/adult food insecurity (34.1%), and household food insecurity (8.8%). About 53.8% of OA mothers (average DDS: 4.6±1.2) and 47.3% of children (average DDS: 3.6±1.2 for 6-23.9 months; 3.5±1.0 for 24-59.9 months) achieved adequate dietary diversity. While grains, roots, and tubers (100%), fish, and meat (89.0-96.7%), and some fruits and vegetables (57.1-75.8%) were commonly consumed, legumes, nuts, and seeds (100%), vitamin A-rich fruits and vegetables (87.9-93.4%), eggs (75.8-76.9%), and dairy products (53.8-98.9%) were lacking in the diets. Despite the high prevalence of food insecurity, Fisher's exact test did not show any significant association between food security status and DDS. **Conclusion:** The findings underscores the urgent need for interventions to improve the accessibility and consumption of nutrient-rich foods among OA communities in Terengganu, particularly vitamin A-rich vegetables and fruits, eggs, and dairy products. Addressing these nutritional gaps is crucial for enhancing the overall health and well-being of OA mothers and children.

A28 Food Security, diet quality and their associations with nutritional status among *Orang Asli* women in Terengganu

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Introduction: Indigenous women, particularly the *Orang Asli* (OA) in Malaysia, face profound challenges including socioeconomic disparities and health inequities. This study investigated food security, diet quality and their associations with nutritional status among OA women in Terengganu. **Methods:** This cross-sectional study involved 135 eligible OA women aged 19–59 years from *Kampung Sungai Berua* and *Kampung Sungai Pergam* in Terengganu, selected through purposive sampling. Data on sociodemographic characteristics, food security (assessed using the Food Insecurity Experience Scale), dietary intake (collected using 24-hour diet recalls over three non-consecutive days), and anthropometry were obtained through face-to-face interviews. Diet quality was evaluated using the Malaysian Healthy Eating Index (HEI). **Results:** The majority of subjects were from the *Semoq Beri* sub-tribe (83.0%), married (88.9%), housewives (78.5%), and lived in B40 households (98.5%). Over half (63.7%) were overweight or obese, and 62.9% exhibited a high body fat percentage. Nearly all (97%) experienced food insecurity, ranging from mild (17.8%) to severe (53.3%). Poor diet quality was prevalent (76.3%), with inadequate intake of whole grains (100%), legumes and nuts (100%), milk products (100%), fruits (97.8%), vegetables (94.1%), meat, poultry, and eggs (52.6%), and high sodium intake (60.7%). Approximately 51.9% met the daily recommendations for total grains (3-5 servings), 66.7% for fish (≥1 serving), 31.9% for fat (25-30% of total energy intake (TEI)), and 85.2% for added sugar (<10% of TEI). A significant association was observed between food security and body fat percentage (X^2=4.83; p=0.04). However, no significant association was found between food security or diet quality and body mass index, or between diet quality and body fat percentage. **Conclusion:** Obesity is highly prevalent among OA women in Terengganu. There is an urgent need to support OA women in achieving improved food security and adopting healthier lifestyles to enhance their nutritional well-being and overall health.

A29 Association between sociodemographic factors, personal factors, food security status and diet quality among government employees in Selangor

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Introduction: Diet quality is defined as the degree to which an individual's diet adheres to the concepts of being balanced, healthy, and diverse, as well as providing the necessary nutrients required for a healthy life. Poor diet quality has been linked to malnutrition and heightened risk factors for non-communicable diseases (NCDs). Recent findings from NHMS 2019 indicate a higher prevalence of NCDs among government employees compared to those in the private sector. This study aimed to investigate the association between sociodemographic factors, personal factors, food security status, and diet quality among government employees in Selangor. **Methods:** This cross-sectional study involved a total of 239 participants among The Government of Selangor Office (SUK) and Jabatan Agama Islam

Selangor (JAIS) through multistage sampling. A self- administered questionnaire covered sociodemographic background, food security status, nutrition knowledge, food choice, self-efficacy for healthy eating, and diet quality. Statistical analyses included Pearson correlation, t-tests, and ANOVA, with significance set at $p < 0.05$. **Results**: Among respondents, 69.5% were food secure, 46.0% had moderate nutrition knowledge, and reported high self-efficacy for healthy eating. The top five motives influencing food choices among participants were religion (4.24 ± 0.67), health (4.09 ± 0.62), price (4.05 ± 0.66), convenience (4.03 ± 0.62), and natural content (3.93 ± 0.68). Global Dietary Recommendation (GDR) score of the respondents was (10.42 ± 2.50) suggesting that their diet quality meets at least half of the WHO recommendation. Marital status, nutrition knowledge, food choice motives, and self-efficacy for healthy eating were significantly associated with diet quality ($p < 0.05$). **Conclusion:** Therefore, proactive approach aimed at enhancing self-efficacy for healthy eating, improving nutrition knowledge and empowering individuals to make better food choices could effectively mitigate the risk factors associated with poor diet quality and contribute to improving diet quality.

A30 Perceived stress and eating behaviours among university students: A cross-sectional study

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Introduction: Stress in university life is concerning and has been linked to unhealthy eating behaviours. A cross-sectional study was conducted to explore the association between perceived stress and eating behaviours among university students in Sabah. Additionally, the study compared students' eating behaviours, body mass index (BMI), and physical activity (PA) status based on their perceived stress levels. **Methods:** A total of 160 students (63 males and 97 females) from Universiti Malaysia Sabah (UMS), aged 18 to 26 years, were involved in this study. Data were collected using a self-administered questionnaire that included sociodemographic information, the Perceived Stress Scale (PSS-10), the Dutch Eating Behaviour Questionnaire (DEBQ), and assessments of BMI and PA (IPAQ). **Results:** The mean perceived stress score was 19.09 ± 4.40. Most students (85.6%) had moderate stress levels, followed by low (9.4%) and high stress levels (5.0%). In terms of eating behaviours, 68.8% of the students exhibited external eating, 16.3% exhibited emotional eating, and 15.0% exhibited restrained eating. The mean scores for emotional, external, and restrained eating were 1.61±0.59, 2.39±0.67, and 1.51±0.79, respectively. Perceived stress was positively associated with emotional eating ($r=0.312$, $p<0.001$) and external eating ($r=0.262$, $p<0.001$), but not with restrained eating ($r=0.104$, $p=0.193$). The comparison between perceived stress levels showed that the moderate and high stress groups had significantly higher emotional ($p=0.001$) and external eating scores ($p<0.001$) than the low stress group. Additionally, the moderate stress group had a higher restrained eating score ($p=0.042$) compared to the low and high stress groups. No significant differences were noted in BMI and PA between the levels of perceived stress. **Conclusion:** Stress among university students was linked to unhealthy eating behaviours. The mechanisms connecting stress and eating habits should be explored to help students adopt healthier behaviours to manage stress.

A31 Association between physical activity and nutritional status among Orang Asli women in Terengganu

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Introduction: Modernisation and urbanisation have brought about lifestyle changes and increased risks of obesity and related chronic diseases among the *Orang Asli* (OA) in Malaysia. Given their rapid nutrition transitions, understanding the levels of physical activity and nutritional status among OA population is crucial. Therefore, this study aims to determine the association between physical activity levels and nutritional status among OA women in Terengganu. **Method:** This cross-sectional study was carried out among 135 OA women aged 19-59 years in Kampung Sungai Berua, Kuala Berang and Kampung Sungai Pergam, Kemaman. Sociodemographic data were collected using interview-administered questionnaires. Measurement of weight and height were taken to assess body mass index (BMI), and body composition was measured using bioelectrical impedance analysis. Physical activity levels were determined using the International Physical Activity Questionnaire (IPAQ). **Results:** Majority of the respondents were from the *Semoq Beri* sub-tribe (83%), followed by *Jakun* (14.8%) and *Temiar* (2.2%). Approximately 78.5% were housewives and most came from B40 household (98.5%). Based on the BMI categories, nearly half (57.8%) were classified as obese, 30.4% as normal, 5.9% as underweight and 6.7% as overweight. Body fat classification revealed that 40.7% of respondents had a very high body fat percentage, 31.2% were normal, 22.2% were high and 5.9% were low. The prevalence of low, moderate, and high physical activity levels were 25.9%, 60.0% and 14.1%, respectively. The Pearson's Chi-square test revealed that body mass index (X^2 =10.29; p = 0.006) and body fat percentage (X^2 = 6.056; p = 0.048) were significantly associated with physical activity. **Conclusion:** This study highlights a high prevalence of overweight or obesity among OA women. Therefore, targeted nutrition intervention programs aimed at increasing physical activity are essential for preventing obesity and related chronic diseases among OA women.

A32 Meal timing, energy and macronutrient intake and body mass index status among degree and diploma nursing students of health campus in Universiti Sains Malaysia

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Introduction: The present study aims to determine if there is any association between BMI and meal timing, energy and macronutrient intake among diploma and nursing undergraduates. **Methods:** This was a cross-sectional study involving 103 participants consisting of degree and diploma nursing students aged 19-26 years old in the School of Health Sciences, Universiti Sains Malaysia Kubang Kerian, Kelantan. The socio-demographic background was obtained through a form created by the researcher while the dietary habits and meal timing were assessed using a 24-Hour Dietary Recall form. The energy intake was classified into early eating window and late eating window which was calculated based on the time of mid-point eating of each participant. **Results:** The main findings include no significant association between meal timing and BMI status for both lunch (p=0.678) and dinner (p=0.121) while there is a significant, very strong and positive relationship (r=0.51, p <0.001) between energy intake and BMI status. **Conclusion:** Interventions and education

on healthy eating habits must be carried out intensively among university students as it was found that 57.1% of the obese students consumed more food during the late window which might be one of the factors that contribute to weight gain.

A33 The relationship between patients' satisfaction and plate waste in hospital food service at Hospital Universiti Sains Malaysia

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Introduction: Hospital food services play a crucial role in providing patients with nourishment and comfort, significantly impacting their physical and mental health, and accelerating their recovery. The main considerations for hospital menus include clinical requirements, patient preferences, variety, quality, and flavour of the food. This study aimed to evaluate the level of patient satisfaction with hospital food service, assess plate waste in Hospital Universiti Sains Malaysia (HUSM), and determine the relationship between these two variables. **Methods:** A cross-sectional study with a quantitative approach was conducted using a questionnaire. The questionnaire comprised three parts: socio-demographics, patients' satisfaction using the Acute Care Hospital Foodservice Patient Satisfaction Questionnaire (ACHFPSQ), and plate waste using the Comstock-6 Point scale. The study focused on dinner meals. Data were analysed using SPSS Version 27.0, employing Mann-Whitney, Kruskal-Wallis, Spearman's correlation, and simple linear regression tests to achieve the study objectives. **Results:** A total of 164 patients participated in this study. The percentage of overall patients' satisfaction are 29.3%, 48.2%, 20.7%, 0.6%, and 1.2%, who rated food services as very good, good, okay, poor, and very poor, respectively. Four dimensions of food services were tested, and the factor scores out of 5 were 3.75 for food quality, 4.29 for meal service quality, 3.95 for staff/service quality, and 4.45 for the physical environment. The mean plate waste percentage for dinner was quantified at 43.75%. The findings also show a statistically significant relationship between patient satisfaction and plate waste ($p=0.001$). **Conclusion:** As conclusion, the observed correlation emphasizes the interconnected nature of the two variables and suggests that higher patient satisfaction can potentially reduce plate waste. Further studies could specifically explore different mealtimes to better understand and assess this relationship.

A34 Poor adherence to Malaysian dietary guidelines among primary school children in Peninsular Malaysia

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Introduction: Adherence to recommended dietary guidelines is essential to ensure children receive optimal and balanced diet, providing the energy and nutrients needed for physiological development. This study aims to assess compliance of primary schoolchildren's dietary intake with Malaysian Dietary Guidelines for Children and Adolescents (MDGCA 2023). **Method**: This analysis included 1,440 children who participated in South East

Asian Nutrition Surveys (SEANUTS II) Malaysia, representing 2.3 million children aged 6.0-12.9 years in Peninsular Malaysia. Dietary intake data was collected using one-day triple-pass 24-hour dietary recall interviews. Food items were categorised into seven food groups according to Malaysian Food Composition Database, and total servings intake was compared with MDGCA 2023 recommendations. **Results**: Overall, older children (aged 10.0-12.9 years) consumed higher servings of cereals/grains (4.97 vs. 4.54, $p<0.001$), fruits (0.62 vs. 0.51, $p<0.05$), and vegetables (1.17 vs. 0.82, $p<0.001$) compared to their younger counterparts (aged 6.0-9.9 years). Intake of recommended servings of poultry/meat/eggs, cereal/grains, and fish were met by 65.8%, 63.7%, and 22.0% of children, respectively. Less than 10% consumed enough servings of fruits (6.5%), vegetables (7.1%), legumes (3.6%), and milk/dairy products (5.7%). Notably, a larger proportion of younger children met recommended cereal/grains (71.4% vs. 55.8%, $p<0.001$) and poultry/meat/eggs intake (74.7% vs. 56.6%, $p<0.01$). For vegetables intake, more older children (10.0%) consumed the recommended amount compared to younger children (4.2%, $p<0.001$). **Conclusions**: Primary schoolchildren in Peninsular Malaysia generally displayed poor adherence to MDGCA 2023 recommendations across all food groups, except for poultry/meat/eggs. Effective and sustainable interventions are warranted to improve dietary habits of Malaysian children, particularly in promoting intake of under-consumed food groups.

A35 Dietary glycaemic index, body mass index and waist circumference among young adults studying at university

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Introduction: A diet that is habitually high in glycaemic index (GI) has been found to be inconsistently associated with non-communicable disease risk factors such as increased body mass index (BMI) and waist circumference (WC), respectively. We aimed to estimate mean dietary glycaemic index (dietary GI) and examine the relationship between dietary GI and BMI as well as WC, respectively, in a sample of young adults studying at university. **Methods:** This cross-sectional study involved 103 young adult undergraduate students of one Faculty at Universiti Malaysia Sabah (UMS) selected through random sampling. Their weight, height and WC were measured using standard procedures. BMI was calculated using a published formula. Information to estimate dietary GI were collected from three-day food records and estimated using a published formula and references. Statistical analysis involved frequency analysis, descriptive statistics as well as Pearson and Spearman correlation tests. **Results:** The dietary GI was 60.23 ± 5.76 (mean ± sd; n=103). The majority of respondents (71.8%) had moderate dietary GI (56-69). Correlation tests showed that there was no relationship between dietary GI and BMI and WC ($p>0.05$), respectively. **Conclusion:** Dietary GI may not play a significant role in BMI and WC status in this sample of young adult population studying at university. These study findings provide preliminary data for future larger-scale studies on dietary GI in the population.

A36 Variations in maternal nutritional intake and diet quality between workdays and workfree days among pregnant women in Malaysia

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Introduction: Diet quality during pregnancy is related to the maternal nutritional status and pregnancy outcomes. Lifestyle and eating habits on workday and workfree day may differ and need to be considered separately. This study aimed to investigate and compare the dietary intake and quality in Malaysian pregnant women on workday and workfree day. **Methods:** This was a prospective cohort study conducted among pregnant women in their second and third trimesters, recruited from 14 government maternal and child health clinics in Malaysia. Socio-demographic background was obtained through a questionnaire. Workday and workfree day meal consumption was assessed using a 2-days food recall. Each serving size and HEI score were calculated using the dietary data. Anthropometric data was taken from clinic records. **Results:** The study included 391 pregnant women. Mean age of pregnant women was 29.38 ± 4.18 years. Most of the women were Malay (71.4%), had tertiary education (67.6%), and from middle monthly household income category (53.4%). Mean total HEI for workday and workfree day was 37.34 ± 12.89 and 36.95 ± 12.08, respectively. There were no significant differences in the diet quality between workday and workfree day, but the mean total daily energy intake and the intake of micronutrients differed. Total mean energy intake was higher ($z = 2.38$, $p < 0.05$), dietary fiber was lower ($z = 2.51$, $p < 0.05$), and calcium intake was lower ($z = 2.68$, $p < 0.01$) on workfree day. Furthermore, the prevalence of skipping breakfast was significantly different, ($\chi^2 = 4.50$, $p < 0.05$), with more pregnant women skipped breakfast on workfree day than workday. **Conclusion:** Overall, pregnant women had low diet quality with inconsistency in dietary intake during workday and workfree day. Therefore, future studies are warranted to observe factors to difference and education to highlight the low diet quality issue.

A37 Determinants of vegetable and fruit intake among overweight and obese adolescents in Selangor

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Introduction: Substantial scientific evidence supports the consumption of vegetables and fruits as essential for maintaining overall health, particularly due to their protective effects against chronic diseases like obesity. However, in Malaysia, fruit and vegetable consumption remains low, and data on the factors influencing intake among adolescents has not progressed. **Objective:** Therefore, this study aims to assess the prevalence of fruit and vegetable intake among adolescents in Malaysia and identify the factors influencing this consumption behavior. **Methods:** This study utilized a cross-sectional design, conducting a comprehensive survey among adolescents attending government secondary schools in Selangor. Data was collected through an online validated questionnaire distributed to the participants and subsequently analyzed using IBM SPSS 28. **Results:**

A total of 277 adolescents participated in this study. The overall prevalence of vegetable consumption was low, at 23.5%. Adequate vegetable intake (>3 servings) was met by 14.8% of adolescents with thinness, 25.2% of overweight adolescents, 15.0% of obese adolescents, and 27.1% of those with normal weight. In contrast, more than 60% of the adolescents consumed at least 2 servings of fruits. Beyond BMI-for-age (p=0.022), sociodemographic factors were associated with the prevalence of fruit and vegetable intake. Personal factors such as attitude (p=0.040) and habit (p=0.024) were linked to vegetable and fruit intake, respectively. Additionally, physical-environmental factors like the availability of fruits at home (p=0.045), at school (p=0.019), and at friends' houses (p<0.001) were significantly associated with fruit consumption. **Conclusions:** The study indicates that personal and physical-environmental factors significantly influence vegetable and fruit intake among adolescents, particularly those who are overweight or obese in Selangor. These findings suggest that future intervention strategies to promote fruit and vegetable consumption should consider both factor domains.

A38 Association between food neophobia and fruits and vegetables intake among preschool children in Kuala Nerus, Terengganu

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Introduction: Adequate daily consumption of fruits and vegetables is vital for a healthy diet as they supply essential nutrients and bioactive compounds, such as vitamins, minerals, fibers, and phytochemicals essential essentialfor children's growth and development. Findings from the SEANUTS Malaysia reported that most children tend to consume insufficient amounts of fruits and vegetables. This cross-sectional study aimed to identify the association between food neophobia and fruits and vegetables intake among preschool children in Kuala Nerus, Terengganu. **Methods:** This study involved 385 preschool children aged 4 to 6 years old and their parents, who were recruited from 54 selected KEMAS preschools using a a convenience sampling method. Research instruments included the sociodemographic background questionnaire, the the Child Food Neophobia Scale (CFNS), and a a semi-quantitative Food Frequency Questionnaire (FFQ). Pearson's Chi-square and Spearman's Correlation tests were sutilised for statistical data analysis. **Results:** The The mmean age of the participants was 5.17 ± 0.73 years, with 196 boys (50.9%) and 189 girls (49.1%). The The mmedian CFNS score was 43.00 (11.00). Among the preschoolers, 203 (52.7%) had high food neophobia, while 182 (47.3%) had low food neophobia. The The median median intake of fruits and vegetables were 2.10 (3.25) and 1.12 (1.66) servings daily, respectively. About 202 (52.5%) achieved the recommended intake of fruits (≥2 servings/ day) and 101 (26.2%) achieved the recommended intake of vegetables (≥2 servings/day). There was was no association between food neophobia with fruit intake (x^2=0.011, p=0.917) and vegetable intake (x^2=0.003, p=0.953). **Conclusion:** Food neophobia is prevalent among preschoolers in Kuala Nerus, Terengganu, and does not appear to be associated with their intake of fruits and vegetables. Interventions aimed at increasing the consumption of fruits and vegetables should focus on reducing food neophobia to promote better dietary habits from an early age. Future research should explore longitudinal studies to examine the long-term impact of early dietary interventions on food neophobia and dietary patterns. Foodprevalent in Kuala Nerus, Terengganu, and does not appear to be associated with their intake of fruits and vegetables Interventions aimed at increasing the consumption of fruits and vegetables should focus on reducing food neophobia to promote better dietary habits from an early age. Future research should explore longitudinal studies to examine the long-term impact of early dietary interventions on food neophobia and dietary patterns.

A39 Factors associated with body weight status among young children aged 6-36 months in Johor Bahru and Kulai, Johor

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Introduction: Malnutrition is an emergent public health problem that could lead to impaired child growth and cognitive development which in turn will dramatically increase the risk of obesity and non-communicable chronic diseases in adulthood. This study aimed to determine factors associated with body weight status (BMI-for-age) among young children aged 6-36 months in Johor. **Method:** A cross-sectional study involving 175 pairs of mothers and children aged six to 36 months was conducted in 8 health clinics in Johor Bahru and Kulai, Johor. A self-administered questionnaire was used to obtain information on socio-demographic background, maternal factors including parental feeding practice, parenting style, children eating behaviour and dietary intakes of both mothers and children. **Results:** A majority of the mothers aged 30-39 years old (59.4%), Malays (89.7%), attained at least tertiary education (42.6%), working (54.9%), and B40 household income (76.0%). About half of the mothers were overweight and obese, with an average BMI of 25.67±4.93 kg/m^2. The prevalence of overweight and obesity among the young children was 5.7%, with mean BAZ of 15.93±2.21 kg/m^2. In the present study, simple linear regression and stepwise multiple linear regression analyses were conducted. All variables that had a $p<0.25$ in simple linear regression model were included in stepwise multiple linear regression model. There were maternal fat mass ($\beta=-0.90$, $p<0.25$), birth weight ($\beta=0.13$, $p=0.072$), modelling ($\beta=-0.12$, $p<0.25$), parenting style ($\beta=-0.13$, $p<0.25$), children energy intake ($\beta=0.16$, $p<0.25$), children protein intake ($\beta=-0.18$, $p<0.25$), maternal energy intake ($\beta=-0.14$, $p<0.25$), and maternal protein intake ($\beta=1.72$, $p<0.05$). Multiple linear regression results showed that parenting style ($\beta=-0.20$, $p<0.05$) and birth weight ($\beta=0.17$, $p<0.05$) were associated with BAZ. **Conclusion:** Future research should engage parents in intervention programs for children. These findings can assist health professionals in educating mothers to promote healthy eating and lifestyle habits among their children.

A40 Factors associated with health-related quality of life (HRQoL) among undergraduate students in Kuala Lumpur and Selangor

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Introduction: University life poses diverse challenges that extend beyond academic performance, significantly impacting the well-being, future health, and societal contributions of students. Unhealthy behaviours, rising mental health concerns, and food insecurity pose growing threats to students' health-related quality of life (HRQoL), highlighting the need for research in this context. Given the limited local research on these issues, especially in the specified context, there is an urgent need to explore and address these factors for the well-being of the student population. This study aimed to investigate factors associated with HRQoL among undergraduate students in Kuala Lumpur and Selangor. **Methods:** A total of 478 respondents participated in the cross-sectional study through multistage sampling. Respondents completed a standardised self-administered questionnaire that

assessed HRQoL, socio-demographic background, depression, anxiety and stress, smoking status, eating behaviour, healthy eating and weight self-efficacy (HEWSE), and food security status. Their body weight and height were measured by the researcher using SECA 217 stadiometer and InBody 270 body composition analyser, respectively. **Results:** Results indicated an overall good HRQoL among undergraduate students, with a mean score of 73.20±14.37, while Physical Functioning had the highest subscale score of HRQoL. The mean scores for the Mental Component Summary (MCS) and Physical Component Summary (PCS) were 66.91±17.77 and 75.71±16.50, respectively. Multiple linear regression analysis showed that being an Indian (B=-5.96, p=0.016), poorer HEWSE (B=0.20, p=0.011), higher financial resources (B=-2.53, p=0.007), higher depression risk (B=-0.49, p<0.001), and frequent supper intake (B=-0.55, p=0.011) were associated with poorer HRQoL (R^2=0.395, F (27,450) =10.89, p<0.001). **Conclusion:** The study suggests that while undergraduate students generally exhibit good health-related quality of life (HRQoL), particularly in the Physical Functioning domain while socio-demographic, psychological, and lifestyle factors significantly influence HRQoL. Further research is needed to understand the inter-relationships of these factors to effectively plan targeted interventions.

A41 Associations of child, parental and household factors with cognitive performance among children aged 4 to 6 years old in KEMAS preschools in Selangor

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Introduction: Poor cognitive performance has become a health concern among children due to its association with adverse outcomes such as reduced attention span, poor social skills, poor academic performance and unpreparedness for primary school. This cross-sectional study aimed to determine the associations of child, parental and household factors with cognitive performance among preschoolers aged 4 to 6 years old from KEMAS preschools in Selangor. **Methods:** A total of 334 respondents, with a mean age of 5.1±0.7 years from 14 randomly selected KEMAS preschools participated in this study. Parents completed an online questionnaire on sociodemographic information, child's screen time, sleep duration, second-hand smoke exposure, parental involvement, parenting styles and household food security. Anthropometric measurements and cognitive performance tests were conducted by researcher in the preschools. Cognitive performance was assessed using the Raven Coloured Progressive Matrices. **Results:** 15.6% of the children showed poor cognitive performance (below average and low/borderline). About one in ten were stunted (11.4%), overweight and obese (12.9%) and underweight (13.5%). The prevalence of household food insecurity was 44.6%. One in five (21.6%) were exposed to second-hand smoke at home. The prevalence of short sleep duration was 43.1%, while 20.7% of the children engaged in more than 2 hours of screen time daily. Mothers (M=56.96, SD=11.88) scored significantly higher in authoritative parenting style compared to fathers (M=52.56, SD=14.03, p<0.001). Mothers (M=48.85, SD=13.90) also showed significantly greater involvement at home, school and home-school conferences compared to fathers (M=41.68, SD=15.13, p<0.001). Children who born earlier (p=0.037), had fewer siblings (p=0.030), had parents with higher educational levels (p<0.001) and from higher income families (p<0.001) showed better cognitive performance scores. **Conclusion:** Interventions should target at high-risk preschoolers, particularly those who born later, with more siblings, had lower parental education and lower family income to improve their cognitive performance.

A42 Comparison of nutritional status, eating behaviour and perceived stress during examination and non-examination weeks among students in Universiti Malaysia Sabah (UMS)

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Introduction: Examination tends to bring changes on university students' nutritional status, eating behaviour and perceived stress levels. This study aimed to compare the nutritional status, eating behaviour and perceived stress between examination and non-examination weeks among students in Universiti Malaysia Sabah (UMS). **Methods:** This cross-sectional study involved 86 UMS students, 40 males and 46 females. Data was collected using a self-administered questionnaire which consists of sociodemographic, anthropometry, dietary assessment, Dutch Eating Behaviour Questionnaire (DEBQ) and Perceived Stress Scale (PSS-10). Data was analysed using SPSS version 29.0. **Results:** This study observed that normal BMI recorded the highest number of students in both exam (59.3%) and non-exam weeks (62.8%). Besides, majority of the students had moderate stress level in both time points (exam: 77.9%; non-exam: 80.2%). No significant differences were found in the weight, height and BMI between exam and non-exam weeks ($p>0.05$). Moreover, there was no significant differences found in the energy and macronutrients intake of UMS students ($p>0.05$) between exam and non-exam period. In terms of eating behaviour, significant differences were only discovered in the emotional and external eating behaviour among UMS female students, as well as in the emotional eating behaviour among all UMS students ($p<0.05$) between exam and non-exam season. Moreover, no significant difference was observed in the perceived stress level of all UMS students ($p>0.05$) between exam and non-exam weeks despite a higher stress level was experienced by UMS students during exam weeks. **Conclusion:** The adaptation mechanism used, the experience gained, the appropriate coping mechanisms discovered to deal with high-pressure setting, and the ability to recover quickly from hard situations as the year of study moves progressively forward could be used to explain the negligible difference in nutritional status, eating behaviour and perceived stress levels among students in UMS.

A43 Relationship Between Academic Stress, Sleep Quality, And Depression Among Undergraduate Students At UCSI University, Kuala Lumpur

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Introduction: Studies have shown that university students facing depression are more likely to experience symptoms such as poor eating habits, which further result in weight changes, nutrient deficiencies, and chronic health conditions. Depression is frequently related to academic stress and poor sleep quality. However, limited studies have been done among undergraduate students in Malaysia. Hence, this study aimed to determine the relationship between academic stress, sleep quality, and depression among undergraduate students at UCSI University, Kuala Lumpur. **Methods:** A cross-sectional study was conducted among 281 undergraduate students at UCSI University aged between 18 and 24 years old. Various self-administered questionnaires such as the Perception of Academic Stress (PAS) Scale, Pittsburgh Sleep Quality Index (PSQI), and Patient Health Questionnaire-9 (PHQ-9) were used to assess sources of academic stress perceived

by individuals, their past month's overall sleep quality, and the severity of depression, respectively. **Results:** More females (74.0%) than males (26.0%) with a mean age of 21.24 ± 1.39 years participated in this study. A weak and negative relationship between academic stress and depression among undergraduate students at UCSI University was observed (r=-.089, p=0.135). However, there was a statistically significant moderate and positive relationship between sleep quality and depression among undergraduate students at UCSI University (r=0.641, p=0.001). **Conclusion:** The results provide valuable baseline data for future research and highlight interventions to minimize academic stress and poor sleep quality among students which may result in poor eating habits and will affect their overall nutritional status. Future longitudinal studies are required to verify these findings and identify the causal links between these variables.

A44 An index of protein price and quality for Kota Kinabalu, Sabah

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Introduction: Sabah was reported as the poorest state in Malaysia for the past two years. Socioeconomic status is associated with food security and protein intake. This study aimed to determine the pattern of protein intake by Kota Kinabalu adult residents and develop a Protein Source Index (PSI) incorporating protein price and quality for Kota Kinabalu. **Methods:** A cross-sectional study was carried out from March to December 2023 in Kota Kinabalu. A semi-quantitative food frequency questionnaire consisting of 68 protein food items was distributed to adults through quota sampling. The development of PSI involved price surveys from supermarkets and wet markets, determination of protein content per 100g edible protein from the Nutrient Composition of Malaysian Foods, and determination of protein quality using the FAO Amino-acid Content of Foods and Biological Data on Proteins. These elements were ranked respectively and combined to derive the PSI. **Results:** 352 adults (males: 105, females: 247; median age: 33.98±9.06y; indigenous: 70.7%, non-indigenous: 29.3%; household income categories: B40: 39.8%, M40: 43.5%, T20: 16.8%) were recruited. Men and women living in Kota Kinabalu had median protein intake of 107.94g and 90.26g, respectively. Most participants (80.7%) overachieved their recommended protein intake. No association was found between gender (p=0.350) and income category (p=0.769) with achievement of RNI for protein. There was no significant difference in consumption of plant and animal proteins across income categories and ethnicity (p>0.05), but consumption of animal protein was significantly different across religions (p=0.006). Round scad *(ikan basung)* was the cheapest with highest protein content and quality at the top of the PSI. **Conclusion:** The PSI could help nutritionists and general public to plan protein choices better.

Group B: Community Nutrition Promotion, Education & Interventions

B01 Effect of "Nutrition Communication, Empowerment and Leadership (NutriCEL) Programme" on nutrition advocacy skills, healthy lifestyle knowledge and self-efficacy in nutrition students

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Introduction: Communication skills are among the soft skills most needed by nutritionists to advocate for better nutrition in preventing non-communicable diseases. Hence, the Nutrition Communication, Empowerment, and Leadership (NutriCEL) programme was developed to improve nutrition communication, empowerment, and leadership skills, in addition to enhancing nutritional status among nutrition students. **Methods:** This cluster randomised controlled trial was conducted among nutrition degree students from two randomly selected local universities in Klang Valley. The students were randomly assigned to intervention and control groups (IG=54; CG=52), respectively. Both groups completed online surveys consisting of validated questionnaires that assessed their health promotion competency, youth empowerment, knowledge, and self-efficacy towards a healthy lifestyle at pre-intervention and post-intervention, respectively. The IG participated in the NutriCEL programme, which included a two-day training workshop and eight-week nutrition empowerment activities, while the CG received a nutrition consultation. Generalised estimating equation was used to determine the impacts of NutriCEL programme after being adjusted for covariates. **Results:** After adjusting for covariates, the health promotion competencies of the IG improved significantly post-intervention (β=2.862, 95% CI: 0.591, 5.133, p=0.014) compared to CG at pre-intervention. The competencies with significant improvement are basic knowledge of health promotion, advocating for the improvement of health and well-being and applying appropriate evaluation methods. There were no significant changes in knowledge and self-efficacy towards healthy lifestyle and youth empowerment compared to CG at pre-intervention. Although youth empowerment did not change significantly, further analysis found that the dimension of leadership competency (β=1.278, 95% CI: 0.379, 2.176, p=0.005) improved significantly post-intervention compared to CG at pre-intervention. Further, most of the IG participants provided positive feedback on the NutriCEL programme. **Conclusion:** This programme improved nutrition communication and leadership among nutrition students. Hence, it is recommended that this programme be integrated into the current nutrition courses to enhance nutrition advocacy efforts in the country.

B02 Factors associated with breastfeeding self-efficacy levels among mothers after birth in Hospital Sultan Abdul Aziz Shah

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Introduction: Breastfeeding self-efficacy has been shown in previous research to reflect the duration and continuation of breastfeeding. This study aimed to determine the factors associated with breastfeeding self-efficacy levels among mothers after birth in Hospital Sultan Abdul Aziz Shah (HSAAS). **Methods:** This cross-sectional study involved 132 postpartum mothers who gave birth at HSAAS. Breastfeeding self-efficacy was assessed using Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF). Mothers were also asked to complete questionnaires on sociodemographic factors, baby-friendly hospital steps received, postpartum depression, maternal breastfeeding attitude, and birth outcomes. **Results:** The average score of breastfeeding self-efficacy was high which was 57.77 ± 9.16 out of 70, where 76.5% of the mothers had high breastfeeding self-efficacy level. Based on chi-square test, there were significant associations found between breastfeeding self-efficacy and mother's ethnicity (= 9.163, p = 0.01), household income (= 8.628, p = 0.047), parity (= 12.939, p = 0.001), infant's birth weight (= 7.597, p = 0.02), and several baby-friendly initiative steps (Step 4.1: = 6.552, p = 0.029, Step 4.3: = 7.826, p = 0.024, Step 9.1: = 10.231, p = 0.004, Step 9.2: = 9.009, p = 0.021). Pearson correlation test showed negative significant correlation of breastfeeding self-efficacy with postpartum depression (r = -0.176, p = 0.043) and a significant positive correlation with maternal breastfeeding attitude (r = 0.318, p < 0.001). **Conclusion:** In conclusion, it is important to address the aspects of mothers' psychological, their attitude towards breastfeeding, and healthcare support as these factors were associated with breastfeeding self-efficacy and could impact breastfeeding. Since this study lacked data on home breastfeeding practices, future research should track these practices and compare it with breastfeeding self-efficacy to see if it predicts breastfeeding outcomes.

B03 Development and validation of a food atlas

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Introduction: A food atlas is crucial for dietary assessment, aiding in portion size estimation. Published food atlases in Malaysia do not accurately depict the typical portion sizes consumed by the local population, often displaying foods in exchanges and in standard portion sizes. This study aimed to develop and validate a food atlas with photographs of various portion sizes of commonly consumed foods in Malaysia. **Methods:** The food photographs were taken using a portable photography studio with white LED lighting at 45°, along with reference objects such as dessert spoon and fork, glass and measuring tape. The portion size references were drawn from Food Consumption Statistics in Malaysia Adult Nutrition Survey, encompassing the 5th and 95th percentiles. Validation involved 54 participants with food studies background from Universiti Malaysia Sabah, estimating portion sizes through both consumption and visual observation. Conceptualisation – memory test, perception test and adaptation tests were performed. **Results:** A comprehensive atlas of 110 photographs was produced, featuring 14 common food items, namely rice, rice porridge, noodles, *roti canai*, cornflakes, chicken breast, spinach, French bean, brinjal, papaya, pineapple, watermelon, soup and butter. Findings revealed a statistically significant difference ($p<0.05$) between weight of estimated and actual portion size. However, there

were strong correlations between estimated and actual portion sizes for most food items. Estimated portion size and actual portion size matched for most food items. Although there were some proportional biases, they were still within good agreement as determined using the Bland-Altman plot and Intraclass correlation. **Conclusion:** In conclusion, this newly developed food atlas could be a valuable tool for accurate portion size estimation.

B04 Effectiveness of a nutrition programme in improving knowledge, attitude and practice among caregivers of under-five children from urban poor in Kuala Lumpur

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Introduction: The insufficient knowledge, attitude, and practice (KAP) of caregivers concerning child nutrition can undermine their ability to positively influence children's food intake. This, in turn, can affect children's eating habits and nutritional status over time. Yet, there is less emphasis on improving caregivers' KAP within the urban poor communities, highlighting the need for interventions to increase their KAP. Hence, this cluster randomized controlled trial aimed to evaluate the effectiveness of a nutrition programme in improving the caregiver's KAP related to feeding practices, healthy eating, child-care practices, health-seeking behaviours, and intrahousehold food allocation and decision-making power. **Methods**: A total of 74 caregivers of children aged 3 to 5 years from 6 public low-cost flats in Kuala Lumpur were recruited and randomly assigned to either the intervention group (IG; n=37) or control group (CG; n=37). The IG participated in a one-month nutrition programme comprising educational sessions, practical sessions, growth monitoring and cooking demonstrations, whereas the CG received no intervention initially but received educational materials after the study period. A self-administered questionnaire was used to assess the KAP level at baseline (T0), immediate post-intervention (T1), and 3-month post-intervention (T2). The effectiveness of intervention on KAP was analysed using Generalized Linear Mixed Models, controlling for mother's working status, child's age and sex. **Results:** There were significant main effects of the intervention and group-timepoint interaction on caregiver's knowledge and attitude, but not on practice. The knowledge scores of the IG increased significantly by 5.61 and 3.78 at T1 and T2, whereas their attitude scores increased by 8.68 at T2. **Conclusion**: While the nutrition programme effectively improved caregivers' knowledge and attitude, further action may be needed to facilitate the translation of knowledge into actual practices. Future interventions could aim for longer durations and greater intensity to support sustainable behaviour change.

B05 A content analysis of nutrition-related misinformation on social media

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Introduction: The credibility of nutrition-related information circulating on social media platforms could be questionable because individuals lacking proper nutrition credentials can freely share such information. This study aimed to determine the prevalence and

characteristics of nutrition-related misinformation on three social media platforms, namely Instagram, Facebook, and TikTok. **Methods:** Nutrition-related social media posts in three languages (Malay, English, and Mandarin) were collected from Malaysian content creators via convenience sampling from March to August 2023. Chi-square and Mann-Whitney tests were performed to compare characteristics between true information and misinformation. **Results:** A total of 1230 social media posts were identified from 515 Malaysian content creators, and 37.4% of posts were found to contain misinformation. Wrong facts (62.0%) were the most prevalent type of misinformation, followed by misleading information (28.9%) and insufficient evidence (9.1%). TikTok has the highest prevalence of misinformation (48.3%) compared to Instagram (36.9%) and Facebook (23.0%) (p<0.001). Misinformation was predominantly presented in video format (p=0.004) and Malay language (p<0.001). 'Weight management', and 'food and its specific functions' were the most common topics of misinformation. Fitness trainers (42.9%), personal accounts (50.6%), and commercial brands/products (35.9%) shared the most misinformation on Instagram, TikTok, and Facebook, respectively. Misinformation posts received more likes, comments, shares, and views than true information (all p<0.001). **Conclusion:** Overall, nutrition-related misinformation is prevalent on social media and has a greater engagement rate. Future interventions and policies should focus on educating the public in evaluating nutrition information on social media to safeguard them from being misled into engaging in unhealthy dietary practices.

B06 Factors associated with sedentary behaviour among secondary school students in Petaling Perdana, Selangor, Malaysia

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Introduction: Sedentary behaviour has been a concerning issue for decades worldwide. In Malaysia, national surveys found an increasing trend in the prevalence of sedentary behaviour among adolescents, from 50.1% in 2017 to 66.7% in 2022. High sedentary behaviour and low physical activity can contribute to the development of non-communicable diseases (NCDs) among youth. This study aimed to examine the factors associated with sedentary behavior among secondary school students in Petaling Perdana, Selangor, Malaysia. **Methods:** Using convenience sampling, 128 secondary school students from Petaling Perdana were selected. The subjects completed a questionnaire that included sociodemographic background, sedentary behavior, body weight status, behavioral factors, and psychological factors. **Results:** The findings indicated that, on average, students spent 625.48 ± 271.14 minutes daily in sedentary behavior. The majority of students (93.4%) engaged in over four hours of sedentary activity, while 84.4% met WHO physical activity guidelines, 52.4% demonstrated good sleeping habits, 58.1% exhibited a low risk of smartphone addiction, 62.2% had a normal body weight status, and 59.1%, 55.1%, and 48.0% reported normal levels of depression, stress, and anxiety, respectively. Significant associations were found between age (r = 0.360, p = 0.001) and physical activity (r = -0.243, p = 0.008) with sedentary behavior among secondary school students in Petaling Perdana. **Conclusion:** In conclusion, a significant number of secondary school students in Petaling Perdana exhibited sedentary behaviour, although many still met the WHO's physical activity guidelines. Factors such as age and time spent on physical activity were associated with sedentary behaviour, suggesting the need to account for these factors when implementing interventions for adolescents, particularly among school students in Petaling Perdana, Selangor, Malaysia.

B07 Development and validation of a digital photographic food atlas of Malaysian foods as a portion size estimation aid

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Introduction: Portion size estimation aids (PSEE), such as the food atlas, are utilised to improve portion size estimation accuracy in dietary assessments. Moreover, a digital food atlas offers several advantages over other PSEEs, mainly its high accuracy, convenience, and portability. This study aimed to develop and validate a digital photographic food atlas comprising commonly consumed Malaysian foods. **Methods:** Commonly consumed Malaysian foods were selected based on published Malaysian food consumption data. Each item was classified into one of two photo types: a series of photographs depicting gradually increasing portion sizes or guide photographs representing an array of portions and food variations in a single picture. Photographs were taken at a 45-degree angle and were photographed with fiducial markers (standard card, fork, spoon). The photographs were then labelled and compiled into a digital atlas. During the validation study, 41 participants were recruited to estimate the portion of 33 pre-weighted foods with the aid of the food photographs. The validity of the atlas was determined by comparing the actual versus the estimated weight of the test foods using the Wilcoxon signed-rank test. Subsequently, a usability questionnaire was administered to assess the usefulness of the atlas. **Results**: In total, 91 foods were included in the food atlas. Significant differences were present in 24 food items tested in the validation study, ranging from a 54.9% underestimation to a 95.1% overestimation. From the usability questionnaire, the atlas was well-accepted among the participants, with an average score of 3.2 over 4 for the carbohydrate food section and 3.3 over 4 for the protein foods and fruits/vegetables sections. **Conclusions:** This study developed and validated a digital food atlas of commonly consumed local foods, which could help improve the accuracy of portion size estimation in dietary assessments. Further modification and validation are warranted before its widespread use.

B08 Consumer food choice and factors affecting them at wet markets in Kuala Lumpur, Malaysia

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Introduction: The prevalence of overweight and obesity has increased from 50.1% to 54.4% based on NHMS 2019 and NHMS 2023. The obesogenic food environment is a key factor contributing to this phenomenon. Food options and factors influencing food purchase preferences in wet markets in Malaysia are still unknown. Hence, this study aimed to identify food choices and factors influencing food choices at wet markets in urban poor areas of Kuala Lumpur. **Methods:** Three parliamentary constituencies (Batu, Kepong and Bandar Tun Razak) were chosen based on highest percentage of urban poor population in Kuala Lumpur. A list of wet markets in these parliaments was obtained from Kuala Lumpur City Hall (DBKL). Consumers who shop at selected wet markets were recruited via purposive sampling. A questionnaire was developed, and respondents can choose to complete the

survey using either SurveyMonkey or printed questionnaire. **Results:** Thirteen wet markets were identified, and a total of 296 respondents were recruited. More than three-fourths of respondents purchased vegetables (89.5%), followed by fruits (85.5%) as well as meat and chicken (84.1%) at wet markets. The top three factors influencing consumer food purchases at wet markets are affordable prices (95.9%), quality of food products (91.6%), and good service (91.6%). **Conclusion:** Fresh foods are the most frequently purchased items in wet markets. This study revealed that consumers considered various factors when making food choices at wet markets, which remain a relevant source for purchasing healthy foods. Future research should investigate government initiatives aimed at promoting wet markets as a strategy to reduce obesity prevalence in Malaysia.

B09 Predicting sedentary behaviour among the elderly in Malaysia using Machine Learning: Findings from National Health and Morbidity Surveys 2018

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Introduction: Sedentary behavior (SB) is closely associated with cerebrovascular disease, cardiovascular disease, poor mental health, and reduced quality of life among the older population. There is a lack of reports on factors associated with SB among the Malaysian elderly. This study aimed to investigate predictors of SB among Malaysia's elderly population and assess the predictive efficacy of supervised machine learning (ML) models compared to conventional stepwise logistic regression. **Methods**: Utilizing data from the National Health and Morbidity Survey 2018, we examined SB patterns in 3,977 Malaysians aged 60 years and above and explored its association with socio-demographic, lifestyle, and health-related factors. Predictive models of SB were constructed using logistic regression and four ML algorithms—Random Forest, K-Nearest Neighbour, Decision Tree, and Boosting. Key performance metrics: model accuracy, positive predictive value, sensitivity, specificity, F-measure, and area under the receiver operating characteristic curve (AUC), were compared. **Results:** Ethnicity, age, income, physical activity, quality of life, education level, social support, transportation, chronic illness, functional status, and malnutrition were important predictors of SB. Logistic regression excelled in specificity (98.1%) but lagged in sensitivity (9.5%), whereas the ML models exhibited varying strengths and weaknesses. Random Forest, Decision Tree, and K-Nearest Neighbour models demonstrated competitive accuracy (78.3%, 79.0%, and 78.1%, respectively), sensitivity (78.3%, 79.0%, and 78.1%, respectively), and reasonable specificity (51.6%, 52.9% and 52.4%) in identifying sedentary activities. Pairwise comparison of AUCs indicated similar predictive abilities of the logistic regression, Random Forest, and Boosting models, which were superior to Decision Tree and K-Nearest Neighbour. **Conclusion**: The Random Forest model emerged as the most robust choice, exhibiting a good balance between accuracy, AUC, sensitivity, and specificity, rendering it potentially suitable for predicting SB among the elderly population. Further research and validation are warranted to refine the model's applicability in diverse contexts.

B10 Adherence to 24-hour movement behaviours and its relationship with motor skills and executive function among 3- to 4-year-old preschoolers in Selangor, Malaysia

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Introduction: The 24-hour movement behaviours comprising sleep, sedentary behaviour and physical activity, are important for health and well-being of preschoolers. Low physical activity level, prolonged sedentariness and insufficient sleep may impair children's motor skills and executive function. **Methods:** This cross-sectional study determined the adherence to 24-hour movement behaviour among 46 children aged 3 to 4 years from 11 preschools in Selangor and its relationship to motor skills and executive function. Information on children's sociodemographic characteristics, sleep duration and sedentary screen time were obtained through a questionnaire while physical activity levels were assessed through 5-day tri-axial accelerometery recording. Gross and fine motor skills was assessed through five tests, namely Supine-Timed Up and Go, standing long jump, one-leg standing balance, hand grip dynamometer and 9-hole pegboard while executive function was assessed through iPad games namely Mr Ant and Go/No-Go. **Results:** On average, children spent 103 minutes in sedentary screen time, 65 minutes in moderate-to-vigorous physical activity, 658 minutes sleeping and 359 minutes in total physical activity. An estimated 21.7% of the children met the 24-hour movement behaviour recommendations. Overall, adherence to 24-hour movement behaviours was neither associated with motor skills nor executive function. **Conclusion:** The 24-hour movement behaviour of children is not correlated with their motor skills and executive function at an early age. In light of the low-adherence to 24-hour movement behaviours, the findings support the need for preschools to incorporate more physical activity in the learning curriculum.

B11 A systematic review of health outcomes associated with sustainable diets

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Introduction: The growing recognition of sustainable diets is driven by their potential to tackle various issues such as public health, environmental sustainability, and social equity. Sustainable diets are often discussed solely in terms of their environmental impact, neglecting their economic and social dimensions. However, understanding the complete picture of sustainable diets requires considering all four aspects: environmental, economic, social, and health. In summary, this study aims to assess the health benefits of adhering to sustainable diets and investigate the dietary impacts on both human health and the environment. **Method:** A systematic search was conducted in PubMed/MEDLINE, Scopus, and Clarivate Analytics Web of Science using relevant keywords to find eligible articles up to March 2024. This systematic review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement. **Results:** The present

systematic review includes 61 studies to investigate the health and environmental outcomes of sustainable diets. The Mediterranean Diet (MD) is highlighted as a sustainable dietary pattern with both environmental and health benefits. Adherence to the MD is associated with reduced carbon and water footprints, as well as a lower risk of chronic diseases such as diabetes and cardiovascular diseases. Plant-based diets, including the EAT-Lancet or Planetary health diet, also show positive outcomes for the environment and human health. These dietary patterns contribute to decreased greenhouse gas emissions, reduced land use, and improved health markers such as decreased body mass and blood pressure. **Conclusion:** In conclusion, this study highlights the importance of sustainable diets in addressing the challenges of public health, environmental sustainability, and social equity. Promoting sustainable and healthy dietary practices should be a priority in efforts to create a more sustainable and resilient food system.

B12 Stocking decisions of food and beverages among wet market retailers in urban poor areas of Kuala Lumpur: A qualitative study

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Introduction: According to NHMS (2023), over half a million adults in Malaysia live with four non-communicable diseases (NCDs), with the obesogenic food environment being a key factor influencing this high prevalence. Food availability in the retail food environment, particularly wet markets, remains understudied. Thus, this study aimed to identify stocking decisions of food and beverages by wet market retailers in urban poor areas in Kuala Lumpur. **Methods:** Wet markets in Batu, Kepong and Bandar Tun Razak parliamentary constituencies were identified using data from Kuala Lumpur City Council (DBKL). Retailers were recruited via purposive sampling until data saturation was achieved. A semi-structured interview guide was developed and used to conduct interviews with participants. Thematic analysis was used to analyse the data. **Results:** A total of thirteen wet markets were identified and thirty wet market retailers were interviewed face-to-face. Nine themes emerged from the interviews: profitability, low cost price, quality/healthiness and freshness of products, seasonal products, having online business, product origin, expiry dates, customer satisfaction, and customer demand. **Conclusion:** Various factors influence wet market retailers' decision in stocking food and beverages in their premises. Despite the trend of consumers shifting to modern retailers for quality products, wet markets continue to attract costumers with their fresh produce. Wet market retailers are committed to ensuring that their products are of the highest standards and meet consumer expectation. Future studies should explore the types of food sold in wet markets and purchasing behaviours of consumers when compared to their shopping habits at modern retailers.

B13 Association between sociodemographic factors, cost of living, financial problems, financial literacy, materialism and food security status among government employees in Selangor

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Introduction: The lack of accessibility to nutritious and adequate food intake can increase the risk of non-communicable diseases (NCDs) such as obesity, cardiovascular diseases (CVD), diabetes, mental health disorders, and other diseases. Other factors can contribute to food insecurity especially nowadays is rising cost of living being the main issue. This study investigates the association between sociodemographic factors, cost of living, financial problems, financial literacy, materialism and food security status among government employees in Selangor. **Methodology:** A cross-sectional study was conducted among 244 respondents at the Government of Selangor Office (SUK) and Jabatan Agama Islam Selangor (JAIS) through multistage sampling. The chi-square test and Fisher exact test were applied. **Results:** Majority of the respondents were females, Malay, married, have tertiary education level and the mean age was 35.81±7.68 years old. The mean of individual income among respondents was RM2905.09±1257.79 and mean of household monthly income of the respondents was RM5035.62±3560.83, half of the respondents were from B40 households (50.8%). The respondents had high materialism (52.9%), financial literacy (50.4%), and food security (69.3%), while having low financial problems (54.5%). A significant association found between gender, education level, value from assets, savings, food expenditure, and financial problems as a contributing factor to food insecurity among government employees in Selangor ($p<0.05$). **Conclusion:** Despite the majority of the respondents having low financial problems, high financial literacy and materialism, 30.7% of the respondents still suffer from food insecurity. Understanding how sociodemographic factors, cost of living, financial literacy, financial problems, and materialism influence food security status can assist government agencies in managing and controlling food insecurity in Malaysia.

B14 Impact of the Putra Community Nutrition Ambassador Programme (PUTRACNAP) on nutritional knowledge and family relationships among children and their mothers from urban-poor background

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Introduction: Recent evidence highlights that integrated agriculture and nutrition education programmes can significantly improve children's fruit and vegetable intake and overall nutritional outcomes. However, there is a lack of evidence regarding the broader effects of these programmes on nutrition and health outcomes for children from urban-

poor background. This study evaluated the effectiveness of the PUTRA Community Nutrition Ambassador Programme (PUTRACNAP) on mother-child nutritional knowledge and relationship among urban poor groups. **Methods:** This cluster randomized controlled trial involved 10 low-cost flats in Kuala Lumpur, with 37 pairs of children (aged 7-12 years) and their mothers. Nineteen pairs of mothers and children in the intervention group received a 12-week intervention programme consisted of interactive and fun nutrition and urban farming activities, while another 18 pairs of them in the control group receive basic nutrition advice. Both children and mothers completed standardized questionnaires at pre-intervention, post-intervention, and three-month follow-up, and data were analysed using Generalized Estimating Equation (GEE). **Results:** There was a significant increase in nutritional knowledge at post-intervention for children in the intervention group (B=3.152, 95% CI:6.123, 4.324, p=0.038) compared to the control group, adjusting for covariates. The mother-child relationship in the intervention group was significantly higher at the three-month follow-up (B=2.442, 95% CI:4.725,4.400, p=0.036) compared to the control group, after adjusting for covariates. However, no significant difference was found in maternal nutritional knowledge between the intervention and control groups at both post-intervention and three-month follow-up (p>0.05). **Conclusions:** PUTRACNAP was effective in improving nutritional knowledge of the children and mother-child relationships among those who completed the programme, though the changes of maternal nutrition knowledge were not significant. The findings reflect the importance of starting young with nutrition education, and show that integrating nutrition and urban farming are feasible in families living in urban-poor settings. Future programmes should consider expanding these components to enhance overall effectiveness.

B15 Associations of sociodemographic factors, burnout and barriers with Baby-Friendly Hospital Initiative (BFHI) compliance among healthcare providers in a teaching university hospital

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Introduction: BFHI compliance among healthcare providers in health facilities is a significant key to successful BFHI implementation and 'Baby-friendly' accreditation. This study aimed to determine factors associated with BFHI compliance among healthcare providers in a teaching hospital, Hospital Sultan Abdul Aziz Shah (HSAAS), which currently has not been accredited as 'Baby-friendly'. **Methodology:** A cross-sectional study involving 105 hospital staff recruited from three departments related to maternal and child healthcare services in HSAAS. The variables were assessed using a self-administered questionnaire. UNICEF/WHO Hospital Self-Appraisal Tool was used to assess BFHI compliance among the providers with a cut-off of 80% indicating a high level of compliance. **Results:** Majority of the providers (n=85, 81.0%) reported high compliance with BFHI steps. Overall score of BFHI compliance indicated a good level of BFHI implementation with a mean score above 80% (M=89.26%, SD=13.74). Age was significantly associated with providers' BFHI compliance (r=0.211, p=0.031). Profession, working department and unit were also found to have significant association with BFHI compliance (p<0.01). Barriers were found to be significantly associated with BFHI compliance (r=-0.209, p=0.032), especially inadequate support and resources (r=-0.21, p=0.030), and lack of clear policies and collaboration among the staff (r=-0.236, p=0.016). Burnout was found to have no significant association with BFHI compliance. **Conclusions:** High compliance level with BFHI among providers in HSAAS indicates the hospital's readiness towards accreditation as 'Baby-friendly'. Findings from this study could act as baseline data for continuous monitoring and improvement of

BFHI practices in HSAAS, even after accreditation. Significant factors associated with BFHI compliance such as age, professions, working divisions, and the barriers identified, can guide the hospital to plan better future interventions. Posting clear policies and gaining support from leadership may help improve BFHI compliance.

B16 Development and validation of digital nutrition education materials for parents of preschoolers

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Introduction: There is a lack of digital nutrition education materials developed for parents of preschoolers in Malaysia. Therefore, this study was aimed to develop digital nutrition education materials for Malaysian parents of preschoolers and to evaluate their understandability and acceptability. **Methods:** This was a cross-sectional study consists of three phases. Phase I involved the development of infographics and videos. Phase II included content validation by a panel of experts. Phase III involved evaluating understandability and acceptability of infographics and videos by parents of preschoolers. Socio-demographic data were collected from parents using a questionnaire. Content validation and evaluation of understandability and acceptability were conducted using Patient Education Materials Assessment Tool (PEMAT) questionnaires. **Results:** Four modules were developed, covering the topics: Mindful Eating, Food Safety and Hygiene, Healthy Menu Plan, and Reward System. A total 5 experts and 30 parents evaluated the infographics and videos. Average PEMAT score for understandability and actionability for all four modules ranged from 85% to 100%, with no significant differences found between modules for the scores of infographics and videos. Overall average scores for acceptability were 4.4 ± 0.6 for infographics and 4.3 ± 0.6 for videos, with no significant differences found between the scores of infographics and videos. **Conclusion:** Infographics and videos for four modules are successfully developed and demonstrated good understandability, actionability dan acceptance by both experts and parents. These materials can be adopted as education tools for online nutrition learning and guide for parents of preschoolers.

B17 Impact of exercise intensity on appetite regulation and acylated ghrelin responses – in female university students: a randomized crossover study

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Introduction: The impact of exercise on appetite regulation and energy intake has been mainly studied in men, with uncertain applicability to women due to gender differences in responses. The study aimed to assess the impact of exercise intensity on appetite and gut hormone responses in female university students. **Methods:** Thirteen healthy females (22 ± 1.96 years; 22.4 ± 2.51 kg m^{-2}) completed three experimental conditions: control with no exercise, and two low- and high-intensity 45 minutes treadmill sessions at 60% and 85% age-predicted maximal heart rate respectively, in a random crossover design, and at least 1-week apart. Subjective appetite ratings via visual analogue scale (VAS), food liking, and food amount preferences were assessed using a questionnaire before and after each trial. Blood samples were drawn to determine plasma acylated ghrelin concentrations immediately post-

exercise trials. Data was analysed using the SPSS version. **Results:** Acylated ghrelin levels increased ($p<0.001$) immediately post-exercise across all experimental trials. VAS ratings of delta hunger were significantly higher in both the low ($p = 0.042$) and high-intensity trials ($p = 0.034$) compared to the control. Food liking and food amount preference changes did not show significant differences across all study conditions. However, significant differences were observed in the main effect of time -on food amount preferences in high-intensity ($p = 0.036$) and low-intensity exercise trials ($p < 0.001$). **Conclusion:** Our study suggested that acute exercise induces a compensatory effect on appetite among women, counteracting energy deficits incurred during exercise. This effect was mediated by increased hunger perception, driven by elevated acylated ghrelin levels following exercise trials, regardless of intensity. Further study is required to understand the mechanisms behind compensatory responses in women to develop effective exercise interventions for weight management and obesity prevention.

B18 Nutrition label literacy among adolescents in east coast of Peninsular Malaysia

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Introduction: Adolescence is a pivotal period for the formation of lifelong dietary habits and nutrition knowledge. Understanding nutrition labels is crucial for adolescents to make informed, nutrient-dense food choices as they gain more independence. These choices will significantly impact their long-term health and well-being. Therefore, this study aims not only to determine level of nutrition label literacy among adolescents aged 13 to 16 years in East Coast of Peninsular Malaysia but also to provide valuable insights into factors influencing their dietary habits and nutrition knowledge. **Methods:** A cross-sectional study involving 310 students aged 13 to 16 years from public secondary schools in East Coast of Peninsular Malaysia was conducted. The online questionnaire that participants filled out using Google Forms covered three main domains of nutrition label literacy: understanding and interpretation of nutrition labels, skills in using nutrition labels, and attitudes toward nutrition labels. The questionnaire also contained sections on sociodemographic and anthropometric information. **Results:** Participants demonstrated intermediate nutrition label literacy, with mean scores of 5.1±1.1 for understanding and interpretation, and 5.1±1.3 for attitude. The skills domain was reported as intermediate, with a mean score of 66.9±21.8%. Overall, nutrition label literacy across all domains was intermediate. Significant associations were observed in the skills domain, with females scoring higher than males ($p<0.05$), and higher maternal education levels were associated with better skills outcomes ($p<0.05$). No significant differences were found between level of literacy and sociodemographic factors, including age, parental marital status, parental education, and family socioeconomic status. **Conclusion:** This study reveals that adolescents in East Coast of Peninsular Malaysia possess intermediate level of nutrition label literacy. The findings suggest potential areas for intervention, including educational programmes focused on nutrition labels, which could foster healthier dietary decisions among adolescents.

B19 Syndemic of food insecurity, micronutrient deficiency and poor mental health in pregnant women: Protocol and preliminary findings

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Introduction: Food insecurity, micronutrient deficiency and poor mental health during pregnancy independently represent three complex factors that often overlap, contributing to poor pregnancy outcomes. Previous studies have shown significant bidirectional associations between these risk factors and adverse pregnancy outcomes. However, no study has examined their co-occurrence and interaction as a syndemic. Therefore, this study aims to explore the associations and interactions between these multiple risk factors that exacerbate adverse pregnancy outcomes using syndemic theory. This paper presents the study protocol and preliminary results of the research. **Methods**: This is a longitudinal study in which pregnant women (n = 540) aged 18 – 49 are being recruited from selected health clinics and hospitals. Participants are completing a questionnaire on sociodemographic information, pregnancy history, psychological status (sleep quality, stress, anxiety, and depression), supplement use, and dietary intake. Eight millilitres of non-fasting maternal venous blood are being drawn for micronutrient and biomarker analysis. Pregnancy records are being retrieved from medical records. Participants are being contacted for a follow-up questionnaire 3 – 6 months after delivery, in which information regarding household food security, mental health, postpartum quality of life, as well as maternal and birth-related information, is being collected. **Results**: Preliminary results from 300 participants indicated a high prevalence of poor sleep quality (58.2%) and significant occurrences of moderate to severe prenatal stress (46.6%), mild to severe depression (24.3%), mild to severe anxiety (13.5%), and mild to moderate food insecurity (9.4%). Syndemic problems were distributed as follows: 29.5% had one, 23.1% had two, 15.3% had three, 7.8% had four, and 1.9% had all five conditions. **Conclusion:** The findings provide initial evidence of the prevalence of co-occurring psychosocial problems among pregnant women in the study region. This highlights the need for integrated public health interventions to improve maternal and perinatal health.

B20 Effects of whole grain breakfast beverages on satiety and body weight: a randomised controlled trial among UCSI university students with bowel disorders

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Introduction: Elevated body mass index (BMI) is associated with a higher risk of bowel disorders (BD). Whole grains are rich in fibre, which may increase satiety levels, reduce energy intake, and lower body weight. This randomised controlled trial aimed to determine

the effects of whole grain breakfast beverages on satiety level and body weight of university students with BD. **Methods:** Participants were screened for BD using the ROME IV Diagnostic Questionnaires. Anthropometric measurements were conducted and only those with BD and BMI of 18.5 to 29.9 were included. Participants were randomly assigned into three groups: two whole grain breakfast beverage groups of either brown rice or oat drink, and a control group that received refined grain breakfast beverage (multigrain cereal drink), every morning for 6 weeks. Satiety level was assessed using Satiety Labelled Intensity Magnitude Scale. Energy intake was assessed using 24-hour dietary recall. All measurements were conducted at baseline and at the end of week 6 of the intervention. **Results:** A total of 48 participants completed the study (20.6±1.67 years old; male, *n*=15; female, *n*=33; brown rice drink, *n*=16; oat drink, *n*=16; multigrain cereal drink, *n*=16). The mean initial BMI was 22.23±2.86 kg/m^2. Satiety level was higher in the oat drink group (25.0±25.8) followed by brown rice (16.3±32.0) and multigrain cereal (11.3±31.8) drink groups, but the difference was not significant (p>0.05). There was no significant difference in the mean energy intake between groups (p>0.05). Body weight change was slightly higher in the brown rice drink group (-0.3±0.5 kg) than the oat (-0.2±0.4 kg) and multigrain cereal (-0.2±1.1 kg) drink groups, but the difference was not significant (p>0.05). **Conclusion:** Consumption of whole grain breakfast beverages may help to increase satiety and reduce hunger in the morning. However, a longer study duration is needed to observe the changes in body weight.

B21 Validation of a weight management programme model: expert assessment

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Introduction: With the growing prevalence of overweight and obesity among adults, effective interventions such as structured weight management programmes are essential. A well-designed approach can significantly enhance the outcomes of these programmes. This study aims to validate a newly developed model for a weight management programme. **Methods**: Seven experts from diverse fields used the Content Validity Index (CVI) and modified kappa to assess this model, confirming its face and content validity. An online questionnaire comprising 42 items, was utilised to assess the six domains of the model. Experts also conducted face validity to gather opinions on the model's features. **Results:** For face validity, 85.71% of the experts agreed on the graphic, layout and arrangement, size and font type of the model, finding it easy to understand. The content validity analysis indicated a consensus among experts across all six domains. The S-CVI/Ave and S-CVI values ranged from 0.97 to 1.00 and 0.80 to 1.00, respectively, indicating high levels of agreement among the experts. The modified kappa value ranged from 0.96 to 1.00, indicating adequate, good and excellent validity. Experts provided suggestions for further model improvement, such as rectifying grammatical errors and using terms suitable for the model context. **Conclusion:** Experts have validated the weight management programme model, affirming its content validity across all six domains. This model offers health professionals a practical framework for planning and implementing comprehensive weight management programmes; however, conducting an acceptance test in future research could provide insight into their acceptance of this model.

B22 Nutrition label literacy: a study of adolescents aged 13-16 from selected schools in Kuala Lumpur

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Introduction: Understanding nutrition labels is crucial for adolescents as they begin to make independent food choices, especially when dining out with their peers. Therefore, this cross-sectional study aimed to determine the nutrition label literacy among school-going adolescents aged 13 to 16 in Kuala Lumpur. **Methods:** Five hundred fifty adolescents were calculated and recruited using random sampling. The adolescents provided data on their socio-demographic background and nutrition label literacy through an online questionnaire administered via Google Forms. The questions on nutrition label literacy comprise three domains: understanding and interpretation of nutrition labels (11 questions), skills in using nutrition labels (8 questions), and attitudes toward nutrition labels (10 questions). **Results:** Five hundred forty-one adolescents from seven secondary schools in Kuala Lumpur participated in the study. This study found that 30.5% of adolescents always read nutrition labels, 47.5% read them sometimes, and 22.0% read them rarely. Their level of nutrition label literacy is intermediate. The findings indicated that the mean score for understanding and interpreting nutrition labels was 4.31 ± 1.43, reflecting an intermediate level. The mean score for skills in using nutrition labels is 59.75 ± 20.23, and the mean score for attitudes towards nutrition labels is 4.65 ± 1.18, indicating an intermediate level. **Conclusion:** The study conclusively demonstrates that nutrition label literacy among adolescents in Kuala Lumpur is intermediate. Given these findings, immediate interventions are crucial in schools to strengthen adolescents' ability to make informed and healthy food choices.

B23 Impact of nutritional intervention on obesity indices in students at Shanxi Normal University, China

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Introduction: Overweight and obesity, defined by excessive body fat accumulation, are becoming major global health concerns. While research has shown that dietary intervention can aid weight loss in adults and children, there is a lack of research within the university context. This study aimed to evaluate the impact of dietary intervention on various obesity indicators among university students. **Methods:** This interventional study was conducted at the College of Modern Humanities, Shanxi Normal University. A total of 92 university students (Male: 57.6%; Female: 42.4%) were randomly assigned to either the intervention group (n=46) or the control group (n=46). Anthropometric and body composition indices were measured before and after the intervention, including BMI, waist circumference, and body fat percentage. The intervention group received 12 weeks of nutritional intervention, with nutrition education and meal planning. Paired sample t-tests and independent t-tests were used to compare differences in obesity indicators before and after the intervention between intervention and control groups. **Results:** At baseline, the

prevalence of overweight and obesity was 59.8%, with 38.0% of them were abdominally obese. Before the intervention, no obesity indicators were different between the intervention group and the control group ($p>0.05$). Compared to the control group, the intervention group showed significant reductions in BMI, waist circumference, and body fat percentage after the intervention ($p<0.05$), indicating the effectiveness of the nutritional intervention. **Conclusion:** This study provides evidence that nutritional intervention positively impacts obesity indices among university students. Nevertheless, further research is needed to explore other factors influencing obesity in this demographic. Effective health promotion programmes should be developed to address the growing obesity problem among university students.

B24 Toybox Study Malaysia: Exploring barriers and enablers in teaching healthy behaviour education among Malaysian preschool teachers

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Introduction: Unhealthy energy balance-related behaviours during childhood are fundamental contributors to obesity and chronic diseases in adolescence and adulthood. Education about healthy habits delivered by preschool teachers can significantly improve overall health of young children and their lifelong health trajectory. This study aims to explore the enablers and barriers that affect preschool teachers in delivering ToyBox Study Malaysia's healthy behaviour modules (healthy snacking, drinking water, being active and reducing sedentary behaviours) in their classrooms. **Methods:** In-depth semi-structured interviews were conducted with 20 preschool teachers who had participated in a ToyBox Study Malaysia intervention program. The interviews were digitally recorded and transcribed verbatim. The transcribed data were analysed using thematic analysis. **Results:** Teachers indicated that teaching healthy habits was facilitated by support from the administration and parents. Additionally, teaching resources were identified as crucial for improving teaching competence and providing convenience, feasibility, and practicality in the classroom. However, a few barriers were also identified. Barriers to teaching healthy behaviour in preschools were time constraints, limitations in devices or equipment, classroom environment, and limited funding. **Conclusion:** This study emphasized the significant impact of administrative support on overcoming barriers in health education for preschoolers. Providing adequate resources, tools, funds, and time allocation through administrative assistance can empower teachers to ensure more effective delivery. Collaborative efforts from administrative bodies, parents, and educators are essential to facilitate sustainable and effective health behaviour programs, ultimately contributing to reduction of childhood obesity.

B25 Factors associated with awareness of menu calorie labelling among consumers in selected fast food restaurants in Putrajaya

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Introduction: By 2025, the Malaysian government aims to implement menu labeling in food service outlets, providing clear nutritional information. This initiative will help consumers make informed and healthier choices amid the high rates of obesity and eating out. This study was conducted to determine the associations of sociodemographic factors, knowledge, attitude, practices with the awareness of menu calorie labelling among consumers in four selected fast-food restaurants in Putrajaya. **Methods:** Adapted and modified questionnaires was used. **Results:** More than half of the participants are aware of the calorie label on the menu (54.7%). From this percentage, most of them used to avoid high calorie menu items (n= 95, 48.5%). Overall, 68.4% have high knowledge on calorie requirements and 97.2% have positive attitudes towards menu calorie labelling. Only 30.7% of the participants scored good on practices of menu calorie labelling. There are significant associations between age and attitudes with awareness of menu calorie labelling, where p=0.005 and p=0.004 respectively. Adults aged below 32 years old are more likely to be aware of the menu calorie label compared to 32 years and above (AOR: 1.796, 95% CI: 1.162, 2.777). Those with positive attitudes have higher likelihood of awareness (AOR: 12.51795% CI: 1.525, 102.706). There was a weak, positive, significant correlation of r=0.299 (p=0.000) between knowledge-attitude of menu calorie labelling, r=0.300 (p=0.000) between knowledge-practices of menu calorie labelling, and r=0.216 (p=0.000) between practices-attitudes of menu calorie labelling. The results did not demonstrate significant associations between gender, ethnicity, educational level, employment, knowledge, and practices with awareness of menu calorie labelling. **Conclusion:** It is important to initiate health education programs on menu calorie labelling by highlighting the objectives of implementing this policy to increase its effectiveness towards promoting healthier food choice and improving diet quality when eating out.

Group C: Clinical Nutrition/Intervention Trials

C01 Effectiveness of a locally grown anthocyanin-rich red-pigmented rice as a sustainable staple food for cardiometabolic health in adults with type 2 diabetes: primary findings from the RICH study

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Introduction: Cardiovascular diseases (CVD) remain the leading cause of death among Type 2 Diabetes (T2D) patients. High glycemic index (GI) white rice is known to increase CVD risk, whereas pigmented rice, with its low GI and antioxidant properties, holds therapeutic potential. This study evaluates the effects of substituting white rice with anthocyanin-rich, red-pigmented rice (UKMRC9) on cardiometabolic parameters in T2D patients. **Methods:** The Rice Intervention in Chronic Health (RICH) study was a 24-week, multicenter, open-label, p arallel-group, randomized controlled trial involving 101 Malaysian adult T2D patients. Eligible participants, who were habitual white rice consumers with poorly controlled T2D, were randomly assigned to either UKMRC9 (treatment) or white rice (control) group. Assessments were conducted at baseline, 12th and 24th weeks. Generalized estimating equations were employed to compare changes in study parameters: adiposity, glycemic, insulin, and inflammatory markers, lipid profiles, blood pressure, and 10-year CVD risk, over time between treatment and control groups. Intention-to-treat analysis was utilized to evaluate the effectiveness of UKMRC9 under real-world condition. Path analysis was conducted to explore the putative mechanism while dose-response analysis and linear-programming were performed to determine the minimum UKMRC9 intake for optimal cardiometabolic health. **Results:** Over the 24-week intervention, significant reductions (all p<0.05) were observed in the treatment groups for adiposity indices, glycemic markers, insulin resistance, and the 10-year CVD risk. These improvements were noted from baseline to the 12th week and continued to decline further by the 24th week. Conversely, the control group showed no significant changes in these parameters (p<0.05). The effect of UKMRC9 on 10-year CVD risk reduction was significantly mediated by glycemic markers (*SIE*= -2.978, p=0.024). At least 40g/d (raw weight) of UKMRC9 was required for its optimal cardiometabolic effects. **Conclusion:** Substituting white rice with UKMRC9 significantly improves key cardiometabolic parameters in T2D patients, suggesting its potential as an effective staple food for diabetes management.

C02 Highlighting the dietitian's role in enhancing quality of life: a motivational interviewing approach for patient with morbid obesity

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Introduction: Obesity, defined by an abnormal accumulation of body fat, poses significant health risks. Morbid obesity is characterized by a BMI of 40 or higher. In Malaysia, the prevalence of overweight and obesity among adults has increased over the past decade. Motivational interviewing is a collaborative, goal-oriented, and patient-centred counselling method that adapts to the individual's stage of change. **Methods:** This clinical case involved Mrs. N, a 45-year-old Malay woman diagnosed with morbid obesity (BMI 59.08 kg/m2), obstructive sleep apnea, hypertension, and type 2 diabetes. She was referred to a dietitian for weight management. Her weight and total fat mass showed improvement from first visit with dietitian. HbA1c levels improved modestly, though her blood lipid profile was less satisfactory. Mrs. N experienced enhanced daily mobility and reduced symptoms of obstructive sleep apnea with the modest weight loss. Dietary changes included reduced portion sizes, lower fat intake, and adequate protein in each meal. She achieved a BMI reduction of 3.72 kg/m2 within 7 months by cutting 880 kcal/day from her diet. However, she often skipped dinner to avoid overeating, struggling with social influences from children and friends. **Results:** Motivational interviewing was employed to support Mrs. N. Acknowledgments and congratulations were given for her progress. The intervention focused on addressing social influences, her biggest challenge. Internal motivation for weight loss was emphasized to enhance her quality of life. Nutrition education on mindful eating and meal sequencing to increase satiety was provided. **Conclusion:** Motivational interviewing aids patients in exploring and resolving ambivalence about change. Highlighting past successes can motivate patients to believe in their ability to change.

C03 Developing and validating a hybrid model of logistic regression and artificial neural network for predicting protein-energy wasting among hemodialysis patients in the era of artificial intelligence

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Introduction: Protein-energy wasting (PEW) is a devastating form of malnutrition in hemodialysis (HD) patients. Assessing PEW using the recommended International Society of Renal Nutrition and Metabolism (ISRNM) criteria is often impractical due to resource constraints. Although various screening tools exist, they have limited predictive accuracy. This study aims to develop and validate a hybrid model of logistic regression (LR) and artificial

neural network (ANN) to predict PEW in HD patients. **Method:** This secondary analysis included data of 953 HD patients sampled from 21 dialysis centers, with PEW diagnosed according to ISRNM criteria. Logistics regression was conducted to identify the most relevant predictors of PEW, which were then used as input variables for building the ANN model. Dataset was randomly divided into training (70%), validation (15%) and test (15%) subsets. The ANN model was trained using Levenberg-Marquardt algorithm. A sigmoid activation function was applied to the hidden layer (layer size =10 neurons), while a linear function was used for output layer. Model performance was evaluated using mean square error (MSE) and coefficient of determination (R^2). The diagnostic test accuracy (DTA) of LR-ANN model was compared with the Malnutrition Inflammation Scale (MIS), a proxy for PEW assessment, and LR model using ROC analysis. **Results:** PEW was present in 14.9% of HD patients as per ISRNM criteria. LR identified serum albumin, total cholesterol, body mass index, mid-arm muscle circumference and daily energy intake as significant predictors of PEW. The LR-ANN model, with an architecture of 5-10-1, achieved MSE of 0.0466-0.0505 and R^2 of 0.727-0.808. The LR-ANN model exhibited higher AUC (0.961 *vs* 0.713 *vs* 0.940), precision (75.4% *vs* 27.0% *vs* 50.9%), and accuracy (94.2% *vs* 69.5% *vs* 85.4%) compared to MIS and LR model. **Conclusion:** The LR-ANN model demonstrates superior DTA in predicting PEW, paving the way for AI-driven precision assessment of PEW in Malaysian HD patients.

C04 Effects of cooled rice storage on postprandial glucose levels in healthy adults

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Introduction: This study aimed to examine the effects of cooling and storing rice at different temperatures on postprandial blood glucose levels. **Methods:** This study included 13 young adults aged 18–40 years (5 men and 8 women). The randomized controlled trial involved: freshly cooked rice, refrigerated rice, and frozen rice. Continuous glucose monitoring (CGM) was used to measure postprandial blood glucose levels following ingestion of the rice during dinner. Blood glucose data were evaluated for postprandial blood glucose variations over 3h. The area under the curve (AUC) of blood glucose increase, maximum and minimum blood glucose levels were analyzed. The palatability of the rice was assessed using a sensory evaluation questionnaire conducted 15 min following ingestion, in each trial. The basic characteristics of the study participants were collected through body composition measurements, a food frequency questionnaire, a questionnaire regarding morning vs evening preference, and the Pittsburgh sleep quality index. A simplified dietary survey was used to evaluate lifestyle variations between the trials. **Results:** There were no significant differences found between the participants in terms of lifestyle habits (wake-up time, bedtime, and mealtime on the previous day) between the trials. No significant differences were observed between the trials regarding time-course changes in blood glucose levels, AUCs, and maximum or minimum blood glucose levels. Similarly, there were no significant differences found in the sensory evaluation scores between the trials. **Conclusion:** The results of this study suggest that cooled rice storage does not have a suppressive effect on postprandial blood glucose levels during dinner. Moreover, the palatability of rice is not significantly compromised by storing it in a cooled state. Future research should include similar studies conducted for breakfast meals, in order to gather more comprehensive data. In addition, resistant starch measurements should be conducted in future studies to further investigate this aspect.

Group D: Nutrients & Other Components in Foods/Products

D01 Nutrient quality of plant-based alternatives (PBA) of milk products in selected hypermarkets

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Introduction: Plant-based alternative (PBA) milk consumption is surging in Malaysia due to concerns about sustainability, ethics, and health. However, there is a significant gap in understanding the nutritional quality of these products in Malaysian market. This study aims to address this gap by assessing the nutrient quality of the available PBA milk products in selected hypermarkets, aiding consumers in making informed dietary choices. **Methods**: A cross-sectional survey utilized purposive sampling to select hypermarkets and their corresponding PBA milk products. Nutrition information standardized for 100g portions and servings sizes of 91 PBA milk products were collected. Mean and standard deviations were determined, One-Way ANOVA was used for comparison. **Results**: Out of 91 products sampled, the majority were in liquid form (82.4%), mostly almond (31.6%) followed by soy (30.3%), oat (21.1%) with rice (1.3%). In terms of nutrient content for liquid alternatives, oat displayed highest in energy (49.50±9.42), carbohydrates (7.36±1.46), and calcium (116.39±46.53); soy was highest in protein (2.73±0.60) while coconut was highest in fats (2.40±1.84), sugars (4.10±0.85) and sodium (58.00±55.15). For powdered alternatives, almond has highest in energy (473±159.81), fat (18.75±19.87), carbohydrates (59.60±23.48), fiber (4.80±5.94), and calcium (202±166.88) while soy was found to have the highest protein content (15.40±11.37), sugar (10.32±11.26), and sodium (81.20±68.68). In terms of contribution to daily needs, liquid oats milk contributes the most to energy (5.70±1.17, 6.57±1.34), followed by liquid coconut for carbohydrates (27.10±2.97), and fat (10.38±4.39,11.86±5.02) and liquid soy contributes the most for protein (10.29±2.34,12.07±2.75). In powdered form, soy contributed highest in carbohydrates (11.66±13.14) and fiber (5.66±4.67), while black sesame contributed most in total fats (9.84±2.65,11.25±3.03) and calcium (9.90±10.75). **Conclusion**: The study highlights nutritional variability among PBA milk products in selected hypermarkets. This assessment underscores the importance of scrutinizing nutritional labels to make informed dietary choices, addressing the knowledge gap regarding PBA milk products in Malaysia.

D02 Comparison of total sugar and individual sugars in bubble milk teas from different franchises

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Introduction: Bubble milk tea, a cold tea-based beverage mixed with milk or flavourings, is typically sweetened with high-fructose corn syrup and classified as a sugar-sweetened beverage. The increasing popularity of bubble milk tea consumption highlights the need to examine the total sugar content and the individual sugars, including fructose, lactose, maltose, and glucose, in different bubble milk tea franchises. Therefore, this study aims to determine and compare total sugar, fructose, lactose, maltose, and glucose content in different bubble milk teas among different franchises. **Methods:** Four samples were analyzed: pearl milk tea and brown sugar pearl milk tea from brands A and B were

purchased at IOI City Mall in Putrajaya. The total sugar content was determined using the phenol-sulfuric method measured using spectrophotometry, while high-performance liquid chromatography (HPLC-RI) was employed for analyzing the individual sugars. **Results:** A 500 ml serving of pearl milk tea from Brand A contains an average of 48.94 ± 0.41 g of total sugar, compared to 47.09 ± 5.38 g in Brand B. Meanwhile, Brand A's brown sugar pearl milk tea averaged 58.60 ± 3.31 g of total sugar per serving, which is higher than Brand B's 54.01 ± 4.14 g. Significant differences were observed in fructose, glucose, and lactose content ($p<0.05$). Brand B's pearl milk tea exhibited the highest fructose and glucose content at 4.26 ± 0.14 g and 3.15 ± 0.03 g per serving, respectively. Lactose content in Brand B's brown sugar pearl milk tea was significantly higher than in other samples at 15.70 ± 0.02 g per serving. **Conclusion:** A single serving of bubble milk tea contains 47 to 58 grams of sugar. According to WHO guidelines, free sugar intake should not exceed 50 grams per day. Therefore, awareness of the sugar content empowers consumers to manage their dietary intake according to recommendations.

D03 Nutrition and labelling characteristics in association with the healthiness of ready-to-eat foods in major supermarket chains in Malaysia

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Introduction: Urbanisation and technological advancement have led to increased consumption of ready-to-eat (RTE) foods in Malaysia. However, this has been identified as contributing adversely to non-communicable diseases. Nutrition labels play a crucial role in informing consumers about food content, but studies indicate that they are often misinterpreted, leading to overeating and health risks. This study aims to determine the association of nutrients and labelling characteristics with the healthiness score of RTE foods. **Methods:** This cross-sectional study was conducted in seven commonly available supermarkets evaluating 11 RTE food categories. The food audit checklist was used to gather information on nutritional values such as energy, carbohydrates, protein, fats, sugars, and sodium. Percentage Daily Values (%DV) and healthiness scores were calculated based on standard practice. IBM SPSS 27 was used to explore associations between nutrients, labelling characteristics, and healthiness scores. **Results:** A total of 2021 RTE food products were examined and categorised into core (n=471) and non-core foods (n=1550). The mean nutrients profile of RTE foods included energy (318.0±194.6kcal), carbohydrate (33.8±26.3g), protein (7.3±6.4g), total fat (16.7±15.8g), total sugar (15.5 ± 15.1g) and sodium (309.4±348.1mg). The mean healthiness score was higher for core foods compared to non-core foods (4.77±0.79 vs. 4.16±0.84). A higher healthiness score was observed for core foods with mean %DV of energy (6.5±3.5), carbohydrate (5.9±4.5), protein (10.5±6.3), total fat (6.0±5.3), total sugar (18.8 ±15.1) and sodium (5.3 ± 6.2). Protein content ($\beta = 0.15$, CI% = 0.09, 0.20) and the presence of nutrient claims ($\beta = 0.61$, CI% = 1.14, 1.32) were positively associated with healthiness scores respectively. **Conclusion:** This study highlights the significance of protein content and nutrition claims in determining the healthiness of RTE products and emphasises the prioritisation of consumer-based nutrition education in selecting healthier RTE foods.

D04 Antioxidant properties, mineral content, glycaemic index, and glycaemic load of coconut and nipa sap water harvested in Marang, Terengganu

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Introduction : The increasing prevalence of non-communicable diseases, particularly diabetes mellitus and cardiovascular diseases, has amplified the need for functional foods with beneficial health properties. Among such foods, coconut (*Cocos nucifera*) and nipa (*Nypa fruticans*) sap water have gained attention due to their potential health benefits. Coconut and nipa sap waters are beverages is a popular traditional beverage with significant health-promoting properties and are often consumed by people in rural areas. This study aims to comprehensively evaluate the antioxidant properties, mineral content, glycaemic index (GI), and glycaemic load (GL) of coconut and nipa sap water to understand their implications for human health. **Methods :** Antioxidants were determined using the Folin-Ciocalteu assay, DPPH radical scavenging assay and Ferric Reducing Antioxidant Power (FRAP) assay. The ICP-OES was used in mineral determination. The blood glucose responses for the glycaemic index and load were calculated based on the incremental area under the curve (IAUC). **Results :** No significant differences were found between coconut and nipa sap for TPC. While both samples were significantly different in TFC and FRAP antioxidant capacity. However, there were no statistical differences between the two samples regarding mineral composition. The coconut sap resulted in medium GI and GL. **Conclusion** : Coconut and Nipah sap water have significant results in the TPC, TFC and FRAP, DPPH radical scavenging activity and mineral contents. Their antioxidant capacity and mineral richness highlight their potential benefits in preventing and managing non-communicable diseases. However, since the GI and GL of the coconut sap water were in the medium category, consuming moderately is suggested. Future research should explore their long-term health impacts and potential therapeutic uses.

D05 Determination of infants growth-related microRNAs (mirnas) abundance in human breast milk and their associations with maternal-infant characteristics

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Introduction: Human breast milk is widely recognised as the optimal source of nutrition for infants. Apart from nutrient contents, bioactive compounds in breast milk, including microRNAs (miRNAs) play crucial roles in various biological processes, potentially serving as biomarkers for maternal characteristics. This study aimed to investigate the levels of miRNAs in breast milk and their associations with maternal and infant factors. **Method:** This cross-sectional study utilised both secondary data and milk samples from the Mother-Offspring Milk Study conducted in Selangor, Malaysia. Mothers completed

socio-demographic questionnaires and recorded infant behaviour at weeks 2–3 and 6–8 postnatally using a validated 3-day Infant Behaviour Diary. Infants' weight and length were measured from birth to 12–14 weeks, while infant fat mass and fat-free mass were estimated using a stable isotope method. Milk samples (n=13) were collected from 13 distinct mothers during the first 2 to 4 months postpartum and stored at -80°C until analysis. The levels of selected growth-related miRNAs (miR-29a, miR-148a, and miR-152) in milk were determined using real-time PCR. Correlations between the levels of selected miRNAs and maternal and infant factors were analysed. A P value <0.05 was considered statistically significant, while P values between 0.5 and 0.1 were considered trend data. **Results:** The selected miRNAs (miR-29a, miR-148a, and miR-152), were present in all milk samples (1.11±0.12, 2.91±4.32, and 0.36±0.70 Log10 2 – ΔΔCt, respectively). MiR-29a was significantly associated with maternal age (r=0.622, p=0.023). MiR-148a was negatively associated with infants' BMI at 2–3 weeks old (r=-0.61, p=0.027). Trend data were found between miR-152 and infant distress duration at 2–3 weeks (r=-0.661, p=0.053) and infant sleeping duration at 6–8 weeks (r=-0.627, p=0.096). A negative trend was observed between miR-152 in breast milk and infant fat mass (r=-0.679, p=0.094), and an opposite trend was seen in fat-free mass (r=0.679, p=0.094). **Conclusion:** The selected miRNAs were present in breast milk and significantly associated with several maternal and infant characteristics. This study provides a baseline understanding of miRNAs in human milk. Future research should explore the implications of miRNAs in breast milk for maternal and infant health outcomes, with a larger sample size needed.

D06 Impact of heating time and temperature on peroxide value, anisidine value, and vitamin D3 stability in fortified palm oil

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Introduction: Vitamin D deficiency is a global concern. Vegetable oils, including palm oil, are potential candidates for vitamin D fortification. However, the stability of vitamin D3 in fortified palm oil under various cooking conditions is unclear. This study investigated the impact of heating time and temperature on vitamin D3 concentration, peroxide value (a marker of primary lipid oxidation), and anisidine value (a marker of secondary lipid oxidation) in fortified palm oil. **Methods:** Fortified palm oil with vitamin D3 underwent heating at three temperatures (100°C, 150°C, and 180°C) for varying durations (0, 5, and 15 minutes). The vitamin D3 concentration was determined using the HPLC method with a C18 column (5 mm diameter and 250 mm length), a mobile phase of acetonitrile and methanol (95:5 v/v), and a 1.2 ml/min flow rate. The peroxide value was assessed through the iodometric titration method, while the anisidine value was determined following the AOCS Cd 18-90 official method (1992). **Results:** The percentage of vitamin D3 degraded and the anisidine value of the samples significantly increased across the heating time and temperature ($p < 0.05$). The peroxide value showed a significant increase across the heating temperatures ($p < 0.05$) but not the heating times. A strong and positive correlation was observed between the percentage of degradation of vitamin D3 and both peroxide value ($r = 0.921$) and anisidine value ($r = 0.811$) in heated fortified palm oil samples. **Conclusion:** These findings suggest that heating conditions significantly affect vitamin D3 stability in fortified palm oil. Further research is necessary to explore methods for preserving vitamin D3 stability or mitigating its degradation during heating.

D07 Determination of total phenolic content, total flavonoid content and antioxidant activity of shiitake mushrooms (*Lentinula edodes*) with different drying methods

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Introduction: Shiitake mushrooms (*Lentinula edodes*) have gained significant attention in recent years due to their esteemed culinary attributes and potential health benefits such as antioxidants. While the nutritional profile of fresh Shiitake mushrooms is well-documented, the impact of various food processing techniques, particularly drying methods, especially on their antioxidant properties remains unexplored. Therefore, this study aims to investigate the impact of household common drying techniques using oven and microwave for preserving Shiitake mushrooms on its antioxidant properties. **Methods:** Two household common drying methods were used (oven- and microwave-drying) and the antioxidant properties of dried samples were evaluated. The total phenolic content (TPC) and total flavonoid content (TFC) were quantified. Antioxidant activities of the mushroom extracts were analysed by 2,2-diphenylpicrylhydrazyl (DPPH) and Ferric Reducing Antioxidant Power (FRAP) assays for their free-radical scavenging activity and iron-reducing capacity. **Results:** Oven-dried samples reported a significant reduction of TPC after drying (p < 0.001) but a significant increase in TFC (p < 0.05). No significant differences were found between fresh and dried samples in the percentage of DPPH but significant reduction of FRAP values of samples that were dried at 80°C and 100°C. A moderate positive correlation was shown between TPC and FRAP of oven-dried mushroom samples (r = 0.69, p = 0.004). Shiitake mushrooms treated with microwave-drying only reported a significant increase in TFC and percentage of DPPH respectively (p < 0.05). Significant correlations were also found between both antioxidant contents TPC (r = 0.56, p = 0.03) and TFC (r = 0.63, p = 0.012) with DPPH. Shiitake mushrooms exhibited higher TFC after oven-drying at 80°C and 100 °C. Higher TFC and DPPH were observed after drying using the microwave at both temperatures. **Conclusion:** In conclusion, microwave-drying is demonstrated as the more effective drying method for preserving antioxidant properties in dried mushroom.

D09 Nutrient quality of selected plant-based alternative meat products available in hypermarkets around Bukit Jalil

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Introduction: Plant-based alternative meat products have become increasingly popular and available in the market, and they are often compared to animal-based meat to evaluate their relative nutrient quality. This study aims to assess the nutrient quality of available plant-based alternative (PBA) meat products that acts as analogues, imitating its animal-based counterpart in terms of taste and texture. **Methods:** This was a cross-sectional study where nine hypermarkets around Bukit Jalil in the radius of 5 km from IMU University were visited. The plant-based meat products available were identified and the energy, carbohydrate, protein, fat, sugar and salt content on the packaging were assessed. **Results:** A total of 141 products were collected with the majority being red meat analogues (39%), followed by poultry (35.5%), and fish and seafood (25.5%). For protein content, poultry analogues (14.52 ± 4.49 g) is significantly (p<0.05) higher than fish and seafood (2.96 ± 1.81 g) but no significant difference when compared with red meat or other

meat analogues. The sugar content of red meat analogues (4.55 ± 4.86 g) is significantly ($p<0.05$) higher than poultry (2.63 ± 2.22 g) but no significant difference when compared with fish and seafood and other meat analogues. Sugar in red meat analogues (3.68 ± 4.71 g) were significantly higher in percentage of contribution compared to poultry analogues, but no significant difference was found for fish and seafood and the other meat analogues. There is no other significant difference found for the contribution of other nutrients. When further classified according to NOVA processing levels, 88.7% of the products were at level 4, while 11.3% were at level 3. **Conclusion:** Findings of the study could facilitate consumers to understand the nutrient quality of plant-based alternative meats and guide food industries in enhancing the nutrient profiles of PBA products in ensuring products meet dietary needs and consumers expectations.

D10 The physicochemical, nutritional and sensorial properties of duck sausage cooked by a sous-vide, boiling and steaming method

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Introduction: Duck meat, known for its high nutritional value, is mostly preferred by consumers for its taste and nutritional benefits. Traditional preparation methods, such as boiling or steaming, often result in significant nutrient loss and altered texture due to uneven heat distribution. To address this issue, this study proposed the use of sous-vide cooking methods. Sous-vide involves cooking food in vacuum bags at a controlled temperature, which improves taste, texture, and nutritional content while extending shelf life compared to traditional techniques. The objective of this study was to compare the physicochemical properties and sensory acceptability of duck sausage prepared using the sous-vide cooking method against traditional methods such as steaming and boiling. **Methods:** The type of study applied in this research was an experimental study. Proximate analysis, a bomb calorimeter, and texture profile analysis were used to determine the content and quality of the duck sausage. Sensory evaluation was conducted with 60 participants, including staff and students from Universiti Sains Malaysia (Health Campus), Kubang Kerian, to assess consumer acceptability. **Results:** The results showed that the sous-vide cooking method had the lowest moisture content (63.79%) and the highest values for ash (3.20%), protein (17.04%), fat (11.97%), and calories (552.9 kcal/100g). The firmness results indicated that sous-vide (1367.87 g/sec) was intermediate between boiling and steaming. The sensory evaluation results showed that sous-vide had the highest scores for appearance (4.90), colour (5.07), and aroma (5.22), but the lowest scores for elasticity (4.20), flavour (3.52), and overall acceptability (4.03). **Conclusion:** The sous-vide cooking method showed many advantages compared to other conventional cooking methods (steaming and boiling). Even though it had the lowest scores for elasticity, flavour, and overall acceptability, the sensory quality of food can be subjective and depends on individual preferences.

D11 Effects of drying on the total phenolic content, total flavonoid content, and antioxidant activity of red and white dragon fruits

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Introduction: This study is a comprehensive investigation into the impact of drying processes on antioxidant properties in dragon fruits. This study aims to determine the effects of different drying methods on the total phenolic content (TPC), total flavonoid content (TFC), and antioxidant activity of red and white dragon fruits. **Methods:** The samples were divided into five parts: fresh, oven-dried at 60°C and 75°C for 6 hours, and microwave-dried at 360W and 450W for 15 minutes. TPC and TFC of samples were assessed using the Folin-Ciocalteu method and aluminium chloride colorimetric assay respectively, while the antioxidant activity was measured through FRAP, DPPH, and ABTS assays. **Results:** Results demonstrated significant differences between fresh and oven-dried dragon fruits at 60°C (p<0.05), with the latter displaying the significantly highest TPC and TFC, while the significantly lowest DPPH EC_{50} and ABTS EC_{50} indicating the putative antioxidant. Microwave-dried dragon fruits at 360W outperformed others (p<0.05), exhibiting the significantly highest TPC, TFC, and FRAP, while a significantly lowest DPPH EC_{50} and ABTS EC_{50}. Pearson correlation revealed a strong and positive correlation between FRAP and TPC in oven-dried dragon fruits (p<0.05). Conversely, oven-dried samples exhibited a very strong negative correlation between DPPH and TFC (p<0.01). Microwave-dried samples displayed strong positive correlations between FRAP and both TPC and TFC (p<0.01) and strong negative correlations between DPPH and ABTS with both TPC and TFC (p<0.01). **Conclusion:** Overall, oven-drying at 60°C and microwave-drying at 360W yielded the highest TPC, TFC, and antioxidant activities in dragon fruits. These drying methods are practical for preserving nutritional properties of dried food products.

D12 Factors associated with the healthiness of ready-to-cook products available in grocery chains in Malaysia

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Introduction: Urbanization has led to increased dependence on ready-to-cook (RTC) foods, which require minimal preparation before consumption. This research examines the nutritional characteristics and packaging labelling of RTC foods and their association with healthiness. **Methods:** A cross-sectional study was conducted on 1,491 RTC products from selected seven main grocery chains in Malaysia and was further categorised into six food categories. Nutrition data was recorded using a structured food audit checklist and the product healthiness was determined using an adapted healthiness score system. Binary logistic regression was used to determine the association of nutrients with healthiness score. **Results:** The mean nutritional values of the RTC products were as follows: energy

(301.0±139.5kcal), carbohydrates (44.6±26.3g), protein (7.6±4.4g), total fat (9.6±8.0g), sodium (965.9±2099.3mg), and total sugar (11.6±16.0g). A total of 260 (17.4%) products contained nutrient claims, with content claims being the most common type (n=238). The results classified 68.1% (n=639) of the products as healthy and 31.9% (n=299) as less healthy. Based on the food categorization, the majority of RTC products based on vegetables and fruits (94.2% (n=49)), cereals and pulses (66.4% (n=292)), meat, fish, and poultry (92.2% (n=130)), condiments, pastes, and sauces (85.3% (n=81)), and snack products (75.5% (n=71)) were classified as healthy. Conversely, beverages were predominantly classified as less healthy (86.2% (n=100). Overall, the energy, macronutrients, sodium, and total sugar were inversely associated with the healthiness score ($p<0.001$), while the presence of health claim was directly associated with the healthiness score (OR=2.13, 95% CI =1.45, 3.15). Similar patterns were observed across most RTC product categories. Sugar was inversely associated with the healthiness of vegetables and fruits-based RTC products (OR = 0.40, 95% CI =0.17, 0.96). **Conclusion:** The healthiness scores for each category may guide healthier choices. However, further research is needed to validate the category-specific healthiness score system used in the study.

D13 The physicochemical, nutritional, and sensorial properties of lamb meatball cooked by boiling, steaming, and sous-vide

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Introduction: Sous-vide is one of the emerging food technologies or cooking methods that cook under controlled conditions according to suitable temperature and time by putting the raw materials inside a heat-stable vacuumised pouches. Sous-vide helps in providing good nutrient content as the water-soluble vitamins can be preserved and prevent the degradation of antioxidants. The objective of this study is to compare the physicochemical properties and acceptability of lamb meatballs made by using different cooking methods which are boiling, steaming, and sous-vide. **Methods:** The type of study that applied was experimental study. Proximate analysis, bomb calorimeter, and texture profile analysis were used to assess the content and quality of lamb meatball. Sensory evaluation was done by 60 participants of students and staff of Universiti Sains Malaysia (Health Campus), Kubang Kerian, Kelantan to test the tenderness of lamb meatball. **Results:** Results showed that sous-vide method has the lowest moisture content (53.92%), the highest value of protein (20.36%), fat (17.44%), ash content (2.54%), and carbohydrate (5.75%). Sous-vide lamb meatballs have the highest calorie value which is 526.83 kcal. The results of sensory evaluation showed that sous-vide lamb meatballs have lower acceptance of appearance, colour, softness, and flavour than steaming method except for the aroma. Generally, this study shows that steaming cooking method is more accepted and preferred by the consumers comparing to boiling and sous-vide method. **Conclusions:** Sous-vide retain the nutritional content and produce more tender and juicier lamb meatballs. The flavour can be enhanced by adding more artificial flavours which might be a drawback from consumer point of view.

D14 Utilisation of *Kappaphycus alvarezii* as a potential fat replacer on the physicochemical, nutritional, and sensorial properties of chicken-based patty

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Introduction: This study investigates the potential of *Kappaphycus alvarezii*,(*KA*) a red seaweed, known for its rich nutritional profile, as a fat replacer in chicken-based patties. The research examines the physicochemical, nutritional, and sensory properties of chicken patties formulated with different percentages of *KA*. **Methods:** This experimental study involved developing five formulations of cooked and raw chicken patty with *Kappaphycus alvarezii* (*KA*) as fat substitute. It included a control sample with 0% *KA* and experimental samples incorporating *KA* at 5%, 10%, 15%, and 20% levels. Methods included AOAC standards for moisture, ash content, crude fat (Soxhlet method), crude protein (Kjeldahl method), carbohydrate and crude fibre (Weende Method). Texture Analyser TA-XT2 was used for texture analysis, and IKA Bomb Calorimeter for calorific value determination. Data obtained were tested for significance using ANOVA and Duncan Multiple Range Test with SAS version 6.12. **Results:** The control group (0% K. alvarezii) had the lowest moisture content in raw (61.14%) and cooked (53.63%) chicken patties, increasing with higher *KA* levels. Ash content rose with *KA* inclusion (raw: 0.72% to 1.09%, cooked: 0.82% to 1.28%). Crude fat content decreased significantly (raw: 11.46% to 9.97%, cooked: 14.04% to 11.97%), while crude protein and carbohydrate content showed no significant changes. Patties with 5% K. alvarezii had lower cutting force (1684.06) compared to the control (2329.23). Sensory scores ranged from 3.33 to 4.12, indicating overall acceptability. **Conclusion:** The inclusion of *KA* as a fat replacer resulted in a marked decrease in fat content in the chicken patties, potentially aiding in combating malnutrition by offering lower-fat food options.

D15 Physicochemical properties and sensory acceptance of crackers *incorporated with different formulation of Moringa oleifera leaves*

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Introduction: *M. oleifera* leaves are rich with minerals, protein, fibre and vitamins. It could be added to the crackers to make as a healthier snack. This study aimed to develop crackers incorporated with *M. oleifera* leaves and to determine the physicochemical properties and sensory acceptance of the crackers. **Methods:** Cackers with various amount of chopped *M. oleifera* leaves (0%, 3%, 5%, 7% and 9%) were developed. The physicochemical analysis inclide proximate composition (i.e., ash, moisture, crude fat, crude protein, crude carbohydrate and energy), texture (i.e., hardness and fracturability) and colour (i.e.,

L, a and b value). The sensory analysis was conducted among 50 panellists on colour, appearance, aroma, texture, taste and overall acceptability attributes based on 9-point hedonic score and further analysed with one-way ANOVA. **Results:** This study showed that the additional of *M. oleifera* leaves significantly affect the physicochemical properties and sensory on colour, aroma, taste and appearance attributes. The most preferred crackers in term of the nutritional composition chosen in this study is M9 crackers (9% of chopped *M. oleifera* leaves formulation) with energy content of 436.3 kcal, carbohydrate (64.97g), protein (11.33g), fat (14.57g), moisture (4.99%) and ash (4.14%) for 100g content. Whereas, the colour of the M9 sample is darker, greener and light-yellow while the hardness and fracturability are preferrable with value of 2153.38g and -4.95mm respectively. The most acceptable crackers preferred by panellists from the sensory evaluation is control crackers followed by M3 crackers (3% of chopped *M. oleifera* leaves), M7 (7% of chopped *M. oleifera* leaves), M5 (5% of chopped *M. oleifera* leaves) and M9 (9% of chopped *M. oleifera* leaves) respectively with the overall acceptability score ranged from 6.32 to 7.14. **Conclusion:** This finding demonstrates the potential for use of *M. oleifera* for industrial exploitation through processing into snack food items such as crackers.

D16 Proximate composition and sensory acceptability of MRQ 74 rice bran bread

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Introduction: Rice bran (RB) is a valuable by-product of rice milling that represents a great potential as a functional food. The abundance of essential nutrient value and bioactive compounds have been validated in RB, obtaining the considerable attention of researchers. This study aimed to develop different percentages of MRQ 74 RB incorporated with wheat flour and to determine its proximate composition and sensory acceptability. **Methods:** The RB bread samples were developed according to the following formulation, control (no addition to RB), RB 10%, RB 20% and RB 30%. The official method of analysis (AOAC) was adopted in conducting the proximate composition analysis. A total of 40 untrained panellists, ages 19 to 24, were participated to determine the sensory acceptability using a 7-hedonic scale. **Results:** The incorporation of RB increased the bread's crude fiber, fat, ash and energy value, while decreased its moisture, protein and carbohydrate content. The substitution of 20% and 30% of RB in bread affected sensory attributes such as color, aroma, taste and texture. In the overall analysis, RB30% exhibited the most desirable results for proximate composition, while RB 10% indicated the most preferred bread samples for sensory evaluation. **Conclusion:** Overall, RB has great potential as an additional ingredient in bread, especially in Malaysia, which can enhance the nutritional and functional properties of white bread available in the market.

D17 The association of safe dose recommendation caffeine intake and session of ingestion during sports competition among athletes

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Introduction: Caffeine is a performance-enhancing substance consumed by athletes, primarily during sports competitions events due to its ergogenic aid effect, and may leads to excessive intake. This study aims to identify the association between safe dose recommendation caffeine intake and ingestion session during sports competition among athletes. **Methods:** A validated Caffeine Consumption Questionnaire (CCQ) has been used to conduct this cross-sectional study among 236 athletes to estimate the caffeine intake. **Results:** Exceed safe dose recommendation of caffeine intake a day (69.1%) was found among athletes. Male athletes had higher intake levels of caffeine than female athletes (57.7%), athletes from the Klang valley consumed more caffeine than those from non-Klang valley (53.4%), non-contact sports athletes had greater intake level of caffeine compare to contact sports athletes (57.1%), team mode sports had larger caffeine intake than individual and mix mode sports (54.6%), gold medalists had higher intake level of caffeine than silver and bronze medal medalists (19.6%), absence of nutrition knowledge in sports and exercise had increased the caffeine intake (63.8%). There was a significant association between the session intake of caffeinated beverages (CB) during sports competitions and safe dose recommendation (p<0.05). **Conclusion:** Caffeine intake through caffeinated beverages among athletes exceeds the safe recommendation level in Malaysia. Thus, there is a need to develop a caffeine label database for caffeinated beverages marketed in Malaysia to enhance the athletes' knowledge, attitude and practice towards warning label and caffeine fact to better monitor the caffeine intake.

D18 Antioxidant content and activity in avrils (flesh) and rags of Cempedak (*Artocarpus integer*) and Nangka (*Artocarpus heterophyllus*)

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Introduction: Cempedak (*Artocarpus integer*) and Nangka (*Artocarpus heterophyllus*) are closely related tropical fruits commonly consumed in Asian countries, including Malaysia. However, both fruits contain a high percentage of inedible parts, usually discarded as waste. Among these fruits, limited comparison studies were found among the edible and inedible parts, especially rags. Therefore, this study aims to determine and compare the antioxidant content and antioxidant activity in avrils (flesh) and rags of Cempedak and Nangka. **Methods:** Four samples; Cempedak Avrils (CA), Cempedak Rags (CR), Nangka Avrils (NA) and Nangka Rags (NR) were analysed spectrophotometrically. The antioxidant content was determined by the Folin-Ciocâlteu method and Aluminium Chloride Colorimetric method, whereas antioxidant activity was determined by 2,2-Diphenyl-1-Picrylhydrazyl (DPPH)

assay and Ferric Reducing Antioxidant Power (FRAP) assay. **Results:** In this study, NR showed the highest total phenolic content (1.33 ± 0.03 mg GAE/g DW, $p < 0.001$) whereas NA showed the lowest (0.94 ± 0.01 mg GAE/g DW, $p < 0.001$). The highest total flavonoid content was shown in CR (0.42 ± 0.05 mg CE/g DW, $p < 0.001$), while the lowest was shown in NR (0.16 ± 0.03 mg CE/g DW, $p < 0.001$). In terms of antioxidant activity, NR significantly showed the highest DPPH (92.63 ± 0.61%, $p < 0.001$). The highest FRAP value was exhibited in CA (20.30 ± 0.89 μM Fe^{2+}/g DW, $p < 0.001$). Total phenolic content ($r = 0.663$, $p < 0.05$) and total flavonoid content ($r = -0.734$, $p < 0.01$) were significantly correlated with DPPH. No significant correlation was found between total flavonoid content and FRAP. **Conclusion:** The results indicated that rags exhibit higher antioxidant properties than avrils in most analyses. Thus, the discarded parts could be a potential source for extracting potent, natural, and non-toxic antioxidants for use as active pharmaceutical ingredients.

D19 Nutrient quality of products of animal origin (PAO) available in selected hypermarkets around Bukit Jalil

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Introduction: Ultra-processed food consumption especially meat products is associated with an increased risk for weight gain and elevated risk of adiposity-related co-morbidities in adults. However, limited information is available on the nutrient qualities of ultra-processed meat products available in Malaysia. This study aims to assess the nutrient quality of products of animal origin (PAO) in selected hypermarkets in Bukit Jalil. **Methods:** A cross-sectional survey was conducted in hypermarkets. Nutrient information of PAOs were collected in standardised portions of 100g per serving size. Mean and standard deviations were determined for the nutrients mentioned on the nutrition information panel and One-Way ANOVA was used for comparison. **Results:** A total of 173 products were sampled with 43.4% were chicken products, followed by fish and seafood (41.6%), beef (2.3%), and pork (2.9%). Frozen chicken products were found to have significantly higher energy (229.45 ± 80.66 kcal), total fat (11.46 ± 5.45g), protein (13.28 ± 3.60g) and sugar (2.96 ± 4.10g) while frozen fish and seafood products were found to have significantly lower energy (175.43 ± 82.06 kcal), carbohydrate (16.12 ± 6.35g), protein (9.65 ± 2.38g) and sodium (460.90 ± 172.63mg). In terms of energy (10.39%), carbohydrate (3%), sugar (0.6%), and sodium (31.9%) frozen chicken products contributed the most to daily recommendation. Frozen lamb products contributed to most to daily recommendation in terms of total fat (24.2%) and protein (25.5%). While frozen fish and seafood products contributed the least to daily recommendation in terms of energy (6.21%), total fat (10.7%), and protein (16.8%). Frozen lamb products contributed the least to daily carbohydrate (1%) recommendation, and frozen beef products contributed the least to daily sodium recommendation (20.7%). **Conclusion:** The study findings underscore the importance of examining the Nutrition Information Panel (NIP) on meat products to help consumers choose items that align with their specific dietary needs.

D20 Differential effects of cooking methods on ascorbic acid, phenolics, flavonoids, and antioxidant activity in Chinese yam

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Introduction: Chinese yam or *Dioscorea Polystachya Turz.* is a popular root vegetable in East Asia, especially China due to its health-promoting properties. Despite its increasing popularity and demand, it has been largely unexplored and underutilised in the aspects of the impact of cooking on its nutritional content. Therefore, the present study investigated the effects of various cooking methods on the ascorbic acid content, total phenolic content (TPC), total flavonoid content (TFC), and antioxidant activity of Chinese yam. **Methods:** Four Chinese yam samples were prepared: fresh, boiled, steamed, and stir-fried. The ascorbic acid content of Chinese yam samples were determined by using high-pressure liquid chromatography (HPLC). Total phenolic content of the samples was evaluated by Folin-Ciocalteu (FC) assay, while total flavonoid content was evaluated by aluminium chloride colourimetry method. The antioxidant activity of samples was examined by α, α-diphenyl-2-picrylhydrazyl (DPPH) and ferric reducing antioxidant power (FRAP) assays. **Results:** There was a significant reduction in ascorbic acid content after boiling, steaming, and stir-frying ($p < 0.05$). Stir-frying (8.75 ± 0.23 mg GAE/g DW) demonstrated a significantly higher TPC compared to boiling (4.84 ± 0.43 mg GAE/g DW) and steaming (5.12 ± 0.72 mg GAE/g DW) of samples ($p < 0.05$). Additionally, a non-statically significant increase in TFC in the samples after being subjected to cooking ($p > 0.05$) was observed. Both DPPH and FRAP assays revealed that stir-fried samples had a significantly higher antioxidant activity after cooking. ($p < 0.05$). There was a strong, negative correlation found between ascorbic acid content ($r = -0.62$) and TPC ($r = -0.72$) with EC50 (DPPH). Moreover, a strong, positive correlation was found between TPC and FRAP ($r = 0.924$). **Conclusion:** Boiling resulted in the greatest loss of analysed parameters compared to steaming and stir-frying. Stir-frying appeared to be the optimal method to preserve or enhance TPC and antioxidant activity in Chinese yam.

D21 Sugar analysis in tea-based sweetened beverages by using different analytical methods

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Introduction: Tea-based sweetened beverages are widely consumed in Malaysian restaurants. Despite their popularity, there is limited information on the sugar content in these drinks and the average sugar reduction in 'kurang manis' (less sweet) beverages. Additionally, there is no established standard protocol for analysing sugar content in these types of beverages. This study aimed to determine and compare the sugar content in selected tea-based sweetened beverages and their 'kurang manis' types using four analytical techniques. **Methods:** This comparative study involved three types of tea samples - Teh O, Teh C, and Teh Tarik - and their 'kurang manis' versions, purchased from two restaurants. Sugar content was analysed using high-performance liquid chromatography (HPLC), phenol sulfuric acid method, Lane-Eynon titration, and refractometry. Statistical analysis was conducted to identify significant differences. **Results:** A statistically significant difference was observed in the total sugar content of tea samples by each method ($p < 0.001$). Teh Tarik contained the highest sugar content, followed by Teh C, and Teh O. Although only five samples of 'kurang manis' beverages had significantly lower sugar

content ($p < 0.05$), vendors intentionally decreased the sweeteners in their preparation process. When comparing analytical techniques, HPLC detected the lowest sugar content, followed by Lane-Eynon titration. Both the phenol-sulfuric acid method and refractometry presented high sugar levels in most samples, especially in Teh Tarik and Teh C. A two-way ANOVA indicated a significant interaction between the effects of methodology and tea samples types on sugar content [$F(33, 84) = 38.251$, $p < 0.001$]. **Conclusion:** HPLC remains the preferred method for quantifying sugar in tea-based sweetened beverages due to its popularity and validity in analyzing local food and beverages. Future studies should improve the quality control, accuracy, and precision of these methods when investigating other nutritional aspects in similar beverages.

Group E: Experimental Nutrition (animal and in-vitro studies)

E01 Exploring the efficacy of *Aspalathus linearis* and *Citrus bergamia* in combating hypercholesterolemia and obesity: enzyme inhibition, antioxidant activity and phytocompound analysis

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Introduction: Hypercholesterolemia, characterized by elevated low-density lipoprotein cholesterol (LDL-C) levels, and obesity, defined by excess body fat accumulation, are significant health concerns. While statins and orlistat are the commonly used drugs to manage LDL-C, their long-term usage are associated with adverse effects. Consequently, there is a growing interest in herbal alternatives that may mitigate these conditions with less or no side effects. **Methods**: This study investigated the biological activity of *Aspalathus linearis* (*A. linearis*) and *Citrus bergamia* (*C. bergamia*) extracts through in-vitro enzyme inhibition assays targeting HMG-CoA reductase, pancreatic lipase and cholesterol esterase. Antioxidant activities were assessed using DPPH, ABTS, and FRAP assays. High-Resolution Mass Spectrometry (HRMS) was employed to identify the phytocompounds present in these extracts. **Results:** *A. linearis* and *C. bergamia* extracts demonstrated significant inhibitory effects on key-enzymes: 82% and 44.5% inhibition against HMG-CoA reductase, respectively; 62.46% and 56.91% inhibition against pancreatic lipase, respectively; and 70.94% and 84.90% inhibition against cholesterol esterase, respectively. The antioxidant activity of *A. linearis* and *C. bergamia* extracts, assessed via DPPH, showed IC50 values of 90.10 µg/ml and 260.4 µg/ml, respectively. The ABTS assay revealed IC50 values of 10.86 µg/ml and 37.92 µg/ml, respectively, while the FRAP assay showed IC50 values of 139.7 µg/ml and 370.1 µg/ml, respectively. Overall, extracts from *A. linearis* and *C. bergamia* exhibited high antioxidant activities in DPPH, ABTS, and FRAP assays. Based on HRMS analysis, *A. linearis* was found to contain 16 flavonoids, while C. bergamia contain 2 flavanols, 4 oxygen heterocycles, 1 limonoid, 1 flavone-O-glycoside, and 2 flavonoids. **Conclusion**: The selected herbs, rich in diverse phytocompounds, demonstrated significant enzyme inhibition and antioxidant capacities, offering promising prospects in ameliorating hypercholesterolemia and obesity. Currently the ongoing research is focusing on *in-silico* molecular docking analysis and *in-vivo* studies, to elucidate the compounds accountable for the effects and to further explore their therapeutic applications.

E02 Molecular docking of bioactive compounds derived from *Manilkara zapota* (L.) P. Royen in EGFR/NF-κB signaling in proliferation of human hepatocellular carcinoma (HepG2) cells

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Introduction: Liver cancer has emerged as the third most prevalent cancer-related fatalities globally, ranking after lung cancer and colorectal cancer. It accounted for approximately 830,180 or 8.3% of deaths in 2020. *Manilkara zapota* (L.) P. Royen is gaining attention of researchers globally as a good source of naturally occurring anti-diabetic, anti-microbial, antioxidant, anti-inflammatory, anti-aging, anticancer, and cardioprotective activities. However, the interaction stability of *Manilkara zapota* (L.) P. Royen in human hepatocellular carcinoma (HepG2) cells is poorly understood. Therefore, we aimed to investigate the interaction stability of *Manilkara zapota* (L.) P. Royen extracts against HepG2 cells. **Methods:** This secondary data analysis involves two potential proteins and twenty-six different bioactive compounds from the *Manilkara zapota* (L.) P. Royen extracts. The initial step involves preparing the structures of bioactive compounds from *Manilkara zapota* (L.) P. Royen and the target proteins through molecular modeling. The next stage employs molecular docking software using AutoDock. **Results:** LC-MS data revealed that there are 26 bioactive compounds identified in the *Manilkara zapota* (L.) P. Royen extracts. Among two proteins that we selected, nuclear factor-kappa B (NF-κB) showed better interaction with Apocynin A compound, with docking score of -223.06 and confidence score of 0.8117, followed by epidermal growth factor receptor (EGFR) interaction with Robinetin 3-rutinoside, with docking score of -128.25 and confidence score of 0.3929. **Conclusion:** We found that NF-κB showed the strong interaction stability with Apocynin A compound, with docking score of -223.06 and confidence score of 0.8117. This research paves the way for future studies and potential clinical applications in cancer treatment.

E03 Health benefits of different types of banana peel extracts on cell culture

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Introduction: Value addition in the food business is a reflection of consumers' growing health consciousness, which is fueling a shift toward natural, nutrient-dense foods. Studies on lipid accumulation from banana peels indicate that food waste can be used to enhance health that could benefit malnourished people. More research is needed to determine the health advantages of banana peel extract on cell cultures. Thus, this study aimed to investigate the impact of different types of banana peel extracts (commercial unripe banana flour, sun-dried and freeze-dried Cavendish banana peels flour) with regards to their physicochemical and biological properties. **Methodology:** Banana peel preparation and drying methods include sun and freeze drying; blending of the peels; extraction of ethyl acetate and methanol using an EYELA Rotary Evaporator N-1000; cultivation of 3T3-L1 cells; assessment of cell viability and proliferation by WST-8 assay; with Oil Red O staining to investigate lipid accumulation. **Results:** Findings showed that banana peel extracts have varying impacts on the build-up of lipids in 3T3-L1 cells. The WST-8 cell proliferation and viability experiment showed dose-dependent responses. 3T3-L1 pre-adipocytes treated

with 100 µg/mL of the extracts demonstrated decreased cell proliferation in comparison to the control group: 0.065±0.003 for sun-dried banana peels, 0.051±0.002 for freeze-dried banana peels, and 0.051±0.002 for commercial unripe banana flour. Reduced cell growth was observed at 10 µg/mL and 100 µg/mL concentrations of Oil Red O staining, whereas lipid accumulation was unaffected by 1 µg/mL. This implies that, in comparison to greater doses like 100 µg/mL, 1 µg/mL is less efficient in inhibiting lipid production. **Conclusion:** Banana peel extracts were found to have an impact on cell survival and proliferation, promoting adipogenesis and raising lipid accumulation at concentrations of 1 µg/mL and reduction at 10 and 100 µg/mL. This showed that cellular health and function can be enhanced by banana peel flour, benefiting the malnourished individuals.

E04 Exploring the effect of chickpea (*Cicer arietinum* L.) extract on adipocyte functions

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Introduction: Consuming chickpeas, particularly the Kabuli subgroup, is associated with various health benefits, including weight control. However, limited research on how Kabuli chickpea extract affects adipocytes, which are crucial for fat metabolism. This study aims to investigate the effects of Kabuli chickpea extract on the viability, proliferation and lipid accumulation in 3T3-L1 pre-adipocyte cells. **Methodology:** Kabuli chickpeas were ground into powder and soaked in ethyl acetate and methanol. The extracts were obtained using an EYELA Rotary Evaporator N-1000. 3T3-L1 pre-adipocyte cells were cultured, and their viability and proliferation were assessed using the WST-8 assay. Lipid accumulation was examined with Oil Red O staining. Each experiment was performed three times. **Results:** Based on the WST-8 experimental results, sample concentrations of 1 and 10 µg/mL show optimal rates of cell proliferation and viability in 3T3-L1 cell culture compared to the control. A significant difference in lipid accumulation in 3T3-L1 cells for both ethyl acetate and methanol extracts at concentrations of 1 and 10 µg/mL was observed ($p<0.05$). **Conclusion:** Kabuli chickpea extract enhances the viability and proliferation of 3T3-L1 pre-adipocyte cells and increases lipid accumulation when treated with ethyl acetate and methanol extracts at concentrations of 1 and 10 µg/mL, compared to the control. This suggests that Kabuli chickpeas could be beneficial in regulating adipogenesis and lipid metabolism, which are critical factors in maintaining a healthy weight and preventing obesity-related conditions.

Group F: Food Science & Technology

F01 Determination of mutagenicity effects in plant-based burgers

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Introduction: The consumption of processed foods, such as hotdogs, burger patties, and meatballs, has increased with modernisation. Processed meat is classified as a Group 1 carcinogen by the International Agency for Research on Cancer (IARC), suggesting that consuming 50g of processed meat daily increases colorectal cancer risk by 18%. Consequently, there is a growing shift towards plant-based foods for health and well-being. However, in Malaysia, there is limited scientific evidence on absence of mutagenic activity in plant-based processed foods. This study aimed to develop a plant-based burger patty and evaluate its mutagenic potential compared to a commercial meat-based burger patty. **Methods:** In Phase 1, a plant-based burger patty was formulated with sample A containing oyster mushrooms, sample B containing splitgill mushrooms, and sample C being meat. In Phase 2, an Ames test was conducted to assess the mutagenic effects of the developed plant-based burger patty compared to a commercial meat-based burger patty. The Ames test employed *S. Typhimurium* strains TA98 and TA100 to detect frameshift and base-pair substitution mutations, respectively. Tests were conducted with and without the presence of the liver S9 fraction mixture for accurate results. **Results:** When determining the mutagenic effect with the presence of the liver S9 fraction for strain TA98, the values for samples A, B, and C were 28.33 ± 1.00, 30.00 ± 1.00, and 35.00 ± 4.58, respectively. For strain TA100, the values were 209.33 ± 9.50, 211.00 ± 8.00 and 226.33 ± 3.22 for samples A, B, and C, respectively. **Conclusion:** The study found no significant correlation (p>0.05) between the developed plant-based burger patties and mutagenic activity, indicating that the plant-based burger patties made from young jackfruit, oyster mushrooms, and splitgill mushrooms do not pose a cancer risk to consumers. This supports the potential health benefits of plant-based alternatives to processed meat products.

F02 The effects of sous-vide and conventional cooking methods on physicochemical, nutritional, and sensorial properties of meatballs made of local beef

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Introduction: The study investigates the impact of the sous-vide (SV) cooking method on the nutritional values, physicochemical properties, and sensory evaluation of meatballs made from local beef, comparing the outcomes with those of conventional cooking methods such as boiling and steaming. Amid growing concerns over protein deficiency, malnutrition, and the demand for high-quality, convenient food options, this research addresses the effectiveness of SV cooking in enhancing meat quality, particularly in terms of nutrient

preservation and sensory attributes. **Methods:** Utilising local beef to prepare meatballs, the study systematically examines the physicochemical characteristics (cooking yield and texture profile analysis), nutritional composition (proximate analysis), and sensory acceptability (appearance, colour, texture, chewiness, flavor, and overall acceptability) across different cooking techniques. **Results:** The findings reveal that SV cooking notably improves the physicochemical and nutritional quality of meatballs by maintaining higher levels of proteins and fats while ensuring minimal nutrient loss, compared to boiling and steaming. Sensory evaluation further supports SV cooking as a superior method, demonstrating enhanced acceptability in terms of texture and flavor. The research underscores the potential of SV cooking in enhancing meat preparation techniques, presenting substantial implications for the culinary industry. **Conclusion:** Consequently, this study contributes valuable insights into the application of SV cooking to promote healthier and more appealing food options, suggesting a shift towards nutritionally beneficial and sensory-pleasing meat products. The study provides practical solutions to improve dietary quality and combat malnutrition, ultimately contributing to better nutritional health outcomes.

F03 Quantification of selected polyphenols in honey using UHPLC-PDA: method development and validation

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Introduction: Polyphenols are a group of secondary metabolite compounds found in plants. Honey derived from the nectar or sap of plants collected and modified by the bees also contains polyphenols that contribute to its health benefit properties. Since polyphenols are one of honey's important constitutions, it is necessary to develop methods to quantify their amount in honey for monitoring and research purposes. Therefore, this study aims to develop and validate a quantification method for five selected polyphenols commonly found in honey. **Methods:** Stock solutions of standard phenolic compounds of interest; gallic acid, catechin, *p*-coumaric acid, kaempferol and quercetin were prepared in a range of concentrations; 2, 6, 10, 20, 60 and 100 ppm. A single mixed standard containing all five polyphenols was used for the development and validation of the UHPLC method using an ACQUITY UPLC® H-Class system coupled to an ACQUITY UPLC® Photodiode Array Detector and an ACQUITY UPLC® BEH C18 column, 1.7 µm (Waters Corporation, Milford, MA, USA) at a wavelength of 254 nm. The chromatographic testing variables included (a) mobile phases of water/acetic acid (0.1% v/v, solvent A) and acetonitrile/acetic acid or methanol/acetic acid (0.1% v/v, solvent B), (b) gradient (c) column temperatures (25°C, 35°C and 45°C) and flow rates (0.35, 0.45-, and 0.55-mL min^{-1}). **Results and Conclusion**: The best separation of polyphenols in the chromatogram was chosen based on their retention time and the accuracy of their standard curve (R^2 > 0.99). Under ideal conditions or circumstances, all five compounds were segregated in less than twelve minutes. The method was validated according to the ICH Guideline Q2 (R1) recommendations 2005, demonstrating excellent detection and quantification of linearity (R^2 value of 0.999 or greater) and precision ranging between 0.07 to 0.85% (repeatability) and 0.13 – 0.56% (intermediate).