



37th

**Scientific
Conference**

Theme

**Nutrition Response
to COVID-19 & NCDs**

Programme & Abstracts

21 - 22 June 2022

ZOOM Online Platform



IQ or EQ?

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*National Coordinating Committee on Food and Nutrition, Ministry of Health Malaysia; BR Recommended Nutrient Intakes for Malaysia: a report of the Technical Working Group on Nutrient Guidelines 2017. FADWHO recommends daily dietary DHA intake of 100-120mg/kg body weight for children 12-24 months or 100-150mg DHA+EPA for children 2-4 years old. Reference: FAD 2017. Fats and fatty acids in human nutrition. Report of an expert consultation. FAO Food and Nutrition Paper no.97. FAO, Rome.
*Coupled with proper nutrition and positive stimulation, nutrition supports growth and brain development, which is the foundation of mental (IQ) and emotional (EQ) development.
MFG-01-04F25-22141

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*Reference: Mokhtar N, Jaafar NM, 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



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Conference Secretariat



12-A, Jalan PJS 8/4, Mentari Plaza, Bandar Sunway,
46150 Petaling Jaya, Selangor.

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Members of the 19th Council & Organising Committee of 37th Scientific Conference

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President's Welcome Message

On behalf of the 19th Council of NSM, I welcome everyone to the 37th Annual Scientific Conference of Nutrition Society of Malaysia (NSM)!

In view of the uncertainty of the COVID-19 pandemic at the early part of this year, the NSM Council decided to organise this 37th Conference on a virtual platform. We hope to be able to have an in-person conference next year, or at least a hybrid one.

The conference theme for this year is 'Nutrition response to COVID-19 and NCDs'.

It is such a relief to all that the pandemic situation in the country has improved greatly. Positive cases and hospitalisations have declined, businesses have re-opened, and traffic jams in cities are back! Yet, we should not be complacent and let our guard down as there are warnings of other mutant strains of the virus that might surface to hound us.

With the height of the COVID-19 pandemic behind us, we should not overlook a group of more debilitating and life-threatening conditions – the non-communicable diseases (NCDs). Many more Malaysians are afflicted by NCDs and their risk factors. We should therefore continue our war on NCDs, especially focusing on their prevention.

Therefore the overarching theme of this Conference highlights the importance of nutrition as an integral part of the nation's fight against COVID-19, an enemy that we must continue our vigilance, and NCDs, a group of more debilitating health threats that have been with the nations for decades.

In addition to diet-related NCDs, it is also essential to remind ourselves of the



Tee E Siong, PhD

President,
Nutrition Society of Malaysia
president@nutriweb.org.my

continuing presence, or worsening in some cases, of undernutrition problems. Scaling up efforts to prevent all forms of malnutrition must be at the top of the agenda of all nutritionists in this country. There must be greater urgency in implementing the programmes and activities identified in the National Plan of Action for Nutrition. This includes ensuring food and nutrition security in the country, especially for the economically deprived and vulnerable groups.

With the implementation of the Allied Health Professions Act in the second half of this year, nutritionists will be recognised as a profession under the Act. It has become even more crucial for nutritionists from all sectors to stand out and contribute to alleviation of nutrition issues in the country.

NSM has provided this conference as a platform for productive knowledge and experiences exchange and discussions on the prevailing nutrition issues in the country. We encourage everyone to make the best use of this opportunity. Browse the conference website to view all the conference materials, scientific posters and the virtual exhibition booths to make the best of this event.

Sincere gratitude to all who have contributed to the successful organisation of this third virtual Conference by NSM. I truly appreciate the effort and dedication of all speakers, oral and poster presenters, participants, sponsors and the secretariat of the Conference.

My sincere appreciation to the 19th Council Members of NSM for their full cooperation in organising this Conference.

May everyone have a fruitful virtual conference!



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

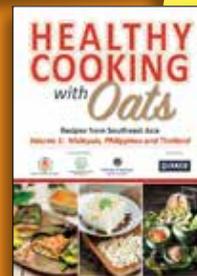


Our Activities

- 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



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



Healthy Eating During Pregnancy & Lactation

Wonders of Whole Grains



Malaysian Dietary Guidelines leaflets



Breastfeed with Confidence

Baby's First Bites

Healthy Spoonfuls for Toddlers



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

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

2 main approaches and activities...

Community outreach roadshows

- Nutrition screening
- Individualised nutrition advice
- Dissemination of nutrition educational materials
- Cooking demonstration



Online nutrition promotion

through social media (i.e. Facebook, Instagram)

- Ask A Nutritionist series (Live chat session with nutritionists)
- NSM Nutritionist's Kitchen (cooking demonstrations)
- NSM Recipe cards (healthy recipes for family cooking)
- Special Events: NSM Virtual Fun Run/Walk, NSM Recipe Books Giveaway
- Variety of nutrition information (NutriQuote; NutriFun Quiz; other infographic nutrition messages)

NSM NUTRITIONIST'S KITCHEN



HEALTHY NUTRITION TO FIGHT COVID-19 AND MUCH MORE!



ASK A NUTRITIONIST

Topic: Staying Active during Covid-19



Contact us: nsmroadshows@nutriweb.org.my



[nsmnutritionroadshows2](https://www.facebook.com/nsmnutritionroadshows2)



[nsmnutritionroadshows2](https://www.instagram.com/nsmnutritionroadshows2)



www.nutriweb.org.my



Virtual Nutrition Fair

Fight COVID-19 & NCDs with Healthy Nutrition

virtualfair.nutritionmonthmalaysia.org.my

July 19 – 31, 2022 • Register now to win prizes!

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Acknowledgements

The Nutrition Society of Malaysia gratefully acknowledges contributions from the following to the 37th Scientific Conference:

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- Herbalife Nutrition
- Kerry

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- International Life Sciences Institute Southeast Asia Region

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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.



Good Nutrition Key to Healthy Children

Multi-country initiative of



Jointly implemented by



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
Chulabhorn



Vietnam Nutrition Association

Recognising the importance of preventing the double-burden of malnutrition from a young age, the Southeast Asia Public Health Nutrition (SEA-PHN) Network has initiated a multi-country nutrition education initiative called Good Nutrition – Key to Healthy Children (GNKHC). It aims at empowering school children with appropriate nutrition knowledge to enable them to adopt healthier eating habits and be physically active. This will be implemented via a specially designed nutrition module developed by member societies/associations of the SEA-PHN Network in Indonesia, Malaysia, Philippines, Thailand and Vietnam. The module, comprising nine topics on the basics of healthy eating and active living, will be implemented by the school teachers in selected schools, trained to conduct the lessons and carry out various interactive activities.

This initiative is supported by unconditional educational grants from corporate partners of the Network, namely BENEÓ GmbH, Danone, DuPont Nutrition & Health, Mondelez International (from 2018), Nestlé (until 2017), PepsiCo (Quaker), and Tate & Lyle (till 2017).

Teaching Materials of the GNKHC Nutrition Module



Teacher's Guidebook and Student's Workbook



Learning Slides



Materials for Interactive activities

Parent's leaflet

Conference Scientific Programme

CONFERENCE DAY 1: TUESDAY, 21 JUNE, 2022

0830 hrs Signing on to ZOOM platform

OPENING & AWARD OF NSM PRIZES

0900 hrs **Speech and official opening by**

Dr Tee E Siong

President, Nutrition Society of Malaysia

- Presentation of NSM Undergraduate and Postgraduate Prizes
- Presentation of NSM Publication Prizes
- Confering of NSM Fellows

KEYNOTE LECTURE

Chairperson: Tee E Siong

President, Nutrition Society of Malaysia

1000 hrs **Nutrition interventions to combat NCDs and COVID-19 health threats – Experiences in Japan**

Hisanori Kato

University of Tokyo, Japan

1045 hrs **Break / E-poster Viewing / Exhibitor Page Viewing**

SYMPOSIUM 1 : Maternal, Infant and Child Nutrition

Chairperson : Mahenderan Appukutty

University Technology MARA

1130 hrs **Nutritional status and changes in dietary habits during COVID-19 pandemic among children aged 0.5 to 12.9 years:**

Key findings from SEANUTS II Malaysia

Poh Bee Koon

Universiti Kebangsaan Malaysia

Maternal infant nutrition: Risk factors and interventions in Malaysia

Hamid Jan Jan Mohamed

Universiti Sains Malaysia

Severe malnutrition surrounded by marine proteins

Yasmin Ooi Beng Houi

Universiti Malaysia Sabah

1230 hrs **Lunch Break / E-poster Viewing / Exhibitor Page Viewing**

INVITED LECTURE 1

Sponsored by Kerry

Chairperson : Lee Jau Shya
Universiti Malaysia Sabah

1330 hrs

Not all yeast beta glucans are the same - A deeper look into Wellmune's unique differentiating molecular structure

Sonja Nodland

Research Development and Application Principal Scientist, Kerry

BC30 – A unique spore-forming probiotics that survives and thrives

Genny Tan

Applied Health & Nutrition Business Development Manager, Kerry

INVITED LECTURE 2

Sponsored by the BENE0-Institute

Chairperson : Truong Tuyet Mai
National Institute of Nutrition, Vietnam

1415 hrs

Nutrition response to COVID-19 and NCDs: Unlocking nutritional tools for gut microbiota support and low blood glucose profiles

Goh Peen Ern

Nutrition Communication Asia Pacific, BENE0-Institute/BENE0 Asia Pacific Pte Ltd

YOUNG RESEARCHERS' SYMPOSIUM

Chairperson : Chin Yit Siew, Universiti Putra Malaysia &
Wee Bee Suan, Universiti Sultan Zainal
Abidin

1500 hrs

Inadequate vegetable consumption among urban poor children in Kuala Lumpur, Malaysia: Influence of psychosocial and garden-related factors

Mok Kai Ting, Tung SEH, Satvinder K, Chin YS, Mohammad Yusoff M and Ulaganathan V

Department of Food Science and Nutrition, Faculty of Applied Sciences, UCSI University

1520 hrs

Prospective associations between an empirically derived dietary pattern and life satisfaction during adolescence

Mugambikai Magendiran, Geeta A, Chin YS, Nor AE, Zalilah MS, Azriyanti AZ and Nurainul HS

Department of Nutrition and Dietetics, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

- 1540 hrs **Predictors of sleep quality among early adolescents in Peninsular Malaysia: Findings from the South East Asian Nutrition Surveys II (SEANUTS II) Malaysia**
Teh Shu Chin, Chan CMH, Lee ST, Nik Shanita S, Schaafsma A and Poh BK, on behalf of the SEANUTS II Malaysia Study Group
Center for Community Health Studies (ReaCH), Faculty of Health Sciences, Universiti Kebangsaan Malaysia
- 1600 hrs **Dietary intake, blood antioxidant level and inflammation status amongst Malaysian football players**
Choo Zi Ying, Chong MHZ, Shyam S, Tan SS and Appukutty M
Division of Nutrition and Dietetics, School of Health Sciences, International Medical University
- 1620 hrs **The prevalence of poor diet quality among older adults with low socioeconomic status in Kelantan**
Nurul Syahidah Mohd Nazri, Divya V and Soo KL
School of Health Sciences, Universiti Sains Malaysia
- 1640 hrs **E-poster Viewing / Exhibitor Page Viewing**
- 1700 hrs **End of Day 1**

CONFERENCE DAY 2: WEDNESDAY, 22 JUNE, 2022

0845 hrs Signing on to ZOOM platform

FREE PAPER PRESENTATIONS

Chairperson : Gan Wan Ying, Universiti Putra Malaysia & Sharifah Intan Zainun Sharif Razak Ishak, Management and Science University

0900 hrs **Chrononutrition and dietary patterns among pregnant women in Kuala Lumpur**

Kok Ee Yin, Yeo YX and Satvinder K

Department of Food Science with Nutrition, Faculty of Applied Sciences, UCSI University, Malaysia

0910 hrs **Antenatal multiple micronutrients use among urban Malaysian pregnant**

Lee Siew Siew, Loh SP, Ling KH, Tusimin M, Subramaniam R and Rahim FK

School of Biosciences, Faculty of Science and Engineering, University of Nottingham Malaysia

0920 hrs **Association of sociodemographic livelihood, postnatal care and infant behaviours with maternal emotional experiences during COVID-19 pandemic in Malaysia**

Nuruljannah Mohamad Nasri, Mohd Shukri NH and Gan WY

Department of Nutrition, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

0930 hrs **Teaching and learning experience sharing in empowering nutrition students in conducting virtual community nutrition and health promotion programmes during COVID-19 pandemic**

Chin Yit Siew

Department of Nutrition, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

0940 hrs **Street food in Malaysia: What is the sodium level?**

Hasnah Haron, Zainorain Natsha ZA, Hamdan M, Siti Farrah Zaidah MY, Tanaka T, Sakinah H, Nor Hayati I, Shariza AR, Hanapi MJ, Chua HP, Lee JS, Risyawati MI and Lee LK

Nutritional Science Programme, School of Healthcare Sciences, Faculty of Health Sciences, Universiti Kebangsaan Malaysia

0950 hrs **The quality of supercritical carbon dioxide extracted dabai pulp oil and its beneficial effects in hypercholesterolemic rat – A new alternative fat**
Noor Atiqah Aizan Abdul Kadir, Azrina A, Farifah A and Intan Safinar I
Faculty of Food Sciences and Nutrition, Universiti Malaysia Sabah

INVITED LECTURE 3

Sponsored by Herbalife Nutrition
Chairperson : Norimah A Karim
International Medical University

1000 hrs **Functional role of nutrition in addressing NCD**
Li Zhaoping
Division of Clinical Nutrition, David Geffen School of Medicine, UCLA

1045 hrs **Break / E-poster Viewing / Exhibitor Page Viewing**

SYMPOSIUM 2 : Nutritional Concerns of Older Persons

Chairperson : Hanis Mastura Yahya
Universiti Kebangsaan Malaysia

1115 hrs **Clinical experiences of a geriatrician**
Alan Ch'ng Swee Hock
Department of Medicine, Seberang Jaya Hospital, Penang

Ageing with resilience: The WE-RISE multidomain intervention
Resshaya Roobini Murukesu
Center for Healthy Ageing and Wellness, University Kebangsaan Malaysia

1215 hrs **Lunch Break / E-poster Viewing / Exhibitor Page Viewing**

INVITED LECTURE 4

Sponsored by Malaysian Palm Oil Board
Chairperson : Norhaizan Bt Mohd Esa
Universiti Putra Malaysia

1315 hrs **Palm oil nutrition research: What's new**
Kanga Rani Selvaduray
Product Development and Advisory Services Division, Malaysian Palm Oil Board

SYMPOSIUM 3 : Learning from Virtual Nutrition Activities

Chairperson : Khairul Zarina bt Mohd Yusop
Ministry of Health Malaysia

1400 hrs

Better Health Programme – A digital, community-based intervention to reduce NCD risks in a B40 community

Lim Shiang Cheng

Better Health Programme Malaysia, RTI International Malaysia

Online promotion of healthy nutrition during the COVID-19 pandemic

Gui Shir Ley

State Health Department Wilayah Persekutuan Labuan

The virtual motivational weight loss online programme: 30-days diet challenge to adults during COVID-19 pandemic

Surainee Wahab

AAA Vision Academy

1500 hrs

Break / E-poster Viewing / Exhibitor Page Viewing

SYMPOSIUM 4 : Physical Activity and Sedentary Behaviour

Chairperson : Wong Jyh Eiin
Universiti Kebangsaan Malaysia

1530 hrs

Malaysian Active Kids Report Card 2022 – How do our children and adolescents fare?

Mohd Razif Shahril

Universiti Kebangsaan Malaysia

Physical activity measurement methodologies: A systematic review in the Association of South East Asian Nations (ASEAN)

Michael Chia Yong Hwa

National Institute of Education, Nanyang Technological University, Singapore

Anthropometric and physical activity status of B40's women during COVID-19 pandemic

Khairil Shazmin

Universiti Malaysia Terengganu

POSTER FINALISTS PRESENTATIONS

Chairperson : Yasmin Ooi Beng Houi
Universiti Malaysia Sabah

1630 hrs

Poster Finalists Presentations

PRIZE GIVING CEREMONY AND CLOSING

Chairperson : Mahenderan Appukutty
Vice-President, Nutrition Society of Malaysia

- 1630 hrs **Prizes presentation**
- Young Researchers' Symposium
 - Undergraduates Poster Competition
- 1700 hrs **End of Conference**

POST-CONFERENCE: THURSDAY, 23 JUNE 2022

BRIEFING SESSION ON:

REGISTRATION OF ALLIED HEALTH PROFESSION PRACTITIONERS FOR AHP ACT 774: NUTRITIONISTS

- 1015 hrs **Participants login***
- 1030 hrs **Briefing by Dr Tee E Siang, Member, Malaysian Allied Health Profession Council (MAHPC), supported by Allied Health Sciences Division, Ministry of Health Malaysia, Secretariat of MAHPC**
- 1130 hrs **Questions and Answer**
- 1200 hrs **Session end**

Platform: Zoom

Live streaming: NutritionistKKM Facebook Page

** Session is open to all intending practitioners and conference participants. Separate registration required via: <https://bit.ly/taklimatnutritionist>*

Conference Information

SCIENTIFIC PROGRAMME

All symposia and lectures will be organised via ZOOM online platform. Only registered participants via the link provided by the Secretariat will be able to enter the ZOOM platform.

Kindly log on through ZOOM online platform 15 minutes before the conference session begins:

- 21 June 2022: 8.45 am – 5.00 pm
- 22 June 2022: 8.45 am – 5.00 pm

General rules using the ZOOM Platform

Please ensure that you have a strong internet connection.

It is suggested to use a good headset to ensure clear audio.

The Zoom webinar platform will “mute” and turn off “webcam video” of all attending participants by default.

Participants will be able to type in their questions using the Q&A icon. Please do not use the Chat function to post your questions. Due to the limitation of time, only selected questions shall be addressed during any Q&A session.

SCIENTIFIC POSTER EXHIBITION

All scientific posters shall be available on a section called, “Scientific Posters” in the NSM Conference 2022 Website: https://www.nsmconference.org.my/scientific_posters

TRADE EXHIBITION

Trade exhibition is available on a section called “Virtual Exhibition” in the NSM Conference 2022 Website: https://www.nsmconference.org.my/virtual_exhibition

OFFICIAL LANGUAGE

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

CERTIFICATE OF ATTENDANCE

E-Certificate of Attendance will be given to all registered delegates and uploaded on the conference website within 30 days after the Conference (by 23 July 2022). Participants will need to download from the website following the instruction given on the website later. Special certificates will be given to those who participated in the Young Researcher’s Symposium, Free Paper Presentation sessions and Poster Exhibitions.

FOR PRESENTERS

Kindly turn on your webcam and unmute yourself when the Chairperson introduces you and invites you to start your presentation, or during the Q&A session. At other times, please turn off our webcam and mute the microphone.

It is suggested that you turn off desktop notifications during your presentation. An incoming message or alert on your screen can distract people from what you are sharing.

Please check your Chat Box at all times for any communication from the Secretariat/Panelist members.

SUBMITTING TRAINING GRANT CLAIMS TO HRD CORP

The Human Resource Development Corporation (HRD Corp) has approved the NSM 37th Scientific Conference to be claimable. HRD Corp has advised that registered employers under Kumpulan Wang Pembangunan Sumber Manusia (KWPSM) can apply training grant through the e-TRiS system by selecting 'Non-Registered Training Provider Details – Association' under the Skim Bantuan Latihan (SBL) only. The approval of the training grant is subject to the conditions set by PSMB. Please request from the Secretariat the official letter from HRD Corp.

The background is a vibrant red color with a complex, low-poly geometric pattern of various shades of red. In the center, there is a horizontal rectangular box with a silver gradient and a dark red border. Inside this box, the text "NSM Prizes 2022" is written in a bold, black, sans-serif font.

NSM Prizes 2022

NSM Postgraduate and Undergraduate Prizes 2022

Two types of NSM Prizes are awarded under the Education Fund of the Nutrition Society of Malaysia, according to the Bye-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 the undergraduate prize. In 2022, NSM is awarding six Postgraduate Prizes; three for PhD and three for MSc, with a total cash award of RM5,250. Seven undergraduates receive Undergraduate Prizes with a total cash award of RM 3,500. The total cash award for both categories of thesis prizes this year is RM8,750.

The recipients for the PhD thesis prize are:

1. Dr Nurliyana Binti Abdul Razak

Early Life Factors Associated with Growth and Cognitive Development Of Infants at 24 Months in Seremban, Malaysia

Supervisor: Prof Dr Zalilah Mohd Shariff

Co-supervisor(s): Assoc Prof Dr Gan Wan Ying, Dr Tan Kit Aun, Assoc Prof Dr Mohd Nasir Mohd Taib

University: Faculty of Medicine and Health Sciences, Universiti Putra Malaysia (UPM)

2. Dr Lee Shoo Thien

Physical Activity, Sedentary Behaviours and Related Factors Among Preschoolers in Kuala Lumpur

Supervisor: Professor Dr Poh Bee Koon

Co-supervisor(s): Assoc Prof Dr Geraldine Chan Kim Ling, Dr Wong Jyn Eiin

University: Faculty of Health Sciences, Universiti Kebangsaan Malaysia (UKM)

3. Dr Chang Chung Yuan Henry

Peak Bone Mass Attainment in Malaysian Children: Influence of Diet, Lifestyle Patterns, Vitamin D Status and Maternal Interactions

Supervisor: Prof Dr Winnie Chee Siew Swee

Co-supervisor(s): Assoc Prof Dr Erwin Khoo Jiayuan, Dr Megan Chong Hueh Zan, Dr Yang Wai Yew

University: School of Health Sciences, International Medical University (IMU)

The recipients for the MSc thesis prizes are:

1. Tan Meng Lee

Factors Associated with Iron Deficiency Anaemia among Pregnant Women Attending Selected Health Clinics in Selangor and Kuala Lumpur, Malaysia

Supervisor: Assoc Prof Dr Chin Yit Siew

Co-supervisor(s): Dr Salma Faeza Ahmad Fuzi, Dr Lim Poh Ying

University: Faculty of Medicine and Health Sciences, Universiti Putra Malaysia (UPM)

2. Ajlaa Binti A Rasid

Malnutrition Related Factors among Orang Asli Children After Discharge from Refeeding Programme in Government Hospitals

Supervisor: Professor Dr Poh Bee Koon

Co-supervisor(s): Dr Sameeha Mohd Jamil

University: Faculty of Health Sciences, Universiti Kebangsaan Malaysia (UKM)

3. Chew Wan Ling

Chrononutrition Factors Across Gestation and its Association with Maternal and Birth Outcomes

Supervisor: Asst Prof Dr Satvinder Kaur A/P Nachatar Singh

Co-supervisor(s): Asst Prof Dr Normina Ahmad Bustami, Dr Siti Raihanah Shafie, Dr Nor Aini Jamil @ A. Wahab

University: Faculty of Applied Sciences, UCSI University

The recipients for the Undergraduate thesis prizes are:

1. Nur Arina Binti Bakeri

Food Security Status and its Coping Strategies among Households Who Received the Lost Food Project Products in Selected Low-Cost Public Housing Areas in Klang Valley

Supervisor: Prof Dr Norhasmah Sulaiman

University: Faculty of Medicine and Health Sciences, Universiti Putra Malaysia (UPM)

2. Anis Balqis Binti Asiati Raili

Association of Breastfeeding and Complementary Feeding Practice with Nutritional Status of Infants Aged 6 to 24 Months in Kuala Lumpur and Selangor, Malaysia

Supervisor: Dr Sameeha Mohd Jamil

Co-supervisor(s): Dr Wong Jyh Eiin

University: Faculty of Health Sciences, Universiti Kebangsaan Malaysia (UKM)

3. **Loe Pei Yu**
 Quantitative Assessment of Food Environment Around the Public Schools in Penang State of Malaysia: A Geographic Information System (GIS)-Based Analysis Approach
Supervisor: Assoc Prof Dr Foo Leng Huat
University: School of Health Sciences, Universiti Sains Malaysia (USM)

4. **Eng Zen Yang Eddie**
 Association between Dietary Inflammatory Index and Overweight among the Aboriginal Primary School Children in Negeri Sembilan
Supervisor: Dr Vaidehi Ulaganathan
University: Faculty of Applied Sciences, UCSI University

5. **Ng Ying Yun**
 Sugar Tax in Malaysia: Food Industry's Response and Adolescents' Knowledge and Attitude towards This Tax
Supervisor: Dr Sangeetha Shyam
Co-supervisor(s): Puan Rokiah Don, Prof Datuk Dr Lokman Hakim Bin Sulaiman
University: School of Health Sciences, International Medical University (IMU)

6. **Kwan Yong Qi**
 Night Eating Syndrome and Its Association with Sleep Quality and Body Mass Index among University Students During the COVID-19
Supervisor: Dr Cheng Shi Hui
Co-supervisor(s): Dr Lee Siew Siew
University: Faculty of Science and Engineering, University of Nottingham Malaysia

7. **Nurul Balquis Binti Azlan**
 Eating Behaviour and Its Association with Anthropometric Indicators among Secondary School Teachers in Shah Alam, Selangor
Supervisor: Ms Sarina Sariman
Co-supervisor(s): Assoc Prof Dr Sairah Abdul Karim
University: Faculty of Health and Life Sciences, Management and Science University

NSM Publication Prize 2022

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 2022, two Corporate Members of NSM have supported this initiative, namely Fonterra Brands (M) Sdn Bhd (C 1879) and Herbalife Nutrition (C 2195).

Fonterra offered to sponsor prizes for three categories of NSM Publication Prizes. These are for three different fields of nutrition research, namely: Maternal Nutrition; Dairy Nutrition and Mobility and Musculoskeletal Health and Nutrition. For each category, the intention was to provide 1 award each year, each to carry a cash prize of RM2,000 and a certificate by NSM.

Herbalife Nutrition offered to sponsor prizes for four categories of NSM Publication Prize in different fields of nutrition research, namely Roles of Dietary Fibre in Health, Functional Foods & Healthy Ageing, Community Support to enable Healthy Lifestyle Changes and Soya Protein and Health Benefits. 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: Maternal Nutrition

Three applications were received for this category sponsored by Fonterra Brands Sdn Bhd. The Selection Committee decided to award the prize to one applicant, with the following details:

Name of recipient: **Dr Lee Siew Siew** [L 2150]
School of Biosciences, Faculty of Science and
Engineering, University of Nottingham Malaysia,
Semenyih 43500, Malaysia

Publication: Interplay between Maternal and Neonatal Vitamin D
Deficiency and Vitamin-D Related Gene Polymorphism
with Neonatal Birth Anthropometry *Nutrients* 2022, 14,
564.

NSM Publication Prize: Dairy Nutrition

No application was received for this category sponsored by Fonterra Brands Sdn Bhd.

NSM Publication Prize: Mobility and Musculoskeletal Health and Nutrition

Two applications were received for this category sponsored by Fonterra Brands Sdn Bhd. The Selection Committee decided to award the prize to one applicant, with the following details:

Name of recipient: **Chan Kai Sze** [O 2396]
Center for Community Health Studies (ReaCH), Faculty of Health Sciences, Universiti Kebangsaan Malaysia

Publication: Dietary Quality, Sleep Quality and Muscle Mass Predicted Frailty among Chinese Postmenopausal Women in Malaysia
Int. J. Environ. Res. Public Health 2022, 19, 2565

NSM Publication Prize: Roles of Dietary Fibre in Health

One application was received for this category sponsored by Herbalife Nutrition. The Selection Committee decided not to award the prize to this applicant.

NSM Publication Prize: Functional Foods & Healthy Ageing

Three applications were received for this category sponsored by Herbalife Nutrition. The Selection Committee decided not to award the prize to these applicants.

NSM Publication Prize: Community Support to Enable Healthy Lifestyle Changes

Three applications were received for this category sponsored by Herbalife Nutrition. The Selection Committee decided not to award the prize to these applicants.

NSM Publication Prize: Soya Protein and Health Benefits

No application was received for this category sponsored by Herbalife Nutrition.

NSM Young Researchers' Symposium Prizes 2022

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

1st Prize – RM400

2nd Prize – RM300

3rd Prize – RM200

1 Consolation Prize of RM100

Prizes for 2022, totalling RM1,000 are provided by International Life Sciences Institute (ILSI) Southeast Asia Region.

NSM Poster Competition Prizes 2022

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

1st Prize – RM200

2nd Prize – RM150

3rd Prize – RM100

7 Consolation Prizes of RM50 each

Prizes for 2022, totalling RM750 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 (various groups) & Community Interventions
- B: Dietary Intake, Consumption Pattern & Disease
- C: Nutrients & Other Components in Foods/Products
- D: Clinical Nutrition/Intervention Trials
- E: Food Science & Technology
- F: Experimental Nutrition

The best 10 posters put up by undergraduates shall be awarded cash prizes!

Poster Presentation

Group A: Nutritional Status (various groups) & Community Interventions

- A01 Effects of home-based exercise on nutritional status among university students
Afifah MH and Norliyana A
- A02 A web-based intervention programme for preschool child-parent dyads: Usability testing study
Ahmad Faezi AR, Sharifah Wajihah Wafa SSTW, Ruzita AT and Nor Mazlina AB
- A03 Association between self-esteem, body mass index (BMI) status and risk of eating disorders among health sciences students of Universiti Sains Malaysia, Health Campus, Kubang Kerian, Kelantan
Aida Nasrin MA and Juliana S
- A04 Association between sociodemographic factors, individual factors, involvement status in gardening and diet quality among adults in AU2 Keramat, Kuala Lumpur
Ang ZF, Norhasmah S, Baarathi B and Nurakmal Syahirah MF
- A05 Association of food environment and weight status in urban poor communities in Kuala Lumpur
Caleb Mok JW, Vaidehi APU and Tung SEH
- A06 Health-related physical fitness among children aged 6-12 years old in Malaysia: Findings from SEANUTS II
Chan KS, Farah NMF, Koh D, Wong JE, van Leeuwen JJM and Poh BK on behalf of the SEANUTS II Malaysia Study Group

- A07 Association between nutrition status and health-related quality of life among Universiti Malaysia Sabah undergraduate students
Chan V and Khor BH
- A08 Digital literacy and perceived barriers among preschool teachers towards development of eToyBox Study Malaysia
Chong YT, Nelson GL, Poh BK, Cheah WL, Ruzita AT, Koh D, Lee JAC, Yatiman NH, Essau CA, Reeves S, Summerbell C and Gibson EL
- A09 Sex differences in body composition and muscle-bone unit of preadolescent children aged between 9-11 years old in Malaysia: A secondary analysis of PREBONE-Kids study
Choo WQ, Chin CY, Arasu K, Megan CHZ and Chee WSS
- A10 Prevalence and factors associated with adherence to movement guidelines among preschoolers in Peninsular Malaysia
Christine J, Koh DCL, Wong JE, Lee ST and Poh BK on behalf of the SEANUTS II Malaysia Study Group
- A11 Personal and lifestyle factors associated with sleep quality among Malaysian undergraduate students during COVID-19 pandemic
Ee YX and Gan WY
- A12 Evaluating the usage and perception of digital nutrition information among adults in Klang Valley, Selangor
Fatin Umairah MK and Ramlah G
- A13 Exploring the sustainability of ToyBox Study Malaysia among preschool teachers as agents of change
Georgia LN, Chong YT, Lee JAC, Cheah WL, Ruzita AT, Koh D, Nur Hafizah Y, Essau CA, Reeves S, Summerbell C, Poh BK and Gibson EL
- A14 Changes in lifestyle-related behaviours and its association with weight status among adults during COVID-19 pandemic
Gillian A and Satvinder K
- A15 Development and validation of questionnaire to assess the nutritional knowledge related to cognitive function among older adults
Teo CW, Hanis Mastura Y and Ponnusamy S
- A16 The association of sociodemographic and lifestyle changes with body weight status during COVID-19 pandemic among university students in Shah Alam, Selangor
Iffa Nadia M, Sarina S and Pauziyah Mohammad S
- A17 Factors associated with stunting among children aged 4 to 12 years in Peninsular Malaysia
Ika Aida Aprilini M, Razinah S, Lim SM, Lee ST, Geurts JMW and Poh BK on behalf of the SEANUTS II Malaysia Study Group

- A18 Food safety knowledge, attitude and practice among working adults during Malaysia's national recovery plan
Isa Sim YX and Tan CX
- A19 Association between knowledge, attitude and practice of food labelling usage with risk of obesity among students in Universiti Sains Malaysia (USM), Health Campus
Kok JD, Nor Nabilah M, NurZetty Sofia Z and Juliana S
- A20 Impact of COVID-19 on dietary intake, sleeping patterns and physical activity levels among university students
Lee LZ and Cheng SH
- A21 Changes in physical activity and sedentary behaviour during the COVID-19 pandemic among adults in Asia: A scoping review
Lee YY, Chia HY, Loubna Khaled MA, Khairil Shazmin K and Wan Abdul Manan WM
- A22 Food security status and nutritional status among undernourished children aged 24 to 48 months old in Taska Seremban, Negeri Sembilan
Miow YX, Gan WY, Lim PY, Geeta A and Siti Nur Asyura A
- A23 Parents' knowledge on complementary feeding and its relationship with stunting: A survey of parents having children in nurseries in Kuantan, Pahang
Muhamad Fitri N and Muzaffar MAKK
- A24 Food safety knowledge, attitude and practice among undergraduates during the COVID-19 pandemic
Nathalie Khoo JY and Tan CX
- A25 Assessment of feeding challenges and sociodemographic status on child's growth among caregivers of cerebral palsy children in Kuala Lumpur and Kuala Terengganu
Nazatul Syazwina N and Karimah Fakhriah I
- A26 Changes in lifestyle, mental health, and body weight status among Malaysian adults before and during the COVID-19
Ng GF and Cheng SH
- A27 Development of graphic materials and assessment of their validity and feasibility to optimize parental knowledge and attitude about benefits of breastfeeding in Terengganu
Nor Bashyrah B and Marhazlina M
- A28 A pilot study of CoPT Nutri Trail™, a newly developed online obesity intervention module, and its impact on social well-being among obese children
Norhasniza Y, Syaza K, Mohd Izwan M, Amirah I and Ruzita AT

- A29 Relationship between perceived stress with body mass index and physical activity among female workers during the Conditional Movement Control Order period in Kota Kinabalu, Sabah
Norliyana A, Nuramalia R and Annim Syahfierah AH
- A30 What are the factors that influence women's decisions to induce lactation? A qualitative study of adoptive nursing by 23 women
Norsyamlina Che AR, Zaharah S and Tengku Alina TI
- A31 Internet addiction, eating behaviour and sleep quality among undergraduate students in Universiti Sains Malaysia
Nur Adila Suhaili Z and Divya V
- A32 Social media usage, body image dissatisfaction and eating disorder among private university students in Malaysia during COVID-19 pandemic
Nur Aina Adlina A and Sarina S
- A33 Development of animated materials and assessment of their validity and feasibility to optimise parental knowledge and attitude about optimal children feeding in Terengganu
Nur Fathin Emmielya S and Marhazlina M
- A34 Association between socio-demographic factors, psychological factors and lifestyle factors with sedentary behaviour among staff in Public Work Department (JKR) in Seremban, Negeri Sembilan
Nur Liyana MS and Hazizi AS
- A35 Knowledge, attitudes and practices on food safety and personal hygiene practice among food court handlers in Kuala Terengganu
Nur Najihah G and Norhayati AH
- A36 Association between nutrition knowledge, body mass index (BMI) and physical activity among staff in Universiti Sains Malaysia during COVID-19 pandemic
Nur Syafiqah MA and Juliana S
- A37 Association between body composition and lipid profile among UniSZA students aged 18 to 19 years
Nur Syakirah Arissa MS and Wee BS
- A38 The association between health literacy and body mass index among type 2 diabetes mellitus patients in Hospital Universiti Sains Malaysia: A cross-sectional study
Nurul IMZ, Maisarah SA and Divya V
- A40 An online survey on the knowledge, attitude and practice of COVID-19 among Malaysian youth
Pang LS and Tan CX

- A41 Associations of personal factors, psychological factors, and social media use with body image perception among undergraduate students during COVID-19 pandemic
Pua MJ and Gan WY
- A42 Comparison of food insecurity and the risk of eating disorders by relative weight change status of Malaysian youths throughout the COVID-19 pandemic
Puteri Iyilia Asilah S and Tan ST
- A43 Chronotype and affective profiles among Malaysian school children
Putri Junita S and Satvinder K
- A44 The association between physical activity and mental health with weight status among Malaysian young adults during COVID-19 pandemic
Sohbanah A and Tasneem S
- A45 Food safety knowledge, attitude, and practice among Malaysian adults during the COVID-19 pandemic
Soo PM and Tan CX
- A46 Weight loss strategies among successful Chinese weight losers in Malaysia
Sum JX and Mohd Razif S
- A47 Factors associated with vitamin D intake among preadolescent boys and girls: a secondary analysis of PREBONE-Kids study
Tan SH, Arasu K, Chong MHZ and Chee WSS
- A48 Factors associated with physical activity and sun exposure among preadolescent boys and girls: A secondary analysis of PREBONE-Kids study
Tee YW, Arasu K, Chong MHZ and Chee WSS
- A49 Comparison of paediatric metabolic syndrome (MetS) between boys and girls aged 6.0-12.9 years old in Peninsular Malaysia
Teh KC, Wee LH, Lee ST, Yeo GS, Khouw I and Poh BK on behalf of the SEANUTS II Malaysia Study Group
- A50 Food security status and its association with socio-economic status among university students during the COVID-19 pandemic
Tuan Nur Maisarah TA and Sharifah Wajihah Wafa SSTW
- A51 Changes of physical activity among healthcare workers after HEAL@work intervention programme in selected government hospitals, Kuala Lumpur
Wan Sahida WZ, Chin YS, Rosita J and Hazrina G
- A52 Iron status and its association with food insecurity among primary school children in Malaysia
Wan Siti Fatimah WAR, Siti Balkis B, Tang SF and Poh BK on behalf of the SEANUTS II Malaysia Study Group

- A53 The H.E.A.T (Healthy Eating, Active and Support) programme
Wan Suria WY, Cheong SM, Sameeha MJ, Mohd Izwan M and Ruzita AT
- A54 A study on the knowledge, attitude, and practice regarding COVID-19 among undergraduates in Perak
Wong SC and Tan CX
- A55 eToybox Study Malaysia: Development and evaluation of digital nutrition education materials for preschool teachers
Woo PX, Poh BK, Chong YT, Ruzita AT, Koh D, Cheah WL, Lee JAC, Nelson GL, Yatiman NH, Reeves S, Essau CA, Summerbell C and Gibson EL
- A56 Associations of genetics with abdominal obesity and metabolic syndrome among vegetarians in Malaysia
Ching YK, Chin YS, Mahenderan A, Chan YM and Lim PY

Group B: Dietary Intake, Consumption Pattern & Disease

- B01 Relationship between nutrition knowledge, attitude and practice (NKAP), with self- efficacy of healthy eating among undergraduate students in USM Kubang Kerian, Kelantan: A cross-sectional study
Adriana Y and Divya V
- B02 The relationship between taste perception and dietary intake among different ethnic subjects
Ahmad Riduan B and Renelda R
- B03 Relationship between barriers of salt reduction and salt intake: Case study among B40 household
Alolikia Ong PJ, Vaidehi U, Lim SY, Siti Madidah Muhammad R, Lubna Samer A, Chee JJY and Tiaw HL
- B04 Analytic Hierarchy Process to determine target food retailers at urban poor locations in Kuala Lumpur, Malaysia: Preliminary findings from the South East Asia Obesogenic Food Environment (SEAOFE) Study
Anis Munirah MS, Sameeha MJ, Shashidharan S, Che Aniza CW, Cheah YK, Elaine B, Sirinya P, Cut NR, Anne-Marie T and Poh BK on behalf of the SEAOFE Study Group
- B05 Determination of the trend and pattern of dietary supplement use in Malaysia from 2020 to 2021: The Google Search algorithm and ranking system approach methods
Connie J and Foo LH
- B07 Evaluation of dietary supplement use among adults living in Kota Kinabalu during the COVID-19 pandemic: A cross-sectional study
Fredrica Vun LL and Khor BH
- B08 Knowledge, attitude and practice of vegetable intake among adolescents in Malaysia
Fung CT and Tung SHE

- B10 A survey on eating disorder risk and total energy intake among young athletes
Hangelica HS and Wong FCP
- B11 Diet quality and weight status among urban poor adolescent in Kuala Lumpur, Malaysia during COVID-19
Janice Tay EF, Tung SEH, Satvinder K, Gan WY, Nik Norasma C and Tan CH
- B12 Knowledge and attitude on salt iodisation programme in Malaysia among Malaysian adults in Klang Valley, Malaysia
Lee CY, Siew JX, Chong MHZ and Tan KL
- B13 Frequency of home cooking and its implications on food insecurity and diet diversity among Malaysian working adults in the middle-income group during the pandemic: A cross sectional pilot study
Lee XY, Yeap KS, Shreya P, Wong NXY, Snigdha M, Yang WY, Tan SS and Num KSF
- B14 The relationship between diet quality and cognitive function among breast cancer survivors
Lin YC, Mohd Razif S and Ponnusamy S
- B15 Evaluation of Malaysian Dietary Guidelines: knowledge among students in International Medical University (IMU)
Looi KS and Norimah AK
- B17 Knowledge, attitude, and practices (KAP's), and nutritional profiling of *Costus woodsonii* consumption as traditional elixirs among adults' population in Kota Kinabalu, Sabah
Mohd Nazri AR, Nur Haifaa R and Nor Hayati M
- B18 Frequency of home cooking, food insecurity and diet diversity among Malaysian working adults during the pandemic: A cross-sectional study among the urban low-income group
Natalie Wong XY, Lee XY, Yeap KS, Shreya P, Snigdha M, Yang WY, Tan SS and Num KSF
- B19 Depression, anxiety, stress and eating habits of UniSZA students during COVID-19 pandemic
Noorul Aysha A, and Sharifah Wajihah Wafa SSTW
- B20 Association between parental feeding styles and diet quality among preschoolers in Terengganu
Nur Adnisofea MJ and Sharifah Wajihah Wafa SSTW
- B21 Association between sociodemographic factors and body mass index (BMI) with fruits and vegetables intake among adults in the West Coast in Peninsular Malaysia
Nuraini Sofiya A, Nur Shafikah Suhada AR and Napisah H

- B22 The correlations between intuitive eating, body image satisfaction, and weight difference among Malaysian youths during the post-pandemic
Nur Alissa H and Tan ST
- B23 Demographic, eating behaviour characteristics and fruit and vegetable intake in children aged 4 to 6 years: Are they related?
Nurfarhana Diana MN and Che Nur Hasniza CR
- B24 Association of carbohydrate-rich food intake and diabetes mellitus related knowledge among adults in Kota Kinabalu, Sabah
Nur Syafieqah Irdina MI and Ramlah G
- B25 Factors associated with consumption of fast food among undergraduate students of Health Campus, Universiti Sains Malaysia, Kubang Kerian, Malaysia
Nur Syaquirah AB
- B26 Dietary patterns of preschoolers aged 3 to 6 years old in Peninsular Malaysia: Findings from SEANUTS II Malaysia
Nurul Hasanah HC, Nur Zakiah MS, Wong JE and Poh BK on behalf of the SEANUTS II Malaysia Study Group
- B27 The association between breakfast consumption habits and body mass index (BMI) status among undergraduate students of Universiti Sains Malaysia, Health Campus
Nurul Husna MA, Sindhhu M and Nurzetty SZ
- B28 Association between physical activity and eating behaviour with weight change among Malaysian adults in the COVID-19 pandemic
Qistina O and Tan ST
- B29 Food retail landscape in urban poor locations in Kuala Lumpur, Malaysia
Shashidharan S, Mohd Jamil S, Mohd Sakri AM, Che Aniza CW, Cheah YK, Cut NR, Elaine B, Sirinya P, Anne-Marie T and Poh BK on behalf of the SEAOFE Study Group
- B30 Frequency of home cooking, food skills and cooking skills among Malaysian adults during the covid-19 pandemic: A pilot study
Shreya PN, Yeap KS, Lee XY, Wong NXY, Snigdha M, Yang WY, Tan SS and Num KSF
- B31 Knowledge and attitude on iodine and iodine deficiency among Malaysian adults in Klang Valley, Malaysia
Siew JX, Lee CY, Chong MHZ and Tan KL
- B32 Factors associated with low calcium intakes among preadolescent children aged 9 to 11 years in Malaysia: A secondary analysis of PREBONE-Kids study
Soo YW, Ng XH, Arasu K, Megan CHZ and Chee WSS

- B33 Food security, dietary habits, and weight status among adolescents in Malaysia
Tan Chyi En and Tung SHE
- B34 Evaluation of compliance to Malaysian Dietary Guidelines 2020 among students in IMU
Tan SJ and Norimah AK
- B35 Validity of digital food photograph series for portion size estimation aid among adults
Tan WW and Mohd Razif S
- B36 The influence of social media on eating habits among chemical engineering undergraduate students at Universiti Sains Malaysia, School of Chemical Engineering
Tan YL, David JP and Hafzan HY
- B37 Acceptance of grasshoppers and other insects as food and its influencing factors among adults in Kuching and Klang Valley
Thien CN, Lim SM, Poh BK and Abdoul Karim T
- B38 The association between psychological distress and emotional eating with weight status among Malaysian youths throughout COVID-19 pandemic
Thivvyatracyny MK and Tan ST
- B39 Comparing the anthropometric data and diet quality among intermittent fasting practitioners (IFPs) versus non-intermittent fasting practitioners (non-IFPs) in Terengganu
Thivya Thrunawkarasu and Che Shuhaili CT
- B40 Relationship between chronotype and chrononutrition profile with weight status of schoolchildren during the COVID- 19 pandemic
Vera LLY and Satvinder K
- B41 Association of eating misalignment and irregularity with weight status among Malaysian young adults
Wong CK and Satvinder K
- B42 Knowledge, attitudes, and practices (KAP) of iron deficiency anaemia (IDA) and dietary iron intake among urban poor adolescents living in Kuala Lumpur, Malaysia during COVID-19 pandemic
Wong HS, Tung SEH, Satvinder K, Gan WY, Nik Norasma C and Tan CH
- B43 Associations of sociodemographic and lifestyle factors with breakfast consumption among Malaysian university students during COVID-19 pandemic
Yau CM and Gan WY

- B44 Frequency of home cooking, food and cooking skills among working adults during the pandemic: A cross-sectional study among the urban low income group
Yeap KS, Shreya P, Lee XY, Wong NXY, Snigdha M, Yang WY, Tan SS and Num KSF
- B45 Breakfast skipping lowers micronutrient intakes amongst primary schoolchildren: Findings from the South East Asian Nutrition Survey (SEANUTS II) Malaysia
Yeo GS, Lee ST, Nik Shanita S, Wong JE and Poh BK on behalf of the SEANUTS II Malaysia Study Group
- B46 Mobile health to support reduced-salt food choice: Acceptance by Indonesian low-income consumers
Yosevine, Vaidehi U, Lim SY L, Siti Madihah MR, Shashikala S, Ho DRY, Lee SW, Tanish E and Yong JC

Group C: Nutrients & Other Components in Foods/Products

- C01 Sodium content in local soya sauce on the Malaysian Market without sodium declaration on the label
Aida Farzana MT, Suzana S, Feng JH and Hasnah H
- C02 Analysis of food labels to evaluate the nutritional quality of bread products from local supermarkets in Pasir Mas, Kelantan
Bazleen R
- C03 Physicochemical properties of selected raw stingless bee honey in Sarawak
Bong ZR, Irine RG, R Shah and Hwang SW
- C04 Compliance of commercial complementary infant and toddler foods available in Kuala Lumpur to the WHO's draft Nutrient and Promotion Profile Model
Bushra Arif AA, Shyam S, Tan SY, Cade J and Morpeth A
- C05 Nutritional value (energy, fat, protein, carbohydrate, and sodium content) between four different brands (Maggi, Mamee, Mi Sedaap, and Vit's) of instant noodles in Malaysia
Fernyla SF and Hamid JM
- C06 A novel theory as a gift for the centenary vitamin E and to explain where have all the dietary tocotrienols gone
Hew NF
- C07 Compliance of commercial food products for infants (up to 12 months) and young children (12-36 months) (FIYC) available in Kuala Lumpur to the World Health Organisation's draft Nutrient and Promotion Profile Model (NPPM)
How KE, Alsheibani Bushra AA, Shyam S, Tan SY, Cade J and Morpeth A

- C08 Promising nutrients for boosting happy chemicals in post-COVID depression: Recent evidences
Jesmine Khan, Wan Nor I'zzah WMZ and Mohammed Nasimul I
- C09 Frequently available street foods, its nutrient contents and factors affecting consumers' choice of street foods in Pahang
Lim LS, Hanapi MJ and Hasnah H
- C10 The familiarity and perception of the Healthier Choice Logo (HCL) on packaged food products among consumers in Batu Gajah, Perak
Nur Adriana Natasya N
- C11 Determination and comparison of total sugar content, nutritional value and price in 3-in-1 beverage from local supermarket
Nur Annisa Syahirah S
- C12 Assessing consumer awareness on nutrition information on food labels: A cross-sectional study in Kota Kinabalu
Nur Fatimah N and Khor BH
- C13 Frequently available street foods, its nutrient contents and factors affecting consumers' choice of street foods in Kedah
Izatti MS and Hasnah H
- C14 Assessments of total energy and sugar content and marketing advertising strategies of the pre-packaged sugar sweetened beverages in the supermarkets in Kelantan
Nur Izzati MA

Group D: Clinical Nutrition/Intervention Trials

- D01 Preliminary finding: Effects of sports drink supplementation post exercise on endurance performance
Fadzel Wong CP and Wong ESS
- D02 Association between omega 3 fatty acid and bioactive peptide supplementation on salivary cortisol among Malaysian footballers – A secondary data analysis
Jeff Lim ZY, Tan SS, Chong MHZ and Sangeetha S
- D03 The effect of omega 3 fatty acid and bioactive peptide supplementation on salivary interleukin-6 (IL-6) level among Malaysian footballers – A secondary analysis
Lim WL, Lim JZY, Tan SS, Chong MHZ and Shyam S

Group E: Food Science & Technology

- E01 Product development and sensory evaluation of acceptability of *kuih bingka ubi* made with isomaltulose amongst IMU students and staffs
Chia PH, Huam ZE, Tan SS and Shyam S
- E02 Proximate composition and antimicrobial activity of kefir produced from cow's and almond drink mixtures with different ratio
Hew JX and Raihanah S
- E03 Development and sensory evaluation of *kuih talam pandan* using isomaltulose
Huam ZE, Chia PH, Tan SS, Sangeetha S and Chong MHZ
- E04 Development and optimisation of green tea kombucha using response surface methodology
PT Nadira Prayacitta S

Group F: Experimental Nutrition

- F01 *In vitro* antioxidant and cytotoxic potential in sequential extracts of *Gyunara divaricata* tuber against MDA-MB-231 cell line
Johanna NL and Baskaran G
- F02 Water-soluble palm fruit extract: Potential anti-diabetic mechanisms
Leow SS, Nawi NM, Fairus S and Sambanthamurthi R
- F03 Effects of *Lactobacillus casei* Shirota (LcS) supplementation on growth performance, intestinal histology, fecal AFB₁ and fecal bacterial profile of AFB₁-exposed rats
Muhammad Firdhaus S, Mohd Redzwan S, Siti Raihanah S, Maizaton Atmadini A and Fauzah AG



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- Join us on 21st June 2022, 2.15 – 3.10 pm:
"Response to COVID-19 and NCDs: Unlocking nutritional tools for gut microbiota support and low blood glucose profiles"
Speaker: Ms Goh Peen Ern, Manager Nutrition Communication, BENEО-Institute/BENEО Asia Pacific Ltd

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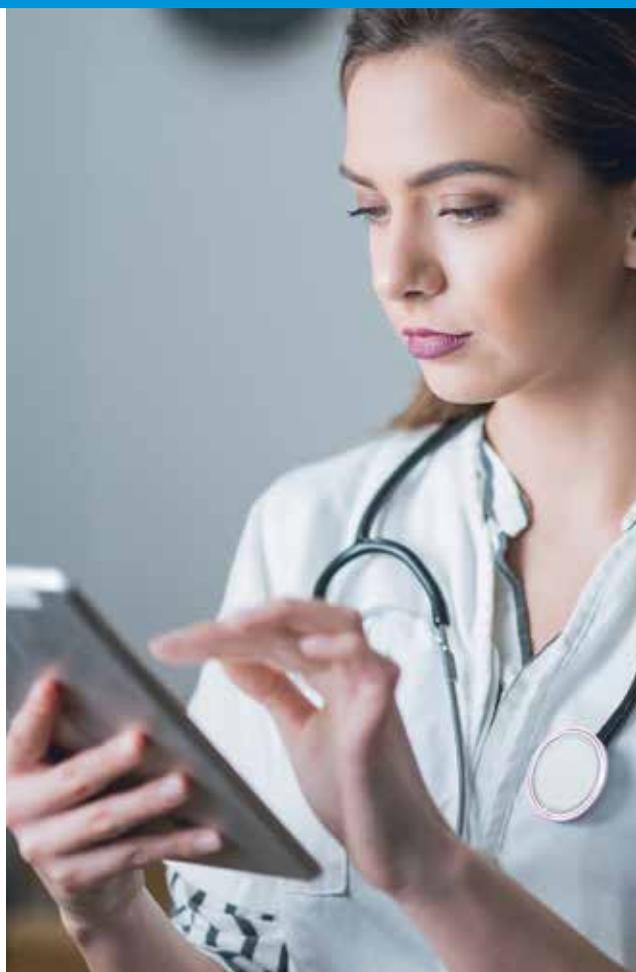
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1 - Kerry Global Consumer Research for Wellmune and BC30 - Malaysia 2020



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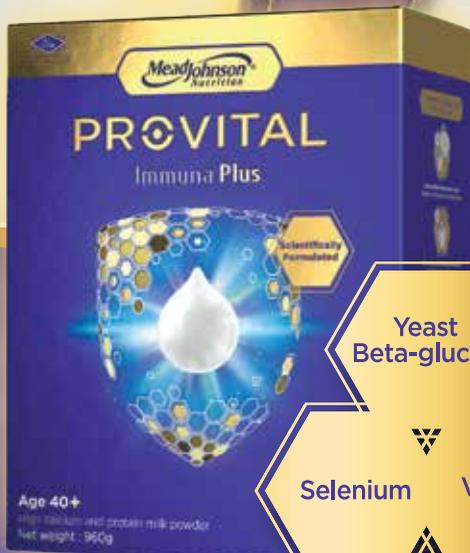
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Abstracts

Keynote Lecture

Nutrition interventions to combat NCDs and COVID-19 health threats – experiences in Japan

Hisanori K

University of Tokyo, Japan

The situation of NCDs in Japan and measures to address them:

First, the current situation of NCDs in Japan will be introduced. The measures are described, focusing on various policies. The following are briefly discussed: Health Japan 21 (2nd round), National Health and Nutrition Survey, Promotion of a Healthy and Sustainable Food Environment, Specific Health Checkup and Specific Health Guidance, Dietary Reference Intakes for Japanese, Food for Specified Health Use, Food with Functional Labeling, and so on.

Status of COVID-19 in Japan and measures to combat it:

Although the risk of severe cases of COVID-19 is lower in Japan than in Western countries, Japan has experienced six peaks of COVID-19 so far. As early as March 2020, the Japanese Society of Nutrition and Food Science (JSNFS) released “Nutritional Tips for New Coronavirus Infections – A Request from JSNFS” to publicize nutritional precautions during a COVID-19 infection epidemic.

Precision nutrition in dealing with NCDs and COVID-19:

The risk of NCDs is largely determined by genetic factors, and many genetic polymorphisms have been reported to be related to the severity of COVID-19. I will discuss precision nutrition in relation to the prevention of NCDs and countermeasures against COVID-19.

22nd IUNS-International Congress of Nutrition (ICN):

The 22nd IUNS-ICN will be held at the Tokyo International Forum from December 6 to 11 this year. More than 2,200 abstracts have already been registered, and we will call for late-breaking abstracts in August. Early-bird registration is already open.

Symposium 1: Maternal, Infant and Child Nutrition

Nutritional status and changes in dietary habits during COVID-19 pandemic among children aged 0.5 to 12.9 years: Key findings from SEANUTS II Malaysia

Poh BK¹, Wong JE¹, Lee ST¹, Ang YN¹, Yeo GS¹, Teh KC, Nik Shanita S¹, Ruzita AT¹ and Khouw P² on behalf of the SEANUTS II Malaysia Study Group

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²FrieslandCampina, Amersfoort LE 3818, The Netherlands

The triple burden of malnutrition has been reported in Malaysia, with increasing prevalence of undernutrition, overnutrition and micronutrient deficiencies; however, there is a lack of national nutrition surveys that encompass multiple nutrition indicators among Malaysian children. Thus, the South East Asian Nutrition Survey (SEANUTS) II aimed to provide up-to-date comprehensive data on nutritional status, dietary intake, and other nutrition-related indicators among children aged 6 months to 12.9 years. This cross-sectional study employed multistage cluster sampling to recruit children from Central, Northern, Southern and East Coast regions of Peninsular Malaysia. A total of 2989 children participated in the survey, representing an estimated 4.9 million Peninsular Malaysian children aged 6 months to 12.9 years old. Anthropometric measurements, blood biochemical assessment and fitness tests were conducted; and dietary intake was assessed using 24-hr dietary recall. Questionnaires were used to obtain information on socio-demographic characteristics, child health status, physical activity, sleep, motor skill development, dietary habits, food security, breastfeeding and complementary feeding practices. In addition, an online survey was conducted in a sub-group of children to investigate the children's lifestyle behaviour changes including dietary habits, food security, physical activity, and sleep during COVID-19 lockdown. This presentation will focus only on nutritional status and dietary intake findings from the main study, and changes in dietary behaviour in the COVID-19 sub study. Overall, prevalence of thinness, overweight and obesity was 6.7%, 9.2% and 8.8%, respectively. In children less than 5 years old, 11.4%, 13.8% and 6.2% were found to be underweight, stunted, and wasted, respectively. Most children did not meet the recommended nutrient intake for calcium (79.4%) and vitamin D (94.8%). As compared with pre-lockdown period, higher percentage of children took regular meals as well as fruits and vegetables ($p < 0.05$) and lower proportions of children took sweetened beverages, confectioneries, fast foods, and outside food ($p < 0.01$) during the lockdown period. However, instant noodles consumption increased ($p < 0.001$) while consumption of milk and dairy products ($p < 0.01$) decreased during lockdown. In conclusion, malnutrition problems persist among children aged 6 months to 12.9 years in Peninsular Malaysia, and COVID-19 lockdown had both positive and negative impacts on the dietary habits of children. We are hopeful that the findings from SEANUTS II Malaysia will serve as a useful reference for nutrition policy planning and implementation for the childhood population of Malaysia.

Maternal infant nutrition: Risk factors and interventions in Malaysia

Hamid Jan JM

Nutrition Programme, School of Health Sciences, Universiti Sains Malaysia, Kelantan, Malaysia

Maternal and infant nutrition plays an important role in ensuring healthy growth and development of human not only *in utero* but also throughout the life course. Since the publication of the Barker's Hypothesis, many pregnancy and birth cohort studies has shown convincing evidence based scientific findings on the importance of optimum nutrition during and throughout early life. In Malaysia, several researchers made efforts in producing high quality pregnancy and cohort studies and published interesting findings that warrants attention from all stakeholders. These high quality cohort studies highlighted several risk factors for poor birth outcome and growth such as high pre-pregnancy body mass index, high gestational weight gain, poor overall dietary intake and low level of micronutrients such as vitamin D. Generally, there are sufficient evidences to guide stake holders to plan and act in ensuring a good maternal and infant nutrition. Hence, it is timely for researcher to work on innovative and appropriate intervention that could drive the health policy on maternal and infant nutrition to a higher level. This presentation will highlight the risk factors, current intervention and potential future interventions that could be utilised by researchers to improve the maternal and infant nutrition in Malaysia.

Severe malnutrition surrounded by marine proteins

Ooi YBH^{1,2*}, Ramlah MRG¹, Norliyana A¹, Liew CSL and Kew ST³

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Mantanani Besar is the largest of three islands which form the Mantanani Islands off the northwest coast of Sabah, Malaysia. The nearest town is Kota Belud; 45 minutes by speedboat costing USD25 for a round trip, which was 4.5% of the poverty line income of USD552/month for Sabah in 2019 (1 USD = MYR4.074 on 1 March 2019). The inhabitants were Bajau Ubiangs who were Muslims. In this cross-sectional descriptive study carried out in March 2019, all school-going children (males: 61, females: 45, mean age: 9.4±1.9 years) were measured for their height, weight, and mid-upper arm circumference (MUAC). Participants were asked whether they consumed daily, 20 items usually consumed by coastal Bajaus. This list was then categorized into 10 food groups to get dietary diversity score (DDS). The food groups were cereals, tubers, fish and seafood, seaweed, vegetables, fruits, milk, egg, meat, and beverages. A follow-up measurement was not carried out because of the onset of the covid-19 pandemic in March 2020. Mean height-for-age was -2.35±1.34 [95%CI: -2.69 – (-2.00)]. Most participants (n=63, 59.4%) had HAZ ≤ -2 SD. Weight-for-age was -2.12±1.13 [95%CI: -2.31 – (-1.73)]. MUAC was 16.7±1.81 [95% CI: 16.23 – 17.17]. Mean DDS for all food groups was 6.21±1.83 [95% CI: 5.86 – 6.56]. Every participant ate rice every day. Islander food intake were different from most Malaysians' food intake: 102 participants (96.2%) ate fish daily, 30 (28.3%) consumed stingray, shark or puffer fish daily, 14 (13.2%) consumed sea urchins daily, 21 (19.8%) consumed seaweed daily. All these were caught by their parents or picked from the sea by participants. Other

than rice, tapioca consumed as putu and tinompe were consumed daily by 33 (33.1%) participants. However, 35 (33.0%) and 31 (29.2%) did not consume vegetables and fruits daily. All fruits and vegetables had to be purchased from Kota Belud. There was an association between WAZ classification and daily consumption of vegetables (χ^2 , $p=0.048$). A follow-up intervention is being planned to address malnutrition.

Invited Lecture 1

Not all yeast beta glucans are the same – A deeper look into Wellmune’s unique differentiating molecular structure

Sonja N

Research Development and Application, Kerry

Immune-supporting ingredient options on the market are vast and the choices can be overwhelming. Selecting an immune health ingredient supported by research is essential. Wellmune® is a beta glucan derived from a proprietary strain of baker’s yeast, used by food, beverage and supplement makers to give people the research-supported immune health benefits they want most. Beta glucans are naturally found in some foods, and different types of beta glucans have different biological functions. Because the body doesn’t produce beta glucans naturally, the only way to get them is through nutritional sources. But it’s important to know that not all beta glucans are effective in supporting immune health. The key to understanding how a beta glucan works, and its benefits, is to understand its source, how it’s made, and clinical research that demonstrates its efficacy. A recent review looked at the research on Wellmune and several other yeast beta glucans and found Wellmune to be the best-studied beta glucan ingredient, and the one that has demonstrated the best results. Wellmune is extracted from the cell wall of a specific type of baker’s yeast (*Saccharomyces cerevisiae*) through a proprietary process that allows for optimal bioavailability and immune support. And because the way it is made is unique, research that shows Wellmune’s immune-supporting properties apply only to Wellmune. Wellmune’s unique molecular structure helps to make it the best-in-class yeast beta glucan for supporting immune health.

BC30 – A unique spore-forming probiotics that survives and thrives

Tan G

Applied Health & Nutrition Business Development, Kerry

BC30™ (*Bacillus coagulans* GBI-30, 6086) is a highly efficacious and safe spore-forming probiotic with research backed digestive health, immune support and protein absorption benefits. It is a unique, spore-forming probiotic that is helping manufacturers to look beyond traditional applications when formulating products that can help support a healthy gut microbiome. The gut microbiota is the population of trillions of bacteria that are key to our general wellbeing. While taking probiotics may help normalize the gut microbiota that can be disrupted by our lifestyle stressors, ensuring the survivability of the probiotic through manufacturing processes, product shelf life, and finally, the human gastrointestinal tract has always been the challenge industry has faced, limiting the expansion of probiotics beyond the short shelf-life dairy chilled space. While vegetative bacteria are fragile and

vulnerable to low gastric pH and bile salts but also susceptible to the rigors of most manufacturing processes, BC30 has the ability to survive those harsh conditions. It is essential to know that not all probiotics are the same. Different strains offer different benefits, and some are more effective and more efficacious than others. There are also important variations in levels of probiotic performance such as survivability, health benefit efficacy, and formulation flexibility. At Kerry, BC30 is designed to be different to meet consumer demand for quality probiotics that are safe, science-backed, able to survive from manufacturing to the gut and provide sought-after benefits.

Invited Lecture 2

Nutrition response to COVID-19 and NCDs: Unlocking nutritional tools for gut microbiota support and low blood glucose profiles

Goh PE

Nutrition Communication Asia Pacific, BENE0-Institute/BENE0 Asia Pacific Pte Ltd

The COVID-19 pandemic has dominated people's lives for more than 2 years. While there still remains many uncertainties about this coronavirus, there seems to be a connection between the diet and a well-functioning immune system to fight infections. Specifically, both a well-balanced, healthy gut microbiota and a low blood glucose profile have a profound positive influence on immune health. Imbalances in gut microbiota have been linked to poorer immunity and a greater severity of COVID-19 infection. Evidence also shows that the combination of elevated blood glucose levels and the coronavirus results in more severe infection outcomes and higher death rates. This is especially concerning since 1 in 5 adults in Malaysia has diabetes and half are not aware of it. The double burden of COVID-19 and non-communicable diseases (NCDs), such as diabetes, presents society with an enormous public health challenge.

BENE0's contribution towards better immune health in the fight against COVID-19 is by offering innovative functional ingredients that are substantiated by over 20 years of nutrition research. These food ingredients are prebiotic chicory root fibres and carbohydrates with particular health benefits, namely Palatinose™ (isomaltulose) and isomalt.

Chicory root fibres (i.e. inulin, oligofructose) comprise two of the three scientifically-proven prebiotics. These prebiotics are special nutrients for the gut microbiota that lead to selective growth of beneficial bacteria, thereby conferring numerous health benefits. These benefits include improved overall digestive health and well-being, blood glucose management, metabolic health, and importantly, strengthening the body's inner defence to support immune health.

Palatinose™ (isomaltulose) is a slow-release, low glycaemic carbohydrate that provides a lower and more balanced blood glucose and insulin profile, with a digestive tolerance as good as traditional sugar. At the same time, it supplies the carbohydrate energy needed to go through the day. Isomalt is a polyol that is used extensively in sugar reduction and sugar-free applications. It has a negligible impact on blood glucose and insulin levels.

A healthy gut microbiota and blood glucose profile matter for every individual at all stages of life as they greatly influence immune health and NCDs. BENE0's chicory root fibres,

Palatinose™ (isomaltulose), and isomalt support food manufacturers in improving the nutritional quality of their recipes, and is a step in the right direction even beyond the current pandemic.

Young Researchers' Symposium

Inadequate vegetable consumption among urban poor children in Kuala Lumpur, Malaysia: Influence of psychosocial and garden-related factors

Mok KT¹, Tung SEH², Satvinder K¹, Chin YS³, Mohammad Yusoff M⁴ and Ulaganathan V¹

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Inadequate vegetable consumption remains a global health challenge despite its health promoting benefits. Growing literature reported that children's involvement in gardening activity can improve vegetable consumption. This study aimed to examine the association of psychosocial (knowledge, attitude, preference and self-efficacy) and gardening related factors (interest, motivation and experience) on vegetable consumption among urban poor children. This study took place in 12 low-cost PPR flats in Kuala Lumpur, Malaysia. A total of 265 children aged 9-12 years were recruited in November 2021 to March 2022 using stratified random sampling method. Child-administered questionnaire was used to assess the psychosocial determinants and gardening related factors associated with vegetable consumption. Children's daily vegetable consumption were determined using two days 24-hour dietary recall method. Majority of the urban poor children (93%) had inadequate vegetable consumption with average of 0.54 servings daily, which was below the recommendation of three servings. About one third (35%) of the children did not consume vegetables at all. Most children had good knowledge (58%) and positive attitude (46%) towards eating vegetables. However, low vegetable preferences (61%) were observed. Psychosocial factors and gardening-related factors were associated with vegetable consumption, in which children who had good knowledge ($\chi^2=7.203$; $p=0.007$), good attitude ($\chi^2=26.768$; $p<0.001$), passionate about gardening ($\chi^2=8.412$; $p=0.015$), had high motivation to garden ($\chi^2=5.652$; $p<0.017$) and with gardening experience ($\chi^2=8.974$; $p=0.003$) tend to have higher vegetable consumption. Logistics regression analysis revealed that children were more likely to eat more vegetables if they have good attitude towards eating vegetables [AOR 2.47 (95% CI: 1.234-4.944)] and passionate about gardening [AOR 3.243 (95% CI: 1.03-10.211)]. Urban poor children had inadequate daily vegetable consumption. Results suggest that integrating garden-based activities in nutrition education programmes could potentially improve vegetable consumption of the urban poor children.

This research was funded by UCSI Research Excellence & Innovative Grant (REIG) [REIG-FAS-2020/007].

Prospective associations between an empirically derived dietary pattern and life satisfaction during adolescence

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Little is known on the prospective associations between empirically derived dietary patterns (DPs) of poor quality and adolescents' life satisfaction in Malaysia. Using data from a prospective study namely the PUTRA-Adol, associations between an empirically derived "high sugar, high fibre, low dietary energy dense (DED) and low fat" DP and life satisfaction were evaluated during adolescence. A total of 262 adolescents (79 boys and 183 girls) who have participated both in 2016 and 2019 follow-ups were included in this study. Dietary intakes were obtained using a validated food frequency questionnaire (FFQ) while life satisfaction was measured using a Multidimensional Students' Life Satisfaction Scale (MSLSS). MSLSS comprised of 5 domains including family, school, self, friend and living. Z-score for the identified exploratory DP was estimated using reduced rank regression analysis. Prospective associations between the DP and life satisfaction scores were assessed using generalized estimating equation models (GEE). DPs identified in 2016 and 2019 were comparable based on their key food groups loadings. Mean (SD) of life satisfaction was higher in girls [67.6(8.9)] compared to boys [67.5(10.8)], $p < 0.05$ in 2019. Compared to 2016, a decreasing trend was found in life satisfaction score among boys and girls in 2019. An increasing DP score was prospectively associated with decreasing score for the self-domain in both boys and girls ($\beta = -0.06$; 95% CI: -0.115, -0.005) and increasing life satisfaction score for the school domain in boys only ($\beta = 0.117$; 95% CI: 0.001, 0.234). The implications of these result may indicate that improving dietary intakes particularly of that beverage high in sugar within the framework of lifestyle intervention may improve life satisfaction among adolescents.

Predictors of sleep quality among early adolescents in Peninsular Malaysia: Findings from the South East Asian Nutrition Surveys II (SEANUTS II) Malaysia

Teh SC¹, Chan CMH¹, Lee ST¹, Nik Shanita S¹, Schaafsma A² and Poh BK¹ on behalf of the SEANUTS II Malaysia Study Group

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²FrieslandCampina, 3818 LE Amersfoort, The Netherlands

Among early adolescents, poor sleep quality has potential to impact on growth and development. This study aims to determine predictors of sleep quality among early adolescents aged 9 to 12 years. This cross-sectional study involved 713 early adolescents (335 boys, 378 girls) from primary schools in Central, Northern, East Coast and Southern regions of Peninsular Malaysia. Questionnaires were used to assess socio-demographic characteristics, sleep pattern, milk and dairy consumption, body image, anxiety and depression symptoms. Body weight and height were measured, and BMI-for-age Z-score (BAZ) derived based on World Health Organization 2007 growth reference. Prevalence of

poor sleep quality among early adolescents was 17.7%. Majority (77.0%) did not meet minimum recommended sleep duration of 9 hours. Around 8.4% of early adolescents were thin, and another 33.0% were overweight/obese. Most (66.6%) took milk and dairy products at least 7 times per week, while 4.6% were not dairy users. For body image satisfaction, over half (59.2%) desired to be thinner while 21.7% wanted to be bigger. A total of 14.2% and 15.8% had symptoms of depression and anxiety, respectively. Early adolescents who lived in urban areas (OR 1.62, 95%CI 1.03-2.53), with depression (OR 1.91, 95%CI 1.11-3.27) and anxiety (OR 2.60, 95%CI 1.57-4.31) symptoms had higher odds of poor sleep quality ($p<0.05$). Early adolescents whose mothers had secondary school education (OR 0.36, 95%CI 0.15-0.83) and higher milk and dairy consumption [1-6 times/week (OR 0.39, 95%CI 0.16-0.93); ≥ 7 times/week (OR 0.36, 95%CI 0.15-0.82)] were less likely to have poor sleep quality ($p<0.05$). In conclusion, one-fifth of early adolescents in Peninsular Malaysia suffered from poor sleep quality, which can be statistically predicted by area of residence, maternal education level, milk and dairy consumption, and symptoms of depression and anxiety. Future intervention should target improving sleep habits, dietary patterns and mental health among early adolescents.

Dietary intake, blood antioxidant level and inflammation status amongst Malaysian football players

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Athletes experience increased inflammation after intensive training and competition. Diets rich in antioxidants can have potential effects to attenuate this inflammatory response. However, limited data is available on the antioxidant intake of Malaysian athletes. This study aims to assess the dietary intake, antioxidants level and inflammation status of Malaysian football players. Three days 24-hours dietary record of 52 male state level football players were analysed using NutriPro software. Blood samples were collected to determine transient and chronic inflammation markers including TNF- α , IL-6, IL-10 and IP 10 using ELISA kits. Blood antioxidant status were determined using the Ferric Reducing Antioxidant Power (FRAP) method. The athletes, despite their higher energy expenditure had insufficient energy and macronutrients intake than the Recommended Nutrient Intake. Similarly, the athletes met less than 50% of RNI for vitamin D, calcium and magnesium. The mean blood antioxidant level was 0.3 ± 0.06 mM, considered low when compared data established for general population. The football players' low inflammation status was reflected by a mean hsCRP (1.3 ± 0.3 pg/mL). The inflammation markers assessed were lower than the reported reference range with mean level of TNF- α (44.6 ± 21.4 pg/mL), IL-6 (20.1 ± 12.1 pg/mL), IL-10 (34.6 ± 16.3 pg/mL), IP-10 (10.8 ± 1.7 pg/mL). No significant association were found between blood antioxidant and inflammation levels. Overall, the footballers reported consuming lower than recommended energy, protein, fat and micronutrients intake and had low blood antioxidant level. Despite their vigorous training, the inflammation markers were found to be low. Insufficient energy and nutrients intake may compromise the performance and recovery process of these football players.

The prevalence of poor diet quality among older adults with low socioeconomic status in Kelantan

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Aging itself increases the risk of poor diet quality among older adults due to chronic disease, psychosocial problems, physical limitations and loneliness. Older adults with low socioeconomic status are at higher risk of health problems. Therefore, the current study aimed to assess the diet quality among older adults with low socioeconomic status. A total of 293 older adults in five districts in Kelantan namely Pasir Mas, Bachok, Tumpat, Kota Bharu and Machang were recruited in the study. Study subjects who fulfilled the inclusion criteria were selected through random sampling method. Data on socio-demography, anthropometry, body composition, medical history, blood pressure and diet history were obtained through interview administered method. Most of the subjects were married (69.6%), are of Malay ethnicity (100%) and has income less than RM900 (91.5%). Almost half of the subjects were underweight (48.8%). Both men and women did not meet the recommendation for daily energy intake. Healthy Eating Index (HEI) score revealed that 42% of the subjects had poor diet quality, 57% need improvement in their diet and only 1% had good diet quality. Binary logistic regression revealed that subjects with high cholesterol were 2.4 times more likely to exhibit poor diet quality than those with normal cholesterol level (95%CI: 1.107, 5.209; *p*-value: 0.027). Thus, nutrition interventions are essential to help low-income families especially with older adults to improve their nutritional status for reducing risk of chronic diseases.

Free Paper Presentations

Chrononutrition and dietary patterns among pregnant women in Kuala Lumpur

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Favourable chrononutrition practices optimizes food intake according to the body's metabolism. Studies suggested that regular meal timings may improve glucose profiles which is beneficial for maternal and fetal health. This cross sectional study aimed to explore the differences of chrononutrition and dietary patterns among pregnant women during workdays and free-days. Identifying the differences offers insights to understand maternal eating habits. A total of 177 pregnant women in their third trimester were recruited from government maternity clinics and completed a 2-days food record. The average workday breakfast time was significantly earlier than free-days breakfast time (8:30, IQR=1:00 vs 9:00, IQR=1:30; $p<0.001$). Significant difference was also observed in lunch time between workdays and free-days (13:00, IQR=1:00 vs 13:30, IQR=1:07; $p=0.003$). The difference in meal timings was largest for lunch time with 53 minutes difference between workdays and free-days. Furthermore, significant association was observed between prevalence of night eating behaviours during workdays and free-days (68% vs 65%, $p<0.001$). Largest meal of the day was lunch for both workdays (35%) and free-days (33%), while 61% of the participants have average food frequency of ≤ 4 a day. Average dietary glycemic index per day was 64.10 ± 6.84 , while dietary glycemic load was 170.95 ± 55.46 . Majority of the participants consumed foods with moderate dietary glycemic index ($n=132$, 75%). Pregnant women who consumed more than 4 meals a day were reported to have higher average dietary glycemic index ($p<0.001$) and glycemic load ($p=0.037$). The average distribution for carbohydrates, proteins, and fats was 60%, 21%, and 19% respectively. This study had determined the difference of dietary patterns between workdays and free-days, and it is associated with the dietary glycemic index and glycemic load. Future studies should center on how these discrepancies can affect glucose metabolism and its influence on gestational weight gain, and ultimately birth outcomes.

Antenatal multiple micronutrients use among urban Malaysian pregnant women

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Multiple micronutrient deficiencies often coexist among pregnant women due to the increased maternal and fetal needs, poor-quality diet and food intake. Antenatal multiple micronutrient supplements (MMS) are more effective than iron and folic acid (IFA) supplements in improving maternal micronutrient status and reducing adverse pregnancy outcomes. However, the use of prenatal multiple micronutrient supplements among Malaysian pregnant women has not yet been clarified. The present study aims to describe prenatal multiple micronutrient supplement use in terms of intake, combinations and frequency in a population of pregnant women residing in Selangor, Malaysia. This is a cross-sectional observational study conducted between October 2015 and February 2017. A total of 217 healthy pregnant women in the third trimester were recruited and information on nutrient supplementation was collected. MMS was defined as a supplement with at least 13 micronutrients. Only 33% of the participants reported taking multiple micronutrient supplements with 29% taking a prenatal multi micronutrient supplement. About two-thirds (65.4%, $n=142$) of participants took iron supplements alone (6.9%, $n=15$) or in combination with other supplements (16.1%, $n=35$) or a hematinic (45.6%, $n=99$). In 6.9% of participants, MMS is taken with other haematinics. Women with tertiary and higher education are more likely to report the use of multiple micronutrient supplements than women with secondary and lower education [adjusted odd ratio [(aOR)= 2.26, 95% CI: 1.2, 4.4, $p=0.016$]. Secondary and lower education were associated with iron supplement use (aOR= 2.24, 95% CI: 1.16, 4.3, $p=0.017$). The results suggest that the provision and use of multiple micronutrient supplements are not universal. Pregnant women with high education are more likely to take multiple micronutrient supplements as their source of iron and folic acid while women with low education are more likely to take haematinics provided during their antenatal care visit.

Association of sociodemographic, livelihood, postnatal care and infant behaviours with maternal emotional experiences during COVID-19 pandemic in Malaysia

Nuruljannah MN and Gan WY

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During COVID-19, Movement Controlled Order (MCO) imposed restrictions and changes in policies and management in public areas, government agencies, and healthcare providers, thereby impairing maternal psychological well-being. Thus, this cross-sectional study aimed to assess the associations of sociodemographic characteristics, pandemic livelihood impact, birth and postnatal experiences, maternal activities, and infant feeding behaviours with maternal emotional experiences during the COVID-19 pandemic. From July 2020 to

February 2021, 1449 mothers and infants aged ≤ 18 months completed an online survey, in which the information was disseminated through social media using convenience sampling. The majority of the mothers were Malay (71.4%), married (98.5%), attained bachelor's degree (44.6%), and had a monthly household income $< \text{RM}4000$ (43.5%). The majority of mothers had direct skin-to-skin contact (73.9%) and breastfeeding (60.5%) after birth. Around 2 in 10 mothers did not receive help with feeding (18.0%) and positioning (23.7%) at hospitals. The husband (81.8%), parents (53.5%), and healthcare professionals (48.5%) provided major breastfeeding support. The majority of infants were breastfed (63.1%) and had no change in feeding (88.0%), behaviour (72.3%), and appetite (80.6%). Worried (54.7%), annoyed (48.1%), and tired were the top-three negative emotions expressed by mothers (42.2%). Mothers who were younger ($p=0.001$), more educated ($p=0.001$), had difficulty paying rent ($p=0.002$), and faced husband unemployment ($p<.001$) predicted negative emotions. Conversely, mothers who received enough support on their well-being ($p=0.001$) and feeding ($p=0.008$) and had more time to focus on health ($p<0.001$) predicted better emotion. Moreover, mothers with a higher household income ($p=0.004$), had more time to focus on their health ($p=.010$) and practiced traditional confinement practices ($p<0.001$) had greater coping. Contrary, mothers who faced difficulty paying essentials ($p=0.023$) negatively predicted coping. In conclusion, postnatal check-ups should include mental health screening, especially among higher-risk mothers (younger and low income). Knowledge, skills, and support should be emphasized in coping interventions.

Teaching and learning experience sharing in empowering nutrition students in conducting virtual community nutrition and health promotion programmes during COVID-19 pandemic

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Nutrition and health promotion programmes remain as one of the critical elements of nutrition undergraduates in sharing their nutritional knowledge with communities. During the COVID-19 pandemic, students are required to study remotely and unable to have face-to-face community-based programmes. The pandemic has also accelerated the adoption of the Fourth Industrial Industrialization (4IR). Considering the virtual immersive learning experience in community nutrition promotion that is crucial for nutrition students, the e-SULAM approach was applied to empower students to use various digital applications and virtual platforms in planning, implementing, and evaluating (P.I.E.) virtual nutrition and health promotion programmes. This project also aimed to provide an e-collaborative stakeholder environment (students, lecturers, communities, industry/NGOs), so that they can improve their soft skills and civic engagement. The project began by dividing all students into two main groups and assigning them with two online nutrition and health promotion projects that aimed to prevent nutrition and health related problems among Malaysian adults and children, respectively. Students were guided to plan, implement and evaluate nutrition and promotion programmes that meet the needs of the targeted communities. At the end of the course, the learning outcomes of the project were achieved. Both community programmes were conducted successfully, with numerous positive feedbacks received from participants. Students were more confident to apply their knowledge and skills in virtual community nutrition promotion engagement. Besides, their digital knowledge and skills and soft skills have improved over time. In short, the COVID-19 pandemic has altered the way nutrition students reaching out to the communities, whereby the nutrition and health promotion programmes have shifted from face-to-face engagement to virtual engagement. By using the e-SULAM approach, high sense of student's ownership and empowerment were observed among nutrition students and public is more receptive to online engagement programmes.

Street food in Malaysia: What is the sodium level?

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Street food is defined as food that is readily prepared and sold by the roadside hawkers on trolleys, bicycles, markets, trucks or stalls that do not have fixed buildings or are confined within four walls. Street foods are likely to be high contributors of salt, given nearly two-thirds of Malaysians eat out at least once a day. Currently, the monitoring of sodium intake is heavily focused on processed foods, but little has been done on foods that are consumed away from home such as street food. Thus, this study aimed to determine the salt level in street food frequently available in Malaysia. It started with identification of the frequently available street food available locally. All data was then processed using SPSS to determine the frequency of the street foods. More than 10 000 street foods have been surveyed in all states in Malaysia and divided into 3 categories which were main meals, snacks and desserts. There were 15 street foods selected from each state that were analysed for its sodium content using AAS. Most top 20 street foods with highest sodium content consisted of processed food containing 500 – 800 mg sodium/100 g). Snacks such as *keropok lekor*, seaweed pickles, fried chicken with cheese and fried noodles also contained high amounts of sodium (700 – 800 mg sodium/100 g). Fried kuey teow, noodle soup, *char kuey teow* and *roti john* contained 400–500 mg sodium/100 g. Dessert such as *apam balik* and banana fritter with added cheese has an increment of sodium up to 45- 55%. These findings will be disseminated to the public in helping them making wise decisions when purchasing the street food. Street vendors should also be educated in terms of using other ingredients other than the salt that could give salty taste to the food.

The quality of supercritical carbon dioxide extracted dabai pulp oil and its beneficial effects in hypercholesterolemic rat — A new alternative fat

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Dabai pulp oil (DPO) is new oil extracted from the pulp of *Canarium odontophyllum*. The quality and efficacy of DPO are needed to promote its potential as a new alternative fat. Therefore, we investigate the quality of DPO, which includes moisture and volatile content (MVC), free fatty acid content (FFA), iodine value (IV), and peroxide value (PV). Furthermore, we evaluate the efficacy of DPO against hypercholesterolemia elicited by a high-cholesterol diet in rats. The MVC of DPO was $<0.001 \pm 0.00\%$. Next, the FFA in DPO was $2.57 \pm 0.03\%$, and the IV of DPO was 53.74 ± 0.08 g iodine/100 g oil. Meanwhile, the PV of DPO was 4.97 ± 0.00 mEq/kg. Supplementation of DPO in hypercholesterolemic rats for 30 days revealed the hypocholesterolemic effect (significant reduction of total cholesterol, triglyceride, and 3-hydroxy-3-methylglutaryl-CoA reductase) accompanied by a significant reduction of inflammatory markers (C-reactive protein, interleukin-6, and tumor necrosis factor- α), and lipid peroxidation (MDA). We also observed a significant improvement in the rats' lipoprotein lipase (LPL) and antioxidant capacities (total antioxidant status, superoxide dismutase, glutathione peroxidase, and catalase). The results on the quality and efficacy of locally made DPO suggest its potential use as a healthy alternative fat in the future.

Invited Lecture 3

Functional role of nutrition in addressing non-communicable diseases (NCDs)

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According to the Malaysia National Health and Morbidity Survey in 2019, 2/3 of Malaysian have a least one of three NCDs, namely diabetes, hypertension or hypercholesterolaemia. More than ¼ have at least 2 NCDs and almost 10% have all 3. The importance of nutrition in prevention and treatment of NCDs has gained much attention from public health professionals. A healthful diet, regular physical activity, and achieving and maintaining a healthy weight are paramount to managing health. Precision Nutrition is a new interdisciplinary scientific field derive from multiple separate nutrition science fields of research including genetics, epigenetic effects on gene expression, proteomics, and metabolomic and biochemical markers of food metabolism. The effects of diet on the microbiome and of the microbiome on digestion and metabolism have revolutionized our understanding of human nutrition and necessitated a more comprehensive approach to

nutrition recommendations beyond simply balancing nutrients and replacing deficiencies of macronutrients and micronutrients in a general fashion for everyone. The aims of precision nutrition are to develop individualized, actionable dietary recommendations that help people decide what, when, why, and how to eat to optimize their health and to prevent and reverse NCDs.

Symposium 2: Nutritional Concerns of Older Persons

Clinical experiences of a geriatrician

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Malaysia has become an “ageing society” in 2020 when seven per cent of its population were aged 65 years and over, and will be an “aged society” by 2044 when 14 per cent of its population are estimated to be aged 65 and over. Throughout life, nutrition is an important determinant of overall health, physical and cognitive function, vitality, quality of life, and longevity. Malnutrition is prevalent in older people. Reduced food intake and unintentional weight loss are often multifactorial. Recognizing and maintaining an optimally balanced diet is imperative as individuals age. This talk explores the nutritional concerns and challenges in older adults, and discusses the management of a complex geriatric patient, highlighting the nutritional aspect.

Ageing with resilience: The WE-RISE multidomain intervention

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Center for Healthy Ageing and Wellness, Universiti Kebangsaan Malaysia

In the face of ageing posed adversity, preservation and promotion of resilience is vital to maintain independent functioning among older persons. This called for the initiation of a multi-domain intervention development which focuses on boosting the multiple facets required to foster healthy ageing. Cognitive frailty (CF) is characterised by the co-existence of physical frailty and cognitive impairment and is hypothesised to be potentially reversible with multi-domain intervention. The WE-RISE™ intervention is a novel multi-domain intervention consisting of combined exercise, cognitive stimulation, dietary counselling, and psychosocial support. WE-RISE™ was conducted over 24-weeks, divided into 12-weeks instructed community-based intervention and 12-weeks of WE-RISE@Home™ home-based intervention among community dwelling older persons from lower socioeconomic status. Significant improvements were observed among participants of the experimental group at the end of the intervention for cognitive status (global cognition, verbal memory, working memory and complex attention), physical status (balance and mobility, endurance and lower body strength), nutritional status (fat percentage, muscle mass, total body water, bone mass, basal metabolic rate, metabolic age) and psychosocial status (disability, health related quality of life and exercise self-efficacy). The findings of this study indicate that the multi-domain, WE-RISE™ intervention has the potential in addressing the reversibility of CF.

Invited Lecture 4

Palm oil nutrition research: What's new

Kanga RS

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Oils and fats play an important role in human nutrition. Palm oil forms one of the 17 oils and fats consumed by humans around the world. Almost 85% of the world's palm oil production is used as food and this has meant that the nutritional properties of palm oil and its fractions must be adequately demonstrated. Palm oil has a balanced fatty acid composition, containing Palmitic acid (44%) which is the major saturated fatty acid in palm oil, 39% monounsaturated oleic acid and 11% polyunsaturated linoleic acid. Nutritional studies have exhibited that palm oil was similar to unsaturated oils with regards to effects on blood lipids. In addition, palm oil provides a healthy alternative to trans-fatty acid in partially hydrogenated fats which are more deleterious to health.

Palm oil also contains many phytonutrients or bioactive compounds, including carotenes, tocotrienols, tocopherols, phenolics, sterols, coenzyme Q10 and squalene which are essential for good health. These phytonutrients have antioxidative properties and some nutritional benefits beyond their antioxidant function. It is to be noted that 70% of vitamin E in palm oil occurs as tocotrienols and the remainder as tocopherols. To date, a number of nutritional studies have shown that tocotrienols reduce blood cholesterol, exhibit anticancer and neuroprotective effects among others. Other phytonutrients found in palm oil such as carotenoids, which are precursors of vitamin A were found to prevent night blindness, improve vitamin A status of lactating women and their infants, improve serum retinol concentrations and combat vitamin A deficiency. Besides these, other minor components e.g. Co-enzyme Q10, squalene, polyphenols and phytosterols have also been proven to possess anticancer, cardioprotective properties and enhance immune functions. In addition, a bouquet of healthful water soluble bioactives have also been extracted and studies have shown numerous health benefits of these compounds.

There is continuous effort in exploring the health potentials of palm oil through extensive research and development. This presentation will focus on latest research findings on the nutritional properties of palm oil.

Symposium 3: Learnings from Virtual Nutrition Activities

Better Health Programme – A digital, community-based intervention to reduce NCD risks in a B40 community

Lim SC

Better Health Programme Malaysia, RTI International Malaysia

To tackle the rising burden of NCDs in Malaysia, the Better Health Programme Malaysia (BHP MYS) focused on addressing the obesogenic environment in low-income neighbourhoods. The programme supported an integrated public health, multi-sectorial and community

driven bottom-up approach in the design of the interventions, focusing on health knowledge, dietary habits, physical activity and environmental issues that were identified at community-level. Programme implementation coincided with the COVID-19 pandemic. Hence, these interventions were delivered through a hybrid approach with the support of trained community health volunteers (CHVs) and complemented by digital e-learning and innovation (MyBHP digital health App) and social media.

The variety of community engagement methods (in-person and virtual) increased participation from different age groups whilst simple, clear, action-orientated messaging delivered using different means (texts, videos, infographics, quizzes) supported learning and retention of key messages. Following up knowledge dissemination with activities and challenges as well as implementation of the gamified community health reward model digital health platform collaborating with local businesses encouraged translation into practice and bridged the know-do-gap. Peer inspiration, mutual support, healthy competition, and visual evidence were important elements to initiate and sustain motivation for collective change.

Online promotion of healthy nutrition during the COVID-19 pandemic

Gui SL

State Health Department Wilayah Persekutuan Labuan

A declaration of COVID-19 as a pandemic by the World Health Organization (WHO) in March 2020 had governments around the world implemented strategies to reduce the impacts of COVID-19 on health, social, and economic. The Malaysian government announced the Movement Control Order (MCO) due to the rapid increase of COVID-19 cases. Most businesses were closed and only essential services such as health care and food provider were opened. At this point of time, health care delivery which include nutrition services were also impacted. Nutrition services which included nutrition advocacy to public, nutrition intervention program, nutrition counselling for mother and child care were highly affected. These services provided by the Ministry of Health Nutritionists were 100 % face to face with the public. Not to mention the nutrition activities such as cooking demonstration for anaemic mothers, the school canteen monitoring, the breastfeeding initiative, among others were not able to be carried out. Therefore, to be able to continually provide essential nutrition information on healthy eating in this critical period, MOH's Nutritionist digitalized their core services.

Nutritionists play a major role in preventing nutrition related NCDs among population and during the COVID-19 pandemic by decreasing the risk of getting infected and minimize the severity of the symptoms. During the COVID-19 pandemic, MOH's Nutritionist play their part by providing their technical services in quarantine centres, handling nutrition consultation virtually, keeping the public updated with essential nutrition tips such as post Covid recovery, healthy shopping during pandemic, healthy eating during pandemic via the online platform such as Facebook and Instagram. We organised a lot of webinars, forum, online quizzes, cooking demonstration, live sessions with expert and also online competition and engagement with other agencies and community. The pandemic does not stop the MOH's Nutritionist to achieve, enhance and maintain the well-being of the population as mentioned in the policy statement of the National Nutrition Policy of Malaysia.

The virtual motivational weight loss online program: 30 Days Diet Challenge to adults during COVID-19 pandemic

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The COVID-19 outbreak has had huge impacts on us, especially causing economic, social, and health disruption. Because of that, we have to cope our life and work in a new norm, including working from home to stay safe. Hence, online meetings and social media are considered the best solution since face-to-face interactions are restricted. Therefore, the virtual motivational online program called the 30 Days Diet Challenge was developed and implemented. This program aims to promote mental strength and behaviour modification through behaviour therapy, motivational method (Big why, online chat, podcast, daily gratitude journal, daily affirmation), healthy eating and physical activity among the participants. The program consists of 30 selected nutrition topics, 12 exercise sessions, a specialized written journal, daily affirmation, daily podcast and menu suggestion videos. Participants' progress is closely monitored via WhatsApp Group, and nutrition classes are conducted using the medium Facebook Closed Group and ZOOM with a respective schedule. Changes in body weight were measured at baseline and post-intervention for the study outcome. A total of 431 adults aged 18 to 60 years old have been participating in this program since January 2021. One hundred and seventy (170) out of 431 participants have completed pre and post-assessment as preliminary results. Among the participants, 30% experienced weight reduction of less than 2kg, 52% between 2 to 4kg, and 18% more than 4kg. In conclusion, the online motivational weight loss challenge has the potential in promoting behavior modification through behaviour therapy, healthy eating and physical activity.

Symposium 4: Physical Activity and Sedentary Behaviour

Malaysia Active Healthy Kids Report Card 2022: How do our children and adolescents fare?

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The Malaysia Active Healthy Kids Report Card 2022 aims to collect, assess, and grade current and comprehensive data on physical activity (PA) and its associated factors among Malaysian children and adolescents aged 5 to 17 years. This report card was developed as part of the Global Matrix 4.0 on Physical Activity for Children and Youth, a comprehensive assessment of the global variation of children and youth's PA, following the Canadian Report

Card model. The Working Group, who were advised by the International Expert Group, identified the core matrices, assessed the key data sources, and evaluated the evidence for grade assignments. A total of 12 indicators of physical activity were graded by comparing the best available nationally representative evidence published between 2016 to 2022 against relevant benchmarks using an internationally standardized grading scheme. Among the top grades were assigned to School (A-), Government (B) and Physical Fitness (B). Sedentary Behaviours (C) and Weight Status (B-) indicators informed that at least half of children and adolescents are doing well in these areas. Overall Physical Activity, Active Transportation, and Diet were assigned D- grades, marking that there is still more work to be done in these areas. Four other indicators, namely Organized Sports and Physical Activity, Active Play, Family and Peers, and Community and Environment, were assigned INC (incomplete) due to lack of representative data. These findings demonstrate that although school facilities and proper government policies are in place, Malaysian children and adolescents are not engaging very much in PA and active commuting and had poor dietary intake. Concerted efforts among relevant stakeholders are needed to address the various factors associated with physical inactivity, and at the same time, conduct nationally representative studies to increase data on PA indicators for Malaysian children and adolescents.

Physical activity measurement methodologies: A systematic review in the Association of South East Asian Nations (ASEAN)

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Non-communicable diseases (NCDs) are a preventable threat to livelihood and longevity in the Association of South East Asian Nations (ASEAN) and insufficient physical activity (PA) is a primary cause of NCDs. A PRISMA-based systematic review of measurement methodologies used to assess PA was conducted. 564 studies published between 1978 and 2020 were reviewed. A majority of the PA measurement employed subjective methodologies and were observational and cross-sectional, with disproportionately fewer studies conducted in economically challenged member nations, except for Brunei. PA research in Brunei, Cambodia, Laos and Myanmar constituted 0.4–1.1% while Malaysia, Singapore, Thailand and Indonesia contributed 12–37% of all PA research within ASEAN. A decision matrix can be used to determine the measurement methodology of choice to assess PA. Future research into PA promotion can include the incorporation of a socioecological model that is focused on time use and lifestyle behaviors as PA and sedentary behavior co-exist in daily life and have co-directional effects on each other.

Anthropometric and physical activity status of B40's women during COVID-19 pandemic

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As the world faces the COVID-19 pandemic, governments have implemented strategies to prevent the virus from spreading. Though it is successful slow down the spread, these strategies adversely affect physical activity and health. The aims of this study were to determine anthropometric status, physical activity level, and its association among B40's women from Kuala Terengganu during the COVID-19 pandemic. This cross-sectional

study was conducted among 142 of B40's women from Kuala Terengganu, Terengganu. Sociodemographic profiles and self-reported anthropometric measurements (height, weight, waist circumference, and hip circumference), and respondents' physical activity were determined by using the Global Physical Activity Questionnaire (GPAQ) via telephone interview. Data obtained was analysed using SPSS Version 26.0 and descriptive statistics were presented in median (IQR) and percentage (%). The Spearman correlation was used to determine the relationship between physical activity and anthropometric status. All respondents were female with median (IQR) for age was 29 (10.0) years old. Most of the respondents (35.9%) were in group B2 with income between RM2500-RM3169. The median BMI among respondents was 24.0 (IQR=5.9) kg/m², and the median WHR among respondents was 0.83 (IQR=0.1) cm. Waist circumference was 77.8 (IQR=11.3) cm, while hip circumference was 96.0 (IQR=9.7) cm. Respondents that meet the WHO recommendation was 53.5%. Median total physical activity was found to be 140 (IQR=81) minutes/week. Spearman correlation coefficient of total physical activity MET-minutes/week, and BMI was found to be weakly negatively correlated with ($r_s = -0.263$, $p = 0.002$). In conclusion, most respondents were in the normal BMI category, while most were categorized as having abdominal obesity according to WHR measurement. Respondents have a moderate level of physical activity during the COVID 19 pandemic. This study provided insight into women's physical activity levels and anthropometric status during the pandemic, which may be used to reference future research.

Poster Presentations

Group A: Nutritional Status (various groups) & Community Interventions

A01 Effects of home-based exercise on nutritional status among university students

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Malaysia implemented its first Movement Control Order (MCO) on 18th March 2020 to curb the spread of COVID-19. Outdoor activities become highly challenging while exercise from home became an alternative to maintain an active lifestyle during pandemic. A pre-post, single-arm, quasi-experimental study was conducted to examine the effects of six-week home-based exercise on nutritional status among university students. A total of ten female students from Universiti Malaysia Sabah (UMS) aged between 21 to 23 years old with body mass index (BMI) ≥ 23 kg/m² were involved in this study. Two-point data were collected, first at the baseline and second at the endpoint, after the intervention completed. Data collected includes anthropometric profile (waist circumference, body weight, body fat and BMI) and dietary intake (calorie and macronutrient). Subjects were given exercise interventions from home five times a week, 40 to 50 minutes per session, for six weeks. A paired sample t-test was used to compare mean values of variables before and after intervention. After six weeks, a significant decrease was observed in body weight (mean difference, MD=1.66 kg, $p=0.042$) and BMI (MD=0.72 kg/m², $p=0.038$). However, no changes were observed in waist circumference ($p=0.474$), body fat ($p=0.245$), intake of calorie ($p=0.617$), carbohydrates ($p=0.766$), protein ($p=0.229$) and fat ($p=0.711$). In conclusion, exercising from home for six weeks could impact a subject's weight and BMI. Exercising from home can overcome the challenges related to outdoor physical activity and help people to stay active and healthy.

A02 A web-based intervention programme for preschool child-parent dyads: Usability testing study

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The objective of this pilot study was to examine the usability of the Interactive Malaysian Childhood Healthy Lifestyle (i-MaChEL) programme, a Web-based interactive website. The i-MaChEL is a multi-theory driven intervention, multi-mode of delivery, multi-setting, and multi-component, targeting both children and their parents, aiming to promote a healthy lifestyle practice. The i-MaChEL programme consists of 13 modules that focus on healthy eating, active physical activity, and sedentary behaviour. The Web-based interactive website of the i-MaChEL programme was carefully designed to be interactive and user friendly, consisting of infographics, reading materials, educational videos, and relevant pictures of a healthy lifestyle. The programme website also consists of online quizzes and interactive activities using Web 2.0 platforms. The parents were also provided with online individualised feedback to allow parents to provide feedback, comments, and recommendation to improve the intervention process of the i-MaChEL programme. The study participants included 42 parents of preschool children and ten multidisciplinary panels of experts. The questionnaires to assess the usability of the i-MaChEL website were adapted from the System Usability Scale (SUS). The SUS represents a simple ten-item instrument using a 5-point Likert scale. Descriptive analyses were used to assess the usability of the i-MaChEL Website. The findings of the study showed that 80.95% of the Web users agreed that the programme website was not complicated, user friendly, and not awkward to use. The programme website appeared satisfactory to users as determined by usability testing, especially related to the storyline, content, colour schemes, subtopic arrangement, and graphics. Results of this pilot test will inform further development and finalization of the i-MaChEL programme, which will be tested using a two-group cluster randomised controlled trial with the goal of reducing childhood obesity risk.

A03 Association between self-esteem, body mass index (BMI) status and risk of eating disorders among health sciences students of Universiti Sains Malaysia, Health Campus, Kubang Kerian, Kelantan

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Transitioning from adolescents to young adulthood with new environment as a university student may give impact on their self-esteem, body mass index (BMI) and thus increasing the risk of eating disorder. The purpose of this study was to determine the prevalence of self-esteem level, BMI status and risk of eating disorder as well as the association between the variables among health sciences students of Universiti Sains Malaysia (USM), Health campus. In this cross-sectional study, 166 health sciences students of USM health campus

were evaluated for risk of eating disorder and self-esteem level using the Eating Attitude Test 26 (EAT-26) questionnaire and Rosenberg's Self Esteem Score respectively. Their height and weight were self-reported and BMI was calculated. Of the 166 participants of the study, 19.9%, appearing to have high risk of eating disorder. Majority of the participants (65.1%) also has normal self-esteem level. Most of the students (57.8%) were found to be in the normal BMI category. There is no association between selected socio-demographic characteristics and risk of eating disorders, and association of BMI status and risk of eating disorders ($p>0.05$). This study shows a significant association between self-esteem level and BMI status ($p=0.006$), and, the association between self-esteem level and risk of eating disorders ($p=0.002$). University students are considered as a vulnerable population that may have high risk of eating disorder. In this study, self-esteem and BMI status plays a significant role in the psychological factors which may result to developing risk of eating disorder. However, several factors such as body perception and body dissatisfaction also should be included in future research. Strategies to reduce prevalence of eating disorders among health sciences students should be implemented such as detecting eating disorders earlier before it imposing further health risk behaviour.

A04 Association between sociodemographic factors, individual factors, involvement status in gardening and diet quality among adults in AU2 Keramat, Kuala Lumpur

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COVID-19 pandemic has impacted the livelihood of Malaysians while gardening activities have been seen to contribute positively to the diet quality of the population. This cross-sectional study aimed to examine the association between sociodemographic factors, individual factors, involvement in gardening and diet quality among adults in Rumah Pangsa AU2 Keramat, Kuala Lumpur. A total of 117 eligible respondents (65.8% females, 35.2% males) were involved in this study via convenience sampling. The questionnaire for this study comprised six sections which were sociodemographic background, depression, anxiety and stress, food security status, involvement in gardening, physical activity and 24-hour diet recall. Findings showed that the prevalence of poor diet quality among respondents in this study was 89.7%, with a mean score of 44.51 ± 10.81 . Most of the respondents had a normal level of depression (98.3%), anxiety (96.6%) and stress (98.3%). 59.5% of the respondents had high food security level and the rest was food insecure. The majority of the respondents did not involve in gardening activities (72.6%). Further analysis showed that the older respondents ($r=0.20$, $p=0.034$) had a significantly higher diet quality. Although there was no significant difference between diet quality ($t=-1.69$, $p=0.096$) based on the involvement status of gardening in general, community gardeners ($t=-2.63$, $p=0.011$) had a significantly higher diet quality compared to non-community gardeners. Furthermore, respondents involved in gardening activity had a significantly higher fruit serving intake [1.00 ($0.00 - 2.00$) vs 0.00 ($0.00 - 1.00$)], Mann-Whitney $U=1045.0$, $p=0.036$) and lower total fat intake (28.84 ± 8.78 vs 32.93 ± 8.66 , $t=2.27$, $p=0.025$). In conclusion, the diet quality of the respondents was considered poor with older adults and community gardeners having significantly higher diet quality. Interventions need to be developed in addressing the persistent poor diet quality of adults in the community.

A05 Association of food environment and weight status in urban poor communities in Kuala Lumpur

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Overweight and obesity in Malaysia could be contributed by the food environment. This study is conducted to determine the association of food environment and weight status among adults aged 19 to 60 years old in urban poor communities in Kuala Lumpur, Malaysia. A total of 143 responses have been included in this study, along with 71 food stores and 70 restaurants. Sociodemographic variables, self-reported anthropometry measurements (height, weight and BMI), subjective food environment and objective food environment in stores and restaurants were assessed. The mean BMI of adults living in urban poor communities in Malaysia is 28.29 ± 6.85 , with most of the population being either overweight or obese (65.8%). For objective food environment in stores, grocery stores have a significantly higher availability ($p=0.018$), quality ($p=0.001$) and overall food environment ($p=0.004$) expressed in total score compared to convenience stores. However, there was no significant difference found for price across store types ($p>0.05$). There is a significant difference of the overall food environment through total scoring across restaurant types ($p=0.000$). Perceived community nutrition environment, perceived restaurant consumer nutrition environment, and home food environment has an insignificant association with BMI ($p>0.05$). However, BMI is positively correlated with perceived consumer nutrition environment ($r=0.205$, $p=0.014$) and overall subjective food environment ($r=0.200$, $p=0.017$), opposite to the expected direction. Store availability, pricing, quality and total scoring was not significantly associated with BMI ($p>0.05$). Furthermore, the total scoring of restaurants has no significant relationship with BMI ($p>0.05$). In conclusion, with the current methodology, food environment is not associated with the weight status of adults residing in urban poor communities, in Kuala Lumpur, Malaysia.

A06 Health-related physical fitness among children aged 6-12 years old in Malaysia: Findings from SEANUTS II

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Health-related physical fitness (HRPF) is an important determinant of physical health in children; however, there are limited studies with representative data that assess HRPF among Malaysian children. The present study investigated HRPF among Malaysian children aged 6-12 years old who participated in the second South East Asian Nutrition Surveys (SEANUTS II). A total of 1238 primary school children (mean age: 9.6 ± 1.7 years, 54% female), from Peninsular Malaysia were included in this study. Body weight and height were measured and classified using World Health Organization 2007 body mass index-for-age Z-score. HRPF was assessed as follows: cardiorespiratory fitness (15-meter shuttle

run), muscular strength (handgrip strength, standing long jump), muscular endurance (sit-ups), flexibility (V-sit and reach), and body composition (body fat percentage using bioelectrical impedance analysis). Physical activity (PA) was assessed by number of days with ≥ 60 minutes of moderate-to-vigorous PA (MVPA) – parent-reported for children aged 6-9 years, and self-reported by children aged 10-12 years. Overall, prevalence of overweight and obesity were 16% and 14%, respectively. Only 11% of children achieved the recommended ≥ 60 minutes of MVPA daily, while most children reported only 1-2 days. Mean peak VO_2 was 42.6 ± 3.5 ml/kg/min. Approximately half of the children did not achieve Healthy Fitness Zone based on FITNESSGRAM® standards, with boys (47%) and girls (48%) at similar proportions. Mean handgrip strength and standing long jump were 12.5 ± 4.4 kg and 110.5 ± 26.7 cm, respectively, while average repetitions for sit-ups were 20 ± 10 reps/minutes. Mean distance achieved in V-sit and reach was -0.6 ± 8.9 cm; while mean body fat percentage was $23.9 \pm 9.7\%$. Overall, about one-third of Malaysian children were categorised as overweight/obese. Most children did not meet recommended daily MVPA, while about half of the children had low levels of cardiorespiratory fitness. More prospective research to assess and improve HRPF in Malaysian children are needed.

A07 Association between nutrition status and health-related quality of life among Universiti Malaysia Sabah undergraduate students

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Poor nutritional status has a significant impact on quality of life, but there is a scarcity of studies investigating nutritional status and quality of life among undergraduates, who are likely to consume poor-quality diets. This study, therefore, aimed to determine the association between nutritional status and health-related quality of life (HRQoL) among Universiti Malaysia Sabah (UMS) undergraduates. This was a cross-sectional study involving 200 UMS undergraduates, who were recruited through convenient sampling from October 2021 to January 2022. Data were collected from the subjects via an online questionnaire. Assessment of nutritional status included self-reported anthropometric measurements such as weight, height, and waist circumference as well as dietary intakes assessed using the 24-hour dietary recall. HRQoL was assessed using the 36-Item Short Form Survey (SF-36). Statistical analyses included descriptive analysis and Spearman correlation test. Majority of the subjects were female (84.2%), Chinese (40.8%), and 4th year students (54.2%). The mean body mass index and waist circumference was 22.4 ± 4.3 kg/m² and 76.5 ± 10.1 cm respectively. The mean energy intake was 1454 ± 436 kcal/day, with the macronutrient distribution of 49% carbohydrate, 17% protein, and 34% fat. The subjects had the highest score for the physical functioning domain (84.3 ± 17.1) while the vitality domain was scored the lowest (54.5 ± 17.6). Waist circumference had a weak association ($r=0.18$, $p=0.05$) with the general health domain while body weight had a weak association ($r=0.18$, $p=0.04$) with vitality domain. Similarly, dietary protein intake had a weak association ($r=0.23$, $p=0.01$) with the emotional role limitation domain. Body mass index and other nutrient intakes were not significantly associated with any HRQoL domain (all $p>0.05$). In conclusion, body weight, waist circumference, and dietary protein intake were associated with HRQoL and could be the potential target of intervention to improve the HRQoL among UMS undergraduates.

A08 Digital literacy and perceived barriers among preschool teachers towards development of eToyBox Study Malaysia

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eToyBox is a learning management system for preschool teachers to improve their health literacy, which ultimately aims to improve children's obesity-related behaviour. As part of development of the eToyBox system, assessment on digital literacies, acceptance of digitization of education materials, and perceived barriers in adopting internet-based training is needed. A total of 54 preschool teachers under the Community Development Department (KEMAS) in Kuala Lumpur, Selangor, and Sarawak, who participated in ToyBox Study Malaysia intervention phase in 2018, took part in this cross-sectional study. An online self-administered questionnaire was used to assess sociodemographic background, use of communication tools and media, and teacher's views on adapting the ToyBox modules to digital education materials. Respondents were contacted, and questionnaire link was shared through WhatsApp messages. Most participants (74.0%) were Malay females with mean age of 37.7±7.9 years. Most participants had Internet access (94.4%) and owned at least a smart phone, laptop or tablet (94.4%). The majority of participants (75.0%) perceived their proficiency in using computer at "Average", followed by "Advanced" (18.5%) and "Beginner" (3.7%). Some (65.0%) perceived their skills in word and email processing as "Advanced" or higher; however, spreadsheet skills were found to be most challenging with only 22.0% reporting "Advanced" and higher. The main barrier to accessing online material was unstable internet connection (74.1%). However, most respondents (90.0%) were supportive of adapting effective modules for online learning and believe that it will be beneficial for professional development and teaching practice. In conclusion, most participants were in favour of digitising Toybox Study Malaysia educational content and were comfortable with its implementation via an online learning platform. The findings from this study can advise future development of online learning materials for preschool teachers in Malaysia.

A09 Sex differences in body composition and muscle-bone unit of preadolescent children aged between 9-11 years old in Malaysia: A secondary analysis of PREBONE-Kids study

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Childhood is a critical period for bone growth. The close relationship between muscles and bones formed a functional unit which is known as the muscle-bone unit (MBU) and a measure of bone strength. Limited studies have examined the association between body

composition and MBU in Malaysian preadolescent children. The main objective of this secondary analysis is to compare the sex differences in total body (TB), and regional (arm, leg, trunk, android, and gynoid) body composition, and MBU of preadolescent children aged between 9-11 years old. Baseline body composition, bone mineral content (BMC) and bone mineral density (BMD) were derived from the Dual energy X-ray absorptiometry scan reports. Total and regional MBU were calculated by dividing BMC with lean mass (LM). This study found that the BMD [BMD boys: 0.772(0.100) g/cm² vs BMD girls: 0.748(0.089) g/cm²; $p=0.004$], and BMC were higher in boys [BMC boys: 1153.3(336.8) g vs BMC girls: 1079.1(313.7) g; $p=0.037$]. Boys had higher LM compared to girls [boys: 21313.0(6566.0) g vs girls: 20397(7390.0) g; $p=0.043$]. Girls had higher body fat percentage than boys [girls: 29.1(12.2) % vs boys: 25.3(15.3) %; $p=0.004$] and the adipose distribution was different in the gynoid region [boys: 1146.0(1533.0) g vs girls: 1624.0(1221.0) g; $p=0.013$]. Girls had higher MBU in the arms [girls: 0.065(0.012) vs boys: 0.059(0.008); $p<0.001$], legs [girls: 0.055(0.007) vs boys: 0.053(0.007); $p=0.011$], and android [girls: 0.013(0.003) vs boys: 0.012(0.002); $p<0.001$]. This study showed that body composition and MBU sexual dimorphism were present in children aged 9-11 years. The differences are possibly influenced by pubertal hormones and varied physical activity levels. This study provides reference data for Malaysian children and is important to further understand the bone health status of growing children.

A10 Prevalence and factors associated with adherence to movement guidelines among preschoolers in Peninsular Malaysia

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Adherence to the 24-hour movement guidelines (24-hMG) has been shown to confer health benefits to young children. WHO recommended that preschoolers aged 3-4 years should have ≥ 180 minutes of physical activity (PA) including 60 minutes of moderate-to-vigorous physical activity (MVPA), not be restrained for ≥ 1 hour, ≤ 1 hour of screen time (ST), and sleep for 10-13 hours while ≥ 5 years old should engage ≥ 60 minutes of MVPA, ≤ 2 hours of ST, and 9-11 hours of sleep. This cross-sectional study, which aimed to assess the 24-hour movement behaviours of Malaysian preschoolers aged 3-6 years and the factors associated with adherence to 24-hMG, is part of the South East Asian Nutrition Surveys II (SEANUTS II) Malaysia. A total of 208 preschoolers (5.0 \pm 1.0 years old, 55.8% boys) from four regions of Peninsular Malaysia were included in this analysis. PA was assessed using GENEActiv accelerometer while information on socio-demography, socio-environmental factors, sedentary behaviours (SB), and sleep were parent-reported. A total of 24.5% of preschoolers achieved age-appropriate 24-hMG (30.2% boys, 17.4% girls). All preschoolers adhered to at least one recommendation, with the highest adherence being PA guidelines (84.1%), followed by SB (58.2%) and sleep (57.7%). Meeting 24-hMG was significantly associated with sex [boys were more likely to meet the 24-hMG than girls (OR=2.28, 95%CI=1.14, 4.55, $p=0.020$)] and availability of community facilities (OR=0.37, 95%CI=0.14, 0.92, $p=0.033$). No significant associations were found between meeting 24-hMG with age, ethnicity, body weight status, household income, mother's education level, residential area, space to play actively at home, and support from parents, siblings, and friends to play actively. Overall, only a quarter of Malaysian preschoolers met the 24-hMG due to low adherence to SB and sleep guidelines. Future studies should explore the association of meeting 24-hMG with other potential factors and health indicators.

A11 Personal and lifestyle factors associated with sleep quality among Malaysian undergraduate students during COVID-19 pandemic

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Poor sleep quality can lead to several health risks such as gastrointestinal problems, depression, anxiety, type 2 diabetes mellitus, cognitive impairment as well as the abuse of addictive substances. University students are vulnerable to poor sleep quality because they need to face new challenges such as online learning during COVID-19 pandemic. Recent studies have shown that university students had worse sleep quality during COVID-19 pandemic. However, local study on sleep quality of university students during the pandemic is lacking. Therefore, this cross-sectional study aimed to determine the factors associated with sleep quality among undergraduate students in Malaysia during COVID-19 pandemic. An online survey was completed by 377 respondents ($M_{age}=21.85$, $SD=1.59$ years) from 16 June to 31 July 2021 regarding sociodemographic background, sleep quality, academic performance, chronotype pattern, night eating syndrome, food security, physical activity, internet addiction and self-reported body weight and height. The prevalence of poor sleep quality was 62.3%. Those who were Malay (AOR=3.84, 95% CI=2.07–7.11), in the arts stream (AOR=2.55, 95% CI=1.20–5.42), and internet-addicted (AOR=2.14, 95% CI=1.22–3.77) had higher risk of developing poor sleep quality. On the other hand, respondents who lived in rented house (AOR=0.38, 95% CI=0.16–0.88), were sophomores (AOR=0.49, 95% CI=0.25–0.99), and were the morning chronotype (AOR=0.35, 95% CI=0.17–0.72) were less vulnerable to poor sleep quality. In conclusion, this study found high prevalence of poor sleep quality among undergraduate students during the COVID-19 pandemic. It was suggested that by preventing internet addiction and evening chronotype may improve overall sleep quality of university students.

A12 Evaluating the usage and perception of digital nutrition information among adults in Klang Valley, Selangor

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The increasing pattern of internet and smartphone usage has altered the distribution of nutrition information from conventional methods such as posters and pamphlets to digital methods such as websites, social media, and mobile applications. However, the extent of these digital nutrition information being utilised by Malaysians and their perception towards these information remains a question. Therefore, this study is aimed to evaluate the usage and perception of digital nutrition information on nutrition among Malaysian adults. The respondents of this cross-sectional study were individuals of the 18-59 years old age group who resides in the Klang Valley area. A total of 383 respondents answered an online questionnaire via Google Form from November 2021 to February 2022. The majority of these respondents were of the 20-29 years old age group (64.8%), Malay race (93.7%), and bachelor degree holders (65.8%). The most common digital device used by the respondents was a smartphone (89.2%) and the majority of the respondents (38.3%) spent more than ten hours a day using the internet. Although most of the respondents comes across digital nutrition information every day (49.2%) and received digital nutrition information through their social media every day (34.7%), most of them has never attempted to intentionally

seek digital nutrition information (35.6%). Our data shows that the respondents received digital nutrition information from Instagram (52.8%), followed by Facebook (50.0%) and Youtube (40.8%). More respondents preferred receiving digital nutrition information from mobile applications and social media compared to nutrition related websites. There was a significant association between the utilization of digital nutrition information and its impact on the adult population ($r=0.406$, $p<0.001$). In conclusion, mobile applications and social media are the preferred platforms for receiving digital nutrition information and therefore should be considered by healthcare professions for a much better distribution of nutrition information to the public.

A13 Exploring the sustainability of ToyBox Study Malaysia among preschool teachers as agents of change

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Factors that affect programme sustainability give insights to the success or failure of an intervention programme where the discourse is a remarkable challenge in implementation science. This study aimed to explore the sustainability of ToyBox Study Malaysia through KEMAS preschool teachers as agents of change. ToyBox Study Malaysia is an evidence-based intervention aimed to prevent obesity by improving energy balance-related behaviours namely healthy eating and snacking, water drinking, reducing sedentary behaviour, and physical activity in pre-schoolers that was implemented across KEMAS preschools in Selangor, Kuala Lumpur, and Sarawak. Teachers participated in Training-of-Teachers (ToT) workshops, and intervention groups were given ToyBox teaching materials and aids. This ongoing exploratory study involved 23 KEMAS teachers from Selangor and Kuala Lumpur ($n=14$) and Sarawak ($n=9$) who were in the ToyBox Study intervention arm in 2018. Qualitative methods were used in gaining rich, contextual data from the teachers after completion of ToyBox Study intervention. Teachers were contacted for semi-structured interview sessions where conversations and observations occur simultaneously. Observations were noted on a checklist of ToyBox teaching materials, tools, and activities. Data obtained from interviews, checklist for ToyBox materials and activities, and artefacts (pictures) were triangulated. Evidently, the teachers continued to implement ToyBox activities pertaining to these modules: healthy eating and snacking, water drinking, and physical activity. ToyBox mediating tools, such as quarter-quarter-half plates, cups, water dispensers, and toys (puppets for storytelling and colourful balls), were still being utilised. A strong, recurring theme identified as a barrier was restrictions due to the pandemic where school operation was highly affected by the fluctuations in COVID-19 cases. The findings are expected to inform stakeholders, future programme implementation, policymakers regarding intervention sustainability, benefits of implementing health interventions during early childhood stage, and empowering teachers as agents of change in sustaining a health intervention programme.

A14 Changes in lifestyle-related behaviours and its association with weight status among adults during COVID-19 pandemic

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In December 2019, there was a sudden onset of coronavirus disease 2019 (COVID-19) caused by a novel coronavirus (SARS-CoV-2) up to now. Due to the rapid transmission of COVID-19, all people including Malaysian adults had to go through the Movement Control Order (MCO). This had impacted the people's daily lifestyle-related behaviours and the changes in these behaviours had been found to influence weight status. This study was conducted to determine the association between the changes in lifestyle-related behaviours with weight status among adults during the MCO period. This cross-sectional online study was participated by 292 Malaysian adults. The lifestyle behaviour changes questionnaire was used and the anthropometric measurements (body weight and height) were self-reported. Multiple linear regression was used to analyse the association between the changes in lifestyle behaviours and weight status. The prevalence of overweight and obesity in the participants were 20.9% and 11.0% respectively. During MCO, an improvement in the overall lifestyle was noticed in those who were 30-49 years old, secondary school graduates, not working, and married. An increase in sugar-sweetened beverages (SSB) intake was significantly associated with higher body mass index (BMI) ($\beta=-0.823$; $p=0.009$) during MCO. On the other hand, an increased in participation in cooking ($\beta=-0.679$; $p=0.013$) were significantly associated with lower BMI during MCO. To conclude, there is an association between the changes in lifestyle-related behaviours with weight status among Malaysian adults during MCO. This finding can aid in the development of strategies to promote health living in the aftermath of COVID-19.

A15 Development and validation of questionnaire to assess the nutritional knowledge related to cognitive function among older adults

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A good nutritional knowledge related to cognitive function is important to encourage healthy eating habit which can helps in improving cognitive function of the older adults. The objective of this study was to develop a validated and reliable questionnaire to assess the nutritional knowledge related to cognitive function among older adults in Malaysia. The development of the questionnaire involves two steps namely development and identification of items for the questionnaire and selection forms response format and scoring system. A total of 30 items from seven domains from the Seven Guidelines for Improving the Memory of the older adults developed with a dichotomous scoring system of 'right' and 'wrong'. Scoring system involves the awarding of one mark for each question answered correctly and no marks for questions answered incorrectly. Content validation was conducted among six experts and the Scale Level Content Validity Index based on Average (S-CVI) score obtained was 0.92. Thus, the questionnaire created was proven to be valid. The final questionnaire consists of 20 items with score above 0.83 as the cut-off point. Test-retest

reliability assessment was conducted among 108 older adults with mean age of 69 years \pm 7.9 years old. Nutritional knowledge assessment was conducted twice with a two-weeks interval between the assessments. Statistical analysis were based on the combination of intra-class correlation coefficient (ICC), limits of agreement (LOA) and standard error of measurement (SEM). Results from these three statistical analysis show high reliability for the newly developed questionnaire. The ICC value has exceeded 0.75 (ICC value=0.78-0.88), LOA graph showed close agreement between each assessment variability and the SEM value of 4.38% (lower than 10%). In conclusion, the newly developed questionnaire was proven to be valid and reliable. This questionnaire is suitable to be used to assess older adults' nutritional knowledge related to cognitive function.

A16 The association of sociodemographic and lifestyle changes with body weight status during COVID-19 pandemic among university students in Shah Alam, Selangor

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This cross-sectional study was conducted to determine sociodemographic factors and lifestyle changes with body weight status during Covid-19 among university students in Shah Alam, Selangor. Respondents ($n= 403$) completed an online self-administered questionnaire comprising self-reported height and weight, sociodemographic characteristics, and Simple Lifestyle Indicator Questionnaire (SLIQ), which includes questions on diet, physical activity, alcohol intake, smoking and stress level before and during the Covid-19 pandemic. Most of the respondents were females (59.6%), of Chinese ethnicity (38.7%), with bachelor's degrees (72.2%) qualification. During this study period, most of the respondents were staying at home (77.2%), living with family (81.4%) with a household income of less than RM2500 (43.7%). There was no significant difference in body mass index (BMI) between male and female respondents in this study, either before or during the COVID-19 pandemic, with $p>0.05$. As for BMI differences, the majority (44.7%) had no changes in BMI. However, most respondents (53.8%) were weight gain in body weight changes. Varying total SLIQ scores can be observed across sociodemographic characteristics before and during the pandemic. However, the results were not statistically significant ($p>0.05$). In terms of body weight status and SLIQ scores were reported higher mean SLIQ scores among overweight respondents than in the other BMI categories ($p<0.05$) before the pandemic. A similar trend was observed during the pandemic. However, the result was not statistically significant. Different lifestyle changes can be observed across sociodemographic factors and body weight status, specifically before the pandemic. Findings would serve as important evidence for shaping strategies to counteract the pandemic effects on student lifestyle during the COVID-19 pandemic.

A17 Factors associated with stunting among children aged 4 to 12 years in Peninsular Malaysia

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Childhood stunting has been linked to poor health, lower educational performance and developmental delays. However, large-scale studies reporting on the factors associated with childhood stunting among Malaysian children are scarce. Hence, a cross-sectional study was conducted to determine the factors associated with stunting among children aged 4 to 12 years in Peninsular Malaysia. This study is part of the South East Asian Nutrition Survey II (SEANUTS II). A total of 542 children (48.0% boys, 52.0% girls) with mean age of 8.2±2.4 years from four different regions (Central, East Coast, Northern, Southern) in Peninsular Malaysia were included in the analysis. Children's height were measured, while data regarding socioeconomic status, sanitation facility and personal hygiene were collected using parent-reported questionnaires. Venous blood samples were drawn and haemoglobin levels were determined using flow cytometry. Some 6.1% of children had stunting, with higher proportions in boys (54.5%), pre-schoolers (51.5%), urban areas (63.6%), and household sizes of 5 people or more (66.7%). Only 6.1% of children with stunting appeared to also have anaemia. Majority of children and their mothers applied good hygiene practices (84.4-90.9%) with proper sanitation facilities at home (100%). Factors including birth weight (OR 3.12, 95%CI 1.20, 8.17, $p=0.020$) and maternal height (OR 2.93, 95%CI 1.03, 8.35, $p=0.044$) are significantly associated with stunting. No significant associations were found with gender, age group, residential areas, maternal education, household income and expenses, anaemia status, and sanitation and good hygiene practices. In conclusion, birth weight and maternal height are the two main factors identified as being associated with stunting among Malaysian children. Strategies to address childhood stunting should aim to ensure good nutritional status among girls and healthy pregnancies with good gestational weight gain.

A18 Food safety knowledge, attitude and practice among working adults during Malaysia's national recovery plan

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Centres for Disease Control and Prevention (CDC) has reported that workplaces have been identified as a potential source of COVID-19 infection due to the fact that many workplaces are occupied, and many tasks require a high level of public interaction. As a result, these conditions may facilitate the spread of the virus among workers. In Malaysia, eight new COVID-19 clusters were detected in October 2021, five of which are associated with workplaces. Hence, the purpose of conducting this research is to determine the level of food safety knowledge, attitude, and practice of working adults in Malaysia during the National Recovery Plan. The sociodemographic variables included are gender, age, ethnicity, education level, current residence, occupation, monthly income, and organisation sector. This cross-sectional study included 160 respondents. The 160 respondents were required to answer the online questionnaire through online platforms from the period of October to November, 2021. The gathered data were analysed by using the Statistical Package for Social Sciences (SPSS) version 26. The study results revealed that working adults have a fair level of food safety knowledge (81.3%) and demonstrate a good (81.9%) and positive level (73.1%) of food safety attitude and practice. Overall, there was significant association between knowledge and practice ($p=0.002$), and attitude and practice ($p=0.001$). Also, there was significant difference ($p<0.05$) between current residence, education level, occupation, and monthly income and food safety knowledge, attitude, and practice. The information gathered via SPSS may help the government or other organisations to take appropriate and effective actions to improve the food safety knowledge, attitude, and practice among working adults. In this study, the limitations of the research were explored, as well as recommendations for future studies.

A19 Association between knowledge, attitude and practice of food labelling usage with risk of obesity among students in Universiti Sains Malaysia (USM), Health Campus

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Nowadays, obesity has become a severe global public health problem. In Malaysia, 1 in 2 adults was categorised as overweight or obese. This increasing trend involves not only the elderly but also the young adults. Food label reading is reported to be key to help individual to adopt healthy food choice and dietary habit. Hence, the aim of this study is to determine the association between knowledge, attitude and practices (KAP) of food labelling usage and obesity risk among university students. A cross-sectional study was conducted for 117 university students in USM Health Campus, Kubang Kerian, Kelantan. Information on socio-demographic profile, nutrition knowledge, attitude and practice of food label were collected using self-administered questionnaire and distributed through online platform. Food Label Used Questionnaire (FLUQ) was chosen as the tool as it included question about level of nutrition knowledge, attitude and practice related using the food labels. Anthropometric data of subjects were collected using self-reported method. Results found that average age of the subjects were 21.6 ± 1.7 years old. Most of the subjects were females (85.1%), Malay (80.7%) and had household income more than RM 4000 (39.5%). Subjects with medium knowledge had higher mean BMI (24.41 ± 4.80 kg/m²) compared to subjects with high knowledge (21.72 ± 4.31 kg/m²) ($p=0.018$). However, attitude and practice domain of food label usage showed no significant median difference with obesity risk factor (BMI) ($p>0.05$). Considering the importance and usage of food label in the management of obesity risk, these findings provide useful information to incorporate nutrition education on food labelling in preventing obesity risks. For example, the government and private bodies can collaborate to develop an education programme that focuses on the framework of promoting impactful food label literacy, so that consumers' understanding and knowledge of food labels is constantly upgraded.

A20 Impact of COVID-19 on dietary intake, sleeping patterns and physical activity levels among university students

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The COVID-19 pandemic has brought a significant impact on people's behaviour and lifestyles, particularly, dietary intake, sleep and physical activity. University students are one of the vulnerable populations affected by the pandemic. However, there was limited research on the impact of lockdown on Malaysian university students' lifestyle modifications. Hence, this study aims to identify the impact of COVID-19 on dietary intake, sleeping patterns and physical activity levels of the students studying in a public or private university in Selangor, Malaysia. A total of 261 university students in Selangor participated in this cross-sectional online survey. Sociodemographic and anthropometric data of the participants were self-reported. Dietary intake was assessed using PLifeCOVID-19 questionnaire, sleep quality was assessed using Pittsburgh Sleep Quality Index Questionnaire (PSQI) while physical activity level was assessed using International Physical Activity Questionnaire-Short Forms

(IPAQ-SF). SPSS was used to perform statistical analysis. Results showed that 30.7% of the participants adhered to the unhealthy dietary pattern, 48.7% had poor quality of sleep and 59.4% engaged in low physical activity levels during the pandemic. Unhealthy dietary pattern was significantly associated with a lower IPAQ category ($p=0.013$) and increased time spent sitting ($p=0.027$) during the pandemic. Participants being underweight before the pandemic (aOR=2.472, 95% CI=1.358-4.499), increased takeaway meals consumption (aOR=1.899, 95% CI=1.042-3.461), increased snacking between meals consumption (aOR=2.989, 95% CI=1.653-5.404) and engaged in a low level of physical activity during pandemic (aOR=1.935, 95% CI=1.028-3.643) were the predictors of unhealthy dietary pattern. In conclusion, dietary intake, sleeping patterns and physical activity levels of the university students were impacted in different ways during the pandemic. Therefore, strategies and interventions should be developed and implemented to improve the health and well-being of the students during the pandemic.

A21 Changes in physical activity and sedentary behaviour during the COVID-19 pandemic among adults in Asia: A scoping review

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The coronavirus disease (COVID-19) pandemic has led the governments to impose several restrictions such as lockdown to curb the spread of COVID-19 cases throughout the population. These lockdowns have greatly changed people's daily lives, including physical activity (PA) and sedentary behavior (SB). The main objective of this scoping review was to identify the available evidence related to PA and SB among adults in Asia during the COVID-19 pandemic. This scoping review was conducted using Arksey & O'Malley's methodology. A search for relevant articles was performed in four databases in Jan 2022 (PubMed, ScienceDirect, Scopus, and EBSCOhost (Medline)). Overall, 132 studies were included in this review. Most of the studies used cross-sectional, and the data collected was through an online questionnaire. Changes in PA were reported in 122 studies and SB in 50 studies. Most of the studies reported a decrease in the total level of PA and an increase in sedentary and screen time. This decrement in PA and increment in SB was related to poor mental health, increase in body weight, and the complications of COVID-19 patients, while participants who maintained or improved their PA had better health outcomes. Most of the studies have found that PA has decreased with a synchronous increase in SB during the COVID-19 pandemic. Given the numerous deterrents and benefits of PA and SB on health, public health authorities should plan an effective intervention and strategies to promote PA and reduce SB.

A22 Food security status and nutritional status among undernourished children aged 24 to 48 months old in Taska Seremban, Negeri Sembilan

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Optimal nutrition allows children to grow, develop, learn, and play while malnutrition affects their futures and leaves young lives hanging in the balance. This study aimed to determine food security status and nutritional status among undernourished (underweight, stunting or wasting) children aged 24 to 48 months from B40 households in Seremban. A total of 85 undernourished children (food secure=38.8%, food insecure=61.2%) with a mean age of 39.88 months (SD=5.36) from 10 Taska Seremban were recruited based on cluster sampling method. Socio-demographic information, anthropometric measurements (weight and height), food security, 3-day 24-hour dietary recall, and dietary diversity were assessed. The prevalence of underweight only, stunting only, wasting only, underweight and stunting, and underweight and wasting were 21.2%, 49.4%, 17.6%, 2.4% and 9.4%, respectively. Nearly one third of them (29.4%) had low birth weight. The percentage of food insecurity among those underweight, stunted, and wasted were 64.3%, 56.8%, and 78.3%, respectively. There was a significant association between food security status and low birth weight ($p<0.05$). Children from food secure households (700.65±93.98kcal/day) consumed significantly higher energy intake compared to those from food insecure households (573.16±177.10kcal/day; $p<0.001$). Those from food secure households had significantly higher intakes of all macronutrients (carbohydrate, protein and fat) and most of the micronutrients (vitamin A, thiamine, riboflavin, niacin and iron), except for folate, vitamin C, calcium, and zinc compared to children from food insecure households ($p<0.05$). There was no significant difference in dietary diversity score between children from food secure and food insecure households. In conclusion, this study found that food insecurity had a great impact on the nutritional status of pre-schoolers. Future intervention programs should improve dietary intakes especially among food-insecure children.

A23 Parents' knowledge on complementary feeding and its relationship with stunting: A survey of parents having children in nurseries in Kuantan, Pahang

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The present study is designed to assess the knowledge on the complementary feeding practices of parents having children in the nurseries in Kuantan, Pahang. A convenient sampling method was used to choose from the ten selected nurseries. A research questionnaire was developed and pretested. The demographic information and data on feeding practices and stunting were gathered on the pretested questionnaire. The data was compiled, and statistical analysis was performed objectively. There were 137 Malay parents involved in which most of them were mothers whose age ranged from 31 to 39 years old. Most of the participants worked in government or private sector, had tertiary level of education, and had four persons or more in the family. Besides, there were 137 children reported through the survey, comprising 66 boys (48.2%) and 71 girls (51.8%). The analysis showed that most of the participants (98.5%) chose 6-12 months as the suitable child's

age to introduce complementary feeding (CF) while only two respondents (1.5%) chose 4-5 months. Various responses in the questionnaire that were designed for evaluating the parents' knowledge on complementary feeding showed that out of 137 children, 78 (56.9%) were normal while 59 children (43.1%) were stunted. Out of 78 normal children, there were equal numbers of boys and girls. On the other hand, it was observed that the number of stunted girls (32 or 54.2%) was more than boys (27 or 45.8%). In terms of the relationship of parents' knowledge with complementary feeding and stunting, there was no association reflected by the r -value which was -0.071 . In conclusion, the results indicated that there was no significant relationship between parents' knowledge with CF and stunted children, which showed a weak negative correlation. The study found that there was a considerable proportion of children who were stunted.

A24 Food safety knowledge, attitude and practice among undergraduates during the COVID-19 pandemic

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The COVID-19 pandemic has emerged as a global threat and has raised concerns among the public regarding food safety and related hygienic practices, especially among university students, who have been known to have risky food handling behaviours. This study aims to evaluate the food safety knowledge, attitude and practice (KAP), the relationship between KAP as well as the association between sociodemographic variables and food safety KAP among undergraduates of a private university during the COVID-19 pandemic. A questionnaire was distributed to 156 participants via various online platforms, and the data obtained was analysed using descriptive statistics, Chi-square tests, ANOVA test and T-test. Overall, the respondents demonstrated good food safety attitude and practice levels, with average scores of 84.6% and 81%, respectively, as well as a moderate knowledge level, with an average score of 74.1%. A significant association ($p < 0.001$) was observed between attitude and practice scores. Male respondents ($p = 0.042$) and those studying science-related courses ($p < 0.001$) had significantly higher knowledge scores. Undergraduates with a CGPA of 2.0–2.49 had a significantly lower ($p = 0.019$) food safety knowledge score than all other respondents, while those with a CGPA of 3.0–3.49 had significantly higher attitude ($p = 0.003$) and practice ($p = 0.037$) scores than those with a CGPA of 3.5–4.0. Food safety and nutrition knowledge intervention programmes should be conducted to encourage positive changes in food handling behaviours and hygiene practices among undergraduates.

A25 Assessment of feeding challenges and sociodemographic status on child's growth among caregivers of cerebral palsy children in Kuala Lumpur and Kuala Terengganu

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Caregivers of children with cerebral palsy (CP) often faced challenging problems involving communication and physical well-being of their children, especially with regards to mealtimes. It has been reported previously that these challenges not only affect the CP

children's growth development but consequently their nutrition needs lead the child to the risk of malnutrition. Other than that, other factor such as socio-demographic status is well documented to be a significant factor that can affect the growth development of these children. Therefore, this study was conducted with the aim to identify the feeding challenges and to explore the primary caregiver's socio-demographic profiles that can overall impact the CP children's growth. A total of 61 primary caregivers of children with CP that lived in Kuala Lumpur and Kuala Terengganu were recruited in this online cross-sectional study. It was intended to find the effect of two different areas towards the ways the caregivers raised their CP children. Socio-demographic data and information on the primary caregiver's profile, CP children profile, anthropometric data of CP children were collected in a form, while the challenges on feeding during mealtimes were measured based on self-reported Parents Nutrition Screening Checklist (PNSC). Overall, primary caregivers in the current study showed stable backgrounds as most have income of higher than RM 4,000, have steady occupational and social support, and mostly lived around urban areas and the east coast. While for the feeding challenges, most primary caregivers showed a low level of concern and fewer challenges during mealtimes which was contradicted to the previous study. In conclusion, the findings showed no association of feeding challenges and sociodemographic status on a child's growth among caregivers of cerebral palsy children in Kuala Lumpur and Kuala Terengganu.

A26 Changes in lifestyle, mental health, and body weight status among Malaysian adults before and during the COVID-19

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The Movement Control Orders (MCO) in Malaysia due to COVID-19 pandemic had a profound impact on the lifestyle behaviors, weight changes, and mental health of the population. This study aims to determine the changes in physical activity, sedentary behavior, body weight status, and mental health status among the Malaysian adults and assess the risk factors associated with body weight changes during the pandemic. A total of 338 Malaysian adults participated in this cross-sectional online study. Sociodemographic and anthropometric information including weight and height were self-reported. Physical activity and sedentary behaviour were assessed using International Physical Activity Questionnaire-Short Form (IPAQ-SF) while Perceived Stress Scale (PSS-10), Patient Health Questionnaire (PHQ-9), and Generalised Anxiety Disorder Assessment (GAD-7) were used to examine stress, depression, and anxiety, respectively. All data were collected at two time points, before and during the pandemic and all statistical analysis was performed using SPSS version 28.0. The results showed an average weight gain of 0.6kg among the participants with 45.5% of them experiencing weight gain. In addition, sedentary behavior ($p<0.001$), PSS-10 score ($p<0.001$), PHQ-9 score ($p=0.002$) and GAD-7 score ($p=0.001$) were significantly increased during the COVID-19 pandemic whereas the level of physical activity was significantly decreased ($p=0.003$) during the pandemic. Weight change during the pandemic was found to be associated with age, sedentary hours, and PHQ-9 score. Through binary logistic regression, sedentary hours (AOR=1.068, 95% CI=1.002 – 1.139, $p=0.043$) was identified to be a risk factor of weight gain during the pandemic. In conclusion, lifestyle changes were associated with weight gain among Malaysian adults during the COVID-19 pandemic. Therefore, promoting healthy lifestyle and well-being via nutrition education should be implemented during the pandemic to alleviate weight gain-related complications.

A27 Development of graphic materials and assessment of their validity and feasibility to optimize parental knowledge and attitude about benefits of breastfeeding in Terengganu

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Graphic material is one type of educational materials that uses visuals to convey information to the readers. It can communicate knowledge about a topic faster and more efficient than plain text, making it a useful tool in nutrition education. The present study aimed to develop the graphic materials regarding benefits of breastfeeding and to assess their validity and feasibility. Two graphic materials were developed in this study. The validity testing involved 15 panels of expert, while feasibility testing involved 45 parents who have children below two years old. The validity testing reported I-CVIs scores of 0.82 and 0.88, which were considered to be relevant. On the other hand, for feasibility testing, the graphic materials were assessed on two areas, which were acceptability and practicality. The results showed that the graphic materials were considered to be acceptable with majority of the parents rated 4 or 5 (80.0-86.6%), and also considered practical with majority of the parents gave rating of 4 or 5 (46.7-66.7%). These findings indicated that the graphic materials were valid and feasible to be used in future intervention program. It is expected that these graphic materials regarding benefits of breastfeeding would become beneficial to the parents in providing knowledge and assisting them in giving optimal nutrition to their children, which subsequently would help to lower the risk of malnutrition.

A28 A pilot study of CoPT Nutri Trail™, a newly developed online obesity intervention module, and its impact on social well-being among obese children

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Online obesity intervention modules are now being actively designed following the current situation. CoPT Nutri Trail is a newly designed online module aiming to improve the implementation of obesity intervention in primary school children. Thus, pilot testing was carried out with two objectives. 1) To identify the appropriate method for conducting interventions using CoPT Nutri Trail focusing on teachers as users and children as participants, duration of the module, use of technology in activities, and improvement of the study prior to actual research. 2) To use an adapted and validated WHO-5 questionnaire to highlight the impact of the social well-being among obese children. This pilot study was followed four procedures: a) process recruitment participants b) resources assessing time in conducting and completing the activities, mode of conducting the activities, and problems that can occur during the study, c) management of the feasibility of instruments, the use of WHO-5 questionnaire to measure the social well-being among children and d) scientific evaluation of the intervention's impact on social well-being among obese children. The study was conducted at one school, with Nutri Game activities led by one teacher and two researchers as observers. A total of 17 obese children with mean age (9.8±0.33) and boys $n=10$ (58.8%), girls $n=7$ (41.2%) completed all nine topics involving nutrition, social

interaction, and physical activity within three weeks. Nutri Game was played both online and offline using a blended model. It was due to children's poor internet connection and skills to use the computer device. The average time spent was 33.8 minutes to complete each topic, and it suits with allocation given. A majority (93.3%) of children found that the WHO-5 given was straightforward. The impact evaluation score was 72.9%, indicating a positive impact on social well-being. Therefore, CoPT Nutri Trail has the potential to be implemented in the school setting with appropriate delivery methods in activities for improving the impact on social well-being among obese children.

A29 Relationship between perceived stress with body mass index and physical activity among female workers during the Conditional Movement Control Order period in Kota Kinabalu, Sabah

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The COVID-19 pandemic has resulted in the most rapid transformation on workplace culture. Working from home (WFH) has become the new normal and can affect an individual's mental and physical health. A cross sectional study was conducted to explore the perceived stress level and its relationship with body mass index (BMI) and physical activity in 141 female workers during the Conditional Movement Control Order (CMCO) period in Kota Kinabalu, Sabah. An online survey was distributed using non-probability convenient sampling between Oct 2020 and Jan 2021 using Google Form. The survey consisted of four components: (1) Socio-demographic characteristics (2) Perceived Stress Scale (PSS-10) of Sheldon Cohen (3) Malay International Physical Activity Questionnaire and (4) Anthropometric data (height, body weight and body mass index, BMI). The results showed that mean score of perceived stress was 18.09 ± 5.39 and BMI was $25.42 \pm 5.49 \text{ kg/m}^2$. The median (Q1, Q3) of physical activity score was 2050 (772.50, 4932.50) MET-min/week. Majority of female workers (66.0%) had high perceived stress level followed by 22.7% and 11.3% with moderate and low perceived stress level, respectively. No significant correlation was found between score of perceived stress with BMI ($r = -0.011$, $p = 0.893$) and physical activity score ($r = 0.009$, $p = 0.918$). Of the 141 participants who completed the survey, 84 (59.6) were WFH while 57 (40.4%) were working from the office (WFO). Chi-square analysis indicates that no significant association was found between perceived stress level and work location (WFH vs. WFO) during the CMCO period ($p = 0.336$). In conclusion, a high level of perceived stress was observed among female workers during the pandemic. Therefore, the need for stress-coping strategies should be emphasized to improve employees' health and well-being.

A30 What are the factors that influence women's decisions to induce lactation? A qualitative study of adoptive nursing by 23 women

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Induction of lactation occurs when breast milk is produced in women, without going through the process of pregnancy and delivery. Induced lactation is a method to enhance the relationship between an adopted child with the adoptive mother. This study aimed to explore the factors influencing women's decisions on induced lactation. This study was conducted in 2017 in five Malaysian states [Central Region (Selangor), Northern Region (Penang), Southern Region (Johor), East Coast Region (Kelantan), Malaysia Borneo (Sabah)] applying in-depth interviews with women who went through induced lactation. This qualitative approach helped establish comprehensive insights from women's experiences in the journey of induced lactation. The semi-structured questionnaire was used in face-to-face interviews with respondents. All interviews were consented, audio-recorded, and transcribed verbatim, followed by identification of emerging themes. Data saturation was obtained after interviewing 23 respondents. Data was synthesised via thematic analysis of Atlas t.i version 8.0. The finding revealed that there were three themes describing the main factors in determining women's decisions on induced lactation: (1) *mahram* relationship, (2) experiencing motherhood, and (3) the perceived superiority of breastfeeding. Induced lactation is analogous to ordinary life, where favorable attitudes are followed by a strong drive to achieve. It is hoped that by identifying the various factors that influence the decision on induce lactation, health care professionals and the community will be empowered to support breastfeeding in terms of facilitating motherhood, providing breastfeeding aid equipment, and assisting with daily necessities. By expanding efforts and programs, the government and other stakeholders can assist adoptive mothers in breastfeeding their children and feeling more accomplished as women and mothers.

A31 Internet addiction, eating behaviour and sleep quality among undergraduate students in Universiti Sains Malaysia

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Internet addiction is one of the major issues among university students due to the high usage of gadgets and the need of internet for completing the chores. Thus, sleep quality and eating behavior may also be affected. The aim of this study is to investigate the association between internet addiction, eating behavior and sleep quality among undergraduate students Universiti Sains Malaysia. A cross-sectional study was conducted among 107 students and three types of questionnaires were distributed namely the Malay version of Internet Addiction Test (IAT), Dutch Eating Behavior Questionnaire (DEBQ) and Pittsburgh Sleep Quality Index (PSQI). Statistical analysis was done using Pearson-Chi Square test, Kruskal-Wallis test and Mann-Whitney test. Findings revealed that 54.2% of students had mild internet addiction, 59.8% suffered from poor sleep quality and mostly were emotional eaters. Severe internet addiction was significantly associated with emotional eating behavior with the median (IQR) value of 41.0(37.0) with ($p < 0.05$). However, no association were found between internet addiction and sleep quality and the association between eating behavior and sleep quality. In conclusion, Internet addiction affects eating habits of university students and thus proper strategies must be taken to manage Internet addiction among university students. Awareness programs are essential to tackle disordered eating behaviours among university students.

A32 Social media usage, body image dissatisfaction and eating disorder among private university students in Malaysia during COVID-19 pandemic

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The COVID-19 pandemic had significant impact towards health status with growing evidence on excessive usage of social media and the emergence of eating disorders and development of negative body image. This study aims to determine the association between social media usage and body image dissatisfaction with eating disorders among private university students in Shah Alam, Malaysia during COVID-19 pandemic. Respondents ($n=248$) completed an online questionnaire comprised of Social Media Addiction Scale-Student Form (SMAS-SF), Body Image Acceptance and Action Questionnaire (BI-AAQ) and Eating Attitude Test-26 (EAT-26). Data analyses were conducted using the IBM SPSS Statistic 26. Most respondents were female (64.9%), aged 21 years old, of Malay ethnicity (58.5%), with a bachelor's degree (55.2%) qualification from non-health science faculties (56.0%). Results showed that respondents had SMAS-SF scores of 86.13 ± 14.98 , and BI-AAQ scores of 22.59 ± 15.80 . Only 15.3% of the respondents were vulnerable with eating disorders with EAT-26 scores of 10.27 ± 10.81 . Pearson Correlation test showed that social media usage was significantly associated with eating disorder ($r=0.235$, $p<0.01$). Similarly, body image was moderately associated with eating disorder ($r=0.462$, $p<0.01$) among these group of university students participating in the study. University students in this study had mild social media addiction, were experiencing negative body image and were not vulnerable to eating disorder. Study findings can be utilised to develop intervention for university students experiencing eating disorder, focusing on the use of social media to improve their body image perception, and eating behaviour.

A33 Development of animated materials and assessment of their validity and feasibility to optimise parental knowledge and attitude about optimal children feeding in Terengganu

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The use of audiovisual media is beneficial because mothers' knowledge and attitude improved after receiving health education through video media. Hence, the aim of the present study was to develop the animated materials regarding optimal children feeding and to assess their validity and feasibility. Two videos of animated materials were developed which were a short video animation and a bubble note video with music. Validity testing was conducted after the animated materials were completely developed. The components in the animated materials were reviewed by panel of experts ($n=15$). Then, the feasibility questionnaire which consists of sociodemographic, acceptability and practicality of animated materials was distributed to the participants ($n=45$). Based on the findings, all items in item-level content validity index (I-CVI) were found to be relevant (0.82-0.88), thus supported that the animated materials are valid. For feasibility tests, the animated materials were mostly acceptable with majority of participants gave 4 or 5 rating (80.0-86.6%), and have a level of practicality with majority of participants rated 4 or 5 (46.7-66.7%). Thus, these animated materials are valid and feasible to be used and it is expected that these animated videos would benefit parents, particularly by providing information on optimal children feeding because they can watch the animated videos on their phone at any time and from anywhere.

A34 Association between socio-demographic factors, psychological factors and lifestyle factors with sedentary behaviour among staff in Public Work Department (JKR) in Seremban, Negeri Sembilan

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Sedentary behaviour is characterised by activities involves with low energy expenditure including sitting, reclining or lying posture during waking time. This cross-sectional study aimed to determine factors associated with sedentary behaviour among Jabatan Kerja Raya (JKR) staff in Seremban, Negeri Sembilan. A self-administered questionnaire was used for socio-demographics background, Past-Day Adults' Sedentary Time (PAST) questionnaire, Fatigue Symptom Inventory (FSI), Profile of Mood States (POMS-SF), Global Physical Activity Level (GPAQ) and Pittsburgh Sleep Quality (PSQI) questionnaire were used in the study. Chi-square independence test and Pearson product-moment correlation was run for correlation between the categorical and continuous variables ($p < 0.05$). This study included 122 staffs (55.7% males and 44.3% females) from all ten JKR divisions and branches in Seremban, Negeri Sembilan with a mean age of 38.02 ± 8.32 years old. Results showed that majority of the staffs (64.7%) were overweight or obese with mean body mass index (BMI) of 27.23 ± 5.47 kg/m². Almost all (91.8%) of the staffs were classified as having high level of fatigue whereas 86.9% were physically active. Meanwhile the staffs reported to be in positive mood states with mean vigour score of 15.27 ± 4.12 . Sedentary time with average time spent on sedentary activities of 13.04 ± 4.94 hours per day was shown in this study, whereas 89.3 % were found to spent more than seven hours doing sedentary activity. Marital status ($p < 0.05$), severity of fatigue ($r = -0.184$, $p < 0.05$) and interference of fatigue ($r = -0.206$, $p < 0.05$), mood states of anger ($r = 0.185$, $p < 0.05$), fatigue ($r = 0.261$, $p < 0.01$) and total mood disturbance ($r = 0.188$ $p < 0.05$) were associated significantly with sedentary behaviour. In conclusion, the prevalence of sedentary behaviour among JKR staffs was high. Fatigue and mood were associated with sedentary behaviour which both play important role in promoting sedentary behaviour among the working population.

A35 Knowledge, attitudes and practices on food safety and personal hygiene practice among food court handlers in Kuala Terengganu

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Food handlers' roles are critical in preventing food contamination during preparation and maintaining the cleanliness of food premises. This is because a huge number of individuals eat outside the home and are potentially exposed to food-borne illnesses. Food handlers' knowledge, attitude, and practice in food safety and personal hygiene practice is a major public health problem. This cross-sectional study aimed to determine the level of KAP and the association between the sociodemographic data with the level of knowledge, attitudes and practices on food safety and personal hygiene practice among food court handlers in Kuala Terengganu. 308 food handlers from seven food courts in Kuala Terengganu district were involved in this study. The data were collected from the food handlers through the self-administered questionnaire and analysed using the SPSS version 22.0. The results showed that the food handlers have excellent knowledge and attitude, and good practices toward food safety and personal hygiene practice with 95.1%, 87% and 99.7%

respectively. Respondents also showed that there was no significant association between sociodemographic data with the level of knowledge and practice. However, there was a significant difference between age, educational level and working experience with the level of attitudes ($p < 0.05$). Even though the respondents showed a positive result on the KAP level, there was no significant association between knowledge and attitudes, knowledge and practice and attitudes and practice among food court handlers ($p > 0.05$). Thus, this finding revealed that the food handlers' KAP levels are good but several aspects of food safety and hygiene procedures, such as refreezing food items, separating raw and cooked food, and not wearing jewellery or watches, should be highlighted.

A36 Association between nutrition knowledge, body mass index (BMI) and physical activity among staff in Universiti Sains Malaysia during COVID-19 pandemic

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Body mass index (BMI) is widely used to assess the nutritional status among adults as it is inexpensive and easy to use. However, the BMI may be associated with nutrition knowledge and physical activity. Hence, this study investigated the BMI of staff in Universiti Sains Malaysia as well as its association with nutrition knowledge and physical activity of the staff. The respondents were recruited by using convenience sampling method and 134 responses were included in the analysis. Data including socio-demographic characteristics, nutrition knowledge, BMI and physical activity of the respondents were collected in this study. The Google Form used for data collection included questionnaires from General Nutrition Knowledge (GNK) and Global Physical Activity Questionnaire (GPAQ) to assess the respondents' nutrition knowledge and physical activity. Among 134 respondents, 64.2% were female whereas 35.8% were male with 55.2% were non-academic staff and 44.8% were academic staff. The prevalence of overweight was the highest (44.8%) compared to other BMI categories. For nutrition knowledge, the minimum score obtained was 9 meanwhile maximum score obtained was 21 with the median scores among male were 17.00 (2.75) and female were 17.00 (3.00). Majority of the respondents met the recommendation for physical activity levels as targeted by World Health Organization. However, no significant association was found between nutrition knowledge and BMI. The association between physical activity and BMI also was not found significant. In conclusion, strategies should be implemented by the university to reduce the prevalence of overweight among the university staff in order to reduce the risk of non-communicable diseases such as type 2 diabetes mellitus and hypertension. Besides, a longitudinal study design is needed to explain the association between nutrition knowledge, BMI, and physical activity among the staff in USM.

A37 Association between body composition and lipid profile among UniSZA students aged 18 to 19 years

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Cardiovascular disease (CVD) is one of the non-communicable diseases rising steadily over the years in Asia, especially in our country. National Cardiovascular Disease- Acute Coronary Syndrome (NCVD-ACS) Registry has also shown that Malaysians are developing

CVDs at a younger age compared to the neighbouring countries. Several risk factors are identified, including body composition and lipid profiles. Thus, the main objective of this study was to determine the association between body composition and lipid profiles among UniSA students aged 18 to 19 years in Kuala Terengganu. Anthropometric measurements comprised weight, height, and waist circumference (WC) were collected, while body composition was determined through bioelectrical impedance analysis. Triglycerides, high-density lipoprotein (HDL-C), low-density lipoprotein (LDL-C), and total cholesterol (TC) were determined from overnight fasting blood samples. Subjects comprised 89 students aged 18.6 (0.6) years old, with the majority of them were females (73.0%) and of Malays ethnicity. The students' mean BMI were 20.9 (5.1) and 21.5 (5.2) kg/m² for males and females, respectively. More than half of the male students were in the underweight/normal weight category (66.7%) while more female students were overweight (63.1%) and obese (20.0%). In addition, more female students were overweight (16.9%) compared to the male students (12.5%). Overall, all male students had normal range of WC (70.8 (10.9) cm) and waist-hip ratio (WHR) (0.8 (0.04)) index. Similarly, the majority of the female students also reported to have normal WC (89.2%) and WHR (95.4%). Lipid profiles analysis revealed that male students had significantly lower TC [4.0 (1.0) mmol/L] versus (4.7 (1.2) mmol/L), ($p < 0.001$), and HDL-C [(1.2(0.4) mmol/L) versus (1.5(0.4) mmol/L), ($p < 0.001$)] compared to female students. Pearson's Chi-Square test found that there was a significant association between FM% and TC category [$\chi^2(1)=6.69$, $p < 0.05$], and BMI and HDL-C category [$\chi^2(1)=1.10$, $p < 0.05$]. In conclusion, there were significant associations between body composition and lipid profiles. Thus, appropriate intervention programs should be planned to increase awareness and monitor students' health status in order to improve and maintain healthy lipid profiles.

A38 The association between health literacy and body mass index among type 2 diabetes mellitus patients in Hospital Universiti Sains Malaysia: A cross-sectional study

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The aim of this study is to explore the association between health literacy and body mass index (BMI) among type 2 diabetes mellitus patients. A cross sectional study was conducted among 96 type 2 diabetes mellitus patients aged 18 years old and above using convenience sampling technique in Hospital Universiti Sains Malaysia (Hospital USM). The translated and validated version of European Health Literacy Survey Questionnaire 16 (HLS-EU-Q16) was used to assess health literacy. Data on the participants' socio-demographic characteristics were collected and anthropometry measurements were taken from the medical folder to calculate their BMI. Out of 96 subjects, 58 subjects (60.4%) had sufficient health literacy whereas the mean BMI of the subjects was 28.59 kg/m² ($SD=6.17$), which was classified within the overweight category. Meanwhile, a significant association was found in the median BMI with three health literacy levels ($p=0.01$) and it was contributed between the problematic and sufficient health literacy groups ($p=0.009$, < 0.05). The most probable reason for sufficient health literacy finding in majority of subjects is due to good educational backgrounds, as 51.0% and 24.0% of the subjects were at secondary and tertiary levels, respectively. The current study also showed significant association between median BMI and health literacy which demonstrated that the interaction between health literacy and BMI is more multifaceted rather than just direct effect which may influenced by dietary behaviour, physical activity, numeracy skills, motivation and social support. The findings of this study indicates that health literacy may be a predictor for BMI, but there might be other stronger determinants apart from health literacy that could influence the BMI. Hence, it is recommended that further studies be conducted to elucidate the relationship and improve the health outcomes of T2DM patients.

A40 An online survey on the knowledge, attitude and practice of COVID-19 among Malaysian youth

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In Malaysia, the government have enforced some preventive measures to control the spread of viruses during the COVID-19 pandemic. The Standard Operating Procedure (SOP) has been set using knowledge, attitudes, and practices (KAP) studies regarding COVID-19. Citizens aged 15 to 30 years old were considered youths in Malaysia. Thereby, Malaysian youth were selected to be the target population in the study due to the lack of research conducted previously. The research objective is to determine the KAP level of COVID-19 among Malaysian youth. It included understanding the association between sociodemographic and the KAP level among the Malaysian youth during the pandemic. A cross-sectional study was conducted by using convenience sampling. A total of 314 respondents were recruited for the study. The questionnaires were used to collect the KAP level regarding COVID-19. The majority of respondents involved in the study were female (66.6%), Chinese (86%), aged 19-22 years (79.6%), unmarried citizens (98.7%), students (93.9%) and living in the northern zone of Malaysia (42.4%). The results show that Malaysian youth have adequate knowledge (80.6%) and practice (66.6%) but have a positive attitude (60.2%) towards COVID-19. Next, there is no association between sociodemographic with knowledge scores except for occupation, with a *p*-value of 0.048. Furthermore, there is no association between sociodemographic with attitude scores. Besides that, there is an association between sociodemographic with practice scores: ethnicity (*p*-value=0.004) and education (*p*-value=0.015). In chi-square analyses, a higher level of knowledge score regarding COVID-19 was not associated with attitude and practice scores. The importance of KAP studies in this critical period is to develop more effective health education programs to aid Malaysia's health authorities.

A41 Associations of personal factors, psychological factors, and social media use with body image perception among undergraduate students during COVID-19 pandemic

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Negative body image is a worldwide issue that is highly prevalent among young adults. Despite body image among university students has been increasingly studied over the last century, no local study assessed body image during COVID-19 pandemic. Research in body image has recently shifted to 'modern' types of media, for instance, Internet and especially social networking sites, as there was a significant surge in media consumption as compared to the pre-pandemic period. Therefore, this cross-sectional study aimed to investigate the associations of personal factors, psychological factors and social media use with body image perception among undergraduate students during COVID-19 pandemic. This study included 378 Malaysian undergraduate students (21.4% males and 78.6% females) with a mean age of 21.85±1.59 years. They completed an online self-administered questionnaire comprising information on socio-demographic characteristics, body image perception, self-weighing, depression, anxiety, stress, social media use (duration, selfie taking, selfie sharing, photo manipulation and social grooming) as well as self-reported weight and height. Results showed that majority of the respondents (79.7%) dissatisfied with their current body size, especially females (81.8%) as compared to males (71.6%). The average duration of using social media per day was about 5 hours, with the most

popular social media platforms were WhatsApp (88.1%), Instagram (52.9%) and YouTube (42.1%). Multiple regression analysis showed that age ($\beta=0.095$, $p=0.039$), sex ($\beta=0.226$, $p<0.001$), BMI ($\beta=0.400$, $p<0.001$) and depression ($\beta=0.129$, $p=0.005$) were significantly associated with body dissatisfaction among undergraduate students. In conclusion, high body dissatisfaction was observed among undergraduate students in this study. Those who were older, females, with higher BMI and depressed were found to have higher body dissatisfaction but not social media use. Preventive strategies focusing on promoting positive body image could include strategies on maintaining a healthy body weight and lifestyle.

A42 Comparison of food insecurity and the risk of eating disorders by relative weight change status of Malaysian youths throughout the COVID-19 pandemic

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The COVID-19 pandemic is one of the worst pandemic that the world is experiencing. The Movement Control Order is necessary to prevent the spread of viruses. However, the lockdown may have an impact on food security, eating behaviour, and body weight. Therefore, this study aimed to investigate the comparison of food insecurity status and eating disorder risk status with the relative weight change status of Malaysian youths throughout the COVID-19 pandemic. Demographics, socio-economic, body height, body weight during MCO 3.0 and the current body weight were self-reported by the respondents. The Food Insecurity Experience Scale (FIES) was used to assess the food security status, whereas the Eating Attitude Test-26 (EAT-26) was used to determine the risk of eating disorders. A total of 208 respondents were included in the study. The prevalence of moderate-to-severe food insecurity was 30.7%, while 18.8% were reported to be at risk of eating disorders. In regards to the relative weight change, 22.2% of youths gained weight throughout the COVID-19 pandemic, with a mean and standard deviation of $8.94\pm 5.61\%$ of their body weight. No significant association was observed between food security status and relative weight change ($\chi^2=4.47$, $p=0.347$). However, the risk of eating disorders was associated with relative weight change status ($\chi^2=6.12$, $p=0.047$). The COVID-19 pandemic worsens food insecurity and increases the risk of eating disorders in Malaysian youths. There is a need for prevention programs implemented within multiple sectors that are targeted to Malaysian youths to lower the risk of eating disorders as well as improving their food security.

A43 Chronotype and affective profiles among Malaysian school children

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The study aimed to determine the association between chronotype and affective profile among Malaysian schoolchildren. This study involved Malaysian schoolchildren between 9-11 years old, with no history of sleep and psychological problems. There were two

questionnaires answered by the participants, which were Morningness-Eveningness Scale for Children (MES-C) and Positive and Negative Schedule for Children in Short Form (PANAS-C-SF). The further outcome from PANAS-C-SF was converted into the four affective profiles, namely self-fulfilling profile, high affective profile, low affective profile, and self-destructive profile. A total of 190 respondents (55.8% female) had completed this study. Majority of the population fell under intermediate chronotype (53.7%) and mostly had self-destructive profile (32.6%). There were no association between gender and age with both chronotype and affective profile. Also, there were no association found between birth time and birth order with chronotype. Furthermore, considering the linear regression analysis, it was reported that chronotype (higher score indicating morningness chronotype) was a significant predictor factor for negative affect ($\beta=-0.143$, $p=0.004$). Also, children with self-fulfilling profile had significantly more morning-oriented person than high affective and self-destructive profile (all $p=0.016$). In conclusion, current study identified that morningness chronotype among schoolchildren showed negative correlation with negative affect. Moreover, morningness individual was associated with self-fulfilling profile in this study.

A44 The association between physical activity and mental health with weight status among Malaysian young adults during COVID-19 pandemic

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COVID-19 pandemic has drastically affected the mental health, physical activity level and weight status of young adults across the globe. Hence, this study was conducted to investigate the association between physical activity and mental health with weight status among Malaysian young adults during COVID-19 pandemic. Respondents ($n=301$) completed a Google Form questionnaire that consists of self-report socio-demographic information such as body height, body weight during pandemic and current body weight. Mental health status and physical activity level assessments were included in the questionnaire using a validated 21-item Depression, Anxiety and Stress scale (DASS-21) and International Physical Activity Questionnaire Short Form (IPAQ-SF) respectively. Data analysis were done using the Statistical Package for the Social Sciences (SPSS) version 26. Findings from this study revealed that 51.5% ($n=115$) young adults gained weight due to confinement, with an average weight gain of 3.27 ± 2.46 kg. Besides, 25.3% ($n=73$) of mild to extremely severe anxiety was most prevalent among respondents followed by 23.3% ($n=70$) mild to severe depression and 10.3% ($n=31$) of mild to moderate stress. During the home confinement, 64.8% ($n=195$) of respondents were physically inactive and 35.2% ($n=106$) were physically active (6815.73 ± 5495.51 METs-minutes/week). Nevertheless, 78% ($n=235$) of respondents fell under non-sedentary category with less than 8 hours sitting time. Findings from Pearson Correlation test revealed that there was no significant difference between depression ($p=0.550$), anxiety ($p=0.351$), stress ($p=0.703$) and physical activity ($p=0.732$) with weight status of young adults throughout the COVID-19 pandemic. Government should come up with an effective implementation in order for the young adults to have a balanced mental and physical health since it may guard against body weight gain during COVID-19 confinement.

A45 Food safety knowledge, attitude, and practice among Malaysian adults during the COVID-19 pandemic

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The current COVID-19 pandemic had increased the trend in meal preparation at home. The possible transmission of SARS-CoV-2 through food packaging contaminated by virus raised concern on the food safety among the public. This study was conducted to determine the level of knowledge, attitude, and practice towards food safety among the Malaysian adults during the COVID-19 pandemic. A cross-sectional study was conducted, and online questionnaire assessing the food safety knowledge, attitude, practice was distributed among the Malaysian adults via social media such as Facebook and Instagram. A total of 159 respondents were recruited. From the responses, fair level of food safety knowledge (6.3 ± 1.3), positive food safety attitude (40.2 ± 4.5), and good food safety practice (38.5 ± 5.1) were reported among the adults. The knowledge on building ventilation (33.3%), asymptomatic transmission of SARS-CoV-2 (27%), and effective disinfectant against SARS-CoV-2 (43.4%) were relatively poor. There was an association between food safety attitude and practice. It was noticed that the food safety knowledge was significantly higher among the male adults ($p < 0.05$). The level of food safety attitude and practice were affected by age and marital status of respondents, where the middle-aged married adults had higher level of attitude and practice towards food safety than the younger and single adults. No significant difference was observed on the education level and food safety knowledge, attitude, and practice. The attention on educational programs and infographics targeting young and single adults is needed to ensure the improvement in food safety knowledge during the pandemic.

A46 Weight loss strategies among successful Chinese weight losers in Malaysia

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Malaysia is the country with the highest prevalence of overweight and obesity among Asian countries. About 50.1% of adults in Malaysia were overweight or obese. However, the research on weight loss strategies used by Malaysians who are successful in weight loss is still limited. Hence, this cross-sectional study was conducted to determine the characteristics of the successful Chinese weight loser and the strategies used by them to lose weight. A total of 171 subjects who met the eligible criteria were recruited through an online questionnaire. This questionnaire consisted of four sections, including the sociodemographic of subjects, the subjects' weight history and weight loss strategies, eating habits and physical activity level of the subjects during the weight loss period. Results showed that majority of the subjects (81.9%) had successfully lost $\geq 10\%$ of their weight. Most of the subjects had modified their dietary and physical activity patterns to lose weight. The most frequently used dietary strategies were restricting the sugar intake and reducing the intake of high-carbohydrate foods. Meanwhile, exercising at least 30 minutes per day and engaging in aerobic exercise were the most commonly used physical activity strategies. This study also found that the intake of carbohydrate foods < 2 times a day and the intake of foods and beverages high in sugar, salt and fat < 2 times a week were significantly more

likely to lose $\geq 10\%$ of their body weight. There was no significant relationship between physical activity level and the magnitude of weight loss. In conclusion, weight loss can be achieved by using appropriate dietary and physical activity strategies. In the future, prospective studies can be conducted to determine the causal relationship between weight loss strategies, eating habits and physical activity level with the magnitude of weight loss.

A47 Factors associated with vitamin D intake among preadolescent boys and girls: a secondary analysis of PREBONE-Kids study

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Studies have reported poor vitamin D status among adolescent children in Malaysia, however limited data is available to describe the contribution of vitamin D intake. This study aims to assess the vitamin D intake of 242 preadolescent school children (aged 9-11 years old) in Kuala Lumpur and to differentiate the vitamin D intake of participants according to their 25-OH vitamin D status. Vitamin D intake were analysed from 7-day diet histories using various food composition data from Singapore and USDA, as well as nutrition facts label from processed foods. Serum 25-OH vitamin D was measured using LC MS-MS method. Results showed that the mean 25-OH vitamin D levels of boys were higher than girls (50.4 ± 13.7 vs 36.8 ± 11.9 ; $p < 0.001$). Boys had significantly higher median vitamin D intake compared to girls ($1.24 \mu\text{g}/\text{day}$ vs $0.93 \mu\text{g}/\text{day}$; $p = 0.023$) although both groups had intakes well below the RNI recommendation. The main contributor of vitamin D intake were fortified cocoa-based and malted drinks and dairy products. Most vitamin D intakes were consumed at breakfast and during snacks. These findings indicate the need to increase public health awareness on vitamin D rich food sources and the consideration for mandatory vitamin D fortification in food products to improve vitamin D status of Malaysian preadolescents.

A48 Factors associated with physical activity and sun exposure among preadolescent boys and girls: A secondary analysis of PREBONE-Kids study

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Currently there is limited local data to describe the physical activity and sun exposure among children in relation to their vitamin D status. The objective of this study is to assess the physical activity and sun exposure of preadolescent school children (aged 9 - 11 years old) in Kuala Lumpur according to their serum 25(OH) D status. Serum 25(OH) D of 243 children were analysed using LCMS/MS while sun exposure and physical activity levels were assessed using questionnaires in the PREBONE-Kids study. In this secondary analysis, physical activity pattern (duration, MET score, types of activities) and sun exposure pattern (duration, Sun Index (SI), body surface area exposed to sun, clothing practices) were being further analysed. Nearly 70% of the preadolescent children in this study had vitamin D insufficiency (< 50 nmol/L) with the mean serum 25(OH)D levels of 43.9 nmol/L. Children with sufficient vitamin D status had higher MET scores than vitamin D insufficient counterparts [$860(656)$ vs $865(560)$, $p < 0.005$]. Boys with higher serum vitamin D were

engaged in activities such as football and *silat* ($p<0.005$). Preadolescent children who wore short-sleeved shirt attire had a higher chance to achieve optimal vitamin D level ($p<0.001$) while children who wore sports cap during school activities were associated with a higher risk of vitamin D insufficiency. In conclusion, higher physical activity, sun exposure; and clothing practices during outdoor activities were factors that contributed to a higher serum vitamin D among Malaysian preadolescents. Thus, the promotion of healthier lifestyle that incorporates physical activity and sun exposure are important as means to boost vitamin D level of preadolescent children in Malaysia.

A49 Comparison of paediatric metabolic syndrome (MetS) between boys and girls aged 6.0-12.9 years old in Peninsular Malaysia

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Metabolic syndrome (MetS), defined as a cluster of risk factors contributing to the development of cardiovascular disease (CVD), is potentially useful in monitoring risks of CVD since childhood. This study seeks to compare paediatric MetS between the sexes in Peninsular Malaysia. The study is part of the South East Asian Nutrition Survey (SEANUTS II) involving 349 children aged 6.0-12.9 years in Peninsular Malaysia. Blood pressure, waist circumference, weight and height were measured, and body mass index was calculated. Venous blood profile assessed included fasting blood glucose, triglyceride and high-density lipoprotein cholesterol (HDL-C). Paediatric MetS was determined using International Diabetes Federation 2007 guidelines. Only 1.4% of children were classified as having MetS, and occurred only in girls. Mean age was 9.5±1.7 years, standing height 133.9±12.0 cm, body weight 32.7±11.9 kg, and waist circumference 61.5±11.8 cm. Over one-quarter of children (26.1%) had abdominal obesity, with higher proportions in girls (29.7% vs 21.7%). One-third of children (33.2%) had overweight/obesity, with higher proportions in boys (34.4% vs 31.8%). Meanwhile, 8.0% had thinness. Systolic and diastolic blood pressure were 103.4±9.7 mmHg and 66.1±6.6 mmHg, respectively. Only 0.6% suffered from elevated blood pressure (boys: 0.6%; girls: 0.5%). Blood profile revealed boys had higher fasting glucose (4.66±0.51 mmol/L vs 4.49±0.43 mmol/L, $p<0.01$), whereas higher triglyceride was seen in girls (0.97±0.45 mmol/L vs 0.85±0.39 mmol/L, $p<0.001$). However, no significant difference between the sexes was found in HDL-C. Percentage of boys (1.9%) with elevated fasting glucose is nearly four times higher than in girls (0.5%). Higher percentage of girls had elevated triglyceride (5.7% vs 4.5%) and lower HDL-C (7.3% vs 4.5%) compared to boys. In conclusion, MetS prevalence was low among children in Peninsular Malaysia. Future studies into continuous metabolic score instead of dichotomous classification of MetS may prove useful in monitoring metabolic and CVD risks development in children.

A50 Food security status and its association with socio-economic status among university students during the COVID-19 pandemic

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The coronavirus disease (COVID-19) pandemic has increased unemployment and food insecurity in Malaysia. Recent studies found that COVID-19 pandemic and the consequent movement control order implemented by the government has deeply impacted food security. Prior to the pandemic, university students exhibited higher rates of food insecurity than nonstudent households. The objectives of this study were to assess the prevalence of food insecurity and its association with socio-economic status among university students during the COVID-19 pandemic. An online survey (via Facebook, Twitter and Instagram) was administered using convenience sampling to 444 university students in Malaysia. Food security was assessed using a 10-item USDA Adult Food Security Module (AFSSM,2012). Association of food security and socio-economic status were examined using Pearson's Chi-square test. Overall, 51.3% students were classified as food insecure during COVID-19 pandemic. The results showed that there is a significant association between food security status with gender ($X^2= 4.425$, p -value <0.05) and living situation ($X^2=40.559$, p -value <0.05). These findings highlight the high prevalence of food insecurity among university students during the COVID-19 pandemic, with female students and/or living in the hostel being impacted the most and that economic relief efforts should include the students, who are disproportionately affected by food insecurity.

A51 Changes of physical activity among healthcare workers after HEAL@work intervention programme in selected government hospitals, Kuala Lumpur

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Obesity has been recognised as a global problem occurred recently due to lack of physical activity and sedentary lifestyle. Obesity is generally the result of imbalance between energy intake and energy expenditure. The aim of the study is to determine the changes of physical activity levels among healthcare workers after HEAL@work intervention programme for the participants. The present intervention programme - HEAL@work was a quasi-experimental pre-intervention and post-intervention study among healthcare workers in two selected government hospitals in Kuala Lumpur. A total of 33 healthcare workers from the intervention group participated in the 3-month HEAL@work intervention programme, while another 34 healthcare workers from another government hospital were assigned as control group without receiving any intervention programme. The changes level of physical activity for both groups were assessed by using the Global Physical Activity questionnaire (GPAQ). At baseline, a majority of the respondents in the control group (64.8%) was reported to have high physical activity level, but about half of the respondents in the intervention group (45.5%) was classified as having low physical level ($p<0.005$). After completing 3 months of HEAL@work intervention programme, there was a significant change in physical activity levels among intervention group, whereby two of the respondents at low physical activity level (6.1%) have changed to moderate physical activity level (pre-intervention: 45.5%; post-intervention: 39.4%) and the number of respondents who reported to have high physical activity level have increased from 30.3% at pre-intervention to 48.5% at post-intervention. At post-intervention, those who were in the high physical activity level in the control group were found to have decreased in physical activity level, from 64.7% decreased to 58.8%. In conclusion, the findings from this study showed that the HEAL@work programme improved physical activity of the healthcare workers in government hospital.

A52 Iron status and its association with food insecurity among primary school children in Malaysia

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Food insecurity is associated with micronutrient deficiencies including iron, and subsequent poor health outcomes, thus establishing the association between iron status and food insecurity is important for children's well-being. This cross-sectional study was part of the South East Asian Nutrition Surveys II (SEANUTS II) and aimed to assess the association between iron status and food insecurity among primary school children in Peninsular Malaysia. A total of 312 children (mean age 9.7±1.6 years) were included in this analysis. Iron deficiency status was determined by serum ferritin <15 µg/L, anaemia status was determined by haemoglobin concentration ≤114 g/L and ≤119 g/L for children aged 7-11 years and 12 years, respectively, while iron deficiency anaemia status was determined by measuring serum ferritin and haemoglobin concentration levels. Subjects with inflammation marked by elevated C-reactive protein (CRP) concentration >5 mg/L were excluded. Food insecurity was measured using the Malay-validated version of Radimer/Cornell Hunger and Food Insecurity Instrument. Overall, the majority of children had normal iron status (96.5%). Iron deficiency and anaemia prevalence were only 2.9% and 2.2%, respectively. Interestingly, only 1 child (0.3%) was found to have iron deficiency anaemia. Furthermore, more than half the children (60.9%) lived in food secure households. There was no significant difference in serum ferritin, haemoglobin concentration, or food security status between children living in urban and rural areas ($p>0.05$). Significant difference was found for CRP ($p<0.01$) with mean concentration 0.38±0.49mg/L and 0.67±2.47 mg/L among children living in urban and rural areas, respectively. No association between serum ferritin and food security status was found ($p=0.741$). In conclusion, we were not able to identify an association between iron status and food insecurity. Nonetheless, other potential factors associated with iron status, such as sex and dietary intake, should be explored for future research.

A53 The H.E.A.T (Healthy Eating, Active and Support) programme

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The study's objective is to evaluate the effectiveness of the H.E.A.T (Healthy Eating, Active and Support) programme among adults. The study involves three phases: Phases 1, a needs analysis to look at the need for a healthy lifestyle and weight control programme. The H.E.A.T programme requirement analysis will be made through document analysis and interviews with users and implementers. Phases 2 designs modules that will be used as educational materials in the programme. Modules are built using the Sidek Module

Development Model (MPMS, 2005). Next, the validity and reliability of the module will be evaluated using the internal consistency method and looking at the Cronbach's Alpha values. Module components cover eating behaviour, physical activity and social support using Social Cognitive Theory (S.C.T). A quasi-experimental study will be selected in phase 3 to evaluate module effectiveness because the participants are not randomly selected. One hundred twenty-nine ($n=129$) young adults aged 18-35-year-old who has a normal body mass index (BMI) will be recruited from three FELDA settlements in Bentong, Pahang. The participants will be divided into three groups face-to-face group from FELDA Lurah Bilut, an online group from FELDA Mempaga and a control group from FELDA Chemomoi. These three settlement areas have similar sociodemographic characteristics regarding education and household income. The assessment parameters for evaluating the programme's effectiveness are eating behaviours, physical activity, body composition and social support conducted at three intervals: pre-intervention, post-intervention and three-month follow-up. Face-to-face and online interventions will be conducted for six sessions (once every two weeks within three months). The expected outcome is that participants in the face-to-face and online interventions will show more positive eating habits and physical activity behaviours by leading a healthy lifestyle while preventing weight gain than the control participants.

A54 A study on the knowledge, attitude, and practice regarding COVID-19 among undergraduates in Perak

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The knowledge, attitude, and practice (KAP) regarding COVID-19 play a crucial role in determining the readiness of the undergraduate students to adopt the behavioral change toward recommended preventive measures outlined by public health officials. This study aimed to assess the KAP regarding COVID-19 among undergraduates in Perak. This was a cross-sectional study that was conducted among undergraduate students at University Tunku Abdul Rahman (UTAR), Kampar, Perak, during the national recovery phase of COVID-19 pandemic in Malaysia. 299 respondents were recruited in this study using convenience sampling. An online validated self-reporting questionnaire was adopted to collect the data. Frequency, percentage, mean and standard deviation used to describe the data. T-test of independence used to test the significant difference between gender and knowledge, attitude and practice. Chi-square test of association used to test the association between KAP. A p -value of <0.05 is reported as a significant result. Majority of the undergraduate students had high level of knowledge, positive attitude and adopted frequent preventive measures against COVID-19. There was no significant difference $p>0.05$ between knowledge and gender; attitude and gender; practice and gender with. The insignificant difference between gender and KAP could be due to similar education levels, risk perception, and health-seeking behaviours. There was a significant association found between knowledge-attitude ($p=0.014$), knowledge-practice ($p=0.000$) and attitude-practice ($p=0.024$). COVID-19 related KAP was at high satisfactory level even though this survey was carried out during earlier phase of the pandemic. The significant association between KAP highlighted the importance of increasing the knowledge, which can improve the attitude and enhance the practice of recommended measures to prevent the transmission of COVID-19. The detailed findings obtained from this KAP survey were helpful to facilitate the school leader to prepare for the reopening

A55 eToybox Study Malaysia: Development and evaluation of digital nutrition education materials for preschool teachers

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Printed materials in nutrition education are less interactive and take longer to understand compared to other materials. Thus, the ToyBox Study Malaysia sets out to convert existing printed education materials into digital format, eToyBox, for better reach and sustainability. This study aimed to develop and evaluate understandability and actionability of digital nutrition education materials for preschool teachers. This study involved three main phases: Phase I was needs assessment; Phase II involved development of infographics and videos, and Phase III was evaluation of understandability and actionability of infographics and videos by six experts using The Patient Education Materials Assessment Tool (PEMAT). In Phase I, the needs assessment showed that all 17 participants consisting of preschool teachers agreed that the printed modules of ToyBox Study Malaysia should be converted to digital format. In Phase II, the *Jom Minum* and *Makanan dan Snek Sihat* modules were developed into infographics and demonstration videos. The evaluation done in Phase III demonstrated that overall average score of understandability and actionability for *Jom Minum* and *Makanan dan Snek Sihat* e-modules ranged from 90% to 100%, indicating excellent level of effectiveness. There were no significant differences in understandability and actionability scores of infographics and videos between *Jom Minum* and *Makanan dan Snek Sihat* e-modules. In conclusion, infographics and videos for *Jom Minum* and *Makanan dan Snek Sihat* e-modules were successfully developed and were found to be effective. These infographics and videos can be used in the planned eToyBox online nutrition education to provide nutrition education to preschool teachers.

A56 Associations of genetics with abdominal obesity and metabolic syndrome among vegetarians in Malaysia

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Genome-wide association studies have demonstrated that genetic variants of the fatty acid desaturase 1 (*FADS1*) gene are important determinants for abdominal obesity and metabolic syndrome (MetS) among the general population. However, the associations of the genetic variant of rs174547 in the *FADS1* gene with abdominal obesity and MetS are not well established among vegetarians in Malaysia. The present cross-sectional study aimed to identify the association of the genetic variant of rs174547 in the *FADS1* gene with abdominal obesity and MetS among 200 vegetarians (Male: 34.5%; Female: 65.5%) from selected community centres in Kuala Lumpur and Selangor. The data on socio-demographic characteristics and vegetarianism practices were self-reported by the vegetarians. Anthropometric measurements (body weight, height and waist circumference) and blood pressure were measured according to standard protocols. A total of 5.0ml of overnight fasting venous blood sample was collected by the registered phlebotomist for blood lipid profile analysis. Genotyping was performed using allele-specific polymerase chain reaction through extracted DNA. The average number of years for practicing vegetarianism was 13.7±9.2 years among the vegetarians. A majority of the vegetarians had a TT genotype of rs174547 in the *FADS1* gene (39.5%). Based on the Joint Interim Statement 2009, the prevalence of abdominal obesity and MetS were 35.5% and 21.0%, respectively. Multiple logistic regression analysis showed that vegetarians with homozygous TT genotype were 4.66 times (95% CI:1.40, 15.57, $p=0.012$) and 3.57 times (95% CI:1.02, 12.47, $p=0.046$) higher odds of developing abdominal obesity and MetS compared to vegetarians with homozygous CC genotype after the models being adjusted for age, sex and ethnicity. Overall, abdominal obesity and MetS were common among Malaysian vegetarians. There is an urgent need to investigate the causal associations of rs174547 in the *FADS1* gene with abdominal obesity and MetS through prospective studies among Malaysian vegetarians.

Group B: Dietary Intake, Consumption Pattern & Disease

B01 Relationship between nutrition knowledge, attitude and practice (NKAP), with self- efficacy of healthy eating among undergraduate students in USM Kubang Kerian, Kelantan: A cross-sectional study

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Healthy eating is an approach to prevent obesity, hypertension, diabetes mellitus and cardiovascular disease. It is believed that individuals with good level of nutrition knowledge, attitude and practice (NKAP), having high self-efficacy of healthy eating will have better healthy eating habits and are confident to change their behaviour into healthy eating lifestyle. The aim of the study was to determine the level of NKAP and its association with the level of self-efficacy of healthy eating among undergraduate students in USM Kubang Kerian, Kelantan. A cross sectional study was conducted among 107 undergraduate students aged 19 to 28 years old, selected using convenience sampling in USM Kubang Kerian, Kelantan from August 2021 until October 2021. Self-administered questionnaire including KAP questionnaire and self-efficacy of healthy eating scale were distributed to the participants via Google Form. The prevalence of good knowledge was 95.3%, good attitude was 79.4% but good practice was only 36.4%. Overall, the prevalence of NKAP was good which was 82.2%. A total median score of self-efficacy of healthy eating was 28.0 (7.0).

A significant association was found between availability of healthy and unhealthy foods with practice ($p=0.012$, $p=0.019$). Moreover, a significant association was found between age and awareness of Malaysian Food Pyramid with NKAP ($p=0.039$, $p=0.005$ respectively). Hence, a significant association was found between NKAP and self-efficacy of healthy eating ($p=0.008$). Therefore, strategies were needed to practice good healthy eating among university students.

B02 The relationship between taste perception and dietary intake among different ethnic subjects

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Taste is one of the key factors to food intake that can further influence an individual's food choices and ultimately their dietary intake. Perception of taste is also influenced by ethnic background. Therefore, this study was conducted to measure the relationship of taste sensitivity and sweet taste acceptance with the nutritional status and food intake of subjects among different ethnic subjects. A total of 86 subjects aged between 20 to 45 years were recruited for this study. Two types of samples namely basic taste solution (sucrose) and food samples (rose flavoured agar) were evaluated for sweetness intensity score and hedonic reaction using general Labelled Magnitude Scale (gLMS). Subjects completed the 3-days food diary to record their food intake. Overall, there was no significant difference between sweet taste sensitivity and sweet taste acceptance among different ethnic groups ($p>0.05$). However, Malays tend to have a low sweet sensitivity compared to the other ethnics group. Other than that, no relationship was observed between taste sensitivity and sweet taste acceptance except at low sucrose concentrations (120 g/L, $p>0.05$). Evaluation on dietary intake showed that there was no relationship between energy and fat intake with taste sensitivity and sweet taste acceptance except on carbohydrate and protein intake. In conclusion, individual sweet taste perceptions do not affect dietary intake. Further studies can be conducted in the future to identify the need for taste perception as an indicator of human food acceptance and intake.

B03 Relationship between barriers of salt reduction and salt intake: Case study among B40 household

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Salt reduction is vital for lowering blood pressure and cardiovascular risk; however, individuals have poor practice of salt intake due to barriers. The aim of this case study was to explore the barriers on salt intake reduction and its relationship with total added salt intake among B40 households in Kuala Lumpur. This was a case study conducted among 40 adults from the B40 population. A structured questionnaire was used to assess the participant's total added salt intake and barriers [i) characteristic and behaviours surrounding salt reduction, ii) responsibility for salt reduction, iii) communication preferences, iv) interest in salt reduction]] on salt intake reduction. All data were analysed using SPSS ver.26. A total of 32.0% of study participants were interested in salt reduction

in the next 6 months and the majority (60.0%) were unaware of recommendations of salt intake. Participants perceived themselves to be mostly responsible for their salt intake, followed by friends and family, food manufacturers, governments, and international organizations, restaurants/fast food chains/caterers, and supermarkets/local markets. The participants reported that reducing salt is healthy and important. Additionally, they wanted to learn more about 'How to reduce salt in your diet' (75.0%) especially from medical community (75.0%) through online social website (85.0%). A prospective study intervening B40 adults to improve their interest and awareness is needed emphasizing self-autonomy in salt reduction in their daily diet.

B04 Analytic Hierarchy Process to determine target food retailers at urban poor locations in Kuala Lumpur, Malaysia: Preliminary findings from the South East Asia Obesogenic Food Environment (SEAOFE) Study

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Analytic Hierarchy Process (AHP) has long been a useful tool for decision-makers and researchers to facilitate the making of multiple-criteria decisions. The AHP was employed to determine the criteria for selection, and thus aid in the identification of target food retailers for the SEAOFE study in Malaysia. Six experts from various related-fields were recruited and trained on the application of AHP. The experts were from *Dewan Bandaraya Kuala Lumpur*, Ministry of Health, Malaysia Retailers Association, Federation of Malaysian Consumers Associations, academia, and food retail industry. The experts filled out and completed all questionnaires requiring pair-wise comparisons of the different criteria. Pair-wise comparison matrices were created and all experts need to give ratings for each criterion based on a scale of relative importance. The three criteria were size of food retailer as first criterion, format of food retailer as second criterion, and company share as final criterion. Mathematical computations to calculate sum of criteria weight was employed to determine the criteria that were important for this study. Three highest sums of criteria weight of each criterion were taken into consideration in our results. Our findings indicate that micro, medium, and large-sized retailers should be prioritised for criterion 1. For criterion 2, modern retailer format with three specific types of retail, namely hypermarket, supermarket, and convenience store, were prioritised. As for the last criterion, Euromonitor data was used to select food retailers by considering the top 10 companies based on market share. In conclusion, the type of retailers were aptly selected for the SEAOFE study in Malaysia using this AHP technique, whereby complex decisions can be made more efficiently with a combination of mathematics and psychology.

B05 Determination of the trend and pattern of dietary supplement use in Malaysia from 2020 to 2021: The Google Search algorithm and ranking system approach methods

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Information about dietary supplements is easily acquired through the internet, allowing easy purchase. This study aims to rank the interest of Google users in dietary supplements and determine the changes that occurred in their popularity from 2020 to 2021 throughout the Movement Control Order (MCO) in Malaysia. Google Trends generates data over time on regional interest in dietary supplements ($n=80$). Each included supplement is categorised, and a calculation of interest in all topics in proportion to the relative search volume (RSV) of "Vitamin C" is conducted. The trends over time of all topics and categories are analysed. The results of the study showed that the most well-liked topics nationally were "protein," which was 1.76 times more popular than "Vitamin C," "magnesium," which was 1.68 times more popular, and "calcium" (1.60). Mineral (1.17), bacterial (0.96), and vitamin supplements were the most popular supplement categories (0.91). Two subjects increased their RSV over time (enzyme and vitamin), while two categories decreased their RSV (amino acid, fibre, and protein). Interest in 34 topics increased over time, whereas interest in 21 topics stayed stable, and interest in 25 topics decreased. Examination of the trending themes and categories over time is conducted. Google Trends offers a retrospective analysis of the popularity of specific topics among Google users across subregions and over time.

B07 Evaluation of dietary supplement use among adults living in Kota Kinabalu during the COVID-19 pandemic: A cross-sectional study

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During the coronavirus 2019 (COVID-19) pandemic, the public may seek non-pharmacological approaches such as dietary supplements to prevent or treat COVID-19. Therefore, this study aimed to evaluate the use of dietary supplements during the COVID-19 pandemic among adults in Kota Kinabalu. This cross-sectional study recruited 213 adults living in Kota Kinabalu through convenient sampling from October 2021 to March 2022. A validated questionnaire was used to evaluate their perception of dietary supplement usage, and types of dietary supplements consumed during the COVID-19 pandemic. The multiple logistic regression was used to determine sociodemographic factors associated with the use of dietary supplements. One-hundred sixty-one (75.6%) subjects reported that they were told to consume dietary supplements during the COVID-19 pandemic, primarily from social media (44.1%) and their friends (32.4%). One-hundred thirty-two (62%) subjects were consuming dietary supplements and 46 (34.8%) of them only started taking them during the COVID-19 pandemic. The reasons for taking dietary supplements during the COVID-19 pandemic included enhancing the immune system (83.6%) and prevention of COVID-19 infection (64.4%). The most common dietary supplement consumed was vitamin C (90.2%), followed by multi-vitamin and -mineral (32.6%), and fish oil (25.8%). The median monthly expenses for purchasing dietary supplements were RM50.00. Twenty-one (15.9%) adults were not aware whether the dietary supplements were registered with the Ministry of Health. After adjusting for age, gender, education level, marital status, ethnicity, and income level, Kadazan-Dusun subjects were more likely to consume dietary supplements (adjusted odds ratio = 2.369, 95% confidence interval = 1.070 to 5.248, p -value = 0.034).

There was an increase in the number of adults consuming dietary supplements during the COVID-19 pandemic, which was likely driven by the information sharing by social media and friends. Healthcare providers need to convey the correct information about the appropriate use of dietary supplements to the public.

B08 Knowledge, attitude and practice of vegetable intake among adolescents in Malaysia

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The prevalence of insufficient vegetable intake among adolescent is at an alarming rate in Malaysia. Therefore, it is important to have a better understanding of knowledge, attitude and practice (KAP) of vegetable consumption among adolescents. This cross-sectional study was conducted to determine the association between knowledge, attitude and practice of vegetable intake and weight status among adolescents aged 10-17 years old in Malaysia. By using the combination of convenience and snowballing sampling technique according to the inclusion and exclusion criteria, a total of 142 subjects were recruited. Socio-demographic details such as age, sex, ethnicity, parents' education, household income and size were accessed. Anthropometric measurements were accessed through weight, height-for-age z-score and BMI-for-age z-score (BAZ). The subjects displayed high knowledge (80.3%), medium attitude (70.4%) and good practice of vegetable intake (72.5%). Females have slightly higher knowledge (10.68 ± 1.83) and attitude (19.97 ± 5.61) than males. However, males have a slightly higher practice on vegetable intake (6.89 ± 5.36) than females. No significant differences were found between sex and knowledge, attitude and practice ($p > 0.05$). A weak positive correlation found between knowledge and attitude ($r = 0.384$) and knowledge and practice ($r = 0.334$). Attitude and practice ($r = 0.549$) reported to have moderate positive correlation. No significance correlation was reported between knowledge, attitude and practice of vegetable intake with BAZ. In conclusion, high level of psychosocial factors do not predict the weight status of the adolescence; however, the effect of other confounding factors need to be assess to produce better justification for the current findings.

B10 A survey on eating disorder risk and total energy intake among young athletes

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It is well documented that eating disorders have a negative impact on health and athletic performance. Therefore, the objective of this study was to investigate eating disorders risk and total energy intake among young athletes in Sabah. A total of 104 athletes were selected to participate in this study. Eating Attitudes Test (EAT-26) was used to determine eating disorder risk and 3-day food diary was used to measure total energy intake of athletes. Statistical Package for Social Science (SPSS) Version 27.0 was used to analyse the collected data. Data was expressed in mean \pm standard deviation. Independent t-test was used to compare eating disorder risk between male and female. This study found aesthetic and weight category sports for both male and female athletes were the highest risk of eating disorder in comparison with weight category, endurance and ball games. Mean daily energy intake for male and female in all sports categories did not meet the Recommended Nutrient

Intake (RNI). The risk of eating disorders score was higher in female athletes than male athletes but statistically showed no significant difference ($p>0.05$). These current findings reflected that both male and female athletes were high risk for eating disorder especially in the esthetic and weight category sports.

B11 Diet quality and weight status among urban poor adolescent in Kuala Lumpur, Malaysia during COVID-19

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The COVID-19 pandemic lockdown is associated with changes in daily lifestyle behaviour, including diet. However, there is limited information on diet quality and its association with weight status of urban poor adolescents during COVID-19 pandemic. This study aimed to determine the association between diet quality and weight status among urban poor adolescents in Kuala Lumpur, Malaysia during COVID-19 pandemic. Urban poor adolescents aged 10 – 17 years old ($n=273$) were included in this cross-sectional study during November 2021 to March 2022. Dietary intake was assessed by using two-day 24-hour dietary recall and diet quality was determined based on Standardized Malaysian Healthy Eating Index (S-MHEI). Weight and height were assessed, and body mass index-for-age (BAZ) was calculated. About 12.5% and 37.3% of adolescents were thin and overweight/obesity while 7.0% were stunted. The mean score of diet quality was 54.2 ± 12.8 and more than half of adolescents (61.9%) being categorised in the category of diet quality needs an improvement. Only 1.1 % of adolescents had good diet quality that met the dietary requirement of the national guidelines. In terms of the S-MHEI components, meat/poultry/eggs (8.8 ± 3.2) and whole grains (0.2 ± 1.2) had the highest and lowest mean score, respectively. No association was found between diet quality and weight status ($p>0.05$). The findings suggested that diet quality might not have effects on weight status of urban poor adolescents during pandemic. Nevertheless, poor diet quality and weight status is still a highlighted issue among urban poor adolescents in this study. Nutrition education and intervention focus on enhancing diet quality and weight status should be implemented among urban poor adolescents.

B12 Knowledge and attitude on salt iodisation programme in Malaysia among Malaysian adults in Klang Valley, Malaysia

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The national iodine deficiency disorder (IDD) survey reported that Malaysian adults had borderline iodine deficiency. On 30th September 2020, all commercially available household

salt in Malaysia were required to undergo iodine fortification, under Regulation 285 of the Food Regulation 1985. As this was a newly implemented initiative, no research has yet to be conducted to assess the public's understanding and perception towards the salt iodisation programme. The objective of this study was to assess the knowledge and attitude on salt iodisation programme in Malaysia. 134 subjects from Klang Valley were recruited and attempted the self-administered online questionnaire. Respondents were predominantly Chinese, female and had tertiary-education. Majority of the respondents had moderate knowledge of salt iodisation programme with a mean knowledge score of 3.1 ± 1.5 , out of seven score. Less than half of the respondents had a positive attitude towards the implementation of the salt iodisation programme. Moreover, an alarming 50% of the respondents said they would increase the amount of iodised salt used in food preparation as means to increase iodine intake. More than half of the respondents felt that they had not received sufficient information from the authorities regarding the salt iodisation initiative. Higher knowledge score was associated with a more positive attitude towards implementation of salt iodisation programme ($p < 0.05$). In this study, the knowledge and attitude regarding salt iodisation programme in Malaysia were unsatisfactory. Nutrition education and health promotion activities on use of iodised salt is paramount to address the low knowledge and to gain public confidence on the fortification programme.

B13 Frequency of home cooking and its implications on food insecurity and diet diversity among Malaysian working adults in the middle-income group during the pandemic: A cross sectional pilot study

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As more time is spent at home during the COVID-19 pandemic, the frequency of home cooking has increased. Studies have reported a link between home cooking frequency, food insecurity and diet diversity, however, these were conducted in western and Middle Eastern countries. The frequency of home cooking, food insecurity and diet diversity among Malaysian working population belonging to the middle-income group (M40) during pandemic is currently unknown. This study was conducted to determine the association between the frequency of home cooking with individual food insecurity and diet diversity among M40 Malaysian working adults during the pandemic. This was an online cross-sectional study. A total of 57 M40 Malaysian working participants aged between 21 to 60 participated in the study. An online survey was distributed to the participants. A 24-hour dietary recall was also conducted using an online questionnaire. Chi-square test was performed to test the association between frequency of home cooking, food insecurity and diet diversity. The majority of M40 working individuals had a high frequency of home cooking (40.4%), a moderate diet diversity score (59.6%) and were food secure during the COVID-19 pandemic (87.7%). There was no significant association between the frequency of home cooking and diet diversity ($p > 0.05$). Food insecurity was higher (19.0%) among those who cooked three times or lesser per week, whereas food insecurity was lower among those who cooked more than six times per week (13.0%). This study suggests that the frequency of home cooking had no effect on food diversity. Most of the M40 Malaysian working adults were food secure and those who cooked at home less frequently were more likely to be food insecure. However, further studies with larger sample size are required to validate the findings and to determine how other factors may have impacted food insecurity and diet diversity during the pandemic.

B14 The relationship between diet quality and cognitive function among breast cancer survivors

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There is lack of evidence on the role of dietary factors in protecting cognitive function among breast cancer survivors. Therefore, this study examines the relationship between diet quality and cognitive function among this population. A cross-sectional study which involved a total of 50 subjects who were chosen using purposive sampling. Data was collected through online interview to obtain information about the sociodemographic, clinical, diet quality by the Malaysian Healthy Eating Index (M-HEI) and cognitive function status by Mini Mental State Examination (MMSE), Digit Span test (DS) and Rey Auditory Verbal Learning test (RAVLT). Majority of the subjects (92%) needed improvements to be made to their diet. Total fat intake (29.1±4.8%) had the highest M-HEI score while dairy products had the lowest M-HEI score among subjects. Overall, performance of subjects in every cognitive function test including MMSE (28.5±1.2), DS forward (5.1±1.4), DS backward (5.2±1.5), RAVLT immediate (56.3±7.0), RAVLT recognition (14.8±0.4) and RAVLT delayed recall (14.4±0.9) were better compared to the score from previous studies. Spearman test showed significant correlation between M-HEI score in fish and seafood group with the score from MMSE test ($r=-0.359$, $p<0.05$). However, no consistent and significant correlation was observed between diet quality and cognitive function specifically on global cognitive, memory and attention among subjects. Further studies could adapt this protocol to a larger and more representative sample size and could compare the diet quality and cognitive function between healthy women and breast cancer survivors.

B15 Evaluation of Malaysian Dietary Guidelines: knowledge among students in International Medical University (IMU)

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Malaysian Dietary Guidelines (MDG) provides information on how to eat healthily. The eating habits of university students have been reported to be unsatisfactory. Thus, in order to improve their eating habits and dietary patterns and enable them to practice the key messages and recommendations in the MDG wisely, they need to have a certain level of knowledge. To date, no study has been conducted to evaluate the knowledge of the updated MDG 2020 among university students in Malaysia. Therefore, the objective of this study was to determine the knowledge of MDG 2020 among students in IMU and to evaluate the association of knowledge with sociodemographic factors. This cross-sectional study recruited 140 subjects using online recruitment by convenience sampling. The MDG 2020 knowledge questionnaire was used to determine the subject's knowledge of MDG 2020 and Malaysian Food Pyramid (MFP) 2020. Majority of the subjects were female (82.1%) and Chinese (85.7%). Nearly half of them were medical students (45%) and from M40 households (46.4%). The results demonstrated that only 19% of the subjects had awareness of both the MDG and MFP 2020. Overall, the subjects have a moderate knowledge of MDG, with a mean score of 63±17.2. With regards to the level of knowledge, 28% of the subjects were considered as having good knowledge of MDG, 45% as moderate, and 27% as poor. Furthermore, being females and had awareness of MDG and MFP 2020 showed that these

individuals had better knowledge of MDG. In conclusion, students in IMU had moderate knowledge of MDG. The awareness of MDG and MFP 2020 was low among the students in IMU. This study indicated that more nutrition education and promotion programs and nutritional education campaigns are necessary to conduct in the university in order to improve the awareness and knowledge of MDG.

B17 Knowledge, attitude, and practices (KAP's), and nutritional profiling of *Costus woodsonii* consumption as traditional elixirs among adults' population in Kota Kinabalu, Sabah

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Costus woodsonii or red button ginger is a *Costus* species with various pharmacological potentials such as anti-inflammatory, antioxidant, antidiabetic, etc. The present study aimed to identify the knowledge, attitude, and practices (KAPs) of the adult population in the Kota Kinabalu, Sabah toward the consumption of *C. woodsonii* as traditional elixirs. Besides that, this study evaluated the correlation between knowledge, attitude, and practice of the species as traditional elixirs in mentioned population. This study also explored the difference in nutritional content in different parts of the plant. For the KAP study, respondents comprised individuals aged 18 years old or older living in Kota Kinabalu, Sabah. Structured questionnaires were distributed physically and online. This study found that, on average, the citizens have moderate knowledge and a neutral attitude towards the practice (consumption) of *C. woodsonii* as traditional elixirs. Only a small fraction of them practised it. The purposes of the practice were to control diabetes, cholesterol, and hypertension. Plant parts consumed were the flower and leaf, four to five times a week, once or twice a day. The present study did not have sufficient evidence to show a correlation between knowledge and attitude towards the practice of *C. woodsonii* as traditional elixirs. However, the study still observed a possible positive correlation between knowledge and attitude, $r(141)=0.170$, $p=0.042$. Meanwhile, the present study found that the bract has the highest content of carbohydrates and stem has the highest content of crude fibre. In conclusion, the present study observed moderate knowledge and neutral attitude towards the practice of *C. woodsonii* as traditional elixirs and suggested a possible correlation between knowledge and attitude. The present study also found a significant difference in nutritional content in different parts of the *C. woodsonii* plant.

B18 Frequency of home cooking, food insecurity and diet diversity among Malaysian working adults during the pandemic: A cross-sectional study among the urban low-income group

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During the COVID-19 pandemic, people spent more time at home, which increased the frequency of home cooking. Prior research has found a link between home cooking frequency, food insecurity, and diet diversity, however, these research were mainly from Western and Middle Eastern countries. During the pandemic, the frequency of home cooking, food insecurity, and diet diversity among the bottom-income group (B40) Malaysian working people remain unknown. The objective was to determine the association between home cooking frequency and individual food insecurity and diet diversity among B40 working adults in Malaysia during the pandemic. An online questionnaire was used to collect data for this cross-sectional study. A total of 114 subjects, ranging from 21 to 60 years, were recruited and completed an online survey. A 24-hour diet recall was performed online. Chi-square test was used to test the relationship between home cooking frequency, food insecurity, and diet diversity. During the COVID-19 pandemic, majority of B40 working adults had a low frequency of home cooking (64.0%) of less than 3 times a week, a moderate diet diversity score (55.3%) and were food insecure (70.2%). There was no significant association between frequency of home cooking and diet diversity ($p=0.989$). Participants who had low frequency of home cooking had higher food insecurity (47.4%) compared to high frequency of home cooking (12.3%). The findings revealed that food diversity was not influenced by home cooking frequency. Food insecurity affected the majority of Malaysian working adults in the B40 group, although those who cooked at home less frequently were more likely to be severely food insecure. More research is needed to ascertain other factors that may have influenced food insecurity and diet diversity during the outbreak among the lower socioeconomic group.

B19 Depression, anxiety, stress and eating habits of UniSZA students during Covid-19 pandemic

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This cross-sectional study was conducted to determine the association between depression, anxiety, stress, and eating habits among UniSZA students. This study was conducted using an online questionnaire that was distributed using social media platforms such as WhatsApp and Telegram. The questionnaire consists of sociodemographic data, eating habits (Eating Habits and Lifestyle Changes in COVID-19 lockdown), and psychological status (21-item Depression Anxiety Stress Scale). A total of 283 UniSZA students were involved in this study. The mean age of the participants in this study was 20.99 ± 1.61 years old and majority of them were females; 88.3%. A total of 71.4% of participants experienced changes in their eating habits, and 56.2% of them had gained weight during the COVID-19 lockdown. From 283 participants, majority of them had normal depression (41.3%), normal anxiety (27.2%), and normal stress (49.1%). The present study found that stress had a significant association with changes in eating habits, $\chi^2(1)=4.385$, $p=0.036$, while anxiety was found to had a significant association with skipping meals, $\chi^2(1)=6.587$, $p=0.010$, but not for depression and stress. Moreover, depression, anxiety, and stress were revealed to have significant associations with fruits intake [$\chi^2(2)=10.112$, $p=0.006$; $\chi^2(2)=7.033$, $p=0.030$; $\chi^2(2)=18.382$, $p<0.001$, respectively] while depression and stress were shown to be significantly associated with vegetables and sweet drinks intake. Conclusively, the findings suggest that most of the students indeed experienced a change in their eating habits during this pandemic. Thus, the findings of this study provide essential information on the depression, anxiety, stress, and eating habits of university students that might be useful for institutions to maintain the health of students during the COVID-19 lockdown.

B20 Association between parental feeding styles and diet quality among preschoolers in Terengganu

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This cross-sectional study aimed to determine the association of parental feeding styles with diet quality among preschool children aged three and four years old in Terengganu. It was carried out in three Terengganu districts preschools: Kuala Terengganu, Kuala Nerus, and Marang. Parents of preschoolers were given a questionnaire that included socio-demographic information and anthropometric measurements. The feeding styles of the parents was determined using Caregiver Feeding Style Questionnaire (CFSQ), adapted into the Malay version. Dietary data were collected using a validated Food Frequency Questionnaire, and the diet quality of children was assessed using the Healthy Eating Index for Malaysians (HEI for Malaysians). Association of parental feeding styles and diet quality among preschoolers were examined using Fisher Exact Test. A total of 195 respondents (49.7% boys and 50.3% girls), with a mean age of 3.54 ± 0.50 years old, participated in this study. Based on the result, 36.9% of the parents were classified as indulgent, while 33.3% of parents had an authoritarian feeding style, followed by uninvolved (16.4%) and authoritative (13.3%). Most preschoolers had moderate diet quality, with a mean HEI for Malaysians composite score of 51.48 ± 11.73 . The children had low mean scores for vegetables, fruits, milk and dairy products, and legumes. There was a significant association found between parental feeding styles and the diet quality of these children ($p=0.001$). This finding somehow indicated that parental feeding styles did reflect the diet quality of preschoolers in three districts of Terengganu. Therefore, further research is needed to help understand the larger feeding style context and its influence on diet quality among children. Future nutrition and health-related research or intervention should also incorporate factors associated with diet quality to improve the children's diet quality.

B21 Association between sociodemographic factors and body mass index (BMI) with fruits and vegetables intake among adults in the West Coast in Peninsular Malaysia

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Malaysian Dietary Guidelines 2020 suggested five servings of fruits and vegetables should be taken every day to meet the daily nutrient requirements. Therefore, this study aimed to determine the percentage of fruit and vegetable intake among adults and to discover the preferences and purchasing patterns of fruit and vegetable intake. Besides, it was also aimed to determine the association between sociodemographic factors and body mass index (BMI) among adults in the West Coast Malaysia. In this cross-sectional study, sociodemographic information and dietary data of fruit and vegetable intake of adults aged 18 to 59 years old were collected using an online self-administered questionnaire. Overall, the percentage of fruit and vegetable intake among adults that met the food pyramid recommendations was (15.4%). Females have a higher percentage of meeting the recommended servings at (70.5%) compared to males. Adults aged 20-29, and those with a Bachelor's Degree/Degree/Ph.D., Masters have a greater prevalence of achieving the recommended daily fruit

and vegetable consumption (55.7%) and (54.1%) respectively. Nevertheless, it was found that the majority of the adults like to purchase fruits and vegetables in a hypermarket. The most preferred fruits were banana, apple, and mango and the most preferred vegetables were lettuce, cabbage, and broccoli. It was found that Malaysian adults like to purchase fruit and vegetable in a weekly manner. Meanwhile, a Chi-square test revealed no significant association between age ($p=0.87$), gender ($p=0.78$), ethnicity ($p=0.49$), educational level ($p=0.71$), monthly income level ($p=0.80$), and BMI ($p=0.98$), respectively ($p\text{-value}>0.05$). Awareness of the health advantages of fruits and vegetable consumption is critical in motivating Malaysians to reach their daily food recommendations. Thus, fruit and vegetable consumption should be promoted and educated to Malaysians of all ages.

B22 The correlations between intuitive eating, body image satisfaction, and weight difference among Malaysian youths during the post-pandemic

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Responding to the Malaysian government's Movement Control Order (MCO), individuals have been forced to confine at home. Literature suggested that lockdown may have a detrimental impact on eating habits and body image satisfaction. Therefore, this study investigates the correlations between intuitive eating, body image satisfaction, and weight difference in youths throughout the COVID-19 pandemic. Through convenience and snowball sampling, a total of 290 respondents were recruited for this study. Socio-demographic information, body height, body weight during the MCO 3.0, and body weight after the pandemic were self-reported by the respondents. Intuitive eating behaviour during the post-pandemic was assessed using the Intuitive Eating Scale-2 (IES-2), while the Multidimensional Body-Self Relations Questionnaire (MBSRQ-AS) was used to measure the body image perception among the youths. The findings of this study revealed that 54.1% of youths gained an average weight of 3.34 ± 2.46 kg due to the pandemic. The Body-Food Choice Congruence (BFCC) was positively correlated with Appearance Evaluation (AE) ($r=0.252$, $p<0.001$), Appearance Orientation (AO) ($r=0.208$, $p<0.001$), Overweight Preoccupation (OP) ($r=0.194$, $p=0.001$) and Body Areas Satisfaction Scale (BASS) ($r=0.222$, $p<0.001$). Likewise, Unconditional Permission to Eat (UPE) ($r=0.172$, $p=0.003$), Reliance on Hunger and Satiety Cues (RHCS) ($r=0.246$, $p<0.001$), Eating for Physical Rather Than Emotional Reasons (EPR) ($r=0.198$, $p=0.001$), and Body-Food Choice Congruence (BFCC) ($r=0.222$, $p=0.001$) were positively correlated with Body Areas Satisfaction Scale (BASS) during the post-pandemic. Although there was no significant correlation observed between body image satisfaction with weight difference, three of the subscales in IES-2 were found to be correlated with the weight difference of the youths. Findings in the current study suggested that UPE ($r=0.197$, $p=0.001$), RHCS ($r=0.140$, $p=0.017$), and BFCC ($r=-0.123$, $p=0.036$) were correlated with weight difference. The COVID-19 pandemic has induced a change in the eating behaviour and body image perception among Malaysian youths. Therefore, government agencies or non-governmental organisations should encourage the youths to adopt intuitive eating as a weight management strategy after the pandemic.

B23 Demographic, eating behaviour characteristics and fruit and vegetable intake in children aged 4 to 6 years: Are they related?

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Fruit and vegetable are packed with nutrients and that high consumption of fruit and vegetables offer various health benefits. However, the consumption has been reported to be below recommendation among children worldwide. Literature shows that eating habit in adulthood remains through adulthood, therefore practicing healthy eating habit since early age is crucial. The aim of this study was to determine factors associated with fruit and vegetable intake among children aged 4 to 6 years. 278 children were involved where questionnaires were distributed in 7 preschools in Setiu, Terengganu, Malaysia. Parents were asked to complete the questionnaire to assess demographic data, parental feeding practice, child's eating behaviour and child's fruit and vegetable intake and liking. Results showed that parental education and frequency of purchasing fruit and vegetables had significant associations with fruit and vegetable intake among children. Frequency of family mealtime was associated with only vegetable intake. Furthermore, child's eating behaviour was found to be related to fruit and vegetable intake. Three eating behaviour characteristics namely emotional overeating, satiety responsiveness and food fussiness were significantly associated with vegetable intake, while five behaviour characteristics (enjoyment of food, food responsiveness, emotional overeating, satiety responsiveness and emotional undereating) had significant associations with fruit intake. Additional robust regression analyses showed that only frequency of purchasing fruit and vegetable was the predictor of both fruit and vegetable intake. It can be concluded that there are many factors involved in determining fruit and vegetable intake among children especially demographic status, parental feeding practice and child's eating behaviour.

B24 Association of carbohydrate-rich food intake and diabetes mellitus related knowledge among adults in Kota Kinabalu, Sabah

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The prevalence of diabetes mellitus in Malaysia continues to rise over the past decade and unhealthy dietary intakes such as excessive refined carbohydrate intake is a modifiable risk factor of type 2 diabetes mellitus. It remained unknown if someone with better diabetes mellitus-related knowledge would consume less refined carbohydrate. Therefore, this study aimed to determine the frequency of carbohydrate-rich food intake and diabetes related knowledge among adults in Kota Kinabalu, Sabah. A food frequency questionnaire (FFQ) was used to assess the intake of carbohydrate-rich food while the level of knowledge on diabetes mellitus was assessed using a questionnaire. This cross-sectional study recruited

309 respondents aged between 19 and 59 years old. The most consumed carbohydrate food according to the daily intake frequency score were white rice and sugar. Both types of food had the highest records of intake for once or more than once per day. The level of knowledge among the respondents was moderate (54.7%) to high (44%). High knowledge scores are found to be associated with gender ($p=0.001$), age ($p=0.003$), race ($p=0.003$), religion ($p=0.011$), level of education ($p=0.001$), exposure to health education on DM ($p=0.023$) and frequency of physical activity ($p=0.04$). The correlation differs between knowledge scores and intake of the three food groups namely whole grains and legumes ($r=0.173$, $p=0.002$), vegetables ($r=0.098$, $p=0.87$) and fruits ($r=0.0$, $p=0.0$).

B25 Factors associated with consumption of fast food among undergraduate students of Health Campus, Universiti Sains Malaysia, Kubang Kerian, Malaysia

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Fast-food industry offers instant preparation of the meal which allows people to eat within a short period of time which made it became the most preferred choice for most people especially students due to their hectic lifestyle. Therefore, this study was conducted to investigate the factors associated with consumption of fast food among undergraduate students of Health Campus, Universiti Sains Malaysia, Kubang Kerian, Malaysia. A cross-sectional research design was conducted from March 2021 to February 2022 by distributing the online questionnaire to the participants through online communication platform, WhatsApp. A total of 318 undergraduate students were required as a sample size in this study. However, only 189 responses from undergraduate students were collected and analyzed using SPSS version 26.0. From the analysis, it shows that there is significant relationship between price, food quality, physical environment and, health consciousness with fast-food consumption of undergraduate students of Health Campus, Universiti Sains Malaysia, Kubang Kerian, Malaysia. The findings from this study together with past studies by earlier researchers can be used as guides to conduct effective intervention measures because overconsumption of fast food can lead to serious health problems such as diabetes, hypertension, heart problem, and others.

B26 Dietary patterns of preschoolers aged 3 to 6 years old in Peninsular Malaysia: Findings from SEANUTS II Malaysia

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A posteriori dietary pattern analysis is a data-driven approach that uses statistical method to derive dietary pattern based on participants' dietary intake and is very useful to understand the whole diet. Nevertheless, research using this method to examine diet of preschool children is scarce in Malaysia. This study aims to determine dietary patterns and their relationships with sociodemographic factors among 3 to 6 years old Malaysian preschoolers. This study, which involved 645 preschoolers in Peninsular Malaysia, was part of the South East Asian Nutrition Surveys (SEANUTS II). A single, triple-pass 24-hour dietary recall method was used to assess dietary intakes. Dietary patterns were determined

using Principal Component Analysis (PCA). Sociodemographic information was also obtained, including ethnicity, parents' body mass index (BMI) and socioeconomic status. Majority of the subjects were males (51.5%) with mean age of 5.1 ± 1.0 years. PCA identified five dietary patterns, namely 'healthy', 'carbohydrates', 'high salt and sugar' (HSS), 'western foods' (WF) and 'sugary drinks and legumes' (SDL), which explained 10.4%, 10.1%, 9.2%, 9.0% and 8.6% of variation in food intake, respectively. Malays showed significantly higher adherence to HSS ($p < 0.001$) and SDL ($p = 0.006$) patterns compared to other ethnicities. Age ($r = -0.134$; $p < 0.01$) was correlated with SDL pattern that included sugary drinks, dairy products, legumes, nuts and seeds. Higher maternal BMI ($r = -0.116$; $p < 0.01$) was correlated with lower intake of WF pattern which is characterized by franchised foods, processed foods, chocolates, sweets, jellies and ice cream. Lower household income ($r = -0.108$; $p < 0.01$) and bigger household size ($r = 0.116$; $p < 0.01$) were correlated with HSS pattern that was high in spreads, condiments, flavourings, chocolates, sweets, jellies and ice cream intake. Our results show that age, maternal BMI, household income and household size were correlated with preschoolers' dietary pattern. Therefore, we opine that it is important to consider sociodemographic characteristics of the target group when designing dietary interventions and strategies.

B27 The association between breakfast consumption habits and body mass index (BMI) status among undergraduate students of Universiti Sains Malaysia, Health Campus

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A proper breakfast intake among university students can help them to have a healthy body mass index (BMI) status and, consequently help them to prevent the development of overweight and obesity, which is recommended to reduce this growing public health problem. Although breakfast can provide benefits to students, they tend to skip their breakfast due to the challenging environment, lack of time and lack of appetite. The aim of this study is to determine the association between breakfast consumption habits and BMI status among undergraduate students at USM Health Campus. A cross-sectional study was conducted on 272 USM undergraduate students from Health Campus from March 2021 to February 2022. A "Breakfast Consumption Habit Questionnaire" (BCHQ) was distributed via an online questionnaire to identify breakfast consumption habits among undergraduate students. Majority of the participants were female (81.6%), aged 21–23 years old (75.7%), Malay participants (61.8%), and from the School of Health Sciences (75.0%). There were 51.8% of participants consuming breakfast equal or more than 5 times per week, while the total mean BMI status was 22.53 ± 4.72 kg/m². The overall mean for BMI status for those consuming breakfast equal or more than 5 times per week is 23.1 ± 4.98 kg/m², while for those consuming breakfast less than 5 times per week is 22.0 ± 4.42 kg/m². A significant association was found between breakfast consumption habits and BMI status ($p = 0.05$). Hence, it was concluded that frequent breakfast consumption is associated with normal BMI status among undergraduate students. However, this present study showed no association between sociodemographic factors and breakfast consumption habits. It is suggested that further study should be conducted to determine the possible factors that influence breakfast consumption habits among undergraduate students.

B28 Association between physical activity and eating behaviour with weight change among Malaysian adults in the COVID-19 pandemic

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The COVID-19 home confinement and restrictions may lead to a decrease of physical activity, disordered eating behaviour and can possibly result in an increase in the body weight. Hence, this study aims to investigate the association between physical activity and eating behaviour with weight change throughout the COVID-19 pandemic. The International Physical Activity Questionnaire - Short Form (IPAQ-SF) was used to assess physical activity and sitting time, while the Three Factor Eating Questionnaire-Revised 18 items (TFEQ-R18) were used to assess the eating behaviour during the pandemic confinement. Findings in the present study revealed that there was a significant decrement in the physical activity during the home confinement (3730.47±4571.65 METs-minutes/week) compared to pre-pandemic (5034.71±4641.93 METs-minutes/week) ($t=3.765$, $p<0.001$). Sitting time during the pandemic lockdown rose significantly ($t=-5.438$, $p<0.001$) from 451.8±228.64 mins/day (pre-pandemic) to 536.25±275.96 mins/day. Nevertheless, there was no significant difference ($p>0.05$) in the mean scores of emotional eating, uncontrolled eating and cognitive restraint throughout the pandemic lockdown. Findings from two-way ANOVA revealed no interaction effects between physical activity, eating behaviour and weight status throughout the COVID-19 pandemic. The restrictive confinement implemented by the government due to the COVID-19 pandemic has impacted the physical activity patterns and weight status of Malaysian adults.

B29 Food retail landscape in urban poor locations in Kuala Lumpur, Malaysia

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Identification of key market players in the Malaysian food retail environment are required to determine key challenges in food availability and affordability in urban poor locations in Kuala Lumpur as there is a lack of this kind of study in Malaysia. The aim of this study was to evaluate food retail landscape in Kuala Lumpur. Euromonitor International 2019 Food Retail Sectoral Report was used to identify the top ten food retailers. The population data of *Projek Perumahan Rakyat* listings, and macroeconomic factors were obtained from

Department of Statistics Malaysia, Kuala Lumpur City Hall and Election Commission. Three areas with highest percentage of urban poor population are Batu (68.2%), Kepong (44.1%) and Bandar Tun Razak (27.0%). In 2020, Kuala Lumpur's population was 1.77 million people consisting of 52.0% men and 48.0% women in 11 parliamentary constituencies with total area of 243 km and labour force of 910,600 people. The results indicated that the top five food retail companies in Malaysia based on sales revenue was 99 Speedmart Sdn Bhd (USD 3.8 billion), Dairy Farm International Holdings Ltd (USD 970.3 million), AEON Group (USD 889.2 million), Tesco Plc (USD 826.6 million), and Jaya Grocer (USD 611.1 million). The marketing strategy of 99 Speedmart was to exist close to local housing areas whilst offering cheaper prices whereas the other four companies exist within malls or commercial areas. All top 5 retailers except 99 Speedmart have their own online shopping application as well as official shops through third party applications, such as Shopee and Lazada. The key players in the food retail environment were identified as supermarkets, hypermarkets, and convenience stores. This study serves as part of Phase One of Southeast Asia Obesogenic Food Environment (SEAOFE) study that will help to identify key players and stakeholders of food retail environment in Kuala Lumpur.

B30 Frequency of home cooking, food skills and cooking skills among Malaysian adults during the covid-19 pandemic: A pilot study

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Home cooking is increasingly included in strategies to prevent and reduce chronic diet-related diseases and obesity. Cooking interventions encourage balanced meals too. Eating out has been practiced often in the Malaysian context. However, due to the pandemic, restrictions on movement and eating out resulted in compelling people to cook their own meals. Some studies reported elsewhere, that 85% of the population was eating from home much more often than before the pandemic and have developed confidence in cooking skills and knowledge on food. The objective of this study is to determine the frequency of home cooking, food skills and cooking skills among middle income group (M40) working adults during the recent pandemic. This study was conducted using online instruments to collect information on their sociodemographic characteristics, frequency of home cooking, food and cooking skills. The tool used for assessing the food and cooking skills was adapted from Food Skills Questionnaire Ottawa public health. There were 29 questions in total. The subjects were recruited from the middle-income group (RM4,850 - RM5,879) between the ages of 21 to 60 years, and those cooking themselves, during the pandemic. Descriptive statistics were used to describe the basic features of the data in a study. A total of 57 participants were recruited, who fit the inclusion criteria. Results showed that 40.3% of the participants had high frequency of home cooking, Similarly, 69.2% of the participants who had high frequency of home cooking demonstrated excellent food and cooking skills, whereas; 76.5% of the participants with moderate frequency of home cooking demonstrated good food and cooking skills. However, more than half of the participants (57.1%) with low frequency of home cooking showed good food and cooking skills. All the participants reported good food and cooking skills across different frequency of home cooking during the pandemic. This study showed that as frequency of home cooking increased, food and cooking skills also increased. Further studies need to be conducted to validate the findings.

B31 Knowledge and attitude on iodine and iodine deficiency among Malaysian adults in Klang Valley, Malaysia

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Prevalence of iodine deficiency was reported to be high amongst Malaysian adults. Nevertheless, information regarding knowledge on iodine and iodine deficiency is limited locally. This study aimed to assess the knowledge and attitude on iodine and iodine deficiency amongst Malaysian adults. A cross-sectional study was conducted using convenience sampling in Klang Valley. A pretested online questionnaire was administered to a total of 134 Malaysian adults recruited. Pearson's Chi-square was used to determine association between sociodemographic factors with knowledge and attitude. 44.8% of the participants in the study had poor knowledge with mean knowledge score of 6.39 out of 10. More than half of the participants could not identify dietary sources of iodine. In addition, the participants also demonstrated a more negative attitude towards iodine intake and iodine deficiency with mean score of 30.89 out of 40. Despite the more negative attitude, more than two-thirds of the participants had awareness on the health consequences resulting from low iodine intake. There is no correlation found between the knowledge and attitude towards iodine and iodine deficiency in this study. Only knowledge score was found to be significantly associated with age, education, and income ($p < 0.05$). Knowledge on iodine and iodine deficiency amongst the participants were poor. Nutrition education and health promotion activities are required to address the poor knowledge on iodine and to increase positive attitude and awareness towards iodine deficiency among Malaysian population.

B32 Factors associated with low calcium intakes among preadolescent children aged 9 to 11 years in Malaysia: A secondary analysis of PREBONE-Kids study

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Adequate calcium during pre-adolescent age is crucial to support accelerated growth spurt and achieve peak bone mass. Limited studies have examined the factors associated with low calcium intakes in Malaysian children. This study sought to determine the factors associated with low calcium intakes among Malaysian preadolescent children aged 9-11 years in terms of food sources and dietary habits. Daily calcium intakes of 239 participants aged 9-11 years was collected using 7 days diet history. The mean daily frequency of meals, snacks, dairy, fruits or vegetables, sugar-sweetened beverages (SSB) consumption and parents' monthly household income were associated with daily calcium intake using Mann Whitney U and Kruskal-Wallis H tests. Majority of the participants (74.9%) were from low-income families. They only achieved 23% to 38% of the Malaysian Recommended Nutrient Intake for calcium, with a median intake of 357 (249) and 302 (204) mg/day for boys and girls respectively. Primary calcium sources for the boys were 'beverages' (23.7%) and 'cereal and cereal products' for girls (19.4%). In both boys and girls, breakfast (28.9%) and snacks (26.5%) contributed the most to the daily calcium intakes. The calcium intakes were significantly higher among participants who reported consuming 3 main meals daily, snacked 2 to 3 times daily and consumed at least 1 serving of dairy, fruit or vegetables daily ($p < 0.05$). However, no significant difference was observed between calcium intakes and SSB consumption as well as parents' monthly household income ($p > 0.05$). Low calcium

intake was associated with poor diet quality and meal frequency. These findings may assist public education initiatives to ensure Malaysian children meet recommended calcium intake levels.

B33 Food security, dietary habits, and weight status among adolescents in Malaysia

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Food insecurity in adolescent is linked to poor dietary habits and nutritional problems due to inadequate nutrients intake. However, there is lack of research reported on food security status among adolescents in Malaysia. The study aimed to examine the association between food security with weight status and dietary habits of adolescents aged 10 to 17 years old in Malaysia. This cross-sectional study was conducted to determine the association between food security weight status and dietary habits among adolescents aged 10-17 years old in Malaysia. By using the combination of convenience and snowballing sampling technique according to the inclusion and exclusion criteria, a total of 142 subjects were recruited. Socio-demographic details such as age, sex, ethnicity, parents' education, household income and size were accessed. Anthropometric measurements, food security status, and dietary habits were accessed using respectively questionnaire. 46.9% of adolescent were categorized under the food secure group. 78.3% of adolescents were within normal weight. Male were found to be more likely to be higher and heavier as compared to female ($p < 0.05$). There was a significant difference between food security status and parent's education level ($p = 0.031$) and monthly household income ($p = 0.002$). There was no association found between household food security with adolescent's anthropometric parameters (BMI-for-age, height-for-age) ($p > 0.05$). More than 65% of the adolescent did not meet the daily recommended food groups intake, pure fruit juice (95.8%), fruits (95.8%), vegetables (97.9%), carbohydrates (52.4%), meat and poultry (66.4%), fish (89.5%), legumes (94.4%) and milk and dairy product (74.1%). There was no association found between household food security status and food groups ($p > 0.05$). Males tend to consume more snack foods ($\chi^2 = 4.868$, $p = 0.027$) as compared to female. In conclusion, the study showed inadequate dietary intake was occur in food secure and food insecure Malaysian adolescents.

B34 Evaluation of compliance to Malaysian Dietary Guidelines 2020 among students in IMU

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The updated Malaysian Dietary Guidelines (MDG) have been published recently to promote healthy eating and lifestyle among Malaysians. Studies have shown that Malaysian adults had poor compliance with the previous MDG 2010 recommendations. Hence, this study is carried out to determine the number of servings consumed for MDG food groups and to evaluate the compliance with MDG 2020 among students in International Medical University (IMU). Using convenience sampling and online recruitment, 140 students were recruited into the study. A self-administered questionnaire was used to obtain sociodemographic information. A self-administered two-day 24-hour dietary recalls were conducted to determine the dietary intake of students in IMU, then determined by food groups and categorised according to the MDG standardised serving size. Dietary

compliance was evaluated by comparing their dietary intake (servings/day) to the MDG recommendations. 64.3% of students who completed the dietary recall were included in this study. Subjects were mostly female (82.1%), Chinese (85.7%) Medical students (45%) and were from the M40 household (46.4%) and parents with tertiary education levels (father:58.6%; mother:60.0%). This study found that 78.3% of students complied with MDG 2020 for meat/poultry (mean=1.66 servings/day) whereas 56.7% of students complied with cereal/grain products (mean=3.11 servings/day). Only 7.8% of students complied with fruits (mean=0.42 servings/day) and a mere 3.9% complied with milk/dairy products (mean=0.32 servings/day). Less than half of the students consumed plain water (32.2%), vegetables (27.8%), fish (24.4%), and legumes (20.6%) within the MDG recommendations. Mother's education level was significantly associated with the compliance with cereal/grain products, meat/poultry, and plain water ($p<0.05$). Majority of the students in IMU did not comply with MDG 2020 regardless of their sociodemographic characteristics. Further nutrition education and promotion are needed in promoting compliance to MDG 2020 in their dietary intake, especially fruits and milk/dairy products.

B35 Validity of digital food photograph series for portion size estimation aid among adults

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The validity of portion size estimation aids is essential to enhance the accuracy of portion size estimates during dietary assessment. The objective of this study was to determine the validity of a digital food photograph series for portion size estimation aid among adults. This study was conducted through perception. A total of 20 types of food with digital image series were selected and validated among a group of adults. The number of subjects was 54, including 25 males and 29 females with a mean age of 29.6±6.9 years. Each set of digital photograph series has seven portion size images. A total of 40 pre-weighed portion sizes were used as references and presented for evaluation by each subject. It consisted of 20 portion sizes that were identical weight as a portion size image, while the remaining 20 portion sizes were presented with altered weight relative to a portion size image. Subjects were asked to match the presented portion sizes with one of the closest portion size images they perceived as displayed on the tablet screen. Overall, 2160 comparisons were made by all subjects in this study. Results showed that 97.8% of adults were able to select correct or adjacent portion size image on average. The weight discrepancy for all portion sizes presented was 10.6%. Significant differences ($p<0.05$) were found between the estimation accuracy of subjects with recipe-guided ($p=0.032$) and without recipe-guided ($p=0.027$) cooking experience except for sex, BMI and educational level ($p>0.05$). In conclusion, the overall performance of the digital food photograph series was good, although the correct classification for two food items was less than 50%. This study demonstrates the importance of a newly developed portion size estimation aid to be validated before use by health professionals and the public in the future.

B36 The influence of social media on eating habits among chemical engineering undergraduate students at Universiti Sains Malaysia, School of Chemical Engineering

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What is the relationship between food-related social media content (FRSMC) and the eating habits of undergraduates from chemical engineering (CE) course? We know that social media can influence one's purchasing decisions through advertisement, reviews and marketing tactics, yet little is known about its influence on the eating habits of Malaysian undergraduates. Does it positively or negatively affect their eating habits? This thesis contributes to this deficit in knowledge, exploring social media usage of Malaysian non-health profession undergraduates, their eating habits and how they perceive the FRSMC to affect their eating habits. A qualitative cross-sectional interview study was conducted focusing on eating habits and social media usage of CE undergraduates at the School of CE, Universiti Sains Malaysia (USM). A total of 10 participants were enrolled to participate in semi-structured interview sessions. The sample of 10 participants is deemed sufficient for data saturation in a qualitative study. Recordings from interview sessions were transcribed and qualitative data thematically analysed. Study findings indicate FRSMC that attract and engage CE undergraduates are food advertising and promotions, cooking tutorials and, food and nutrition information. The results show that FRSMC can positively and negatively affect eating habits of CE undergraduates. Undergraduates perceive that FRSMC, specifically health and nutrition related content are more credible when created by healthcare professionals. Participants suggested that the credibility of health-related content needs to be complemented with creative and engaging interactive features. Such features can help in creating health awareness, dispelling myths and promoting healthy eating habits. Further research could involve a larger sample of students and different Malaysian demographic groups.

B37 Acceptance of grasshoppers and other insects as food and its influencing factors among adults in Kuching and Klang Valley

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Entomophagy or the practice of eating insects has become a trend in western countries. Edible insects have also been recognised as an alternative protein to counter its high demand due to our world's growing population. However, apart from pockets of the country, the acceptance of insects as food and the factors that influence its acceptance in Malaysia are still unclear. Therefore, this study aimed to determine the acceptance of grasshoppers and other insects as food and its influencing factors among adults in Kuching and Klang

Valley. A cross-sectional survey was conducted among 292 adult respondents from Kuching ($n=148$) and Klang Valley ($n=144$). Data regarding sociodemography, readiness and acceptance of insects as food, and factors that influence its acceptance were collected using self-administrated online questionnaire. Majority of respondents (96.7%) had prior knowledge of people eating grasshoppers or other insects as food. However, only about one third (35.6%) had previously tried to eat grasshoppers or other insects. The readiness and acceptance of the respondents towards eating grasshoppers and other insects as food were only 30.1% and 18.2%, respectively, with no significant difference between those from Kuching and Klang Valley. The acceptance of biscuits made with insect flour was significantly higher ($p<0.001$) compared to other food products with insects in different forms. The main factors that influence acceptance of insects as food were insect texture, food safety and feelings of disgust towards insects, although cultural and religious aspects and lack of knowledge about insect-eating also influenced their acceptance. In conclusion, the acceptance of grasshoppers and other insects as food among adults in Kuching and Klang Valley is still low with sensory characteristics, food safety and aversion towards insects being the main barriers. Future studies involving the population of different regions should be conducted to enrich the data of entomophagy in Malaysia.

B38 The association between psychological distress and emotional eating with weight status among Malaysian youths throughout COVID-19 pandemic

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Stay-at-home orders have abruptly altered the psychological distress, eating behaviour and weight status of young adults. Therefore, this study aims to investigate the association between psychological distress and emotional eating with weight status of Malaysian youths throughout the COVID-19 pandemic. Respondents were required to self-report their demographics and socio-economic status, body height, body weight during the Movement Control Order 3.0 (MCO 3.0) and current body weight (January 2022). Psychological distress and emotional eating were assessed using a validated 21-item Depression, Anxiety and Stress scale (DASS-21) and 3-item three factor eating questionnaire (TFEQ-18), respectively. The findings revealed that 49.4% Malaysian youths gained weight as a result of confinement, with an average weight gain of 3.60 ± 2.53 kg. Moreover, 18.7% of the young adults had mild-to-moderate levels of depression, 19.6% had mild-to-severe levels of anxiety and 2.1% had mild levels of stress after the pandemic lockdown. Emotional eating in the aftermath of COVID-19 pandemic was 36.41 ± 28.88 . A path analysis models was built to investigate the indirect correlations between psychological distress, emotional eating and weight status of the young adults throughout the COVID-19 pandemic. The findings of path analysis indicated that depression ($\beta=0.219$, $p=0.024$) and stress ($\beta= 0.229$, $p=0.046$) were positively correlated with emotional eating. However, no significant correlation was observed between emotional eating and weight status ($\beta= 0.042$, $p=0.512$). Likewise, no significant correlation was observed between anxiety ($\beta= 0.023$, $p=0.819$) and emotional eating with weight status. To mitigate the psychological adverse effects of COVID-19 and emotional eating on youths, government contingency planning should include efforts to preserve work possibilities as well as mental health services.

B39 Comparing the anthropometric data and diet quality among intermittent fasting practitioners (IFPs) versus non-intermittent fasting practitioners (non-IFPs) in Terengganu

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Intermittent fasting (IF) is an effective strategy in promising health outcomes in anthropometric parameters and its dietary impact. The main objective of this study was to compare anthropometric measurements and quality of diet among IFPs and non-IFPs in Terengganu specifically aged from 19 to 60 years old. A total of 132 participants (92 IFPs and 38 non-IFPs) took part in this study. In this context, the IFPs group was the fasting group which involved religious fasting, alternate day fasting, 16/8 method and 5:2 diet. Meanwhile, the non-IFPs group was the non-fasting group. Assessment for anthropometry measurement using suitable home equipment with guidance was given via google form and a food frequency questionnaire (FFQ) for diet quality was assisted via phone call and scoring was based on Malaysian Healthy Eating Index (M-HEI). The result showed that no significant difference of anthropometric data between IFPs and non-IFPs group for waist circumference (76.8 ± 13.1 vs 79.5 ± 14.3 , $p=0.295$), waist-to-hip-ratio (0.8 ± 0.14 vs 0.9 ± 0.1 , $p=0.220$) and body mass index (23.6 ± 5.1 vs 22.0 ± 4.5 , $p=0.216$). The diet quality findings also showed no significant difference between both groups, ($p=0.943$). The number of IFPs and non-IFPs obtained poor M-HEI score were 77 (83.7%) vs 32 (84.2%) respectively. Thus, this finding concluded that no significant difference in anthropometric measurements and diet quality was observed between both groups. Furthermore, this study also highlight that importance of choosing a good quality diet during IF would improves anthropometric results and may also improve cardio metabolic variables and act as the most important tool when comparing with non-IFPs group.

B40 Relationship between chronotype and chrononutrition profile with weight status of schoolchildren during the COVID- 19 pandemic

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Chronobiology suggests that later chronotype (higher eveningness) and suboptimal time-related eating patterns are associated with overweight and obesity besides the diet content. This study determines the relationship between chronotype and chrononutrition with weight status of children. Online cross-sectional study was conducted whereby questionnaires to assess the chronotype (Morningness and Eveningness Scale for Children (MESc)), chrononutrition and weight status were administered. Majority children were 11-year-old Malay girls from low household income group. In a week, the lower the MESc score of children (reflecting higher eveningness), the higher the breakfast skipping ($r=-0.325$, $p<0.001$), lunch skipping ($r=-0.166$, $p=0.024$), snacking after last meal ($r=-0.158$, $p=0.032$) and night eating ($r=-0.190$, $p=0.010$) frequency. On both school day (SchD) and free day (FreeD), the lower MESc score was also correlated negatively with later first eating event (SchD, $r=-0.204$, $p=0.005$; FreeD, $r=-0.304$, $p<0.001$), breakfast time (SchD,

$r=-0.168$, $p=0.025$; FreeD, $r=-0.256$, $p=0.001$), dinner time (SchD, $r=-0.202$, $p=0.006$; FreeD, $r=-0.229$, $p=0.002$), last eating event (SchD, $r=-0.204$, $p=0.005$; FreeD, $r=-0.216$, $p=0.003$) and longer evening latency (SchD, $r=-0.227$, $p=0.002$; FreeD, $r=-0.196$, $p=0.008$). Besides, 61.8% of evening type children had dinner or snack as their largest meals on both SchD ($p=0.02$) and FreeD ($p=0.009$). Only on FreeD, lower MESC score was negatively correlated with the later lunch time (FreeD, $r=-0.246$, $p=0.001$). Higher BMI for age z-score correlated positively with timings of first eating event ($r=0.155$, $p=0.035$), breakfast ($r=0.165$, $p=0.027$) on SchD and snacking frequency after last meal in a week ($r=0.154$, $p=0.037$). In conclusion, the chronotype has significant relationship with chrononutrition profile but not weight status of the children. Nevertheless, significant relationship between chrononutrition profile and weight status were observed. This concludes the importance of regular sleep wake pattern and proper mealtime pattern among schoolchildren which could be considered as an approach to tackle childhood obesity in Malaysia.

B41 Association of eating misalignment and irregularity with weight status among Malaysian young adults

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Recently, chrono-nutrition is emerging in the nutrition study. Nutrition researchers found that apart from the quantity and quality of foods, meal timing plays a crucial role in one's well-being. The present study aimed to determine the association of eating misalignment (i.e., the discrepancy between preferred and actual meal timing) and irregularity (i.e., inconsistent timing and frequency of meals from one day to another) with weight status among Malaysian young adults. A total of 293 Malaysian adults aged 18 to 26 years were recruited in this cross-sectional study using the convenience sampling method. Online self-administered questionnaires were used to determine self-reported weight status and chrono-nutrition profile. Participants were also instructed to record meal timings for 2 weekdays and 1 weekend to assess eating regularity in terms of mealtime regularity score (mReg). All statistical analyses were performed using Statistical Package for the Social Sciences (SPSS). This study was comprised primarily of females (63%), Chinese (92%) and students (90%). In the current sample, eating misalignment was a common phenomenon. Most of the participants were considered "regular eaters" (68%) based on mealtime regularity score (mReg). In terms of weight status, half of the respondents (52%) were considered normal, followed by underweight (25%), obese or overweight (23%). There was no significant difference in body mass index (BMI) between "eating aligned" and "eating misaligned" groups, for all chrono-nutrition variables ($p>0.05$). No significant association was found between mealtime regularity score (mReg) and weight status ($r=-0.023$, $p=0.722$), as well as between mealtime regularity score (mReg) and weight changes in the past 6 months (weight gain, $r=-0.010$, $p=0.925$; weight loss, $r=0.001$, $p=0.995$). More studies should be conducted to confirm the association of eating misalignment and irregularity with weight status.

B42 Knowledge, attitudes, and practices (KAP) of iron deficiency anaemia (IDA) and dietary iron intake among urban poor adolescents living in Kuala Lumpur, Malaysia during COVID-19 pandemic

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Anaemia has been identified as a major public health problem that affects both developed and developing countries, including Malaysia. To prevent anaemia, knowledge is a key parameter, which is the cornerstone of changing attitudes and practices. Apart from that, dietary iron intake is crucial. The objective of this study was to determine the relationship between knowledge, attitudes, and practices of iron deficiency anaemia with dietary iron intake among urban poor adolescents. A cross-sectional study was conducted among 209 urban poor adolescents aged 10 to 17 years old in Kuala Lumpur, Malaysia. A self-administered questionnaire was used to assess the sociodemographic characteristics, knowledge, attitudes, and practices toward iron deficiency anaemia. Anthropometric measurements were taken and dietary intake using a 2 days 24-hour diet recall were assessed. The adolescent's dietary iron intake was 11.02mg±6.60. More than half (68.4%) of the adolescents did not meet the dietary iron requirement based on Recommended Nutrient Intake (RNI) 2017. Besides, only 29.2%, 26.8% and 10.0% of adolescents showed good knowledge, attitudes, and practices, respectively. Knowledge scores was found to be correlated with dietary iron intake ($r=0.149$, $p=0.031$), while no correlation was found for attitudes and practices ($p>0.05$). After adjusted for adolescent's sex, parent's marital status, household monthly income, and household size, average knowledge (AOR=2.87, 95% CI=1.20 – 6.90, p -value=0.02) and moderate attitude (AOR=0.38, 95% CI=0.17–0.82, p -value=0.01) was found significant association with dietary iron intake. Findings low levels of knowledge, attitudes, practices, and dietary iron intake among the urban poor adolescents. Nutrition education and intervention are needed to improve KAP and dietary iron intake of the urban poor adolescents in Kuala Lumpur, Malaysia.

B43 Associations of sociodemographic and lifestyle factors with breakfast consumption among Malaysian university students during COVID-19 pandemic

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University students are vulnerable to unhealthy eating behaviours especially breakfast skipping due to their hectic lifestyles. Breakfast skipping has been linked with varieties of health problems such as obesity, dysmenorrhoea, and increased mortality rate due to

circulatory system diseases. Therefore, this cross-sectional study aimed to investigate the factors associated with breakfast consumption among Malaysian university students during the COVID-19 pandemic. A total of 378 Malaysian undergraduates with a mean age of 21.85±1.59 years participated in this study. A self-administered questionnaire was distributed online from July to August 2021 to collect sociodemographic information, breakfast consumption behaviour, physical activity level, internet addiction level, body image, depression, anxiety, and stress level, sleep quality and chronotype. Results showed that 37.8% of the respondents skipped breakfast with the most common reason of “wake up late” (54.8%). About 39.4% of them had low physical activity level, 36.8% of them were moderately to severely addicted to internet use and 79.7% of them had body image dissatisfaction. Some of them had severe levels of depression (21.2%), anxiety (29.4%) and stress (15.6%). About 62.2% of them were poor sleepers and 22.8% of them were evening type person. Significant associations were found between ethnicity ($\chi^2=37.03$, $p<0.001$), depression ($\chi^2=28.09$, $p<0.001$), anxiety ($\chi^2=12.27$, $p=0.015$), stress ($\chi^2=10.29$, $p=0.036$), chronotype ($\chi^2=32.46$, $p<0.001$) and sleep quality ($\chi^2=28.03$, $p<0.001$) with breakfast consumption behaviour. However, physical activity, internet addiction and body image dissatisfaction were not significantly associated with breakfast consumption ($p>0.05$). In conclusion, undergraduates in this study who are Malay, with high levels of depression, anxiety and stress, evening type as well as poor sleepers were more likely to skip breakfast. Therefore, effective nutrition intervention programmes are urgently needed to prevent unhealthy lifestyle behaviours and encourage regular breakfast consumption among university students.

B44 Frequency of home cooking, food and cooking skills among working adults during the pandemic: A cross-sectional study among the urban low income group

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COVID-19 pandemic had led to a massive rise in home cooking as more time was spent at home. However there is still much unknown about frequency of home cooking, food and cooking skills of Malaysians during the pandemic as most of the related studies were done in the west. This study was conducted to determine the association of frequency of home cooking with food and cooking skills among the urban poor (B40) Malaysian adults during pandemic whose annual income is less than RM4850. This was an online cross-sectional study. A total of 114 Malaysian adults aged between 21-61 years old were recruited; participants were required to fill an online questionnaire. Ottawa Public Health Food Skills Questionnaire was used to assess food and cooking skills. Descriptive statistics were conducted to study all variables of interest while inferential statistics were for specific study objectives such as association between frequency of home cooking with food and cooking skills. It was found that majority of participants had low frequency of home cooking. Most (81.8%) of participants with low frequency of home cooking had average food and cooking skills. On the contrary, participants (61.8%) with low frequency of home cooking had good food skills. The results suggested that food and cooking skills were affected by frequency of home cooking as only spending more time trying new cooking technique will help build food and cooking skills. Hence, it is significant to acquire food and cooking skills to survive in a pandemic where movement and mobility are restricted.

B45 Breakfast skipping lowers micronutrient intakes amongst primary schoolchildren: Findings from the South East Asian Nutrition Survey (SEANUTS II) Malaysia

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Breakfast is arguably the most important meal to refuel the body with essential nutrients. Thus, this study aims to investigate breakfast consumption by sociodemographic factors and its impact on nutrient intakes amongst primary schoolchildren. A total of 1313 children who participated in the South East Asian Nutrition Survey (SEANUTS II) Malaysia, representing 2.1 million children aged 6.0-12.9 years from Peninsular Malaysia, were included in this analysis. Sociodemographic characteristics and breakfast consumption were determined using questionnaires. Breakfast consumption pattern was further grouped into daily (consumed breakfast daily) and non-daily (skipped breakfast at least a day per week) categories. Nutrient intake was assessed using one day triple-pass 24-hour dietary recall approach. Approximately two-thirds of children (63.9%) consumed breakfast daily. Lower proportions of daily breakfast consumption was observed amongst those aged 10.0-12.9 years (56.2%), Malays (59.1%) and other ethnicities (58.6%), residing in rural areas (56.3%), with extremely low household income (50.5%), and having parents with lower education (paternal secondary-education, 59.5%; maternal non-schooling and primary-education, 52.5%) ($p < 0.05$). Compared to daily breakfast consumers, children who skipped breakfast tended to have lower intake of vitamin D [daily 4.9 mcg (95%CI 4.6-5.2); non-daily 4.0 mcg (95%CI 3.6-4.3) $p < 0.001$], thiamin [daily 1.2 mg (95%CI 1.1-1.2); non-daily 1.0 mg (95%CI 1.0-1.1) $p < 0.01$], riboflavin [daily 1.5 mg (95%CI 1.4-1.5); non-daily 1.3 mg (95%CI 1.2-1.3) $p < 0.001$], potassium [daily 1140 mg (95%CI 1095-1186); non-daily 1037 mg (95%CI 991-1083) $p < 0.01$], and calcium [daily 601.2 mg (95%CI 574.2-628.1); non-daily 518.3 mg (95%CI 488.0-548.6) $p < 0.001$]. However, no significant differences in energy and macronutrient intakes were observed. In conclusion, breakfast skipping is associated with age, ethnicity, area of residence, household income, and parental education level, which could lead to lower micronutrient intakes among children who skipped breakfast. Continuing to promote healthy eating habits among school-aged children is required to tackle the issue of breakfast skipping.

B46 Mobile health to support reduced-salt food choice: Acceptance by Indonesian low-income consumers

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Association between mobile health usage and acceptance of reduced-salt food choice was being relatively unexplored up to this date, especially among the low-income population who were at higher risk of getting health issues due to financial limitation. An online cross-sectional study was conducted with aims of i) to explore the use of mobile health related to salt intake; ii) to explore the acceptance of reduced-salt food choice; iii) determine the correlation between the use of mobile health related to salt intake and acceptance of reduced-salt food choice. The questionnaires were self-administrated by the respondents

and the variables collected and assessed were: i) sociodemographic data; ii) the use of mobile health related to salt intake; iii) health consciousness related to salt intake; iv) acceptance of reduced-salt food choice. A total of 104 adults (66.3% male) with mean age of 34.77 ± 9.68 were participated. Most of the respondents were high school graduates (50%). The majority of respondents scored “low” in the use of mobile health related to salt intake and scored “medium” in both health consciousness related to salt intake and acceptance of reduced-salt food choice. The relationship between mobile health related to salt intake with acceptance of reduced-salt food choice and health consciousness related to salt intake were both positively correlated ($r=0.430$, $p=0.000$; $r=0.618$, $p=0.000$ respectively). Educational levels were found to be an influence in the mobile health use related to salt intake despite it is not showing a strengthening effect ($p=0.012$).

Group C: Nutrients & Other Components in Foods/Products

C01 Sodium content in local soya sauce on the Malaysian Market without sodium declaration on the label

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Sodium chloride is a major component of table salt. Salt is in high demanded due to its easy access, cheap and universally used in food preparation. High salt concentration in brine solution during soya sauce fermentation is to enhance its flavour and to prevent the growth of undesirable microorganisms. Thus, high consumption of soya sauce may lead to high sodium intake that may cause noncommunicable diseases (NCDs) such as kidney failure, hypertension and cardiovascular disease. The declaration of sodium content on the label of Malaysian commercial soya sauces is on a voluntary basis. Hence, the aim of this study was to investigate the sodium content in commercial soya sauces in the market that do not have the sodium content labelling. The commercial soya sauces were collected from the main local supermarkets and analysed for sodium content by using Inductively Coupled Plasma Optical Emission Spectrometry (ICP-AES). The samples consisted of 11 brands of sweet soya sauce, five brands of salty sauce, four brands of dark soya sauce and three brands of light soy sauce. Three brands of sweet soya sauce contained 3500 – 4300 mg sodium/100g were significantly higher ($p<0.05$) in sodium content compared to the rest of the samples. The sodium in two brands of dark soya sauce contained 695 mg/100g which was significantly lower ($p<0.05$) than the rest of the soya sauce brands. Sodium in the light soya sauces (500-600 mg sodium/100g) was significantly lower ($p<0.05$) compared to other types of soya sauce. In conclusion, it is important to investigate the sodium content in soya sauce that are sold locally as additional information to the consumers.

C02 Analysis of food labels to evaluate the nutritional quality of bread products from local supermarkets in Pasir Mas, Kelantan

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Bread has been a staple in Malaysian's palate for generations as it provides energy as well as other nutrients such as dietary fibre, vitamins particularly B-vitamins and minerals. The aim of the present work is to survey the nutritional quality of commercial bread loaves, specifically pre-sliced sandwich breads, present in local supermarkets in Pasir Mas, Kelantan. A total of 13 bread products, across three commercial bread categories, white bread (WB), high fibre bread (HFB) and flavoured bread (FB) were collected. Comparison of energy, carbohydrate, protein, total fat, dietary fibre, salt and price between three bread categories were analysed. Energy ($p=0.008$), carbohydrate ($p=0.027$), protein ($p=0.030$), total fat ($p=0.009$), dietary fibre ($p=0.037$), and price ($p=0.004$) of bread products showed statistically significant median differences across three bread categories while salt content ($p=0.333$) does not. Overall, FB has significantly higher energy (343kcal/100g), carbohydrate (52.40g/100g), total fat (9.90g/100g) than HFB and significantly greater price (RM1.39/100g) than WB. HFB has significantly higher protein content (13.50g/100g) than WB and has significantly greater dietary fibre (5.50g/100g) than FB. A very strong positive correlation was observed between energy and total fat ($r=0.966$, $p<0.001$) while a strong positive correlation was observed between energy and carbohydrate ($r=0.697$, $p=0.008$). No correlation observed between energy and protein in this study ($p=0.318$). The present work showed the analysis of commercial bread products, specifically pre-sliced sandwich bread. This study will be useful as reference in future studies related to analysis of bread products.

C03 Physicochemical properties of selected raw stingless bee honey in Sarawak

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Stingless bee honey, locally known as Kelulut honey, is not commonly exposed to the public when compared to *Apis* bee honey. Recently, the research on stingless bee honey worldwide has become one of the promising fields of study. However, the stingless bee honey industry is still under stagnation due to the limited background knowledge of stingless bee honey, lack of complete quality control standards, and not being regulated by food control authorities. For a start, the evaluation of the physicochemical properties of Sarawak stingless bee honey is important as the identity of the honey samples can be 'fingerprinted', and eventually, bring prestige and increase revenue to Sarawak state. The objective of this research is to generalise better documentation of the physicochemical properties of selected honey samples in Sarawak for allowing better categorisation of stingless bee honey product quality and commercialisation. Hence, several physicochemical properties including pH, moisture content, ash content, total phenolic content and melissopalynological analysis were conducted to determine their botanical origin, purity, and quality. The physicochemical

properties of raw Sarawak stingless bee honey varied as follows: pH (3.19 – 3.60), moisture content (26.84 – 33.85) %, ash content (0.08 – 0.32 g/100g) and total phenolic content (187.11 – 331.72) mg GAE/kg. By conducting Melissopalynological analysis, it was revealed that all the honey samples were multi-floral, mainly collected intensively from fruit trees (longan, coconut), vegetables (sweet corn, brinjal), and flower plants (*Mimosa pudica*, *Ixora coccinea*). Hence, this can widen the data bank of stingless bee honey and quicken complete international standards of stingless bee honey to better accommodate stingless bee honey worldwide.

C04 Compliance of commercial complementary infant and toddler foods available in Kuala Lumpur to the WHO's draft Nutrient and Promotion Profile Model

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The first 1000 days of life are critical since the foundation of a child's health, growth, and development are laid during this time. Unsuitable commercial foods introduced as foods for infants and young children (FIYC) made during this period could be detrimental to a child's growth and future health status. Presently, commercially available foods FIYC are extensively available in the Malaysian market and widely used for convenience. However, FIYC in several countries have raised concern owing to their high sugar and sodium content and problematic promotional strategies. Thus, the World Health Organization (WHO) proposed a Nutrition and Promotion Profile Model (NPPM) to evaluate FIYC. We aimed to evaluate the nutrient profiles and marketing strategies of products for infants and toddlers like cereals, soft wet-spoonable foods, and meals with chunky pieces as per the WHO's draft NPPM. The food samples were obtained from several stores in Kuala Lumpur. Food label data on nutrient content and promotional information were extracted from the food packaging, as per the NPPM criteria. Data were then evaluated using the NPPM calculator website and recorded in a pre-designed Excel sheet. The number (*n*) and percentage (%) of products passing the NPPM nutrient profiles and marketing strategies were automatically generated. Out of the 150 products evaluated, only 78 (52%) passed all the nutrient requirements, while a humbling 23% passed all the marketing requirements. Products contained high sugar (23%) and sodium (24%) and were low in energy (28%) and protein (36%). Some FIYCs were promoted for infants and young children below six months, which is not permitted by WHO's NPPM. Marketing claims were extensive, while front-of-pack names were misleading. The present study findings revealed that several products had poor nutrient quality and inappropriate labels, eventually misleading parents and caregivers. Therefore, baby food reformulation and parental education on reading food labels are critical components in guiding them to make wise choices.

C05 Nutritional value (energy, fat, protein, carbohydrate, and sodium content) between four different brands (Maggi, Mamee, Mi Sedaap, and Vit's) of instant noodles in Malaysia

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Instant noodles are widely consumed in Asian nations. The consumption of packaged foods in low- and middle-income nations is rising at a quicker rate than in high-income countries. Various brands of instant noodles have different amounts of nutritional value inside them. A consumer needs to know how many nutrients such as macro- and micronutrients they are consuming from every instant noodle. This study focuses on 4 brands of instant noodles (Maggi, Mamee, Mi Sedaap, and Vit's) as well as the nutritional value such as energy content, fat, protein, carbohydrate, and sodium content from each brand. The data collection was done in one of the supermarkets located in Keningau, Sabah. From this finding, it has been obtained that among all these four brands, brand Mi Sedaap has the highest content of energy (median 470.0, IQR 15), fat (median 20.8, IQR 2.1), and protein (median 10.9, IQR 0.9) content compared to the other brands. Brand Vit's has the highest content of carbohydrate (median 63.0, IQR 4.1) and sodium (median 2030.0, IQR 1146.0) compared to the other brands. In Malaysia, there are several instant noodle options, and customers must select or build their version of healthy instant noodles by understanding the nutritional value of each instant noodle. In conclusion, this research shows that a greater awareness of nutritional value influences instant noodle choices and has the potential to supplement one's usual diet with essential nutrients. For future recommendation in this study, it would be better for more research on the nutritional value content of more brands of instant noodle that are widely marketed in Malaysia as this study only focuses on energy, fat, protein, carbohydrate, and sodium content from only four brands involved. This will help consumers to make the best decision in choosing their instant noodles.

C06 A novel theory as a gift for the centenary vitamin E and to explain where have all the dietary tocotrienols gone

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It is known well since about half a century ago that, in many studies comparing with tocopherols particularly the α -tocopherol, oral supplementation of tocotrienols by animals and humans consistently showed very low bioavailability and undetectable in some organs 12 hours after dosing or fasting, existing antioxidant and non-antioxidant theories are inconclusive to explain why the tocotrienols were mostly disappeared. Despite low levels of plasma tocotrienols were always correlatively presumed to in vitro effects and extrapolated to various benefits, dosage efficacy of tocotrienols attempted for treatment of diseases remained puzzling. Fundamental homeostasis theory encompassing several principal chemical species is introduced to elicit the physiological roles of vitamin E, including homeostasis of radicalization and beyond the commonly known oxidation-reduction processes of lipids, it attempts to explain some regulatory functions of tocotrienols more broadly as compared to tocopherols, and to account for the disappearance of dietary tocotrienols. Applications of new concepts in the mechanisms of vitamin E's actions will open up some new directions of research for tackling various metabolic and chronic diseases. As long as the bizarre problems of low bioavailability using highly pure tocotrienols are still unresolved, clinical evaluation of their therapeutic efficacy will remain a great challenge in the vitamin E research, certainly, the biochemistry and chemistry fundamentals will be important core issues in the future exploration. Vitamin E, functioning as an excellent anti-inflammatory factor, may serve as a target therapeutic or nutrient in fighting against the COVID-19 infection or long covid syndrome and post-vaccination symptoms. Strategies with strong scientific basis emphasizing on chemistry and biochemistry fundamentals are definitely also needed to fight against non-communicable diseases. This paper will also discuss some electron spin resonance (ESR) results which showed that γ -tocotrienol and δ -tocotrienol have some better beneficial antioxidant activities than α -tocotrienol and α -tocopherol which form more stable radicals.

C07 Compliance of commercial food products for infants (up to 12 months) and young children (12-36 months) (FIYC) available in Kuala Lumpur to the World Health Organisation's draft Nutrient and Promotion Profile Model (NPPM)

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Complementary foods are important to assist infants in achieving their optimal growth from around six months of age because an infant's need for nutrition and energy starts to exceed that provided by breast milk. Currently, commercial food products for infants and young children (FIYC) are popular as they have a variety of choices and are convenient and simple to prepare. However, most parents and caregivers lack knowledge and guidance in choosing nutritious snacks and beverages for infants since there is no standardised way to examine commercial FIYC available in Malaysia. The objectives of this study were (i) to evaluate the nutrient profiles and marketing strategies of commercial FIYC snacks and beverages available in Kuala Lumpur using the World Health Organisation's draft Nutrient and Promotion Profile Model (NPPM), and (ii) to evaluate the association between compliance to the nutrient threshold and promotion criteria. Overall, 135 samples were collected from stores available in Kuala Lumpur. Data were obtained from the product's packaging and recorded in a pre-designed Excel spreadsheet. Results were expressed as the number and percentage of samples meeting the proposed nutrition and marketing criteria using the NPPM baby food calculator website. Two food categories discouraged for use as FIYC were sold in Malaysia. These included: (i) Sweet confectionery, sweet spreads, and fruit chews, and (ii) Single or mixed fruit juices, vegetable juices or other non-formula drinks. No FIYC snack or beverage met all proposed NPPM nutrition thresholds, while 43% of these products met all marketing requirements of the NPPM. The high sugar and sodium contents in FIYC snacks and beverages are a concern. Inappropriate food claims can misguide consumers while choosing FIYC for their children. Hence, the government and health professionals should educate consumers on making healthier food product choices.

C08 Promising nutrients for boosting happy chemicals in post-COVID depression: Recent evidences

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Recent research found that approximately one third of all COVID sufferers develop post-COVID anxiety, depression or other neuropsychiatric conditions within six months of contracting the virus. Dopamine, serotonin, oxytocin and endorphin are known as the happy chemicals. They have important role in maintaining happy mood and prevent depression. All these chemicals are synthesised from amino acids. Recently, altered amino acids profile after corona virus infection has been reported, which revealed deficiency of some of the amino acids essential for the synthesis of happy chemicals and might have role in post-COVID mental well being. Objective of this study was to gather updated information about the effect of diet and nutrition on the level of happy chemicals in the body. PubMed and Google Scholar were searched using the key words corona virus infection combined with dopamine, serotonin, oxytocin, endorphin, tyrosine, tryptophan and nutrients till

date. Dietary fat, tryptophan, probiotics, vitamin D, rosemary extract, *Opuntia humifusa* stems and fenugreek were reported. All of them increased the level of one or more happy chemicals except dietary fat which had dual action, it decreased dopamine and increased oxytocin level. Updated knowledge on the effect of nutrients on the level of happy chemicals in the body and supplement them in patients with corona virus infection might help to prevent post-COVID anxiety and depression.

C09 Frequently available street foods, its nutrient contents and factors affecting consumers' choice of street foods in Pahang

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Street food has become the food choice for people. Most people will take street food as their source of energy compared to consuming food at home. The aim was to determine the frequently available street food, the nutrient contents and the factors that influence the choice of street food consumption among adult consumers in Pahang. This study was divided into two phases. Phase I was based on secondary data through direct observation method followed by nutrient analyses of the street food while phase II was a cross-sectional study using convenience and snowball sampling to distribute the online questionnaires on factors influence the choice of street food in Pahang. Street food found in Pahang was divided into main meals category ($n=362$), snacks ($n=356$) and desserts ($n=241$). *Laksa* (main meal), fried chicken (snack) and *apam balik* (dessert) were the most common street food found in Pahang. *Keropok lekor* had the highest carbohydrate, energy, sodium and ash content; fried chicken had the highest content of protein and fat whereas congee had the highest moisture content. A total of 200 subjects were involved in the survey of determining the factors in purchasing the street food in Pahang. Hygiene factor (score: 4.01) was the most important factor in influencing the subjects' street food choices. There were significant relationships ($p<0.05$) between gender, race, education level and household income with the factors influencing the choice of street food. Female subjects, Malays, the low-educated and the M40 and T20 groups were more likely to agree with those factors. Most street food in Pahang was high in fat, sodium and energy. Education and awareness on food hygiene need to be exposed to the food vendors since the hygiene factor was the main factor that will influence the street food consumption among the adult consumers.

C10 The familiarity and perception of the Healthier Choice Logo (HCL) on packaged food products among consumers in Batu Gajah, Perak

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The Healthier Choice Logo (HCL) is a front-of-pack (FOP) label that has been implemented by the Ministry of Health Malaysia (MOH) in 2017 to assist the consumers in making informed food choices by only looking at the front label of food packaging. Research has shown that most of the participants in previous studies had supported the implementation

of the HCL because it could give them confidence in choosing food products. This study aims to gain insight into the consumers' awareness regarding the HCL by assessing their familiarity and perception of the logo concerning their buying decision. To conduct this research, an online survey has been done by distributing an online survey questionnaire to the consumers in Batu Gajah, Perak via social media platform. A total of 308 participants had volunteered to answer the online survey. The results indicate that the consumers' familiarity and perception of the HCL do give impacts on their informed decision towards healthy choices. Therefore, it is recommended that the relevant authorities can provide more education and knowledge regarding the HCL to avoid misleading information about the logo and to encourage Malaysian consumers to use the logo prior to food purchasing. Further research is needed to evaluate the association between the implementation of the HCL and the actual purchasing behavior of consumers in Malaysia.

C11 Determination and comparison of total sugar content, nutritional value and price in 3-in-1 beverage from local supermarket

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Sugary drinks were defined as all types of beverages containing free sugars, and these include carbonated or non-carbonated soft drinks, fruit or vegetable juices and drinks, liquid and powder concentrates, flavoured water, energy and sports drinks, ready-to-drink tea, ready-to-drink coffee, and flavoured milk drinks. This study was conducted to determine the total sugar content, nutritional value, and price of three different flavours of selected 3-in-1 beverages. Besides, the aim of this study is to create awareness of choosing a healthy beverage and control the intake of sugar-sweetened beverages. A total of 15 3-in-1 beverages were collected in the study, with five different brands of coffee, tea, and cocoa flavours, respectively. The 3-in-1 beverage samples were collected by a stratified random sampling method. The nutrition information was collected from labels, and the price was collected from the price tag on the shelf. The nutrition information and price of the selected 3-in-1 beverage were photographed using a smartphone. In terms of total sugar content, the median total sugar of tea flavours is significantly higher than coffee and cocoa flavours ($p=0.179$). In terms of nutritional value, tea flavours had significantly higher energy ($p=0.427$), total fat ($p=0.113$) and total carbohydrate ($p=0.058$) than coffee and cocoa flavours. Meanwhile, cocoa flavours had significantly higher protein ($p=0.012$), fibre ($p=0.488$) and price ($p=0.044$) than tea and coffee flavours. According to a recent study, excessive sugar consumption is linked to a variety of health problems such as heart disease, stroke, obesity, diabetes, high blood cholesterol levels, cancer, and dental caries. In conclusion, this study will be useful in future studies related to the determination and comparison of sugar content, nutritional value, and price of three-in-one beverages in order to shorten the time of analysis.

C12 Assessing consumer awareness on nutrition information on food labels: A cross-sectional study in Kota Kinabalu

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The Malaysian Dietary Guidelines 2020 recommend making effective use of nutrition information on food labels in choosing healthier food products. However, the extent

of consumers living in Kota Kinabalu read and utilise these information has not been previously examined. Therefore, this study aimed to assess the awareness of consumers in Kota Kinabalu on nutrition information on food labels. This was a cross-sectional study involving 145 adults living in Kota Kinabalu recruited via convenient sampling, conducted from September 2021 to February 2022. A validated questionnaire was used to assess the subjects' awareness of the nutrition information on food labels, and descriptive analysis and Chi-square test were used for statistical analyses. One-hundred thirty-four (92.4%) subjects reported that they knew and were aware of the nutrition information on food labels, particularly ingredient list (89.0%) and nutrition information panel (80.0%). Similarly, the ingredient list was the most common (nutrition information utilised by the subjects, followed by the nutrition information panel (71.7%), front-of-pack (55.2%), healthier choice logo (52.4%), and nutrition claims (51.0%). Total sugar (25.5%) was the most common nutrient in the nutrition information panel referred by the subjects, followed by total fat (23.3%), and carbohydrate (17.9%). Majority of the subjects reported that they knew the nutrition information on food labels from schools (41.4%) and social media (21.4%). Education level was significantly associated ($p=0.013$) with the awareness of nutrition information on food labels while other sociodemographic factors such as sex, age, ethnicity, and marital status showed non-significance (all $p>0.05$). Although most consumers in Kota Kinabalu reported utilising nutrition information on food labels, it was limited to the ingredient list and nutrition information panel. More effort could be done to promote the utilisation of front-of-pack, healthier choice logo, and nutrition claims during purchasing food products, and schools and social media appear to be a strategic approach.

C13 Frequently available street foods, its nutrient contents and factors affecting consumers' choice of street foods in Kedah

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Street food is one of the most popular foods that people enjoy at any time. Most street food in Malaysia is authentic and traditionally prepared by locals. The high demand of street foods was due to its low cost, easy to access and ability to be cooked quickly. Hence, this study aims to determine the frequently available street foods, its nutrient contents and factors that affect the consumers' choice of street food in Kedah. This study was divided into two phases. The first phase included a survey of street food followed by analysis of nutrient content. Surveys were carried out in the districts of Kubang Pasu, Kuala Muda, and Pendang. The second phase involved an online questionnaire form to determine factors that affect the consumers' choice of street food in Kedah which was completed by adults aged 18 to 59 who had purchased at least two times street food in Kedah. In the first phase, street food survey data from three main categories in selected areas were analysed using SPSS to identify 15 types of street food commonly found in Kedah. According to the study's findings, fried rice from the main meal, nuggets, fried popia, fried sausages from snacks, and *kuih peneram* from desserts are the most popular street foods in the state of Kedah. Among all street foods, currypuff was the highest in calorie content (399 kcal), chicken nugget was the highest in fat content (22.95%) and fried sausage was the highest in sodium content (757 mg/100g). Data analysis showed that most respondents agreed that the hygiene factor (score: 4.25) was the main factor influencing their choice when buying street foods followed by price factor (score: 3.72). The findings demonstrate the importance of hygienic elements in ensuring that the food handled and prepared is safe to eat.

C14 Assessments of total energy and sugar content and marketing advertising strategies of the pre-packaged sugar sweetened beverages in the supermarkets in Kelantan

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Consumption of pre-packaged sugar-sweetened beverages (SSBs) is linked to consumption of added or free sugar and negative health outcomes such as obesity and type 2 diabetes. However, little information has been conducted to assess the total energy and sugar content of pre-packaged SSBs in the supermarkets, especially in Kelantan, Malaysia. The aim of this cross-sectional study was to determine the total energy and sugar content of pre-packaged SSBs in the supermarkets in Kelantan. In general, eight categories (fruit juices and juice drinks, flavoured milk, carbonated drinks, chocolate drinks, milk tea and coffee, tea and herbal drinks, sports and energy drinks, and soy beverages) with five beverages from each category of pre-packaged SSBs were selected and photographed to be evaluated based on their nutritional information (total energy and sugar content). The findings of the study showed that chocolate and malt drinks had the significantly highest median of total energy (63.0, IQR 15.5), followed by milk tea and coffee (56.0, IQR 33.5), and tea and herbal drinks (18.0, IQR 21.5), which falls under the lowest median of total energy content among the eight groups. For the total sugar content, sports and energy drinks had the highest median of total sugar content (11.3, IQR 10.0), followed by chocolate drinks (7.9, IQR 3.6) and fruit juices and juice drinks (7.3, IQR 6.6). The products of tea and herbal drinks had the lowest median total sugar content (4.5, IQR 4.4). Based on the findings of the study, it is clearly shown that total energy and sugar content have a positive, strong significant association, which indicates that sugar contributes to the majority of energy in pre-packaged SSBs. In conclusion, this study provided the data of total energy and sugar content of pre-packaged SSBs for the use of other future research or the latest data in MyFCD according to the availability of current food and beverages in Malaysia. Additionally, the research must be conducted to represent the whole Kelantan population by conducting the research in other supermarkets and during several festival seasons in Kelantan.

Group D: Clinical Nutrition/Intervention Trials

D01 Preliminary finding: Effects of sports drink supplementation post exercise on endurance performance

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Recovery is a challenge for sportspersons who are undertaking two or more session each day and competing in a sports competition that involves multiples events. To date, there is still scanty information on effects of sports drink post exercise on endurance performance in the field exercise test. The objective of this study was to investigate the effects of sports drink supplementation post exercise on subsequent endurance performance. Sixteen young active participants (age: 21.0±5.0 years, body mass index: 22.4±2.4; physical activity

category: 3401 ± 992 MET min/week) participated in this study. During experiment trial test, participants ran 2.4km and followed by one-hour rest before performing a shuttle run test. Heart rate, tympanic temperature and rate of perceived exertion (RPE) were measured at pre and post exercise. During recovery, subjects consumed sports drinks or placebo. Heart rate, tympanic temperature and rate of perceived exertion (RPE) were measured at every 20 minutes during recovery. The wash out period between the trials was one week. Physical activities of participants were measured by International Physical Activity Questionnaire (IPAQ). Statistical Package for Social Science (SPSS) Version 27.0 was used to analyse the collected data. Data was expressed in mean \pm standard deviation. This present research found that level of shuttle run test in the sports drink trial was significant higher than placebo trial ($p < 0.05$). There were no statistically differences in the heart rate, tympanic temperature and rate of perceived exertion (RPE) between the two trials during exercise and recovery ($p > 0.05$). These findings reflected that sport drink seems to have enhanced subsequent endurance performance.

D02 Association between omega 3 fatty acid and bioactive peptide supplementation on salivary cortisol among Malaysian footballers – A secondary data analysis

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Athletes commonly hold a high-stress level due to chronic exposure under high physical demand and competitive environments. Excessive stress without sufficient recovery may cause cortisol dysregulation, reducing an athlete's sports performance. The anti-oxidative and anti-inflammatory effects of n-3 fatty acid (n-3) and bioactive peptide (BP) may potentially suppress cortisol secretion and assist athletes in handling stress to achieve optimal sports performance. This secondary data analysis from a randomised control trial assess the salivary cortisol (SAC) level among Malaysian footballers. 52 footballers were randomly allocated into four treatment arms: placebo, BP, n-3 and BP + n-3. SAC was collected during baseline, fourth week and eighth week of supplementation via passive drool method in a standardized collection time. SAC level was quantified by enzyme-linked immunosorbent assays (ELISAs). Descriptive statistics, repeated measured ANOVA and Spearman Correlation test were selected for data analysis. The subject's median SAC level was 9.07 (7.29). No significant SAC differences were observed between treatment ($p = 0.751$) and treatment overtime ($p = 0.859$). Significant weak to moderate correlational strength were observed between SAC and serum cortisol (SC) in baseline ($r = 0.516$, $p < 0.001$), week 4 ($r = 0.384$, $p = 0.005$) and week 8 ($r = 0.459$, $p < 0.001$). There is no significant effect of four and eight weeks of supplementation of n-3 and BP on SAC level among Malaysian footballers. There is a significant association between SAC level and SC level among Malaysian footballers. Present study suggested a control upon the subject's pre-test condition and supplement's effective dosage identification may require to confirm the treatment effectiveness.

D03 The effect of omega 3 fatty acid and bioactive peptide supplementation on salivary interleukin-6 (IL-6) level among Malaysian footballers – A secondary analysis

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Inflammation is an immune system's protective strategy to eliminate harmful stimuli and starts the healing process in the human body. Excessive stress, inflammation from damaged tissues, and free radical and oxidative stress cause the immune cell to release Interleukin 6 (IL-6) and reduce an athlete's sports performance. The anti-oxidative and anti-inflammatory effects of omega-3 fatty acid and bioactive peptide(peptAlde) may potentially suppress IL-6 secretion as a biomarker to indicate changes in the inflammation level from the supplementation to assist athletes in handling stress to achieve optimal sports performance. To assess the effect of omega-3 fatty acid and bioactive peptide(peptAlde) supplementation on salivary and serum IL-6 levels among Malaysian footballers. Secondary data analysis from a randomised control trial. 52 healthy Malaysian footballers aged between 18 to 21 years old were randomly allocated into four treatment arms: placebo, BP, n-3 and BP + n-3. The archival saliva and serum samples during baseline, fourth week and eighth week of supplementation are then analyzed by human IL-6 ELISA Kit high sensitivity (ab46042) from the previous study to determine the IL-6 concentration level of each subject. Next, the data was then analysed using SPSS version 26.0 to perform statistical analysis. There is an effect on the 4th and 8th weeks of supplementation (Placebo, omega-3 fatty acid, bioactive peptide (peptAlde), and omega 3 fatty acid + bioactive peptide) on the salivary IL-6 level among Malaysian footballers. However, there is no correlation between salivary IL-6 levels and serum IL-6 levels among Malaysian footballers. The bioactive peptide supplementation is useful to suppress the salivary IL-6 level in the body. This is because it is inhibiting the angiotensin-converting enzyme (ACE) to lower the blood pressure, neutralizing and scavenging free radicals to reduce oxidative stress, anti-inflammatory properties, and improving mineral absorption in one's body.

Group E: Food Science & Technology

E01 Product development and sensory evaluation of acceptability of *kuih bingka ubi* made with isomaltulose amongst IMU students and staffs

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Traditional Malay *kuih* is a common local confectionary in demand in the Malaysian diet in terms of sweet taste. In contrast, excessive intake of sugar (sucrose) is detrimental to public health, alternative sweeteners were researched to improve their nutritional value. The usage of functional carbohydrates derived from the isomer of sucrose, isomaltulose (IM) was identified to have benefits like lower glycemic index (GI), ability to sweeten food, and non-cariogenic characteristics. This substitution process was further studied among common local food to identify its feasibility. To analyse the rate of preference of subjects for developed *kuih bingka ubi* (Baked Tapioca Cake) recipes sweetened with sucrose and IM via a 5-point hedonic and Just About Right (JAR) scale amongst International Medical University (IMU) students and staff. A total of 37 students and staff aged 18 to 48 years old were recruited from IMU Bukit Jalil Campus to taste the modified recipe of *kuih bingka ubi* sweetened with sugar ratio (100% sucrose, 50%: 50% sucrose and IM, and 100% IM). A 5-point hedonic scale was used to evaluate five sensory attributes, namely appearance, aroma, taste, texture, and overall acceptability. The sweetness level was assessed with the Just-About-Right scale. Duo-trio tests were carried out to identify the difference between varied recipes (50%: 50% sucrose and IM, 100% IM) and reference (100% sucrose). All the *kuih* were developed successfully. About the *p*-values generated, sweetness (<0.001),

aroma (0.032), and overall (0.020) was having significance differences, whereas the other attributes, appearance (0.587), taste (0.096), and texture (0.063) was not showing significant difference. 100% IM sample was rated highest for four out of five attributes in the hedonic scale, namely appearance (70%), taste (84%), texture (81%), and overall (86%); 50%: 50% sucrose to IM sample was rated highest for the attributes of aroma (84%). The current extension of studies provided the brief conclusion that usage of IM in baked *kuih* products was applicable. Amongst the three variations, 100% IM was most accepted by the subject groups with the highest ratings for overall acceptability and major attributes.

E02 Proximate composition and antimicrobial activity of kefir produced from cow's and almond drink mixtures with different ratio

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Fermentation is important in the diet of people around the world. Milk kefir, fermented milk which originates from Tibet and Caucasus has successfully gained popularity worldwide. It is designated as 21st century yoghurt due to its high nutritional value. Traditionally, the most common substrate utilised for kefir fermentation is cow's milk. However, non-dairy milk kefir has gained popularity due to some reasons such as scarcity of animal-based milk in some countries, dietary constraints, and health risk. In this study, almond drink is chosen because it is one of the most popular non-dairy drink and there is a scarce of study on almond drink kefir. Hence, the study was conducted to evaluate and compare the nutrient composition and antimicrobial activity of the kefir produced from cow's and almond drink mixtures with different ratios. The proximate composition was analysed by using AOAC 2000 method while the antimicrobial activity against *Escherichia coli*, *Staphylococcus aureus*, and *Salmonella typhi* was analysed by using the agar well diffusion method by Azizkhani *et al.* (2021). Comparison has been made between the three kefir samples (100% cow's milk kefir (CMK), 1:1 ratio of cow's and almond drink kefir (MMK), and 100% almond drink kefir (AMK)) by using a one-way ANOVA test. Results showed that the moisture content, total dietary fibre, and fat content were significantly different from each other ($p < 0.05$), while the other proximate composition did not. No significant difference was observed between the diameter of zone of inhibition of the tested kefir samples for *Escherichia coli* and *Staphylococcus aureus* ($p > 0.05$) while a significant difference was observed for *Salmonella typhi* ($p < 0.05$). Generally, the mixture of cow's milk and almond drink may be a better substrate for kefir fermentation as it produced a better overall nutrient profile and higher antimicrobial activity.

E03 Development and sensory evaluation of kuih talam pandan using isomaltulose

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The objective of this study was to determine the sensory attributes and overall acceptability of *kuih talam pandan* made with isomaltulose (IM). A total of 37 Malaysian adults aged 18 to 50 years old were recruited from Kuala Lumpur. The *kuih talam pandan* recipe was developed with three variations which are 100% sucrose, 100% IM and 50% sucrose:

50% IM. The three variations of the *kuih talam pandan* were provided to the participants at the same time to conduct the sensory evaluation. In affective test, sensory attributes and overall acceptability were evaluated using a 5-point hedonic scale while sweetness was assessed using Just-About-Right scale. Duo-trio test was carried out to identify the variation close to the reference (100% sucrose). *Kuih talam pandan* with 100% sucrose, 100% IM and 50% sucrose: 50% IM were successfully developed in this study. Under affective test, appearance ($p=0.714$), aroma ($p=0.232$), taste ($p=0.286$), texture ($p=0.607$) and overall acceptability ($p=0.319$) and sweetness ($p=0.907$) had no significant difference. Appearance (3.86 ± 1.00), aroma (3.70 ± 1.08), taste (3.57 ± 1.24), texture (3.49 ± 1.17), overall acceptability (3.57 ± 1.32) of 100% sucrose obtained highest score among three variations of *kuih talam pandan*. Sweetness (2.81 ± 1.00) of 100% sucrose was the nearest to just about right (score=3). In duo-trio test, 23 participants (62%) chose 50% sucrose:50% IM while 14 (38%) chose 100% IM as the similar sample to reference. In conclusion, present study suggested the incorporation of IM to substitute sucrose is impossible in *kuih talam pandan*. Among the three variations of kuih, 100% sucrose was the most acceptable by the subjects with highest score obtained in overall acceptability.

E04 Development and optimisation of green tea kombucha using response surface methodology

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The fermented tea drink, kombucha has become increasingly popular due to its purported health benefits. Kombucha is made by fermenting sweetened tea using the symbiotic colony of bacteria and yeast (SCOBY). Kombucha has a refreshing, sweet, and acidic taste with a sparkling mouthfeel. One of the challenges in producing commercial kombucha is inconsistencies in the batch of kombucha. Different fermentation conditions influence the physicochemical and sensory quality of kombucha. The interaction between the fermentation conditions with the physicochemical properties of green tea kombucha and the optimised green tea kombucha fermentation parameters were investigated with Response Surface Methodology. Fermentation time, temperature, and sugar concentration had a significant effect ($p<0.05$) on the pH, total soluble solids, and titratable acidity of green tea kombucha. The desired qualities of the optimised green tea kombucha are pH value between 3-3.5, maximum titratable acidity, and minimum fermentation time. The optimised parameters of green tea kombucha were 5% sugar concentration, seven days fermentation time, and 30°C fermentation temperature with a desirability score of 0.806. The consumer sensory evaluation of optimised green tea kombucha and two competitor products result showed that the colour, clarity, mouthfeel, and overall acceptability of optimised green tea kombucha were significantly higher than both competitor products ($p<0.05$). The optimised green tea kombucha had the highest overall acceptability score and the most preferred sample by the panellists. Green tea kombucha has good market potential and business value as a functional probiotic beverage and healthy alternative for carbonated beverages. The product concept of green tea kombucha was made with the consideration of the packaging, safety, cost of production, and market positioning. The result obtained from this study may provide guidance to develop product innovations, marketing strategies, and direction of future research to meet the demand and rising interest in kombucha as a functional probiotic beverage.

Group F: Experimental Nutrition

F01 *In vitro* antioxidant and cytotoxic potential in sequential extracts of *Gyunara divaricata* tuber against MDA-MB-231 cell line

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Traditional Chinese herbal medicines have been gaining interest due to their association with fewer side effects and richness in bioactive compounds. Thus, they are regarded as potential candidates for the development of novel cancer drugs. Henceforth, this research focuses on investigating the potential *in vitro* anticancer potential of sequential extracts of *Gyunara divaricata* tuber by testing their antioxidant effects and cytotoxicity in MDA-MB-231 human triple-negative breast cancer cells. In this study, the dried tuber of *Gyunara divaricata* was extracted using hexane, dichloromethane and methanol. Ten different concentrations of the solvents extracts (25, 50, 75, 100, 125, 150, 175, 200, 225, and 250 µg/mL) were tested for their *in vitro* antioxidant activity in the DPPH• assay. The screened solvent extract with the highest antioxidant activity was subjected to further cytotoxic studies in MDA-MB-231 human triple-negative breast cancer cells by using MTT assay with the same concentrations of extracts. A correlation analysis was conducted between the antioxidant and cytotoxic activity of the selected plant extract. Based on their mean DPPH• inhibitions, the solvent extracts were ranked in the following order: methanol (79.840±0.120%) > hexane (67.543±0.313%) > dichloromethane (56.223±0.686%). Based on results from the MTT assay, the IC₅₀ and mean percentage inhibition of methanol extracts from *Gyunara divaricata* tuber were 113.86 µg/mL and 55.06±3.50%, respectively. A strong correlation was found between the radical scavenging and cytotoxic activity of *Gyunara divaricata* extracts. This study concludes that all tested solvents extracts do have antioxidant activities, whereas the methanol extracts of *Gyunara divaricata* tuber possess both antioxidant and cytotoxic activities. Further studies on this plant such as fractionation and purification using chromatographic techniques should be conducted to identify and isolate the bioactive compounds that are responsible for the anticancer activity of *Gyunara divaricata* tuber.

F02 Water-soluble palm fruit extract: Potential anti-diabetic mechanisms

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Rising physical inactivity, obesity and consumption of energy-dense diets have resulted in an unprecedented increase in the incidence and prevalence of type 2 diabetes mellitus. A phenolic acid-rich extract obtained from the aqueous vegetation liquor of oil palm (*Elaeis guineensis*) fruit milling, termed Water-Soluble Palm Fruit Extract (WSPFE), has potential anti-diabetic effects but the related mechanisms were unknown. In addition, different drying

methods may have effects on the biological activities of polyphenols. In the present study, we investigated the potential effects of WSPFE samples on glucose uptake and enzymes involved in carbohydrate hydrolysis and incretin degradation. Glucose uptake assays were performed using spray dried (SD) WSPFE, freeze dried (FD) WSPFE, WSPFE ethyl acetate fraction (EAF) and seven individual WSPFE fractions (F1 to F7) obtained from WSPFE EAF on everted mouse intestinal sacs *ex vivo* and Caco-2 cell monolayers *in vitro*. α -glucosidase, α -amylase and dipeptidyl peptidase-4 (DPPIV) enzymatic assays were performed *in vitro*. Glucose uptake assays revealed that all the WSPFE samples tested did not inhibit glucose absorption. However, WSPFE EAF consistently had stronger inhibitory effects on α -glucosidase, α -amylase and DPPIV enzymes compared to SD WSPFE and FD WSPFE. SD WSPFE inhibited α -amylase better than FD WSPFE. In terms of individual fractions, F2 demonstrated the strongest inhibitory effects against α -glucosidase and DPPIV. Hence, although WSPFE samples did not inhibit glucose uptake, they showed inhibitory effects on the three enzymes tested, especially WSPFE EAF and F2. Further studies to investigate their effects on carbohydrate digestion and postprandial hyperglycaemia are warranted.

F03 Effects of *Lactobacillus casei* Shirota (LcS) supplementation on growth performance, intestinal histology, fecal AFB₁ and fecal bacterial profile of AFB₁-exposed rats

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The objectives of this study are to investigate the effects of *Lactobacillus casei* Shirota (LcS) supplementation on body weight, food intake, intestinal morphometry biomarkers, the composition of *Lactobacillus* spp. and *Bifidobacterium* spp. in feces, and the fecal aflatoxin B1 (AFB₁) in AFB₁-exposed rats. Thirty-two male Sprague Dawley rats were divided into Control, AFB₁, AFB₁+LcS and LcS groups. AFB₁ was given at a complete dosage of 25 μ g AFB₁/kg body weight, while LcS supplementation was given at 2×10^9 CFU/ml per day via oral gavage for four weeks. The AFB₁ group showed no significant increment of body weight ($p > 0.05$) from Week 2 to 4, unlike other groups which had significant body weight increment ($p < 0.05$) throughout the study. The food intake of AFB₁ group reduced significantly ($p < 0.05$) throughout treatment period, but AFB₁+LcS group showed significant increase ($p < 0.05$) in food intake from Week 3 to 4. Histomorphometric analysis of AFB₁ group showed a significantly lower ($p < 0.05$) villus height in duodenum and ileum, and lower ($p < 0.05$) surface area in ileum in comparison to LcS group, indicating AFB₁ toxicity towards the intestine. Nonetheless, the AFB₁+LcS group showed a higher duodenal and ileal villus height, and surface area of ileum. The H&E staining showed a mild to moderate inflammation in all parts of the intestine of AFB₁ group, while only mild inflammation was observed in the jejunum and ileum of AFB₁+LcS group. *Bifidobacterium* spp. counts showed increment in three groups, while AFB₁ group showed a significant reduction ($p < 0.05$) after four weeks. Besides, the fecal AFB₁ in AFB₁ group was significantly lower ($p < 0.05$) than in AFB₁+LcS group at the end of the study and this finding showed the formation of AFB₁-probiotic complex, wherein it is eventually excreted. The AFB₁ exposure can affect the growth performance, intestinal histology, and *Bifidobacterium* spp. composition and AFB₁ in feces of rats, where these adverse effects were alleviated with LcS supplementation.