

AOCO-MASO 2021

ASIA-OCEANIA CONFERENCE ON OBESITY AND MALAYSIAN ASSOCIATION
FOR THE STUDY OF OBESITY SCIENTIFIC CONFERENCE

Tackling Obesity: Innovative Strategies
for a Healthier Future

"Virtual Conference"



6th to 8th April 2021

PROGRAMME AND ABSTRACTS

Organized by:



Malaysian Association for the
Study of Obesity

Under the auspices of:



Asia Oceania Association for the Study of
Obesity

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Ministry of Health Malaysia

Message from the Director General of Health Malaysia

Tan Sri Dato' Seri Dr Noor Hisham Abdullah

Ministry of Health Malaysia

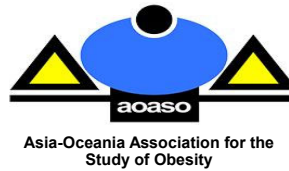
On behalf of the Ministry of Health Malaysia, I would like to extend a warm welcome to all the participants of the 11th AOCO-MASO 2021 Virtual Conference. I wish to congratulate the Malaysian Association for the Study of Obesity (MASO) under the auspices of the Asia-Oceania Associations for the study of Obesity (AOASO) for their extraordinary effort in convening this biennial AOASO Scientific Conference for the second time.

The theme of AOCO-MASO 2021 "Tackling Obesity: Innovative Strategies for a Healthier Future" provides a platform for participants to discuss the "Challenges and Opportunities" in preventing and managing the rising obesity epidemic in the region. Given the magnitude and complexity of the issues, there is an urgent need to intensify our understanding of obesity prevention and management principles.

I would like to take this opportunity to convey my special appreciation to all the speakers and poster presenters for their invaluable contribution in showcasing the emergence of research talents in obesity, internationally and locally.

It is my sincere hope that this conference will serve as a catalytic convention on the improvement of global obesity prevention and management, and more importantly, how the region can cope with this ever-escalating epidemic. I wish all participants a rewarding and fruitful experience in AOCO-MASO 2021.

Tan Sri Dato' Seri Dr. Noor Hisham Abdullah
Director General of Health Malaysia



Message from AOASO President

Professor Brian Oldfield

Department of Physiology, Faculty of Biomedical and Psychological Sciences, Monash University, Australia

As President of the Asia-Oceania Association for the Study of Obesity (AOASO) it is a pleasure to welcome you to this virtual combined AOCO-MASO 2021 meeting.

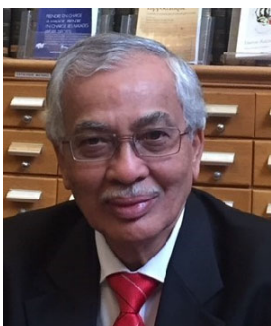
The Congress wing of AOASO, the Asia-Oceania Conference on Obesity (AOCO) is a critical part of the function of AOASO. It affords, in 2021, in collaboration with the Malaysian Association for the Study of Obesity (MASO), an opportunity to showcase the best of obesity research from the region and provides a platform to invite world leaders to present in this forum. Like all successful Congresses it has a focus on young and emerging researchers blended with an opportunity for established scientists and practitioners to establish and develop collaborative networks. With a commitment to the safety and well-being of its members this meeting will be held virtually.

A great effort has been made to create the best possible program and here we owe our thanks to Emeritus Prof Dr Mohd Ismail Noor, the Chair, and other members of the Local Organising Committee. Your contribution has helped to create a spectacular program that covers the breadth of obesity research from prevention of the disease to the care and treatment of people living with obesity.

I wish you well during the meeting and hope that you find the program stimulating, enlightening and inspiring.

I also look forward, as we inevitably emerge from this pandemic, to seeing you face to face at the upcoming ICO 2022 Meeting held in conjunction with AOCO and ANZOS in Melbourne, Australia in October 2022.

Professor Brian Oldfield, PhD
President of AOASO



Message from MASO President

Emeritus Professor Dr Mohd Ismail Noor

*Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur and
Universiti Sultan Zainal Abidin, Kuala Terengganu*

On behalf of the Organising Committee, it gives me great pleasure to welcome you to 11th. AOCO-MASO 2021 Virtual Conference organised by the Malaysian Association for the Study of Obesity (MASO) under the auspices of Asia-Oceania Associations for the Study of Obesity (AOASO) and in conjunction with the World Obesity Day celebrated on 4 March this year. We would like to thank Prof Brian Oldfield, President AOASO and its Council for the opportunity and support, having hosted the 2nd AOCO in 2003.

The Scientific Committee had prepared a fairly comprehensive programme covering different aspects of obesity which include 5 plenary lectures, 12 Symposia sessions (with 48 invited speakers), 4 Free communication sessions, the AOCO Rising Star symposium and AOASO President's Country updates plus about 100 poster presentations.

I would like to sincerely thank Tan Sri Dato' Seri Dr Noor Hisham Abdullah Director- General of Health Malaysia for launching AOCO-MASO 2021, all the speakers for accepting our invitation, the 500 odd delegates for your support, our sponsors and last but not least, the hard-working LOC and Scientific Committee to make this Conference possible. There is a saying "all WE can do is plan but GOD will decide" We are hopeful that this 3-day Virtual Conference will proceed smoothly as planned.

Please take advantage of everything our meeting has to offer and your participation and attendance are what makes the meeting successful. Thank you.

Emeritus Prof. Dr Mohd Ismail Noor,
President MASO and
Chairman, Organising Committee AOCO-MASO 2021

AOCO-MASO 2021 ADVISORY BOARD MEMBERS

Prof Dr Brian Oldfield, ANZOS,
President, AOASO (Australia)

Emeritus Prof Dr Mohd Ismail Noor,
President, MASO
Immediate-Past President, AOASO
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Dr Francis Chun Chung Chow,
President, HKASO (Hong Kong)

Dr Banshi Saboo,
President, AiAARO (India)

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Prof Yi-Ching Yang,
President, TMASO (Taiwan)

Dr Mia C. Fojas,
President, PASOO (Philippines)

Prof Le Thi Hop,
President, VINUTAS (Vietnam)

AOCO-MASO 2021 LOCAL ORGANIZING COMMITTEE

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Emeritus Prof Dr Mohd Ismail Noor

Secretariat

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Ms Mugambikai Magendiran

Treasurer

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Emeritus Prof Dr Mohd Ismail Noor
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Ms Zaiton Daud

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Assoc Prof Dr Mohd Razif Shahril
Assoc Prof Dr Mahenderan Appukutty
Dr Wilfred Mok Kok Hoe

Sponsorship

Assoc Prof Dr Gan Wan Ying

E-Poster

Assoc Prof Dr Mahenderan Appukutty
Dr Wilfred Mok Kok Hoe

Virtual Exhibition

Mr Lim Kooi Fong

AOCO-MASO 2021 SCIENTIFIC COMMITTEE

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Prof Dr Poh Bee Koon

Advisor

Prof Dr Brian Oldfield
Emeritus Prof Dr Mohd Ismail Noor

Member

Prof Dr. Louise Baur
Prof Dr Leonard Kyoung Kon Kim
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Dr Tham Kwang Wei
Prof Dato Dr Nik Ritza Nik Kosai
Prof Dr Firdaus Mukhtar
Prof Dr Hamid Jan Jan Mohamed
Prof Dr Muhamad Yazid Jalaludin
Assoc Prof Dr Barakatun Nisak Mohd Yusof
Assoc Prof Dr Wan Azdie Mohd Abu Bakar
Dr Masni Mohamad
Dr Reynu Rajan

PROGRAMME OVERVIEW

AOCO-MASO 2021 DAY 1: Tuesday, 6th April 2021

Time	Programme
08:30	REGISTRATION Log-in to online platform
09:00 – 9:20	Welcome remarks: Emeritus Prof. Dr. Mohd Ismail Noor, Chairman AOCO- MASO 2021 President's Address: Prof. Dr. Brian Oldfield, AOASO Official Launching: YBhg. Tan Sri Dato' Seri Dr. Noor Hisham Abdullah, Director General of Health, Malaysia
09:20 – 10:00	Plenary Lecture 1 Chair: Prof Dr Muhammad Yazid Jalaludin <i>Department of Paediatrics, Faculty of Medicine, University Malaya, Malaysia</i> Evidence and challenges in treating child & adolescent obesity Prof Dr Louise Baur <i>Faculty of Medicine and Health, University of Sydney, Australia</i>
10:00 – 11:00	Symposium 1 Epidemiology of Obesity Chair: Prof Dr Norimah A Karim <i>School of Health Sciences, International Medical University, Malaysia</i>
10:00 – 10:15	S1.1 Obesity from a life course perspective – findings from GUSTO study Prof Dr Johan Eriksson <i>Yong Loo Lin School of Medicine, National University of Singapore, Singapore</i>
10:15 – 10:30	S1.2 The impact of obesity on cardiometabolic complications and beyond: An immunoepidemiological perspective Dr Dicky L Tahapary <i>Division of Endocrinology, Metabolism, and Diabetes, Department of Internal Medicine, Faculty of Medicine Universitas Indonesia, Indonesia</i>



10:30 – 10:45	S1.3 Gender-specific differences in obesity predisposition and management Dr Jennifer Miles-Chan <i>Human Nutrition Unit, School of Biological Sciences, Faculty of Science, University of Auckland, New Zealand</i>
10:45 – 11:00	S1.4 Pre-pregnancy BMI, gestational weight gain, gestational diabetes and maternal and birth outcomes: MISC cohort study in UAE Dr Hadia Mohammad Radwan <i>College of Health Sciences, University of Sharjah, United Arab Emirates</i>
11:00 – 12:00	Symposium 2 COVID-19 Pandemic and Obesity Chair: Dr Mohd Fairulnizal Md Noh <i>Cardiovascular, Diabetes & Nutrition Research Centre, Institute for Medical Research, Malaysia</i>
11:00 – 11:15	S2.1 COVID-19 and obesity: implications for Asian and Oceanian policy Prof Dr Caroline Miller <i>Health Policy Centre, South Australian Health and Medical Research Institute, Adelaide, Australia</i>
11:15 – 11:30	S2.2 Obesity is a potential risk factor for COVID-19: an ecological analysis Prof Dr Ranil Jayawardena <i>Department of Physiology, Faculty of Medicine, University of Colombo, Sri Lanka</i>
11:30 – 11:45	S2.3 COVID-19 and Diabetes- what's the link? Prof Dr Alice Pik Shan Kong <i>Division of Endocrinology, Department of Medicine and Therapeutics, The Chinese University of Hong Kong, Hong Kong</i>
11:45 – 12:00	S2.4 Potential mechanism linking obesity to vulnerability and severity of COVID-19 Prof Dr Soo Lim <i>Division of Endocrinology and Metabolism, Internal Medicine, Seoul National University College of Medicine and Seoul National University Bundang Hospital, Seongnam-city, South Korea</i>
12.00 – 13:00	Lunch / Posters / Exhibition Hall (online)

<p>13:00 – 14:30</p>	<p>AOCO Rising Stars Symposium</p> <p>Chair: Prof Dr Gary Wittert, <i>Faculty of Health and Medical Sciences, University of Adelaide, Australia</i> Co-chair: Dr Denise Koh Choon Lian <i>Centre of Community Education & Wellbeing, Faculty of Education, Universiti Kebangsaan Malaysia, Malaysia</i></p>
<p>13:00 – 13:15</p>	<p>RSS1 Activation of the medial-prefrontal cortex to lateral hypothalamic circuit reduces food intake and motivation to obtain sucrose reward</p> <p>Ms Rachel Clarke (ANZOS) <i>Department of Physiology, Monash University, Australia</i></p>
<p>13:15 – 13:30</p>	<p>RSS2 Immune regulation of metabolic processes through myeloid production of IL-10</p> <p>Dr Gotaro Toda (JASSO) <i>Department of Diabetes and Metabolic Diseases, Graduate School of Medicine, the University of Tokyo, Japan</i></p>
<p>13:30 – 13:45</p>	<p>RSS3 Ventromedial hypothalamic primary cilia control energy and skeletal homeostasis</p> <p>Ms Dong Joo Yang (KSSO) <i>Department of Oral Biology, Yonsei University College of Dentistry, Seoul, Korea</i></p>
<p>13:45 – 14:00</p>	<p>RSS4 Tick Tock: Overweight Early Bird vs Night Owl, which is healthier?</p> <p>Ms Fatin Hanani Mazri (MASO) <i>Centre for Healthy Aging and Wellness, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia</i></p>
<p>14:00 – 14:15</p>	<p>RSS5 Overall unsatisfactory knowledge in obesity signals an urgent need to incorporate obesity medicine teaching into current medical curriculum in Singapore</p> <p>Mr Timothy Tan (SASO) <i>University of New South Wales, Australia and Department of Endocrinology, Tan Tock Seng Hospital, Singapore</i></p>
<p>14:15 – 14:30</p>	<p>RSS6 Can anthropometry and body composition explain physical fitness levels in school-aged children?</p> <p>Ms Chih-Yu Hsu (TMASO) <i>Department of Family Medicine, Chang Gung Memorial Hospital, Taipei Branch and Linkou Main Branch, Taoyuan, Taiwan</i></p>

14:30 – 15:15	<p>Symposium 3 Mechanistic underpinnings of obesity</p> <p>Chair: Prof Dr Hamid Jan bin Jan Mohamed <i>School of Health Sciences, Universiti Sains Malaysia, Malaysia</i></p>
14:30 – 14:45	<p>S3.1 Recruitment of postprandial thermogenesis in Brown Adipose Tissue</p> <p>Prof Dr Brian Oldfield <i>Department of Physiology, Faculty of Biomedical and Psychological Sciences, Monash University, Australia</i></p>
14:45 – 15:00	<p>S3.3 Famine reactions in pathways to obesity</p> <p>Prof Dr Abdul Dulloo <i>Laboratory of Nutritional Energetics and Body Composition Regulation, University of Fribourg, Switzerland</i></p>
15:00 – 15:15	<p>S3.4 Leap2, a hepatic peptide identified in bariatric surgery research, in metabolic regulation</p> <p>Prof Dr Masamitsu Nakazato <i>Department of Internal Medicine, University of Miyazaki, Japan</i></p>
15:15 – 16:15	<p>Symposium 4 Childhood Obesity</p> <p>Chair: Ms Johanna Ralston <i>World Obesity Federation, London, United Kingdom</i></p>
15:15 – 15:30	<p>S4.1 Predicting and preventing childhood obesity: do we need more evidence or newer models of care?</p> <p>Assoc. Prof Dr Fabian Yap Kok Peng <i>Department of Paediatric Endocrinology, KK Women's and Children's Hospital, Singapore</i></p>
15:30 – 15:45	<p>S4.2 Reduction in overweight and obesity in 3-6 year-old Malaysian children following a multi-component kindergarten-based health behaviour intervention: ToyBox Study Malaysia</p> <p>Assoc. Prof Dr Leigh Gibson <i>Clinical and Health Psychology Research Centre, Roehampton University, UK</i></p>
15:45 – 16:00	<p>S4.3 Microbiome transfer and childhood obesity</p> <p>Prof Dr Wayne Cutfield <i>The Liggins Institute, University of Auckland, New Zealand</i></p>
16:00 – 16:15	<p>S4.4 The first 2000 days in child life: current evidence and policies</p> <p>Dr Abdullah Mamun <i>Institute for Social Science Research, Faculty of Humanities and Social Sciences, University of Queensland, Australia</i></p>

<p>16:15 – 17:15</p>	<p>Free Communication 1</p> <p>Chair: Assoc Prof Dr Mohd Razif Shahril <i>Centre for Healthy Ageing and Wellness (HCARE), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Malaysia</i></p> <p>Co-chair: Dr Wilfred Mok Kok Hoe <i>Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, Malaysia</i></p>
<p>16:15 – 16:25</p>	<p>FC1.1 Impact of self-monitoring digital interventions on body composition in obese patients: A randomized controlled trial</p> <p>Shree Vidhya Nagendram <i>Endocrinology Department, Hospital Putrajaya, Malaysia</i></p>
<p>16:25 – 16:35</p>	<p>FC1.2 Therapeutic benefit and pharmacological aspects of Aegeline in the medicine for the treatment of Human health complications</p> <p>Dinesh Kumar Patel <i>Department of Pharmaceutical Sciences, Sam Higginbottom University of Agriculture, Technology and Sciences, India</i></p>
<p>16:35 – 16:45</p>	<p>FC1.3 Ramadan focused nutrition therapy in overweight and obese individuals with Type 2 Diabetes</p> <p>Barakatun Nisak Mohd Yusof <i>Department of Dietetics, Universiti Putra Malaysia, Malaysia</i></p>
<p>16:45 – 16:55</p>	<p>FC1.4 Exercise prescription in the management of obesity in an osteoporotic female with Turner’s syndrome</p> <p>Janani Gopalakrishnan <i>Arthroscopy and Sports Medicine, Sri Ramachandra Institute of Higher Education and Research, India</i></p>
<p>16:55 – 17:05</p>	<p>FC1.5 Nutritional therapy in obese patient with suprapubic diabetic abscess and sepsis: A case report</p> <p>Ayu Diandra Sari <i>Department of Nutrition, Faculty of Medicine, Universitas Indonesia – Dr. Cipto Mangunkusumo Hospital, Indonesia</i></p>
<p>17:05 – 17:15</p>	<p>FC1.6 Association between self-efficacy in maintaining healthy lifestyle and barrier to change eating habit and weight status of secondary school students in Kuala Lumpur: NuTeen project</p> <p>Shashikala Sivapathy <i>Department of Food Science and Nutrition, Faculty of Applied Sciences, UCSI University, Malaysia</i></p>
<p>Posters / Exhibition Hall (online)</p>	
<p>END OF DAY 1 – See you tomorrow!</p>	

AOCO-MASO 2021

DAY 2: Wednesday, 7th April 2021

Time	Programme
08.30	Log-in to online platform
09:00 – 9:40	<p>Plenary Lecture 2</p> <p>Chair: Ms Zalma Abdul Razak <i>Nutrition Division, Ministry of Health Malaysia</i></p> <p>Affordable nutrition and economics of obesity Prof Dr Adam Drewnowski <i>Nutritional Science Program, School of Public Health, University of Washington, Seattle, USA</i></p>
09:45 – 10:45	<p>Symposium 5 Psychological Perspectives in Obesity</p> <p>Chair: Prof Dr Firdaus Mukhtar <i>Faculty of Medicine & Health Sciences, Universiti Putra Malaysia, Malaysia</i></p>
9:45 – 10:00	<p>S5.1 Weight bias and obesity stigma: definitions, prevalence, consequences and strategies for change</p> <p>Dr Ximena Ramos Salas <i>Research & Policy, Obesity Canada, Canada</i></p>
10:00 – 10:15	<p>S5.2 Obesity and sexual functioning</p> <p>Prof Dr Hatta Sidi <i>Department of Psychiatry, Universiti Kebangsaan Malaysia Medical Centre, Malaysia</i></p>
10:15 – 10:30	<p>S5.3 Translational Approach for Food Seeking Behavior: Mouse – Monkey – Obesity Patients</p> <p>Prof Dr Hyung Jin Choi <i>Department of Biomedical Sciences & Department of Anatomy and Cell Biology, Seoul National University College of Medicine, Seoul, Republic of Korea</i></p>
10:30 – 10:45	<p>S5.4 Precision Health: Leveraging Patient-Generated Data for Personalized Behavioral Nutrition Interventions</p> <p>Dr Marissa Burgermaster <i>Dell Medical School, Austin College of Natural Sciences, The University of Texas, Texas, USA</i></p>

10:45 – 12:05	AOASO President: Country Update Chair: Dr Banshi Saboo <i>President, All India Association for Advancing Research in Obesity (AIAARO)</i> Co-chair: Assoc Prof Dr Gan Wan Ying <i>Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Malaysia</i>
10:45 – 10:55	PS1 Obesity in Australia - a decade of inaction Dr Jane Martin <i>Australia and New Zealand Obesity Society (ANZOS), Australia</i>
10:55 – 11:05	PS2 Obesity in Thailand Dr Tanupol Virunhagarun <i>Bangkok Association of Regenerative Health and The Study of Obesity (BARSO), Thailand</i>
11:05 – 11:15	PS3 Enhancement of social media platforms for better community education on obesity Dr Francis CC Chow <i>Hong Kong Association for the Study of Obesity (HKASO), Hong Kong</i>
11:15 – 11:25	PS4 Updates on the burden of obesity in Indonesia Dr Dante S. Harbuwono <i>The Indonesian Association for The Study of Obesity (ISSO), Indonesia</i>
11:25 – 11:35	PS5 Prevalence of obesity and government programs and activities to help reduce the obesity prevalence in Korea Prof Dr Jae Heon Kang <i>Korea Society for the Study of Obesity (KSSO), Korea</i>
11:35 – 11:45	PS6 Obesity trends, interventions and policy options in Malaysia Emeritus Prof Dr Mohd Ismail Noor <i>Malaysian Association for the study of Obesity (MASO), Malaysia</i>
11:45 – 11:55	PS7 Addressing the ROOTS of obesity in Singapore: Population health & obesity professional education Dr Tham Kwang Wei <i>President, Singapore Association for the Study of Obesity (SASO), Singapore</i>
11:55 – 12:05	PS8 Policy implementation to stop the trend of rising obesity in Taiwan Prof Dr Yi-Ching Yang <i>President, Taiwan Medical Association for the Study of Obesity (TMASO), Taiwan</i>

12.00 – 13:00	Lunch / Posters / Exhibition Hall (online)
13.00 – 13:45	<p>Symposium 6 Assessment of obesity and its associated implications</p> <p>Chair: Prof Dr Poh Bee Koon, <i>Centre for Community Health Studies (ReaCH), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Malaysia</i></p>
13:00 – 13:15	<p>S6.1 Revealing an unseen epidemic: comparison of the diagnosis of obesity using DXA and surrogate anthropometric measurement Dr Erwin Christianto <i>Clinical Nutrition Specialist, Eka Hospital, Indonesia</i></p>
13:15 – 13:30	<p>S6.2 Revisiting proportion of segmental weight in young Japanese female adults Assoc Prof Dr Masaharu Kagawa <i>Institute of Nutrition Sciences, Kagawa Nutrition University, Japan</i></p>
13:30 – 13:45	<p>S6.3 A web-based, time-use application to assess diet and movement behaviour in Asian schoolchildren Dr Mary Chong Foong Fong <i>Saw Swee Hock School of Public Health, National University of Singapore, Singapore</i></p>
13:45 – 14:45	<p>Free Communications 2</p> <p>Chair: Assoc Prof Dr Geeta Appannah <i>Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Malaysia</i></p> <p>Co-chair: Dr Ang Yeow Nyin <i>Centre for Community Health Studies (ReaCH), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Malaysia</i></p>
13:45 – 13:55	<p>FC2.1 Weight status differences in the associations between obstructive sleep apnea and pediatric hypertension Hai-Hua Chuang <i>Weight Management Center, Health Promotion Center, Department of Family Medicine, Chang Gung Memorial Hospital, Taiwan (ROC)</i></p>
13:55 – 14:05	<p>FC2.2 Impact of COVID -19 induced lockdown on the body weight, waist circumference and blood pressure in overweight and obese children and adolescents Priti Phatale <i>Samrat Endocrine Institute, India</i></p>

14:05 – 14:15	<p>FC2.3 Sonographic measurements of abdominal adiposity and atherosclerosis in Hong Kong Chinese obese adolescents</p> <p>Jamie Cheung <i>Medicine and Therapeutics, The Chinese University of Hong Kong, China</i></p>
14:15 – 14:25	<p>FC2.4 Examining the relationship between social exclusion, snack intake and body mass index in children</p> <p>Aimee E. Pink <i>School of Social Sciences, Nanyang Technological University, 639818, Singapore and Department of Psychology, Swansea University, Swansea, SA2 8PP, UK</i></p>
14:25 – 14:35	<p>FC2.5 Social environmental factors influencing preschoolers' physical activity and sedentary behaviour</p> <p>Lee Shoo Thien <i>Centre for Community Health Studies (ReaCH), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, Malaysia</i></p>
14:35 – 14:45	<p>FC2.6 Childhood obesity in lower socio-economic families of Pakistan</p> <p>Sabeen Abid Khan <i>Shifa College of Medicine, Shifa Tameer-e-Millat University, Pakistan</i></p>
14:45 – 15:45	<p>Symposium 7 Obesity Treatment & Management</p> <p>Chair: Assoc Prof Dr Barakatun Nisak <i>Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Malaysia</i></p>
14:45 – 15:00	<p>S7.1 Setting the multidisciplinary team for morbid obesity</p> <p>Assoc Prof Dr Zubaidah Nor Hanipah <i>Department of Surgery, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Malaysia</i></p>
15:00 – 15:15	<p>S7.2 Anti-obesity drugs before and after bariatric surgery</p> <p>Prof Dr Leonard Kim Kyoung Kon <i>Department of Family Medicine, Gachon University, Seongnam-si, South Korea</i></p>
15:15 – 15:30	<p>S7.3 The effectiveness of intermittent fasting in body weight management and its clinical applications</p> <p>Assoc Prof Dr Mo'ez Al-Islam Ezzat Faris <i>Department of Clinical Nutrition and Dietetics, College of Health Sciences, University of Sharjah, United Arab Emirates</i></p>

15:30 – 15:45	<p>S7.4 The REWIND remission programme with low calorie and reduced carbs diets: a dietetic perspective Ms. Salma Mehar <i>NHS North West London Collaboration of Clinical Commissioning Groups, London, United Kingdom</i></p>
15:45– 16:45	<p>Symposium 8 Prevention of Obesity Chair: Prof Dr Timothy Gill <i>Faculty of Medicine and Health, University of Sydney, Australia</i></p>
15:45 – 16:00	<p>S8.1 Dietary habits and the prevention of obesity in different ethnic groups Prof Dr Rob van Dam <i>Saw Swee Hock School of Public Health, National University of Singapore, Singapore</i></p>
16:00 – 16:15	<p>S8.2 Principle of precaution and circumspection: Elements for a strategy of obesity prevention Prof Dr Jean Pierre Poulain <i>Centre d'études et de Recherches Travail Organisations Pouvoir (CERTOP), University of Toulouse, France</i></p>
16:15 – 16:30	<p>S8.3 Public and Private sectors roles in the food environment of Malaysia Prof Dr Tilakavati Karupaiah <i>School of Biosciences, Faculty of Health and Medical Sciences, Taylor's University, Malaysia</i></p>
16:30 – 16:45	<p>S8.4 Epidemiology, strategies and real-world actions to prevent obesity in Japan Prof Dr Kazuyo Tsushita <i>Department of Nutrition, Kagawa Nutrition University, Japan</i></p>
16:45 – 17:25	<p>Plenary Lecture 3 Chair: Prof Leonard Kyoung Kon Kim <i>Vice President, Asia Oceania Association for the Study of Obesity (AOASO)</i> Obesity pharmacotherapy – which treatments really work? Prof Dr John Wilding <i>Department of Cardiovascular and Metabolic Medicine, Institute of Life Course and Medical Sciences, Clinical Sciences Centre, Aintree University Hospital, United Kingdom</i></p>
	Posters / Exhibition Hall (online)
	END OF DAY 2 – See you tomorrow!

AOCO-MASO 2021

DAY 3: Thursday, 8th April 2021

Time	Programme
08:30	Log-in to online platform
09:00 – 9:40	<p>Plenary Lecture 4 Chair: Emeritus Prof. Dr. Mohd Ismail Noor <i>President, Malaysian Association for the study of Obesity (MASO)</i></p> <p>Obesity pandemic turning points – hopeful signs and promising directions Prof Dr Boyd Swinburn <i>School of Population Health, University of Auckland, New Zealand</i></p>
09:45 – 10:30	<p>Symposium 9 Food security & Obesity</p> <p>Chair: Assoc Prof Dr Wan Azdie Mohd Abu Bakar, <i>Kulliyah of Allied Health Sciences, International Islamic University Malaysia, Malaysia</i></p>
9:45 –10:00	<p>S9.1 Food Insecurity and Obesity Research and Policy: Where do we go from here? Prof Dr Rafael Perez-Escami <i>Yale School of Public Health, Yale University, New Haven, USA</i></p>
10:00 – 10:15	<p>S9.2 Food insecurity and the ramifications for health and weight status: an international overview of high-income countries Prof Dr Danielle Gallegos <i>Faculty of Health, School of Exercise and Nutrition Sciences, Queensland University of Technology, Australia</i></p>
10:15 – 10:30	<p>S9.3 Not having enough food can lead to obesity: Is that possible? Prof Dr Norhasmah Sulaiman <i>Department of Nutrition, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Malaysia</i></p>
10:30 – 11:30	<p>Symposium 10 Bariatric Surgery</p> <p>Chair: Dr Reynu Rajan <i>Faculty of Medicine, UKM Specialist Centre, Malaysia</i> Co-chair: Dr Gafoor Mubarak <i>Island Hospital, Penang</i></p>

10:30 – 10:45	S10.1 Metabolic outcomes of bariatric surgery Dr Muffazal Lakdawala <i>Institute of Minimal Invasive Surgical Sciences & Research Centre, Saifee Hospital, Mumbai, India</i>
10:45 – 11:00	S10.2 Cost effectiveness of bariatric surgery—why insurance providers should consider coverage Dr Chih-Kun Huang <i>China Medical University Hospital, Taichung, Taiwan</i>
11:00 – 11:15	S10.3 Latest innovation in bariatric procedures Dr Simon Wong <i>Upper GI & Metabolic Surgery, Prince of Wales Hospital, Hong Kong & Department of Surgery, The Chinese University of Hong Kong</i>
11:15 – 11:30	S10.4 History and progress of bariatric surgery in Malaysia Prof Dato' Dr Nik Ritza Kosai Nik Mahmood <i>Department of Surgery, Faculty of Medicine, UKM Specialist Centre</i>
11.30 – 12:30	Free Communication 3 Chair: Assoc Prof Dr Chin Yit Siew <i>Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Malaysia</i> Co-chair: Ms Zaiton Daud <i>Nutrition Division, Ministry of Health Malaysia</i>
11:30 – 11:40	FC3.1 You are what your mother eats: Maternal macronutrient intake and the effects on offspring metabolism and behaviour Therese Freire <i>Faculty of Medicine and Health, University of Sydney, Australia</i>
11:40 – 11:50	FC3.2 Monitoring glycemic responses of selected foods using rtCGM and integrating it into a low glycemic index education among overweight and obese young adults Khadidja Chekima <i>School of Biosciences, Faculty of Health and Medical Sciences, Taylor's University, Malaysia</i>
11:50 – 12:00	FC3.3 The effect of a family-based assessment and intervention healthy lifestyle programme on health knowledge and beliefs of children and their families Dayna Te'o <i>School of Medicine , University of Auckland , New Zealand</i>
12:00 – 12:10	FC3.4 Hypnotherapy smartphone applications for weight loss: A narrative review Nurul Afiedia Roslim <i>Faculty of Pharmacy, Universiti Sultan Zainal Abidin, Malaysia</i>

12:10 – 12:20	FC3.5 Physical activity level and association with age among nurses at the University College Hospital, Ibadan, Nigeria Ayodeji Ayodele Fabunmi <i>Physiotherapy, University of Ibadan, Ibadan. Nigeria, Nigeria</i>
12:20 – 12:30	FC3.6 Exploring digital use and needs among community health volunteers to inform effective and innovative digital health solution design Xin Yun Khor <i>Better Health Programme Malaysia, RTI Malaysia, Malaysia</i>
12.30 – 13:00	Lunch / Posters / Exhibition Hall (online)
13:00 – 14:15	Symposium 11 Complications of Obesity Chair: Dr Tham Kwang Wei <i>President, Singapore Association for the Study of Obesity (SASO)</i> Co-chair: Dr Masni Mohamad <i>Endocrine Unit, Medical Department, Putrajaya Hospital, Malaysia</i>
13:00 – 13:15	S11.1 What positive changes have we seen in our fight with obesity? Prof Dr Ian D Caterson <i>School of Life and Environmental Sciences, Faculty of Science, University of Sydney, Australia</i>
13:15 – 13:30	S11.2 Obesity and its complications, an overview Dr Rosa Allyn Sy <i>Diabetes, Endocrine, Metabolic, and Nutrition Center, Cardinal Santos Medical Center, Philippines</i>
13:30 – 13:45	S11.3 Molecular mechanism of insulin resistance and comorbidities linked to obesity Prof Dr Takashi Kadowaki <i>Department of Diabetes and Metabolic Diseases, The University of Tokyo Hospital, Tokyo, Japan</i>
13:45 – 14:00	S11.4 Obesity and non-alcoholic fatty liver disease (NAFLD) latest update Prof Dr Chan Wah Kheong <i>Gastro-Enterology Unit, Department of Medicine, Universiti Malaya Medical Centre, Malaysia</i>
14:00 – 14:15	S11.5 Obesity and cardiovascular diseases (CVD) Dr Mohd Arimin Mat <i>Research Fellow in Endocrinology with Obesity & Immunity Research Group (OIRG), St. Vincent's University Hospital, Dublin, Ireland</i>

14:15 – 15:15	<p>Free Communication 4</p> <p>Chair: Assoc Prof Dr Mahenderan Appukutty <i>Faculty of Sports Science & Recreation, Universiti Teknologi MARA (UiTM)</i></p> <p>Co-chair: Dr Jasmine Chia Siew Min <i>Centre for Community Health Studies (ReaCH), Universiti Kebangsaan Malaysia, Malaysia</i></p>
14:15 – 14:25	<p>FC4.1 Obesity triangle in Indonesia</p> <p>Saptawati Bardosono <i>Department of Nutrition, Fakultas Kedokteran, Universitas Indonesia</i></p>
14:25 – 14:35	<p>FC4.2 Utilising machine learning model to predict obesity trends</p> <p>Ala Barzinji <i>School of Computing and Mathematical Sciences , University of Greenwich , United Kingdom</i></p>
14:35 – 14:45	<p>FC4.3 Early impact of sweetened beverage excise duty in Malaysia—gauging the food and beverage manufacturers’ response</p> <p>Sangeetha Shyam <i>Division of Nutrition and Dietetics, International Medical University, Malaysia</i></p>
14:45 – 14:55	<p>FC4.4 Brown adipose tissue assessed by near-infrared time-resolved spectroscopy inversely correlates with BMI in T2D Patients</p> <p>Hironori Waki <i>Department of Diabetes and Metabolic Diseases, Graduate School of Medicine, The University of Tokyo, Japan</i></p>
14:55 – 15:05	<p>FC4.5 Overweight and obesity negatively predict the concurrent attainment of glycosylated haemoglobin A1C, blood pressure and LDL-cholesterol goals in patients with type 2 diabetes</p> <p>Kim Sui Wan <i>Centre for Epidemiology and Evidence-Based Practice, Department of Social and Preventive Medicine, Faculty of Medicine, University of Malaya, Malaysia</i></p>

15:15 – 16:30	Symposium 12 Lifestyle, Exercise & Diet Chair: Assoc Prof Dr Gaga Irawan Nugraha, <i>Indonesian Society for the Study of Obesity (ISSO)</i> Co-chair: Assoc Prof Dr Hazizi Abu Saad, <i>Faculty of Medicine and Health Sciences, Universiti Putra Malaysia</i>
15:15 – 15:30	S12.1 The role of 24 hour movement behaviours in understanding and responding to the global child obesity pandemic with a focus on Asia- Oceania region Prof Dr Anthony Okely <i>Early Start Research Institute, University of Wollongong, Australia</i>
15:30 – 15:45	S12.2 Structured nutrition in optimizing weight loss Prof Dr Winnie Chee <i>Department of Nutrition & Dietetics, International Medical University, Malaysia</i>
15:45 – 16:00	S12.3 Abdominal fat reducing effect of exercise training Prof Dr Kuo Chia- Hua <i>College of Kinesiology, University of Taipei, Taiwan</i>
16:00 – 16:15	S12.4 How the gut talks to the brain? Prof Dr Carel le Roux <i>Metabolic Medicine Group, University College Dublin, Ireland</i>
16:15 – 16:30	S12.5 Effective Type 2 Diabetes Management with very low-calorie diet (VLCD) Dr Saiful B. Kassim <i>Gleneagles Hospital Kuala Lumpur, Malaysia</i>
16:30 – 17:10	Plenary Lecture 5 Chair: Prof Dr Brian Oldfield <i>President, Asia Oceania Association for the Study of Obesity (AOASO)</i> Gut microbiota and obesity: what's new? Prof Dr Karine Clément <i>Nutrition Department, Faculty of Medicine, Pitié Salpêtrière Hospital and Sorbonne Université, Paris, France</i>
17:10 -17:40	Prize-giving & Closing Ceremony
	Posters / Exhibition Hall (online)
	END OF DAY 3 – End of Conference · Take Care & Stay Safe!



PLENARY ABSTRACTS



List of Plenary Titles

No.	Abstract ID	Title
1	PL1	Evidence and challenges in treating child & adolescent obesity
2	PL2	Affordable nutrition and Economics of Obesity
3	PL3	Obesity Pharmacotherapy—Which Treatments Really Work?
4	PL4	Obesity Pandemic Turning Points—Hopeful Signs and Promising Direction
5	PL5	Gut Microbiota and Obesity : What’s New?

AACOMASO 2021

PLENARY 1

Evidence and challenges in treating child & adolescent obesity

CHAIRPERSON



MUHAMMAD YAZID JALALUDIN is currently the Head of Department of Paediatrics, Faculty of Medicine, University Malaya. He works as a Senior Consultant Paediatrician and Senior Consultant Paediatric Endocrinologist at the University Malaya Medical Centre (UMMC) and as a Professor at the Faculty of Medicine, University Malaya. He completed his fellowship in Pediatric Endocrinology and Diabetes at Children's Hospital of Philadelphia (CHOP), USA after obtaining his MBBS and Masters in Paediatrics, both from University Malaya.

He is currently the Immediate Past President of the Asia Pacific Paediatric Endocrine Society (APPES 2020-2022) and the Malaysian Paediatric Association (MPA 2019-2021). His main research interest is in growth (nutrition), obesity and type 2 diabetes mellitus, and vitamin D in children. He holds many national and international research grants and acts as Scientific Advisor for many multicentre international researches. His work has been published in various academic journals including in the New England Journal of Medicine (NEJM).

PLENARY 1



Evidence and challenges in treating child & adolescent obesity

Louise Baur

Faculty of Medicine and Health, University of Sydney, Australia

ABSTRACT

Obesity in children and adolescents is prevalent in many countries. In addition to prevention of the disease, effective treatment of those who are affected is vital. There is a well-established evidence base showing that high quality behavioural interventions for adolescents with obesity can lead to modest improvements in BMI, as well as improvements in cardio-metabolic and psychosocial health. Clinical trials and systematic reviews of more intensive dietary interventions, drug therapy and bariatric surgery (strong evidence) highlight the effectiveness of these treatments as part of a suite of options for patients, especially adolescents with more severe obesity.

There are many barriers to providing evidence-based behavioural treatment, especially for those: from culturally and linguistically diverse backgrounds; experiencing stigma; living with poverty or low literacy; affected by learning disabilities, developmental disorders or psychiatric disorders; or who are a family or young person in crisis. The provision of such services is hampered in many regions because services are often poorly resourced and/or health professionals may be inadequately trained. Future research and practice in paediatric obesity management will need to focus upon developing a range of flexible and personalised treatment options, especially for those living with disadvantage, as well as cost-effective strategies for delivery of services at scale in real-life clinical settings.

Biography

Louise Baur holds the Chair of Child & Adolescent Health at the University of Sydney. In addition, she is a senior consultant paediatrician at the Sydney Children's Hospitals Network where she is an active member – and former Head - of Weight Management Services, a multidisciplinary clinical service for children and adolescents affected by moderate to severe obesity. Louise Baur has made research contributions to the management of obesity and related disorders in a variety of clinical settings; the complications of obesity; the prevention of obesity, especially in early childhood; and to the responses of health systems to obesity. Louise is the President-Elect of the World Obesity Federation, and is a member of that organisation's Executive. She is a Founding Fellow of the Australian Academy of Health & Medical Sciences.

PLENARY 2

Affordable nutrition and economics of obesity

CHAIRPERSON



ZALMA ABDUL RAZAK is a Director of Nutrition Division, Ministry of Health Malaysia since April 2016. She holds a bachelor degree in Food Science and Nutrition from Universiti Kebangsaan Malaysia and a master degree from Universiti Teknologi MARA. She has experience working in the state health departments but most of her career life spent at the headquarters. She has been involved very actively in nutrition programmes and activities including the development and implementation of Breastfeeding Promotion Program, Healthy Eating Promotion, Nutrition Rehabilitation Programme for Malnourished Children, Programme for the Prevention and Control of Iodine Deficiency Disorders and the implementation of WHO Growth Standards for Children. She leads the development of smartphone application to promote healthy eating, MyNutriDiari and a positive front-of-pack labelling initiatives. She also involves in the development and revision of the National Plan of Action for Nutrition Malaysia and the National Nutrition Policy of Malaysia .

PLENARY 2



Affordable Nutrition and Economics of Obesity

Adam Drewnowski

Director of Nutritional Science Program, School of Public Health, University of Washington, Seattle, USA

ABSTRACT

Obesity is a socioeconomic issue that has little to do with dietary “choices” at the individual level. For many, those choices were always limited by the local food environment and inadequate purchasing power. The COVID-19 pandemic has brought the pre-existing social disparities into sharper relief. First, multiple components of the food system are under stress, from food supply chains to food demand. Bottlenecks in supply, distribution, and sale of foods have led to a sharp rise in food prices in the US. At the same time, a parallel drop in employment, wages, and incomes has reduced access to healthy foods, leading to lower quality diets. Rising food insecurity in Seattle has been mapped across vulnerable neighborhoods. Spatial analyses of geo-localized data suggest that food insecurity, obesity, and COVID-19 risk fall along the same socio-economic gradient and are concentrated in the same Seattle neighborhoods.

Biography

Adam Drewnowski is a Professor and the Director of the Center for Public Health Nutrition at the University of Washington in Seattle, Professor of Epidemiology at the School of Public Health and the Director of the Nutritional Sciences Program. He also directs the UW Center for Obesity Research. Dr. Drewnowski obtained his MA degree in biochemistry at Balliol College, Oxford, and PhD degree in psychology at The Rockefeller University in New York. He is the author of the Nutrient Rich Foods Index, which helps consumers to identify affordable healthy foods. The Seattle Obesity Study (S.O.S.), funded by the National Institutes of Health, has helped develop new methods to link obesity and social disparities. The SOS combined health survey research with novel methods of spatial analysis to examine the multiple determinants of weights and health. Dr. Drewnowski is the author of more than 300 research publications and advises governments, foundations and the private sector on obesity-related issues.

PLENARY 3

Obesity Pharmacotherapy—Which Treatments Really Work?

CHAIRPERSON



LEONARD KYOUNG KON KIM is a medical graduate from Yonsei University College and undertook his clinical training as a family physician at Severance Hospital in South Korea. He is currently Professor of Department of Family Medicine at Gachon University College of Medicine and Director of VIP Health Promotion Center at Gachon University Gil Medical Center. He has been an executive board member of Korean Society for the Study of Obesity for a long time and is Vice President of Asia-Oceania Society for the Study of Obesity. His major research areas are pharmacotherapy and epidemiology of obesity.

AUGUST 2024

PLENARY 3



Obesity Pharmacotherapy—Which Treatments Really Work?

John Wilding

*Department of Cardiovascular and Metabolic Medicine,
Institute of Life Course and Medical Sciences, Clinical
Sciences Centre, Aintree University Hospital, United Kingdom*

ABSTRACT

Obesity pharmacotherapy has had a difficult history, with many challenges and some effective medicines withdrawn due to concerns over safety. More recently, better understanding of the biological mechanisms underlying body weight regulation have led to the development of more effective treatments, some of which are now entering clinical use. These include treatments targeted for the management of single gene disorders such as metreleptin for the rare condition of leptin deficiency, and setmelanotide for pro-opiomelanocortin (POMC) deficiency and some melanocortin 4 receptor mutations. For the majority of individuals with obesity a range of treatments can be considered. These include older medications such as phentermine and orlistat, which have modest efficacy and where potential adverse events have limited widespread use. Combination therapies such as phentermine / topiramate (only available in the USA) and naltrexone/bupropion have also been approved. One of the most promising areas for research has been to target hormones from the GI tract that have physiological roles in satiety, such as glucagon like peptide 1 (GLP1), peptide YY and amylin; the only approved treatment in this class is liraglutide 3mg, given sc daily. This results in effective weight loss and has been found to improve glucose control in diabetes and reduce the risk of progression to diabetes in people with impaired glucose regulation. Adverse events of nausea tend to resolve over time with gradual dose titration. More recently we have seen the results of studies with the weekly GLP1 RA semaglutide that results in weight loss of 15% or more. In the future we may see even greater weight loss, as GLP1 RAs are combined with other gut hormones, perhaps sufficient to rival the effects of bariatric surgery.

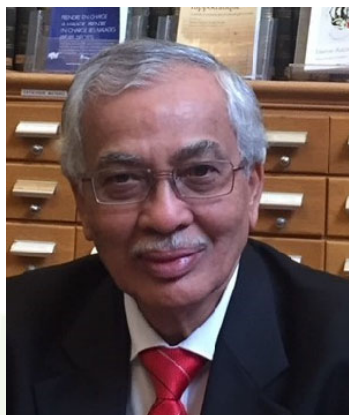
Biography

John Wilding leads Clinical Research into Obesity, Diabetes and Endocrinology at the University of Liverpool. He leads specialist services for severe obesity at Aintree University Hospital – designated a Centre for Obesity Management by the UK and European Associations for the Study of Obesity. He has published over 350 articles related to his research interests in obesity and its complications. He is a past Chair of the UK Association for the Study of Obesity, a member of the Royal College of Physicians Advisory Group on Weight and Health and President of the World Obesity Federation.

PLENARY 4

Obesity Pandemic Turning Points—Hopeful Signs and Promising Direction

CHAIRPERSON



MOHD ISMAIL NOOR is an Emeritus Professor in Nutrition, UKM and a Visiting Professor UniSZA. His major research interest includes energy requirements, obesity, body composition and public health nutrition. He was a member, WHO Consultation on Obesity, Geneva (1997) and on appropriate BMI for Asian populations, Singapore (2002) and FAO/WHO/UNU Expert Consultation on Energy in Human Nutrition, FAO, Rome (2001). He is the President MASO (2019-2021), Secretary IASO (2010-2014), President AOASO (2014-2018) and was elected Fellow, International Union of Nutritional Sciences, FIUNS (2005), Fellow, Academy of Sciences Malaysia, FASc (2006) and Foreign Correspondent, French Academy of Medicine FCFAM (2017).

PLENARY 4



Obesity Pandemic Turning Points—Hopeful Signs and Promising Directions

Boyd Swinburn

School of Population Health, University of Auckland, New Zealand

ABSTRACT

The Obesity Transition schema describes three stages of increasing prevalence patterns within a population and a proposed fourth stage of a decreasing prevalence pattern. What are the signs that some populations are entering the fourth stage and how could this be accelerated? In some high income countries, the rate of prevalence increase has flattened off and a few places have demonstrated decreasing prevalence in young children. While this is the vanguard sub-group to reduce obesity prevalence, in some, but not all instances, this is accompanied by widening disparities by socio-economic status, ethnicity, and rurality.

Two promising approaches to accelerate action on reducing obesogenic environments are by linking with the food sustainability agenda and by mobilising civil society demand for policy action. The Global Syndemic describes how the obesity shares many of the same societal drivers as climate change, especially through food systems. Joining health and sustainability demands for food system transformation will reach a climax at the 2021 UN Food Systems Summit. Bloomberg Philanthropies has pioneered an approach in Latin American countries for creating social demand for food policy actions by supporting movements across civil society and research groups. This approach is now being rolled out in many low and middle income countries.

Biography

Boyd Swinburn is Professor of Population Nutrition and Global Health at the University of Auckland. Boyd trained as an endocrinologist and has conducted research in metabolic, clinical and public health aspects of obesity. His major research interests centre on community and policy actions to prevent childhood and adolescent obesity, and reduce, what he has coined, ‘obesogenic’ environments. He leads the INFORMAS initiative (www.informas.org) to monitor and benchmark food environments in over 50 countries. He established WHO’s first Collaborating Centre on Obesity Prevention at Deakin University in 2003, led two Lancet Series on Obesity in 2011 and 2015, was co-chair of World Obesity Policy & Prevention section 2009-2019 and co-chair of the Lancet Commission on Obesity 2015-2019. He has been an advisor on many government committees, WHO Consultations, and large scientific studies internationally.

PLENARY 5

Gut Microbiota and Obesity: What's New?

CHAIRPERSON



BRIAN OLDFIELD is a Professor, Department of Physiology, Monash University. He heads a research group with interests in obesity that extend from the central neural control of thermogenesis to the interrogation of animal models of anorexia nervosa and bariatric surgery. He also has long standing interests that involve him in organizations and Societies that attempt to better inform different levels of the community in the biology of obesity. He is the current President of the Asia and Oceania Association for the Study of Obesity (AOASO) as well as a Vice President of the World Obesity Federation.

AUGUST 2021

PLENARY 5



Gut Microbiota and Obesity: What's New?

Karine Clément

Nutrition Department, Faculty of Medicine, Pitié Salpêtrière Hospital and Sorbonne Université, Paris, France

ABSTRACT

For more than 20 years (WHO report 1997), the alert has been given concerning the epidemic progression of obesity and the need to study its clinical and pathophysiological complexity, as well as its relationship with metabolic complications (diabetes, dyslipidemia), liver diseases and cardiovascular complications. Obesity is associated with a deregulation of the energy balance in connection with complex interactions between our biology and our lifestyles. This complexity extends to tissue disturbances with metabolic and immuno-inflammatory alterations of the tissues; adipose tissue, liver, muscle, brain as well as the intestine, and inside the intestine the gut microbiota. Experiments of microbiota transfer carried out in animals have made it possible to identify that the intestinal microbiota could indeed be involved in metabolic disorders. The sequencing studies not only showed changes in the composition of the large bacterial phyla, of certain specific bacteria but also quantitative and functional changes. The notion of dysbiosis has been introduced. This intestinal dysbiosis is associated with an unfavorable metabolic profile (increased insulin resistance and dyslipidemia) and increased low-grade inflammation in the blood and tissues in human population. Certain bacterial species have been put forward. Partial amelioration of this dysbiosis can be seen observed after dietary intervention or bariatric surgery. This lecture will review data on the microbiota in obesity and current developments.

Biography

Karine Clément (MD, PhD) is full professor of Nutrition at Pitié-Salpêtrière hospital and Sorbonne University, Paris. Her research unit at INSERM (www.nutriomique.org) works on the pathophysiology of obesity. From 2011-2016, she created and was the director of the Institute of Cardiometabolism and Nutrition (ICAN). KC has been first involved in genetics of obesity and contributed to the identification of monogenic forms of obesity. Her group is also exploring the link between environmental changes (as changes in lifestyle and nutrition), gut microbiota, immune system and tissue functional modifications (adipose tissue fibrosis and inflammation). K Clément and her group contributed to more than 400 highly cited publications. KC contributes to several science advisory boards and international consortia such as METACARDIS a EU project dedicated to the study of gut microbiota in cardiometabolic diseases. She was coordinator of Metacardis for 6 years. KC is a member of several international groups (WOF, EASD, AFERO).



SYMPOSIUM ABSTRACTS



List of Symposium Titles

No.	Abstract ID	Title
SYMPOSIUM 1: Epidemiology of Obesity		
1	S1.1	Obesity from a life course perspective-findings from GUSTO study
2	S1.2	The impact of obesity on cardiometabolic complications and beyond: An immunoepidemiological perspective
3	S1.3	Gender-specific differences in obesity predisposition and management
4	S1.4	Pre-pregnancy BMI, gestational weight gain, gestational diabetes and maternal and birth outcomes: MISC cohort study in UAE
SYMPOSIUM 2: COVID-19 Pandemic & Obesity		
5	S2.1	COVID-19 and Obesity: implications for Asian and Oceanian policy
6	S2.2	Obesity is a potential risk factor for COVID-19: an ecological analysis
7	S2.3	COVID-19 and Diabetes-what's the link?
8	S2.4	Revealing an unseen epidemic: comparison of the diagnosis of obesity using DXA and surrogate anthropometric measurement
SYMPOSIUM 3: Mechanistic Underpinnings of Obesity		
9	S3.1	Recruitment of postprandial thermogenesis in brown adipose tissue
10	S3.3	Famine reactions in pathways to obesity
11	S3.4	Leap2, a hepatic peptide identified in bariatric surgery research, in metabolic regulation
SYMPOSIUM 4: Childhood Obesity		
12	S4.1	Predicting and preventing childhood obesity: do we need more evidence or newer models of care?
13	S4.2	Reduction in overweight and obesity in 3-6 year-old Malaysian children following a multi-component kindergarten-based health behaviour intervention: ToyBox study Malaysia
14	S4.3	Microbiome transfer and childhood obesity
15	S4.4	The first 2000 days in child life: current evidence and policies

List of Symposium Titles

No.	Abstract ID	Title
SYMPOSIUM 5: Psychological Perspectives of Obesity		
16	S5.1	Weight bias and obesity stigma: definitions, prevalence, consequences and strategies for change
17	S5.2	Obesity and sexual functioning
18	S5.3	Translational approach for food seeking behaviour: mouse-monkey-obesity patients
19	S5.4	Precision health: leveraging patient-generated data for personalized behavioral nutrition interventions
SYMPOSIUM 6: Assessment of Obesity and Its Associated Implications		
20	S6.1	Revealing an unseen epidemic: comparison of the diagnosis of obesity using DXA and surrogate anthropometric measurement
21	S6.2	Revisiting proportion of segmental weight in young Japanese female adults
22	S6.3	A web-based, time-use application to assess diet and movement behaviour in Asian school children female adults
SYMPOSIUM 7: Obesity Treatment & Management		
23	S7.1	Setting the multidisciplinary team for morbid obesity
24	S7.2	Anti-obesity drugs before and after bariatric surgery
25	S7.3	The effectiveness of intermittent fasting in body weight management and its clinical applications
26	S7.4	The rewind remission programme with low calorie and reduced carbs diet: A dietetic perspective
SYMPOSIUM 8: Prevention of Obesity		
27	S8.1	Dietary habits and the prevention of obesity in different ethnic groups
28	S8.2	Principle of precaution and circumspection: elements for a strategy of obesity prevention
29	S8.3	Public and private sectors roles in the food environment of Malaysia
30	S8.4	Epidemiology, strategies and real-world actions to prevent obesity in Japan

List of Symposium Titles

No.	Abstract ID	Title
SYMPOSIUM 9: Food Security & Obesity		
31	S9.1	Food insecurity and obesity research and policy: Where do we go from here?
32	S9.2	Food insecurity and the ramifications for health and weight status: An international overview of high-income countries
33	S9.3	Not having food can lead to obesity: is that possible?
SYMPOSIUM 10: Bariatric Surgery		
34	S10.1	Metabolic outcomes of bariatric surgery
35	S10.2	Cost effectiveness of bariatric surgery — why insurance providers should consider coverage
36	S10.3	Latest innovations in bariatric procedures
37	S10.4	History and progress of bariatric surgery in Malaysia
SYMPOSIUM 11: Complications of Obesity		
38	S11.1	What positive changes have we seen in our fight with obesity?
39	S11.2	Obesity and its complications, an overview
40	S11.3	Molecular mechanism of insulin resistance and comorbidities linked to obesity
41	S11.4	Obesity and non-alcoholic fatty liver disease (NAFLD) latest update
42	S11.5	Obesity and cardiovascular disease (CVD)
SYMPOSIUM 12: Lifestyle, Exercise & Diet		
43	S12.1	The role of 24 hour movement behaviours in understanding and responding to the global child obesity pandemic with a focus on Asia-Oceania region
44	S12.2	Structured nutrition in optimizing weight loss
45	S12.3	Abdominal fat reducing effect of exercise training
46	S12.4	How the gut talks to the brain?
47	S12.5	Effective type 2 diabetes management with very low-calorie diet (VLCD)

SYMPOSIUM 1

Epidemiology of Obesity

CHAIRPERSON



NORIMAH A. KARIM retired from the Nutrition Sciences Programme, Faculty of Health Sciences, UKM after more than 30 years of service. She is currently a Professor of Nutrition in the Dept of Nutrition and Dietetics at International Medical University.

Her research expertise includes dietary assessment methods, in particular developing and validating food frequency questionnaire, public health nutrition, community nutrition and development of nutrition education packages. She is a member of TWG Nutrition Research and TWG Dietary Guideline, MOH and is very much involved in the updating of the Malaysian Dietary Guideline 2020. She is the Vice President of the MASO and a council member of NSM.

S1.1 Obesity from a life course perspective-findings from GUSTO study

Johan Eriksson

Yong Loo Lin School of Medicine, National University of Singapore, Singapore

Introduction: There is a global increase in the prevalence of obesity- but it is not only the rise in prevalence of obesity that is alarming — more alarming is that there is a rise in the number of diseases and health outcomes associated with obesity. Obesity is usually classified by using the body mass index or BMI — despite the fact that it is well known that it does not give a very precise picture of the overall adiposity and its health impact.

Objective: The problem with BMI does not apply only to body composition but also to metabolic health in general so using BMI as a marker of adiposity is not optimal today in the age of precision medicine. What seems to be a major player in determining health outcomes is the localization of fat depots something that is not captured by BMI, but by metabolic imaging.

Methodology: Subcutaneous fat tissue consists of the fat visible under the skin and in most people, the majority of body fat is subcutaneous but the subcutaneous tissue cannot store indefinite amounts of fat and when it cannot expand any more — fat spills over to organs not optimized for fat storage like the liver, muscle and heart. Fat storage in these organs is often called ectopic fat and usually associated insulin resistance, lipotoxicity and an increased risk for several metabolic disorders.

Results: Findings from the Singaporean birth cohort GUSTO - launched in 2009 and including over 1200 motherchild pairs- in relation to overweight and obesity and metabolic imaging will be presented. One strength of GUSTO is not the size but the very deep phenotyping including metabolic imaging beginning from the first week of life.

Biography



Johan G Eriksson is Professor specialised in internal medicine and general practice at the University of Helsinki, Finland. In 1995, he initiated Helsinki Birth Cohort Study which is globally unique thanks to its long follow-up from preconception to 80 years of age. Besides life-course epidemiology, he is interested in prevention of type 2 diabetes and related metabolic outcomes. He has over 800 peer-reviewed publications a h-index of 117. From 2019, Prof Eriksson is working full time in Singapore focusing on GUSTO and S-PRESTO birth cohorts as well as Director for Human Development at SICS, A*Star, professor at the NUS Yong Loo Lin School of Medicine and Programme Lead for the Human Potential Translational Research Programme.

S1.2 The impact of obesity on cardiometabolic complications and beyond : An Immunoepidemiological perspective

Dicky L. Tahapary

Division of Endocrinology, Metabolism, and Diabetes, Department of Internal Medicine,

The worldwide prevalence of obesity has been increasing, including in low-to-middle income countries. Interestingly, recent reports suggested that, in contrast to previous belief, this increasing prevalence of obesity has been mainly contributed by the increase of body mass index of people living in rural area. It is important to note that, in comparison to those of urban area, the scarcity of health care resources in rural area might not be sufficient to cope with the increasing problem of obesity-associated cardiometabolic complications. Cardiometabolic complications of obesity can comprise from dysglycemia, dyslipidemia, hypertension to cardiovascular diseases, of which chronic low-grade inflammation and insulin resistance play an important role.

In rural area, not only that changes in lifestyle which leads to a positive energy balance and obesity plays a role, the loss of biodiversity and infectious pressure might also contribute. Recent studies observed the important role of gut ecosystem and immune system on the development of chronic low-grade inflammation in obesity. The higher rate of gut infection among those living in rural area might also shape the risk of cardiometabolic complications of obesity by influencing the balance of the immune system. Our group has previously reported that eradication of helminth infection, a strong inducer of a type 2 immune response, leads to a significant increase in insulin resistance, the main pathogenesis of obesity-associated cardiometabolic complications.

However, the impact of infections to obesity, in general, are deleterious. Acute bacterial or viral infections are associated with increased insulin resistance. Obesity has also been reported to be associated with worse outcomes for several infectious diseases. Recently, studies confirmed that obesity is an independent prognostic factors for severe COVID-19 infection.

In summary, the impact of obesity has been mainly attributed to its impact on cardiometabolic complications. In many low-to-middle income countries, especially among those living in rural areas, despite helminth infections might offer potential protection, other infections might lead to a worse outcome among those with obesity, including the COVID-19.

Biography



◀ **Dicky Tahapary** is an endocrinologist and an Assistant Professor at the Division of Endocrinology, Metabolism, and Diabetes, Department of Medicine, Dr. Cipto Mangunkusumo National Referral Hospital, Faculty of Medicine Universitas Indonesia (RSCM-FKUI). He is currently the Head of The Metabolic, Cardiovascular and Aging Cluster, The Indonesian Medical Education and Research Institute (IMERI-FKUI). After completed his PhD from Leiden University of Medical Centre in 2017, his main research focus has been in the field of obesity, insulin resistance and type 2 diabetes, especially on their association with infectious diseases. He has received multiple grants and published numbers of international publications.

S1.3 Gender-specific differences in obesity predisposition and management

Jennifer Miles-Chan

Human Nutrition Unit, School of Biological Sciences, Faculty of Science, University of Auckland, New Zealand

It has been known for more than a century that sex hormones influence metabolism. Yet current obesity prevention and treatment strategies continue focus on a one-size-fits-all approach, and remain largely ineffective. Indeed, in the age of rapid advancement in personalised medicine, it is perhaps surprising that large knowledge gaps remain in our understanding of how hormonal factors such as the menstrual cycle and hormonal contraception affect energy balance and the regulation of body composition.

International data shows that obesity prevalence in women has increased at an alarming rate, often eclipsing the rate of increase in male obesity – and with rising numbers of young women presenting with obesity at pregnancy, the metabolic effects of this will resonate across future generations to come. Furthermore, women have been shown to engage in less physical activity and respond less favourably to traditional dietary intervention strategies, highlighting the inappropriateness of a gender-neutral approach to obesity management.

Here we will consider how we may be able to tailor obesity and prevention strategies according to sex and gender to optimise outcome – Who is most at risk? Should we consider hormonal contraceptive use when choosing a dietary regime? What are the implications for the transgender population? Do we need to alter exercise recommendations based on sex? And what work remains to be undertaken to address all of the above?

Biography



Jennifer Miles-Chan is a Sir Charles Hercus Health Research Fellow, Senior Lecturer and Director of the Human Nutrition Unit, University of Auckland. Her experience covers a diverse range of settings: from pre-clinical models to epidemiological-type investigations and dietary intervention studies; all focused on deciphering inter-individual variability in energy metabolism, and how this variability relates to inequities in metabolic disease risk. Dr Miles-Chan's current research encompasses several related areas of nutritional energetics, including the influence of gender and sex hormones on metabolic risk, ethnic

disparities in susceptibility to obesity and type 2 diabetes, bioactive food ingredients and diet-induced thermogenesis.

S1.4 Pre-pregnancy BMI, gestational weight gain, gestational diabetes and maternal and birth outcomes: MISC cohort study in UAE

Hadia Mohammad Radwan

College of Health Sciences, University of Sharjah, United Arab Emirates

Introduction: Pre-pregnancy body mass index (PRE_BMI) and gestational weight gain (GWG) constitute the most important factors that influence maternal and infant outcomes. Previous studies have shown that adequate pregnancy weight gain is crucial for optimal outcomes for both mothers and infants.

Objective: To investigate the patterns of weight gain during pregnancy and the relationship between PRE_BMI, GWG, and birth outcome.

Methodology: A prospective cohort study recruited 265 pregnant mothers during their third trimester and their newborns in the UAE. Sociodemographic, lifestyle, maternal, and infant outcome data were collected.

Results: Mean Prepregnancy BMI was $27.4 \pm 6.3 \text{ kg/m}^2$; and 4.3%, 36.3%, 28.6%, and 30.8% of the women were underweight, normal, overweight, and obese respectively. Mean GWG was $11.64 \pm 7.30 \text{ kg}$, and 31.6% of the women had insufficient GWG while 39.5% had excessive GWG. The PRE_BMI was a dependent factor that significantly influenced GWG ($p < 0.000$). For normal and underweight subjects, 20% had excessive GWG. While overweight (49.3%) and obese women (46.6%) gained more than the recommendations. Mean gestational age (GA) was significantly lower among women with excessive GWG as compared to other groups ($P < 0.016$). Logistic regression analysis showed that PRE_BMI, family income, parity, sex of the infant, GA, and gestational diabetes (GDM) were significant predictors of GWG. While PRE_BMI was significantly associated with mother's age, parity, complications during pregnancy, GDM, and eating breakfast daily.

Conclusion: This study revealed alarming prevalence rates of inadequate, mainly excessive, GWG and GDM among the MISC participants. Pre-pregnancy BMI was found a risk factor for both of these conditions (GWG and GDM). In addition, age and regular breakfast consumption were significant determinants of pre-pregnancy BMI. Healthcare providers are encouraged to counsel pregnant women to maintain normal body weight before and throughout pregnancy by advocating healthy eating and increased physical activity in order to reduce the risk of excessive weight gain and its associated complications.

Biography



Hadia Radwan has earned her BSc. and MSc. from the American University of Beirut in Nutrition and Dietetics and her Ph.D. from Teesside University – UK. She is currently working as an Associate Professor, Department of Clinical Nutrition and Dietetics at the College of Health Sciences, University of Sharjah. Her areas of research include Maternal and child nutrition. She was the PI for several research projects mainly “Mother and Infant Cohort Research (MISC)” (2015-2017), as well as another cohort study (2017-2019) “Examining Breastfeeding Self-Efficacy, Infant Feeding Method, and Postnatal Mental Health among Women in the United Arab Emirates: A Cohort Study”. She has many publications in high impact peer reviewed journals.

SYMPOSIUM 2

COVID-19 Pandemic and Obesity

CHAIRPERSON



MOHD FAIRULNIZAL BIN MD NOH is the Head of Nutrition, Metabolism and Cardiovascular Research Centre, Institute for Medical research at National Institutes of Health, Setia Alam. He graduated bachelor and master degree from Universiti Kebangsaan Malaysia and PhD from Cranfield University. He has been carried out research in the area of analytical food chemistry, analytical biochemistry, sensor and biosensor, instrumentations and cardiovascular. Since 2011, he has been working actively on the development of food analysis for the updates of Malaysian Food Composition Database. He has also been working in in the development of sensor/biosensors for identification of TB, heavy metals, iodine in salt, vitamin D and Covid-19. So far, he has three join patents and his group won medals at several technology expo for inventions on Iodine Kit. He is also actively involved as treasurer for Sensor Malaysia. Internationally, he is one of the Country Coordinator for ASEANFOODS. He has more than 60 manuscripts published in local and international journals.

S2.1 COVID-19 and Obesity: implications for Asian and Oceanian policy

Caroline Miller

Director of the Health Policy Centre, South Australian Health and Medical Research Institute, Adelaide, Australia

SARS-CoV-2 is a novel coronavirus causing COVID-19. 2020 has been a race to: understand the virus and the disease; control the spread via non-pharmaceutical interventions; treat those who became unwell; and develop vaccines to reduce the impact. It has been clear that COVID-19 impacts disproportionately. The impacts are greater and the outcomes are poorer for older people and people with chronic health condition. COVID-19 is a syndemic of a communicable and non-communicable diseases. The relationship between obesity and COVID-19 outcomes is clear and compelling – at the individual and population levels. Countries with highest rates of obesity have also seen the poorest outcomes.

The first policy priority is to protect and treat those most at risk, prioritising them for vaccination and protecting them from the virus. Health protection efforts must avoid compounding the problem with measures which are designed to protect the vulnerable but may also compound the problem by reducing opportunity to exercise, creating social isolation or creating stigma. Governments must also move swiftly to take over-due policy action to prevent / reduce obesity. Ultra-processed food and beverage industry have adapted to and capitalized on COVID-19. Comprehensive public health policy approaches are essential to curb these obesity-promoting practices.

Biography



Caroline Miller is a Professor and a qualified in behavioural science, economics and public health. She is an NHMRC Emerging Leader and Heart Foundation Future Leader Fellow. The Health Policy Centre she leads is focussed on non-communicable disease prevention; specialising in tobacco control, obesity and alcohol research. Prof Miller has a specialist focus on over consumption of ultra-processed foods and beverages, including artificially-sweetened beverages. The Centre is also leading a rapid COVID-19 Evidence Synthesis service supporting Australian policy responses to COVID-19. Prof Miller is Vice President (Policy) of the Public Health Association of

Australia and Council Member of the Australian New Zealand Obesity Society.

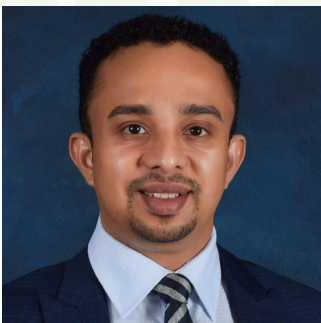
S2.2 Obesity is a potential risk factor for COVID-19: An ecological analysis

Ranil Jayawardena

Department of Physiology, Faculty of Medicine, University of Colombo, Sri Lanka

Obesity is a well-known risk factor for non-communicable diseases such as diabetes and cardiovascular diseases. The emerging evidence suggests obesity is a potential risk factor for communicable diseases including COVID-19. In this presentation, I will discuss the relationship between obesity prevalence of the total adult population and COVID-19 infection and mortality rates in different countries. In our analysis, we found a varied prevalence of obesity that ranged from 2.0% (Vietnam) to 35.0% (Saudi Arabia). Among the selected countries, the highest number of COVID-19 cases per million was documented in Qatar (n = 44,789) while the lowest was reported from Vietnam (n = 11). Highest mortality per million population due to COVID-19 infections occurred in Peru (n = 981), in contrast with the smallest number reported in Mongolia (n = 0). A significant positive correlation ($r = 0.46$; $p < 0.001$) was observed between the total number of COVID-19 infections and the prevalence of obesity. COVID-19 mortality was also significantly correlated ($r = 0.34$; $p < 0.05$) with the prevalence of obesity. Will certainly further elaborate the possible mechanisms for the above-mentioned correlation. An excess reduction in body weight is essential for reducing the spread and improving the outcome of the COVID-19.

Biography



Ranil Jayawardena is a Professor in Nutrition at the Department of Physiology, Faculty of Medicine, University of Colombo and a visiting fellow to the Queensland University of Technology, Australia. Following his medical graduation from the University of Colombo, he completed his MSc from the University of Glasgow, UK and subsequently the PhD focused on Obesity in Queensland University of Technology, Australia. He is a registered nutritionist in Sri Lanka, UK and Australia. He is the leading clinical nutritionist in Sri Lanka with over 15 years of clinical experiences. In addition, he is a very active researcher,

he has nearly 100 full paper publications in international peer-reviewed journals and four books including “Sri Lanka food atlas”. He took part in the national level study on Obesity; [Obesity Reviews 2010] among Sri Lankan adults. He has an H-index of 28 and over 3300 citations. He has received many local and international research awards. In 2018, he received the country prize as the young researcher by the World Academy of Science, Trieste, Italy.

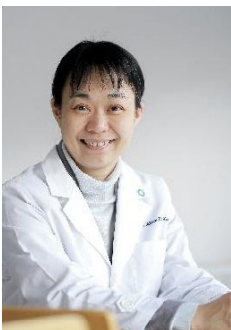
S2.3 COVID-19 and diabetes-what's the link?

Alice Pik Shan Kong

Division of Endocrinology, Department of Medicine and Therapeutics, The Chinese University of Hong Kong, Hong Kong

Obesity, diabetes and COVID-19 are affecting many people across the globe and are closely interconnected. People with obesity and/or diabetes are at increased risk of severe COVID-19 infection. Obesity, in particular visceral obesity, is an independent risk factor for ICU (Intensive Care Unit) care and requirement of mechanical ventilation among individuals infected with COVID-19. Hyperglycemia, even in the non-diabetic range, is shown to be associated with adverse COVID-19 outcomes. The use of anti-diabetic agents adds to the complexity of inter-relationship between diabetes and COVID-19 due to the immunomodulatory effects of some commonly used glucose lowering drugs. For example, metformin, AMPK (AMP-activated protein kinase), suppresses a number of inflammatory pathways whereas DPP-4 (dipeptidyl peptidase-4) inhibitors may have an effect on adaptive immunity. From a cohort of 635 patients with diabetes and confirmed COVID-19 infection in Hong Kong, we found that metformin and DPP-4 inhibitors users had improved outcome compared to their counterparts who were prescribed insulin and sulphonylureas prior to admission. There are still many areas of uncertainty regarding how obesity and diabetes, two commonly co-existing metabolic disorders, can modulate viral-induced immune response and COVID-19 pathogenicity which call for more research in the future.

Biography



Alice Pik Shan Kong's research interests are obesity and diabetes in adults and adolescents. Dr. Kong is the Steering Committee Member of Joint Asia Diabetes Evaluation (JADE) program. She is the Council Member of Diabetes Hong Kong and the former Vice President of Hong Kong Association for the Study of Obesity. She is the Editor-in-Chief of Primary Care Diabetes, Academic Editor of PLOS ONE, International Associate Editor of Technology and Therapeutics and an editorial board member of Current Diabetes Reports. She has presented at numerous local, regional and international meetings and has published over 250 articles in international peer-reviewed journals.

S2.4 Revealing An Unseen Epidemic: Comparison of the diagnosis of Obesity using DXA and surrogate anthropometric measurement

Soo Lim

Division of Endocrinology and Metabolism, Internal Medicine, Seoul National University College of Medicine and Seoul National University Bundang Hospital, Seongnam-city, South Korea

Since December 2019, countries around the world have been struggling with a novel coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). During the COVID-19 pandemic, people have tended to gain weight because of environmental factors imposed by quarantine policies, such as decreased physical activity and increased consumption of unhealthy food. Mechanisms have been postulated to explain the association between COVID-19 and obesity. COVID-19 aggravates inflammation and hypoxia in people with obesity, which can lead to severe illness and the need for intensive care. The immune system is compromised in people with obesity and COVID-19 affects the immune system, which can lead to complications. The inflammatory response, critical illness, and underlying risk factors may all predispose to complications of obesity such as diabetes mellitus and cardiovascular diseases. During the COVID-19 pandemic, social activities have been discouraged and exercise facilities have been closed. Under these restrictions, tailored lifestyle modifications such as home exercise training and cooking of healthy food are encouraged.

Biography



Soo Lim is Professor of Medicine, Department of Internal Medicine at Seoul National University College of Medicine, Seoul, Korea. After obtaining his medical degree at Seoul National University College of Medicine, Seoul, Korea, Dr. Lim completed an internship, residency, and fellowship at the same institution. He obtained the degree of Master of Public Health and received a doctorate in Medicine at Seoul National University College of Medicine. He worked as a research fellow at Massachusetts General Hospital/Harvard Medical School, Boston, USA in 2011-2012. Dr. Lim's research interests focus on biology and pathophysiology related with diabetes mellitus, metabolic syndrome, and fatty liver. He has published more than 300 scientific journal articles in these fields.

SYMPOSIUM 3

Mechanistic Underpinnings of Obesity

CHAIRPERSON



HAMID JAN BIN JAN MOHAMED is a Professor and lectures at the Nutrition and Dietetics Programme, Universiti Sains Malaysia (USM) since year 2007. He joined this institution immediately after completing his PhD (Nutrition) at King's College London, United Kingdom. He holds a Masters Degree in Nutrition from UKM and Bachelor Degree in Nutrition and Community Health from UPM.

Dr Hamid works closely with the Ministry of Health Malaysia by being committee member of the Technical Working Group for Nutrition Guidelines (Children/Adults/Elderly) and other consultative activities. Dr Hamid is currently the Chairman Technical Working Group (Nutrition Research) for the Ministry of Health Malaysia.

S3.1 Recruitment of postprandial thermogenesis in Brown Adipose Tissue

Brian Oldfield

Department of Physiology, Faculty of Biomedical and Psychological Sciences, Monash University, Australia

Introduction: The concept of postprandial thermogenesis, a process by which elevated energy expenditure after a meal tends to negate or balance the impact of excessive caloric intake, is not new. However, the involvement of brown adipose tissue (BAT), the relevance to humans and the mechanisms via which the process is recruited remain poorly resolved.

Objective: Here we use animal models and a raft of technologies to better define the mechanistic underpinnings of the neural links between the brain, where elevated glucose is used as a surrogate marker of a meal, and BAT.

Methodologies: We use transsynaptic retrograde viral (Bartha strain of pseudorabies virus, Ba-PRV) tracing in combination with patch clamp electrophysiology to consider glucose activation of BAT-directed neurons in the hypothalamus. Subsequent pharmacological or chemogenetic (DREADD) loss-of-function and activation manipulations are employed to define the function of these pathways.

Results: We show that POMC-containing neurons constitute the major hypothalamic pathway directed multisynaptically to BAT and that there is a redundancy in the transfer of this information with a number of parallel neural circuits conveying information through key hypothalamic centres to BAT. Moreover, chemogenetic stimulation of POMC neurons is sufficient to rapidly activate BAT thermogenesis via a MC3/4 dependent pathway.

Conclusion: These studies provide a framework for the relationship between the gut, brain and the neural control of BAT in the mediation of postprandial thermogenesis. As such they represent potential targets that may potentially be manipulated in order to better control body weight.

Biography



Brian Oldfield is a Professor, Department of Physiology, Monash University. He heads a research group with interests in obesity that extend from the central neural control of thermogenesis to the interrogation of animal models of anorexia nervosa and bariatric surgery. He also has long standing interests that involve him in organizations and Societies that attempt to better inform different levels of the community in the biology of obesity. He is the current President of the Asia and Oceania Association for the Study of Obesity (AOASO) as well as a Vice President of the World Obesity Federation.

S3.3 Famine reactions in pathways to obesity

Abdul Dulloo

Laboratory of Nutritional Energetics and Body Composition Regulation, University of Fribourg, Switzerland

Over the course of their evolutionary history, humans, like many other mammalian species, have been faced with periodic food shortages and famine. Consequently, it is plausible that what constitutes the 'normal' physiology of weight regulation must have evolved within the constraints of large fluctuations of body weight and body composition. In this context, the control systems underlying body composition autoregulation probably evolved to optimize not only the survival capacity of the individual during prolonged periods of negative energy balance, but also the rapid restoration of the individual's survival capacity when food availability improves – in preparation for the next period of food scarcity.

To understand the physiology underlying the recovery of survival capacity during weight regain, we have applied a systems approach to the analysis of data on longitudinal data on changes in body composition, basal metabolic rate and food intake during weight loss and weight recovery from the classic Minnesota Starvation Experiment. This has provided rare insights into the multitude of control systems that govern the regulation of body composition during weight regain. In particular, they have underscored an internal (autoregulatory) control of lean-fat partitioning (highly sensitive to initial adiposity) which operates during weight loss and weight regain, and (ii) revealed the existence of feedback loops between changes in body composition and the control of food intake and adaptive thermogenesis for the purpose of accelerating the recovery of fat mass and lean mass.

It is discussed how these control systems, which constitute the famine-related adaptations or 'famine reactions', manifest themselves to varying degrees in pathways to obesity and in undermining obesity therapy. Furthermore, their integration provides a system physiology framework for research towards elucidating proteostatic and adipostatic mechanisms that control hunger-appetite and adaptive thermogenesis, with major implications for a better understanding (and management) of obesity.

Biography



Abdul G. Dulloo studied at University of London (UK) for a Bachelor degree in Physiology and a PhD degree in Nutrition, followed by a 2-year postdoctoral research fellowship at Harvard Medical School (USA). He subsequently worked as a research associate in Physiology at University of Geneva, before joining University of Fribourg (Switzerland) as a lecturer in Physiology and Nutrition, and establishing the Laboratory of Nutritional Energetics and Body Composition Regulation. His current research interests (in Switzerland and in his native island of Mauritius)

center upon phenotyping for thrifty (energy conservation) metabolic traits in human predisposition to obesity and cardiometabolic diseases.

S3.4 Leap2, a hepatic peptide identified in bariatric surgery research, in metabolic regulation

Masamitsu Nakazato

Department of Internal Medicine, University of Miyazaki, Miyazaki, Japan

Introduction: The molecular mechanisms of energy balance are coming to light by the recent robust progresses in the molecular biology and peptide chemistry. After our discovery of ghrelin, an orexigenic peptide produced in the stomach, we have thoroughly investigated its multifaced roles in energy homeostasis including glucose metabolism and adipogenesis.

Objective: In 2018, liver-expressed antimicrobial peptide 2 (LEAP2), a 40-amino acid peptide produced in the liver, was identified to be an endogenous antagonistic peptide against ghrelin.

Methodology: We identified that LEAP2 administration to mice abolished ghrelin-induced food intake, blood glucose elevation, growth hormone release, and reduction in body temperature (Islam MN, Nakazato M. et al., J Endocrinol. 2020).

Results: Ghrelin administration reduced LEAP2 biosynthesis in the liver. We have found that plasma LEAP2 is positively correlated to waist circumference, body fat weight, HOMA-R, fasting blood glucose, and fatty liver index in type 2 diabetic patients. In patients underwent bariatric surgery, plasma LEAP2 was decreased in accordance with the degrees of reductions in body weight, visceral fat area, and serum triglyceride.

Conclusion: The ghrelin-LEAP2 axis may regulate energy homeostasis via the stomach-liver-brain crosstalk. Researchers on novel peptides could open a new way for our better understanding of organ network and pathogenesis of metabolic disorders.

Biography



Masamitsu Nakazato received his M.D. degree from Miyazaki Medical College in Japan in 1980, where he was awarded a Ph.D. degree in 1984. He is the professor of the Division of Neurology, Respiriology, Endocrinology and Metabolism in the department of Internal Medicine at the University of Miyazaki. His research interest is identification of novel peptides and lies in a wide area of obesity science that working on molecular regulation of feeding, obesity mechanism, treatment strategy and more. Among them, he is best known as a researcher on a peptide (ghrelin) that has action enhancing food intake and has abundant experience in research and development of peptide drugs against obesity and diabetes. Dr. Nakazato continues to translational research based on elucidation of various functions of peptide.

SYMPOSIUM 4 Childhood Obesity

CHAIRPERSON



JOHANNA RALSTON has worked in global noncommunicable diseases (NCDs) and their risk factors for over two decades. She has served as CEO of World Obesity Federation since 2017, focusing on changing the narrative and elevating obesity on the global agenda. WOF is the lead organization in official relations with the World Health Organization on obesity, working towards a common understanding of obesity as both risk factor and disease, with national plans and accelerated action. Under her leadership WOF has tripled its budget and significantly extended its impact. From 2011-2016 Johanna served as CEO of World Heart Federation, the main CVD organization in official relations with WHO and a founder of NCD Alliance. Johanna's work included mobilizing the CVD community around the NCD agenda and WHO initiatives including the Global Action Plan on NCDs 2013-2020 and Global HEARTS, as well as a shared strategy to address rheumatic heart disease. Johanna also served as Vice Chair, steering group member and Interim Director of NCD Alliance during that period. From 1999 until 2011 Johanna was Vice President of Global Strategies at American Cancer Society, overseeing global advocacy and building the global capacity building program to strengthen community based cancer and tobacco control in LMICs. She is also a fellow at Geneva Centre for Security Policy, leading the course on global health security.

A dual citizen of Sweden and the US, Johanna received a nonprofit fellowship to attend the Harvard Business School Advanced Management Program and also studied public health at Johns Hopkins, after a first degree in literature. She serves on various committees and boards including G02 Foundation (formerly the Lung Cancer Alliance), World Health Organization NCD Civil Society Working Group, the NCDA "Our Views Our Voices" steering group and the Centre for Food Policy (UK) advisory group, and has served on various World Economic Forum councils and working groups. Johanna is also a proud cancer survivor and has been in remission from MS for over two decades. She is currently residing in Boston with her family.

S4.1 Predicting and preventing childhood obesity: do we need more evidence or newer models of care?

Fabian Yap Kok Peng

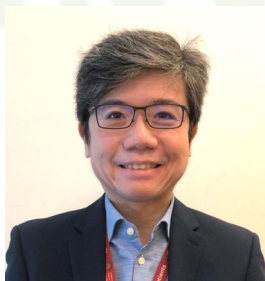
Head & Senior Consultant, Paediatric Endocrinology, KK Women's and Children's Hospital, Singapore

Obesity is a complex and wicked problem. As it involves physiology and possibility of underlying disease, clinicians tend to approach obesity from a diagnostic and treatment perspective. However, because of its scale and impact on population health and healthcare, authorities view obesity in broader systemic and economic terms. Yet, obesity fundamentally involves behaviour, choices and life-courses, and therefore may be best considered from a developmental perspective using bioecological models.

Once obesity develops, management challenges will arise due to multiple behavioural, physiological and reinforcing feedback loops. Prediction models for childhood obesity exist but most have not been externally validated or have methodological limitations, restricting their implementation for the prevention of childhood obesity. Systematic reviews of randomised controlled trials show that strategies to change diet and activity levels are effective in making modest adiposity reductions in younger children, but little evidence is found among adolescents. Even as we seek cleverer prediction and prevention models, it is clear that new care models are needed.

Maternal and child health systems designed in the twentieth century to tackle under nutrition and communicable diseases may not be able to deal with twenty-first century challenges of over nutrition and non-communicable diseases. Intergenerational cycles of hunger and poverty are now complicated by vicious cycles of metabolic disease. Altogether, these underscore the need to move interventions upstream, to integrate and repurpose maternal and child health systems, so as to secure optimal metabolic health for mother and child in the years to come.

Biography



Fabian Yap is the Head of Endocrinology and Senior Consultant in the Department of Paediatrics at KK Women's and Children's Hospital. He received his Paediatric membership in 1998 and Advanced Specialty Training certification in Paediatrics in 2001. He subsequently completed Clinical Fellowship in Paediatric Endocrinology at the Institute of Endocrinology and Diabetes at the Children's Hospital at Westmead in Sydney where he trained from 2002 to 2003. His special clinical interest is in the management of childhood growth and puberty disorders. His research interest focuses on the early origins of metabolic health and disease, where he is now working to translate evidence into new models of care. He is the Lead for Paediatrics and adjunct Associate Professor at the Lee Kong Chian School of Medicine at the Nanyang Technological University in Singapore. He also contributes to medical education in the SingHealth Academic Clinical Program at the DukeNUS Medical School.

S4.2 Reduction in overweight and obesity in 3-6 year-old Malaysian children following a multi-component kindergarten-based health behaviour intervention: ToyBox Study Malaysia

E. Leigh Gibson¹, Bee Koon Poh², Whye Lian Cheah³, Denise Koh⁴, Julia Ai Cheng Lee⁵, Abd Talib Ruzita², Cecilia A Essau¹, Sue Reeves⁶, Carolyn Summerbell⁷

¹Department of Psychology, University of Roehampton, United Kingdom; ²Nutritional Sciences Programme, Centre for Community Health Studies (ReaCH), Universiti Kebangsaan Malaysia, Malaysia; ³Faculty of Cognitive Sciences and Human Development Universiti Malaysia Sarawak (UNIMAS), Malaysia; ⁴Sport and Recreation Programme, Centre for Education and Community Well-being, Universiti Kebangsaan Malaysia, Malaysia; ⁵Faculty of Cognitive Sciences and Human Development Universiti Malaysia Sarawak (UNIMAS), Malaysia; ⁶Department of Life Sciences, University of Roehampton, United Kingdom; ⁷Department of Sport and Exercise Sciences, Durham University, United Kingdom

Introduction: Interventions focusing on young children are needed in Malaysia to prevent the rise in obesity. ToyBox Study Malaysia is a multi-component, family-involved intervention to improve energy-balance related behaviours, in 3-6 year-old kindergarten children. Based on the European ToyBox-Study, the intervention was delivered in 2017-2018 through training of kindergarten teachers, with environmental adaptations, and focused on improving four target behaviours: drinking more water, eating healthily, reducing sedentariness and increasing physical activity.

Objective: To examine the effect of the intervention compared to the control group on anthropometric indicators of overweight and obesity in kindergarten children.

Methodology: The intervention lasted 24 weeks, with a focus on each behaviour for 4-week periods, followed by 2-week repetition periods. Kindergartens were recruited from those managed by the Community Development Department (KEMAS), Malaysia, sampling from three states with different urbanisation and ethnicities: Kuala Lumpur (10 intervention, 13 control), Selangor (5 intervention, 5 control), and Sarawak (7 intervention, 8 control), with random allocation to group. Anthropometric outcomes were examined in 812 children who completed either the intervention (n=403) or control (n=409) conditions (dropout: 9%, 11%, respectively). Changes in age- and sex-standardised body mass index (BAZ) were compared between groups in children who were overweight or obese (BAZ at least 1; intervention n=65, control n=72).

Results: In children who were overweight or obese, BAZ decreased in the intervention group but not in the control group, group x pre/post interaction, $p=0.026$, $\eta^2=0.04$. This effect was confirmed by analysis of covariance adjusting for baseline BAZ; post-intervention estimated marginal means, intervention=1.96, SE=0.102; control mean=2.29, SE=0.097. The intervention also significantly reduced BAZ in children with obesity (BAZ ≥ 2 ; n=33) relative to control (n=42), $p=0.007$, $\eta^2=0.10$.

Conclusion: Thus, ToyBox Study Malaysia appears to be efficacious in reducing overweight and obesity in young children.

Biography



Leigh Gibson, BSc, PhD, C Psychol, R Nutr, AFBPsS, FHEA, is an Associate Professor in Biopsychology at the University of Roehampton, London. After a BSc in Psychology and Physiology, University of London, and a PhD and post-doc at the School of Psychology, University of Birmingham on biopsychological influences on appetite, Leigh held research posts at the Institutes of Neurology and Psychiatry, London, and UCL. His research addresses processes governing normal and abnormal eating, and their interaction with stress and cognitive and emotional well-being. Leigh is PI on ToyBox Study Malaysia, a kindergarten-based intervention to reduce obesity and improve health behaviours.



S4.3 Microbiome transfer and childhood obesity

Wayne Cutfield

The Liggins Institute, University of Auckland, New Zealand

There is a global childhood obesity pandemic. In New Zealand, one in three children are overweight or obese when they start school. Obesity treatments for children have provided very limited benefit that are usually not sustained. Fecal microbiome transfer (FMT) from a lean mouse to an obese mouse leads to major weight loss in the obese mouse. The gut microbiome is thought to influence adiposity through a range of different mechanisms that include increased calorie absorption, circulating proinflammatory short chain fatty acids, lipogenesis and increased appetite. FMT from healthy non-obese donors has not been trialled to treat childhood or adolescent obesity.

We conducted a randomized, double blinded, placebo-controlled FMT trial in obese adolescents (aged 14-18 years) with six months follow-up. Treatment consisted of a single course of oral encapsulated fecal microbiome from 4 healthy lean donors of the same sex or saline placebo. Participants were not placed on a calorie restriction diet but were encouraged to eat a healthy diet.

Eighty-seven participants (59% female adolescents, mean [SD] age 17.2 [1.4] years) were randomized 1:1, in groups stratified by sex, to FMT (42 participants) or placebo (45 participants). There was no effect of FMT on BMI standard deviation score at 6 weeks however there was a reduction in abdominal adiposity (DXA derived android to gynoid ratio) throughout the follow-up period. Most impressively in participants with metabolic syndrome at the start of the study there was greater resolution of this condition (18 to 4 cases) compared with placebo (13 to 10 cases) by 26 weeks (adjusted odds ratio, 0.06; 95% CI, 0.01-0.45; P = .007). There were no serious adverse events recorded throughout the trial.

Further trials are needed to confirm these results and identify organisms and mechanisms responsible for mediating the observed benefits. In addition, the combined effects of a calorie reduction diet with FMT needs to be assessed.

Biography



Wayne Cutfield is Professor in Paediatric Endocrinology at the Liggins Institute, University of Auckland and practising paediatric endocrinologist at Starship Children's Hospital a national referral centre. He is currently Director of A Better Start National Science Challenge, one of 11 large scale government research initiatives that focuses on the health and well-being of children. Previously he was Director of the Liggins Institute, the University of Auckland's largest large scale research institutes with a focus on the developmental origins of health and disease. He is a former President of the Asia Pacific Paediatric Endocrine Society. He has published more than 280 peer reviewed manuscripts in leading journals that include the New England Journal of Medicine and the Lancet. He was featured in the perspectives section of the Lancet in 2015. He is a clinical researcher who leads research teams currently addressing the role of the microbiome in determining weight gain, metabolism and well-being, and the early prevention of childhood obesity.

S4.4 The first 2000 days in child life : Current evidence and policies

Abdullah Mamun

Institute for Social Science Research, Faculty of Humanities and Social Sciences, University of Queensland, Australia

The first 2000 days of a child life that occurs between a woman's pregnancy and her child's fifth birthday is a critical time for physical, cognitive, social and emotional health. What happens in the first 2000 days of life has a significant impact on future development, health, learning and overall wellbeing. For example, early life experiences are related to obesity, elevated blood pressure and depression in 20-40 years olds; predictive of coronary heart disease and diabetes in 40-60 years olds, and related to premature ageing and memory loss in older age groups. In this study, three aspects of early life exposures are further explored. Firstly, define whether there is an optimal timing of early prevention of chronic diseases and risk factors? Is this gestational period? First 1000 days of life? First 2000 days of life? Or other critical windows are important for future health and wellbeing. Secondly, provide latest epidemiological evidence on this early life exposures and its short and long-term impact based on longitudinal cohort studies and randomised controlled trials. Finally, provide examples of current policies and practices that are in place to implement the concept of early life exposure such as first 2000 days of a child life.

Biography



Abdullah Mamun (Mamun) has had a career-long commitment to furthering understanding of the aetiology, development and progression of chronic diseases and risk factors using advanced methodology that have value in measuring intervention effects for disadvantaged and vulnerable populations. Mamun is a life course epidemiologist and biostatistician with expertise in modelling the life course experience of illness and disease, with a specific focus on risk factors (obesity, diabetes), health services, and patient outcomes. He is an internationally recognized leader who has significant impact on life course research,

from understanding the developmental stages of human life, to intergenerational perspectives on health and wellbeing. He published over 270 peer reviewed articles, over 20,000 citations and with a h-index of 60.

ONLINE PROFILE: <https://researchers.uq.edu.au/researcher/1318>.



SYMPOSIUM 5

Psychological Perspectives in Obesity

CHAIRPERSON



FIRDAUS MUKHTAR is a Professor in clinical psychology (qualified in 2003) and currently hold a post as a Deputy Dean at School of Graduate Studies, Universiti Putra Malaysia. She was graduated from University of Queensland, Brisbane (PhD, 2007), University of Edith Cowan, Perth (Master of Clinical Psychology, 2003), and International Islamic University Malaysia (BHSc Psychology, 1999) in which her PhD thesis was related to Group Cognitive Behavior Therapy for Unipolar Depression. She was the first secretary in Malaysian Society of Clinical Psychology. In 2011-2013 she was appointed as WHO CBT Consultant for the country to develop a CBT manual to manage chronic medical illness at primary care and gave intensive CBT training to Family Medicine Specialists. In 2012, L'oreal Malaysia has awarded her as Young Women Scientist for her vast contribution in research related to depression, anxiety and weight management.

Since 2000, she has trained both CBT and DBT to many psychiatrists, clinical psychologists, counsellors, medical specialists (Family Medicine, Paediatrics, Otorhinolaryngology etc), allied health professionals, undergraduate and postgraduate trainees, and community at large, not just in Malaysia but also in some other countries in South East Asia. She has published over 50 scientific articles and CBT books and has been appointed as Subject Matter Expert by many government and private industrial collaborators.

A mother of six children, her principle is to expect the best but be prepare for the worst and choose to be kind.

S5.1 Weight bias and obesity stigma: Definitions, prevalence, consequences and strategies for change

Ximena Ramos Salas

Director of Research & Policy, Obesity Canada, University of Alberta, Canada

Weight bias refers to our personal negative attitudes and beliefs about weight that can affect our understanding, actions, and decision making. When we act on our weight biased beliefs (stigma), it can result in weight-based discrimination. Weight-based discrimination refers to the unfair treatment that people with obesity experience across their personal and professional lives. In the US, weight discrimination has increased by 66% over the past decade and is comparable to rates of racial discrimination, especially among women. Weight-based discrimination occurs across life domains, such as employment, schools, health care and interpersonal relationships, ranges from 19.2% among individuals with Class I obesity (BMI 30-35 Kg/m²) to 41.8% among individuals with severe obesity (BMI > 35 Kg/m²). The consequences of weight bias and stigma are mostly documented in the adult population; however, emerging studies demonstrate that many of the same psychological factors and emotional responses are at play within the pediatric population. Moreover, investigators have found that weight-based teasing in childhood places children and adolescents at increased risk for excess weight gain and fat gain throughout their developmental period. This presentation will illustrate how weight bias, stigma and weight-based discrimination illustrate can impact health and social outcomes such as housing, employment, income, social relationships, psycho-social or behavioural responses, as well as overall morbidity and mortality. Evidence-based recommendations on how to reduce weight bias, stigma and discrimination in healthcare settings and policy as outlined in the new Canadian Adult Obesity Clinical Practice Guidelines will be shared and discussed.

Biography



Ximena Ramos Salas, PhD in Public Health, University of Alberta, Canada, Director of Research & Policy at Obesity Canada and consultant with the European Association for the Study of Obesity and the World Health Organization (Europe). Ximena coordinated the development of the 2020 Canadian clinical practice guidelines for the management of obesity in adults and co-authored the chapter on reducing weight bias and obesity stigma. She is founding member of Obesity Canada's weight bias and obesity stigma scientific committee, co-chair of the World Obesity Federation Working Group on Weight Bias and Stigma, and member of

The Obesity Society Policy Committee.

S5.2 Obesity and sexual functioning

Hatta Sidi

Department of Psychiatry, Universiti Kebangsaan Malaysia Medical Centre, Malaysia

Obesity which now affected more than 1 billion human population has now become a global public health issue and problems of an epidemic proportion. Obesity may reduce life expectancy (LE) by seven years at the age of 40 years. Increased body-mass index (BMI) and obesity is now the 6th the most significant risk factor adding to the overall burden of disease worldwide. Overweight and obesity may cause many psychological issues related to self-esteem, self-confidence, and sexual performance. It also increases the risk of erectile dysfunction (ED) for a satisfactory sexual relation by 30–90% as compared with normal-weight subjects. Furthermore, patients with ED tend to be heavier, which may cause discomfort sensation to his partner below on the missionary position's sexual intercourse. With a greater waist than subjects without ED, they are more likely to be diabetic, hypertensive and hypercholesterolemic. The metabolic syndrome typified by a clustering of those risk factors is associated with blunt insulin response and is associated with poor sexual functioning. Likewise, women with the metabolic syndrome have an increased prevalence of female sexual dysfunctions (FSD) as compared with matched control women. Behaviour activation (BA) in a form of lifestyle changes aimed at lowering body weight and enhancing physical activity. Subsequently, it will improve both ED and FSD, LE and longevity. Improving our lifestyles primarily by focussing on regular and consistent physical activity and maintaining a healthy diet are effective and safe ways to improve endothelial functions. They may also improve sexual functioning in both sexes.

Biography



Hatta Bin Sidi is a senior consultant psychiatrist and lecturer in the Department of Psychiatry, Universiti Kebangsaan Malaysia Medical Centre (UKMMC). He has almost 25 years clinical experiences in lecturing in UKM and treating patients with mental health problems and sexual dysfunction. He had authored more than 160 scientific research papers and books and is one of the Reviewer Editor for Frontier journals. Dr Hatta is the former editor-in-chief of ASEAN Journal of Psychiatry (2008 – 2018).

S5.3 Translational approach for food seeking behaviour: Mouse-Monkey-Obesity patients

Hyung Jin Choi

Department of Biomedical Sciences & Department of Anatomy and Cell Biology, Seoul National University College of Medicine, Seoul, Republic of Korea

Introduction: Most of the obesity studies related to eating behavior are only focused on food consumption. However, eating behavior consists of multiple phases.

Objective: We focused on why and how food seeking behaviors are performed among mouse, non-human primates, and humans.

Methodology: In the mouse model, recent studies discovered that hypothalamus, specially ARC arcuate nucleus and LH lateral hypothalamus are main drivers of feeding behavior. In ARC, two specialized neurons AgRP, and POMC neurons receive hormonal and nutritional signals and send them to the secondary neurons. And the AgRP neurons have been believed to be the major driver of feeding behavior. In LH, various neurons transfer signals from ARC neurons to many other parts in the brain to drive feeding behavior. We aimed to investigate both ARC and LH neurons, using multi-phase specific behavior paradigm, real-time neuron activity monitoring (fiber photometry) and real-time neuron activity modulation (optogenetics).

Results: The results regarding the role of ARC neurons and LH neurons on food seeking behavior will be presented. In addition, our tools and strategy regarding food seeking behavior research for monkeys and humans will be presented. In our non-human primate study, we developed a novel method to examine and assess the food seeking behavior by different behavioral phenotypes. Also, we are currently developing wireless neuron activation devices to modulate the food seeking behavior based on the two major neurons. To investigate the complexity of eating behavior in humans, we utilized functional MRI, cognitive test, buffet test and eating behavior analysis using video recordings.

Conclusion: Accordingly, we are exploring the fundamental cause of obesity by asking "why are we seeking so much food?" among mouse, non-human primates, and humans. The translational research strategy integrating three different models, will allow us to connect the gap between basic and clinical research and discover the fundamental treatment for obesity.

Biography



Hyung Jin Choi is a Professor in endocrinology clinic, he is focused on innovative clinical and animal model researches aimed to investigate obesity and eating behaviors. He has a master degree on internal medicine. Doctor degree on molecular and genomics. Endocrinology training in Seoul National University Hospital. Clinical professor in Chungbuk National University Hospital. He has total of 86 peer-reviewed papers published (H-index=31). Major publications include Diabetes Care (IF=16, as major author) and Nature Nanotechnology (IF=32, as coauthor).

S5.4 Precision health: Leveraging patient-generated data for personalized behavioral nutrition interventions

Marissa Burgermaster

Dell Medical School, Austin College of Natural Sciences, The University of Texas, Texas, USA

The ubiquity of smartphones has led to an explosion of patient-generated health data and the potential to use these data for precision health. In this talk, I will discuss how patient-generated diet data can be leveraged in support of personalized nutrition interventions to help people prevent and manage chronic diseases, like type 2 diabetes. In particular, I will focus on how nutrition researchers and practitioners can engage patients from underserved communities in collecting patient-generated data and how to evaluate these efforts. I will conclude with a discussion of additional data sources that might support precision behavioral nutrition.

Biography



Marissa Burgermaster is an Assistant Professor of Nutritional Sciences in the College of Natural Sciences and of Population Health in Dell Medical School at The University of Texas at Austin. Her research leverages patient-generated data and technology to improve nutrition and health equity. Dr Burgermaster holds a PhD in Behavioral Nutrition from Columbia University, where her research at Teachers College's Tisch Centre for Food, Education, & Policy focused on improving the evaluation of school-based childhood obesity prevention interventions. Dr Burgermaster completed a postdoctoral fellowship in biomedical informatics at Columbia University Medical Centre where she developed and evaluated diabetes management.

SYMPOSIUM 6

Assessment of Obesity and Its Associated Implications

CHAIRPERSON



POH BEE KOON is Professor of Nutrition at Universiti Kebangsaan Malaysia. She is Chair of the Centre for Community Health Studies (ReaCH) at Faculty of Health Sciences. She has more than 20 years of research experience that involves multi-disciplinary and multi-country projects. Her research areas focus on childhood and adolescent nutrition, and her projects covers surveys, observation and intervention studies. Prof Poh leads many international grants, including those funded by United Kingdom Medical Research Council, United Nations' International Atomic Energy Agency (IAEA), and International Development Research Centre (IDRC Canada). She is Principal Investigator of South East Asian Nutrition Surveys (SEANUTS) Malaysia, a nationally-representative survey on nutritional status of children; and Co-Principal Investigator of ToyBox Study Malaysia, an intervention aimed at reducing obesity rates through improving preschoolers' healthy eating and physical activity. She also leads studies involving stable isotope work to assess body composition and energy expenditure among healthy individuals as well as in paediatric cancer patients.

Prof Poh is Editor-in-Chief of the Malaysian Journal of Nutrition. She has won numerous awards, including International Nutrition Foundation–Ellison Medical Foundation Short-term Fellowship and IAEA Nobel Peace Prize Fund Schools in Nutrition fellowship. She is a Fellow member of Nutrition Society of Malaysia, and Life member of Malaysian Association for the Study of Obesity.

S6.1 Revealing an unseen epidemic: Comparison of the diagnosis of obesity using DXA and surrogate anthropometric measurement

Erwin Christianto¹, Marc K. Smith², Jonathan MD Staynor³

¹*Clinical Nutrition Specialist, Eka Hospital, Indonesia*

²*Body Composition Technologies, Pty Ltd, South Perth, Western Australia, Australia*

³*School of Human Sciences (Exercise and Sport Science), The University of Western Australia, Crawley, Western Australia, Australia*

Objective: Indonesia's dramatic rise in chronic disease belies their relatively low obesity prevalence. This study provides normative iDXA and anthropometry measures in an Indonesian cohort. We also compare obesity prevalence determined by traditional measures.

Methods: 2623 Indonesian adults were measured by an iDXA and had waist and hip circumferences collected. Normative data were stratified by sex and age. Obesity prevalence was compared using body mass index (BMI) and body fat percentage (BF%). Specificity, sensitivity, and Youden's Index evaluated the ability of cut-off values to identify individuals with high visceral adipose tissue (VAT).

Results: Overweight and obese prevalence by BF% was 72 % for males and 63 % for females. BMI incorrectly categorized 40 % of obese individuals as normal/overweight. Waist circumference provided the highest Youden's Index (0.69–0.73), identifying 91% of Indonesians with high VAT mass.

Conclusions: The rise of chronic disease is potentially due to high BF% and VAT mass. Compared with criterion iDXA BF%, obesity prevalence is severely underestimated by BMI. Measuring waist circumference is recommended in clinical settings due to its ability to identify participants with high VAT mass.

Biography



Erwin Christianto finished training as medical doctor in 1998, from Brawijaya University in Malang. Graduated master of science in clinical nutrition in 2006 from Universitas Indonesia. Board certified as physician Nutrition Specialist in 2007. Currently head of Nutrition department and Chair of medical committee EKA Hospital Pekanbaru.



S6.2 Revisiting proportion of segmental weight in young Japanese female adults

Masaharu Kagawa

Institute of Nutrition Sciences, Kagawa Nutrition University, Saitama, Japan.

Introduction: Estimation of segment mass is important in assessment of nutritional status of specific group of populations such as amputees. While there are reference values for a proportion of body segments, many reported from Western population who are likely to differ in body proportion to Asians.

Objective: To investigate proportion of segment mass in young Japanese female adults.

Methodology: Two datasets of healthy young Japanese female university students (dataset 1: $n = 75$, aged between 19 – 22 years; dataset 2: $n = 51$, aged between 18 – 22 years) were utilized for the present study. All participants underwent detailed anthropometry using the international protocol and dual energy x-ray absorptiometry (DXA: Lunar Prodigy, GE) after obtaining a written informed consent. Proportions of segmental weights determined from DXA were compared with previously reported values.

Results: Two datasets were comparable in age, stature and body mass but significantly differ in percentage body fat (%BF) ($p < 0.01$). Average proportions of segment weights and fat mass (FM) of arms, legs, trunk and head regions were $9.2 \pm 0.6\%$ and $9.1 \pm 1.0\%$, $35.5 \pm 1.7\%$ and $39.7 \pm 4.0\%$, $46.7 \pm 1.7\%$ and $46.9 \pm 4.1\%$, and $8.6 \pm 0.8\%$ and $4.2 \pm 0.6\%$ respectively. Proportional weights and FM of legs and trunk regions were however significantly ($p < 0.05$ or $p < 0.01$) different between the datasets. Observed proportions of segmental weights were significantly different from previously reported in literatures ($p < 0.01$).

Conclusion: Young Japanese female adults had a different proportion of segment weight to previously reported. Further investigation to determine a population-specific segmental weight proportion may be warranted.

Biography



Masaharu Kagawa is an Associate Professor of the Institute of Nutrition Sciences at Kagawa Nutrition University in Japan. Masa is a Registered Public Health Nutritionist of Nutrition Society of Australia (NSA) and the first and the only Level 4 (Criterion) anthropometrist accredited by the International Society for the Advancement of Kinanthropometry (ISAK). Masa's research interests include all topics associated with anthropometry and body composition assessments in the fields of Public Health and Nutrition, particularly in relation to obesity and health screening, body image, maternal and child health, and sports science.



S6.3 A Web-based, time-use application to assess diet and movement behaviour in Asian school children

Mary F-F Chong¹, Chia Airu¹, Tan YX Sarah¹, Chew MNJS¹, Chan MJ¹, M Colega², Toh JY², Natarajan P¹, Lanca C³, Shek LPC⁴, Saw SM¹, Muller-Riemenschneider F¹

¹Saw Swee Hock School of Public Health, National University of Singapore, Singapore; ²Singapore Institute for Clinical Sciences, (SICS), A*STAR, Singapore; ³Singapore Eye Research Institute, Singapore National Eye Centre, Singapore; ⁴Yong Loo Lin School of Medicine, NUS, Singapore

Introduction: Web-based approaches to capture information on multiple lifestyle behaviours in young adolescents are limited. We developed a web-based application (MEDAL) which takes participants through completion of a four-day activity diary to collect data on movement behaviours (physical activity, sedentary behaviour, screen time, and sleep), dietary intakes, time spent outdoors, and location of activities.

Objective: We examined the feasibility and acceptability of MEDAL among young adolescents.

Methodology: Formative research and a user-centric design approach were adopted for the development of MEDAL. Children aged 9 to 12 years of age were recruited from primary schools in Singapore to complete MEDAL for 3 weekdays and 1 weekend day and a 10-item usability questionnaire. For validation of data collected through the application, school meal photography was conducted and devices to capture objective data on activity and sedentary behaviours (accelerometers) and outdoor time (FitSight watch) were provided.

Results: A four-day completion of MEDAL for children aged 11-12 was 70%. Majority agreed that instructions were clear (100%), it was easy to use (98%), they liked the application (96%), and will want to use it again (87%). About half of the participants reported that MEDAL was lengthy to complete; median (IQR) time to complete a one-day record was 13 (8-28) mins. Dietary intakes of the children were examined and only a small proportion met the dietary recommendations for fruit, vegetable, wholegrains and dairy intakes. About one third of the children consumed more than 1 serving of sugar-sweetened beverages a day. Among participants who reported a concurrent activity during eating and drinking, about 70% of them were screen viewing for some periods in the day.

Conclusion: Set within an adolescent-friendly graphic interface and incorporating gamification elements, MEDAL is a feasible and acceptable application for assessing multi-component behaviours in children.

Biography



Mary Chong is currently Assistant Professor at the Saw Swee Hock School of Public Health, National University of Singapore and a Principal Investigator at the Singapore Institute for Clinical Sciences, A*STAR. She is the Nutrition Lead for the Growing Up in Singapore Towards Healthy Outcomes (GUSTO) study, a mother-offspring cohort study in Singapore and two pre-conception studies. Specializing in the area of Nutrition through the Life Course, her main research interests are in maternal and child nutrition and nutrition related to metabolic diseases and cardiovascular health.

She has a special interest in lifestyle and eating behaviours and has been exploring this in both children and adults.



SYMPOSIUM 7

Obesity Treatment and Management

CHAIRPERSON



BARAKATUN NISAK BT MOHD YUSOF, is an Associate Professor and a practicing dietitian in the Department of Dietetics, Faculty of Medicine & Health Sciences, Universiti Putra Malaysia (UPM). She holds a position as a Deputy Dean Academic (Health Sciences) and Student Affairs, UPM. Dr Nisak completed a Postdoctoral Research Fellowship at Joslin Diabetes Centre, Harvard Medical School in the field of Diabetes Nutrition. Her research is focusing on Obesity, Diabetes and Nutrition-related issues and have published almost 100 articles on this topic. She has also contributed to various policy papers and practice guidelines.

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S7.1 Setting the multidisciplinary team for morbid obesity

Zubaidah Nor Hanipah

Department of Surgery, Faculty of Medicine and Health Sciences, Universiti Putra

Obesity is a complex chronic disease with multiple etiologies and effects spanning levels from the gene to the environment. Due to the complex nature of obesity and the absence of a single treatment, interventions for obesity are varied and represent management with multiple necessary intervention components. Patients with obesity may require treatment such as bariatric surgery and pharmacotherapy; these patients also need to implement the effort to motivate their cognitive and behavioural changes, especially for diet and exercise. These multi-component interventions in the management of obesity require experience from multilevel expertise to deliver them.

The multi-disciplinary team (MDT) is effective in providing holistic health care and improving patients' outcomes with complex diseases. Obesity is multifactorial in origin and therefore requires a multi-disciplinary team approach. The multi-disciplinary team members have clearly defined roles within the team and an overall goal plan to address specific factors to lose weight and effectively managing obesity-related co-morbidities such as type 2 diabetes. MDT allows a comprehensive and effective team approach to the assessment and management of complex obesity.

Biography



Zubaidah Nor Hanipah is an associate professor and Senior Lecturer at Department of Surgery, Faculty of Medicine and Health Sciences, University Putra Malaysia; Clinical Consultant in General and Bariatric Surgery at Hospital Pengajar UPM (HPUPM) and also a visiting Bariatric Surgeon at Hospital Kuala Lumpur. She is a member of the Academy of Medicine of Malaysia, Malaysia Metabolic & Bariatric Surgery Society (MyMBS), International Excellence Federation (I.E.F) for Bariatric & Metabolic Surgery and International Federation for the Surgery of Obesity and Metabolic Disorders (IFSO). At present she is the vice secretary of the Society of Endoscopic and Laparoscopic Surgery Malaysia (SELSMA). She is an Associate Editor of the Malaysian Journal of Medicine and Health Sciences (MJMHS). Throughout her academic years with UPM, she has endeavoured to maintain a balance between the academic scholarly work and clinical practice. The majority of her research has focused on the outcome of Bariatric and Metabolic Surgery in patients with obesity and metabolic disorders. She also has a few book chapters' publication on Bariatric and Metabolic Surgery.

S7.2 Anti-obesity drugs before and after bariatric surgery

Leonard Kim Kyoung Kon

Department of Family Medicine, Gachon University College of Medicine, Seongnam-si, South Korea

Bariatric surgery is the most effective method for the weight reduction of people with obesity currently. However, considering number of patients regain their lost weight, stay at only small amount of weight loss, or fail to lose weight again after weight regain. Most patients experience early very rapid weight loss phase, followed by blunted weight loss phase and weight stabilization phase. Lots of patients encounter uncomfortable feelings at food intakes in the early very rapid weight loss phase. Their uncomfortable feelings usually go away, their appetites come back, and the speed of weight loss is blunted, or their body weights become stabilized. That will be appropriate time points considering adjuvant obesity pharmacotherapy. Bariatric surgery induces huge change in the secretion of many gut hormones, and the gut hormone changes would be an important mechanism of rapid weight loss. Among the gut hormones changed by bariatric surgery, GLP-1 is the only hormone that can be administered as a form of medicine. GLP-1 analogues may prolong or enhance weight loss induced by bariatric surgery. Because bariatric surgery gives a huge change in both of anatomy and physiology, low potency drug will not be able to effect on body weight after bariatric surgery. Considering the strong weight loss potency, the combination of phentermine-topiramate can be another option for post-operative adjuvant pharmacotherapy. We can counteract weight recidivism and weight loss plateau after bariatric surgery to some degree with these drugs. Bariatric surgery on super obese patients (BMI ≥ 50 kg/m²) is technically challenging and carries a higher risk of complications, due to 1) increased liver size, 2) increased visceral fat, 3) thicker abdominal wall, 4) advanced co-morbidities and poor condition. Pre-operative weight reduction with pharmacotherapy can make the bariatric surgery easier and safer in super obese patients. In conclusion, anti-obesity drugs are helpful in bariatric surgery, not only as post-operative adjuvant treatment, but also as pre-surgical bridging method. GLP-1 analogues are physiologically appropriate, and the combination of phentermine-topiramate is good considering its strong weight reducing effects.

Biography



Kyoung-Kon Kim is a medical graduate from Yonsei University College and undertook his clinical training as a family physician at Severance Hospital in South Korea. He is currently Professor of Department of Family Medicine at Gachon University College of Medicine and Director of VIP Health Promotion Center at Gachon University Gil Medical Center. He has been an executive board member of Korean Society for the Study of Obesity for a long time and is Vice President of Asia-Oceania Society for the Study of Obesity. His major research areas are pharmacotherapy and epidemiology of obesity.

S7.3 The Effectiveness of intermittent fasting in body weight management and its clinical applications

Mo'ez Al-Islam Ezzat Faris

Department of Clinical Nutrition and Dietetics, College of Health Sciences, University of Sharjah, United Arab Emirates

Intermittent fasting (IF) is rapidly gaining interest across both scientific bodies and the general community. The practice of IF is characterized by being safe, costless, with health-improving and disease-preventing benefits, especially against obesity, metabolic syndrome, diabetes, inflammatory diseases, and even cancer. A growing body of literature accumulated during the last two decades provides evidence that observing different forms of IF (time-restricted feeding, periodic fasting such as 2:5 days, and alternate-day fasting) on metabolic and physiological aspects. One of the most pronounced effects is the improvements in body weight and body composition, with emphasis on visceral adiposity reduction. These alterations are reflected in metabolic syndrome, dyslipidemia, pro-inflammatory adipocytokines, and other cardiometabolic risk factors associated with obesity. Different clinical application aspects related to different types of IF and how they affect body weight and obesity management will be highlighted. Mechanisms of action how IF impact body weight and composition will be discussed in this lecture.

Biography



Mo'ez Al-Islam Ezzat Faris got his three higher university degrees from the University of Jordan in the field of human nutrition. Dr. Faris has completed Harvard Medical School/GCSRT Program, works now as an associate professor at the Clinical Nutrition department at the University of Sharjah. Dr. Faris has about 100 scientific publications, honored the State Award for the Excellent Ph.D, and the Best Ph.D. Dissertation Award at the University of Jordan. Dr. Faris is a member and a founder of several associations and professional societies and specialized committees, and a reviewer for many international journals.

S7.4 The REWIND Remission Programme with Low Calorie and Reduced Carbs Diet : A Dietetic Perspective

Salma Mehar

*NHS North West London Collaboration of Clinical Commissioning Groups, London ,
United Kingdom*

The session will cover how you can advise patients on how to offer advice on Low carb diets while address the cultural diets and commonly eaten foods in order to support individuals on their weight loss journey and improving clinical outcomes. Reflecting on the practical aspects of Low carb diets Offering practical advice on Low carb dietary information on foods and cooking methods is provided to people living Diabetes. Health Care professionals can learn about dietary choices made on Low carb diets and how cultural diets can be adapted to low carb diet plans.

The session will reflect on the Diabetes UK guidelines on Low carb diets and de-prescribing guidelines for People living Type 2 Diabetes. Sharing resources and meal examples developed for different cultural groups and looking at the evidence available to provide more up to date nutrition advice to people with diabetes that are seeking to loose weight and improve their Diabetes management.

The session is delivered by a Specialist Diabetes Dietitian, who has over 15 years of experience working with communities and in public health, while ensuring the dietary advice and suggestions are scientific, culturally sensitive and significant. Salma will give an update on how her book “World Food book” a visual Carbohydrate awareness resource is improving patient engagement and dietary management.

Biography



Salma Mehar RD PGdip - A Specialist Dietitian working in the field of community health and wellbeing for over 15 years. Her work has been acknowledged in many communities, improving health conditions such as type 2 diabetes, heart disease and obesity through education and health promotion. She has written a number of resources on Diet and Ramadan. Salma Mehar is also the co Author of “World Food book” by Carbs and Cals, which is the first Visual Carbohydrate awareness resource for ethnic communities. Her role has extended working across the globe with various communities and charities teaching and developing educational tools and resources to improve the lives of local communities. Her passion to improve health through better nutrition and dietary habits and lifestyle has reflected in many projects related to community health and long term conditions.

SYMPOSIUM 8

Prevention of Obesity

CHAIRPERSON



TIM GILL is Professor of Public Health Nutrition within the Boden Collaboration for Obesity, Nutrition, Exercise and Eating Disorders at the Charles Perkins Centre in the University of Sydney. He has wide experience as an academic and within government departments and health agencies and has authored several key reports and scientific papers on nutrition, obesity and chronic disease. His research focuses on improving consumer food and nutrition environments and guidance as well as and better tailoring of advice for the prevention and management of obesity.

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S8.1 Dietary habits and the prevention of obesity in different ethnic groups

Rob van Dam

Saw Swee Hock School of Public Health, National University of Singapore, Singapore

Introduction: The prevalence of obesity and related diseases such as type 2 diabetes is increasing rapidly in many Asian countries. Diet is known to play a key role in the development of obesity, but more information is needed to decide what aspects of the diet to change, what population groups to target, and what intervention strategies are effective in Asian populations.

Objective: Our objectives were 1). to evaluate the role of ethnicity, socio-economic status, and life stage as determinants of obesity, 2). to identify specific dietary habits that are determinants of obesity, and 3). to evaluate a population-wide program to improve the quality of out-of-home dietary intakes in an urban Asian setting.

Methodology: We also conducted a series of analyses in cohorts in the multi-ethnic adult Singaporean population and a cluster-randomized trial.

Results: Ethnicity, low education level, and early adulthood were associated with excess weight gain and obesity. Dietary quality as assessed by international diet quality scores was inversely associated with weight gain over 6 years. Replacement of dietary carbohydrates with protein was also associated with less weight gain. Similarly, replacement of white rice with selected high-protein foods or whole grains and reducing sugar-sweetened beverage (SSB) consumption was associated with less weight gain. Besides traditional dietary characteristics, food characteristics that facilitate fasteating rates were associated with a higher body mass index. In a systematic review, high SSB intake was linked to excess weight gain and a higher risk of type 2 diabetes in Asian populations. An intervention that changed ingredients in default food options improved the quality of out-of-home dietary intakes.

Conclusion: Our findings suggest that population-wide interventions that reduce SSB consumption, promote a shift from refined grains to high-quality alternatives, and facilitate slower eating rates can contribute to obesity prevention in Asia.

Biography



Rob van Dam's research is focused on the lifestyle prevention of obesity, type 2 diabetes, and cardiovascular diseases in different ethnic groups. He is a Professor and Leader of the Epidemiology Domain at the National University of Singapore, and Adjunct Professor at the Harvard T.H. Chan School of Public Health. His research is mostly based on large-scale cohort studies integrating data on reported diet, dietary biomarkers, biomarkers of intermediate pathways, and genetic variation. In addition, he is interested in cultural and environmental

determinants of dietary behaviors and obesity.

S8.2 Principle of precaution and circumspection: Elements for a strategy of obesity prevention

Jean Pierre Poulain

Centre d'études et de recherches Travail Organisations Pouvoir (CERTOP), University of Toulouse, France

The change in the epistemological status of obesity from "risk factor" to "disease" to "global epidemic" has contributed to its visibility. It has thus become a political, social and media issue. In a context of food crises, obesity gradually became the "obvious" demonstration that "something is wrong" with modern food and began to represent the dreaded consequences of this crisis. Sociology helps to identify the impact of the social aspects in scientific and media debates, be it deliberate influences such as those of lobbyists, or the phenomenon of collective representations that weigh on both lay and scientific representatives. Thus, obesity is an outstanding object for studying the relations between science and society). Dramatization has brought obesity onto the political agenda, but when it becomes excessive under the effects of media focus, we face the risk of counter-productive effects that reinforce stigma of obese subjects and contribute to food anxiety in the general population.

Sociology of sciences is interested in the medicalization of obesity, i.e. the background of its definition and the modalities of its management by the medical system. It studies the conditions of its inclusion in different medical fields, the concepts that contribute to its definition, measurement and designation as a health issue, and finally, it analyzes the possible consequences of its management and treatment. It is particularly attentive to scientific controversies, not to take part in their resolution, but to understand the social stakes involved. It is thus an invitation to take a critical look at the dramatization of obesity. So beside the justification of action based on the "principle of precaution", the context is an invitation to caution based on the "principle of circumspection".

Biography



Jean Pierre Poulain, is a Professor of sociology at the University of Toulouse and a member of the "Health and Food" axis of CERTOP-CNRS. He heads the Chair of "Food Studies: Food Cultures and Health" jointly set up by University of Toulouse Jean-Jaures (France) and the Taylor's University (Malaysia). Prof Poulain is the designer of the Ovalie experimental platform for study contextualized food behaviors. Among his publications: *Sociology of Food. Eating and the place of food in the society*. Bloomberry, Fev. 2017. *Sociologie de l'obésité*, PUF.

S8.3 Public and private sectors roles in the food environment of Malaysia

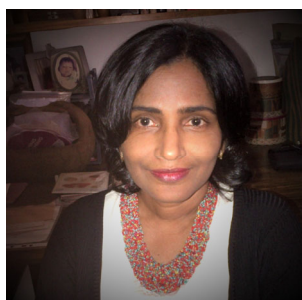
Tilakavati Karupaiah & Ng See Hoe

School of Biosciences, Faculty of Health and Medical Sciences, Taylor's University,

The statistics on Malaysia having the highest obesity prevalence in the South-East Asian region is distressing, and disquieting when we consider this has been the prevailing scenario over time. Policy interventions to create healthy Food Environments offer the best buy options to tackle the burden of obesity and diet-related non-communicable diseases. However, progress to international best practices is the least understood area for many countries such as Malaysia. By putting the lens on the public and private sectors, examining indicators specific to Food Environments should facilitate measures to either optimise opportunities or reverse the implementation gaps. This makes sense as key causes of unhealthy obesogenic diets are nutrition transitions imposed on a population by rapid urbanisation, economic growth and social change coupled with trade liberalisation, which collectively trigger food system shifts towards convenience and ultra-processed foods.

This topic presents findings from the Food-Environment Policy Index (Food-EPI) and Business Impact Assessment-Obesity (BIA-Obesity), two studies conducted in Malaysia in collaboration with the International Network for Food and Obesity/NCD Research, Monitoring and Action Support (INFORMAS). Food-EPI Malaysia assessed 'Policies' and 'Infrastructure Support' components. The government-scoped food environment policies related to food composition, labelling, promotion to children, prices, provision, retail and trade and investment. The backbone of the leadership, governance, monitoring, funding and resources, platforms for interaction and health-in-all policies within the government were included as the 'infrastructure support' component. On the other hand, BIA-Obesity Malaysia focused on the commitments and disclosures on population nutrition and health-related policies of the top food and beverage manufacturers, quick service restaurants and retailers in Malaysia. Indicators examined were corporate strategy, product formulation, nutrition labelling, promotion practices, product accessibility and relationship with external organizations.

Biography



Tilakavati Karupaiah of the School of BioSciences, Taylor's University, contributes towards legislation, clinical practice, education and research in the field of cardiovascular and renal nutrition in Malaysia. Her research agenda is on 'doable' issues in prevention of obesity and non-communicable diseases. She is engaged in translational research bridging clinical nutrition, epidemiological search for nutrition behaviors and providing evidence-base necessary for prevention strategies in population health. Currently she leads a 9-country Asian study in food environment studies. She is serving on Prof Barry Popkin's *Evaluation Advisory Committee of the Bloomberg Global Food Research Program, University of North Carolina.*

S8.4 Epidemiology, strategies and real-world actions to prevent obesity in Japan

Kazuyo Tsushita

Department of Nutrition, Kagawa Nutrition University, Japan

Epidemiology of obesity and overweight in Japan

According to the National Health and Nutrition Survey in 2019, percentage of overweight ($25 \leq \text{BMI} < 30 \text{ kg/m}^2$) is 26.3% for men and 18.0% for women, and that of obesity ($30 \leq \text{BMI}$) is 5.3 % and 3.6% respectively. which has changed little over the last decade. Men are in their 40s (39.7%) and women are in their 60s (28.1%), with the highest percentage of overweight and obesity.

Japanese strategies and actions to reduce obesity:

1. Population strategy: The national health promotion campaign (Health Japan 21, 2nd edition) promotes the prevention of NCDs and the creation of a healthy environment. All local governments have formulated health promotion guidelines and implement policies for health education and creating a healthy environment. Twelve percent of large companies were certified strategic health management and more than 50,000 of small and medium-sized enterprises declared the creation of healthy workplaces.

2. Health check-ups and health guidance: All health insurers in Japan are mandated to provide Specific Health Check-ups and Specific Health Guidance (SHG) with a particular focus on metabolic syndrome in middle-aged adults. This program includes individual counseling or group sessions designed to provide information about how to make changes to various aspects of lifestyle and how to set individual goals, with follow-up by e-mail, phone or interviews for three months. Incentives are given to insurers depending on the implementation rate of health examinations, SHG and other health programs. Although it has been clarified that the improvement of the test values in the next year is better in the participation group than in the non-participation group, there is a strong need for health guidance to be more effective and efficient.

Biography



Kazuyo Tsushita is a specially appointed professor at Kagawa Nutrition University. She is a board member of JASSO, Health Japan 21 Council, and Public Insurance Prevention System (National Government). She is a senior researcher in NCD prevention at the Ministry of Health, Labor and Welfare. After graduating from Nagoya University School of Medicine, she was engaged in clinical practice and research on obesity and diabetes. She shifted her career with a focus on health care systems and policies. She was the director of the Aichi Health Science Center.

SYMPOSIUM 9

Food Security & Obesity

CHAIRPERSON



WAN AZDIE BIN MOHD ABU BAKAR is an Associate Professor in the Department of Nutrition Sciences IIUM. He was the Head for the Department before he became the Dean for the Kulliyah of Allied Health Sciences until 2017. He is a life member of the Nutrition Society of Malaysia (NSM) and Malaysian Association for the Study on Obesity (MASO). He is actively involved in several technical working groups and other committees related to nutrition under the Ministry of Health Malaysia. His main research interest is in nutrition, focusing on public health issues including food security, obesity and also nutrition education.

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S9.1 Food insecurity and obesity research and policy: Where do we go from here?

Rafael Perez-Escamilla

Yale School of Public Health, Yale University, New Haven, USA

Obesity and household food insecurity (HFI) are pandemics that concentrate heavily among the most socially disadvantaged. Even in low-income countries were the better off are still more likely to be overweight and obese; it is among the poorest members of society, including indigenous communities and the rural poor, that the rate of increase in prevalence of overweight and obesity across time is the fastest. From a research perspective a key question is if both pandemics are causally linked with each other (i.e., if they behave as a syndemic) or if they are not but happen to be caused by similar underlying social and economic factors (i.e. confounded by socio-economic and demographic factors). The answer to this question is key for understanding how best to design effective policies. This presentation will argue first that both pandemics behave as a syndemic as they are causally linked with each other through different pathways. These include the potential impact of HFI with: a) consumption of ultra-processed foods and beverages across the life course, b) stress-related emotional eating, and c) physical inactivity. There is also a potential impact of obesity on HFI as a result of obesity-related poor health outcomes that prevent people from generating income. Second, it will argue that unregulated marketing of unhealthy foods and beverages by the food industry must be addressed, especially taking into account that it disproportionately affects dietary patterns among the poor. Third, it will argue that addressing this syndemic requires a social-ecological model approach that addresses the major structural barriers in the current global food systems and health care systems through an equity lens. The presentation will conclude with a brief summary on recent advances on HFI measurement and monitoring and evaluation systems that can help improve policy design, implementation and evaluation to address the HFI-obesity syndemic.

Biography



Rafael Pérez-Escamilla is a tenured Professor at the Yale School of Public Health where he is also Director of the Office of Public Health Practice, the Global Health Concentration and the Center for Methods in Implementation and Population Science (CMIPS) Maternal Child Health Promotion program. His highly impactful work has led to improvements in food security; maternal, infant and young child feeding; and early childhood development programs globally. He has published over 280 peer reviewed articles and lectured extensively across world regions. He is an elected member of the U.S. National Academy of Medicine and has served as senior scientific advisor to UNICEF, the World Health Organization (WHO), The United Nations Food and Agriculture Organization (FAO), the Bill and Melinda Gates Foundation and the Robert Wood Johnson Foundation. He currently serves in the steering committee of a new Lancet Breastfeeding Series and in two infant and young child feeding expert committees from the WHO. He obtained his MS in food science, doctorate in nutrition and postdoc in early childhood development at the University of California, Davis.

S9.2 Food insecurity and the ramifications for health and weight status: an international overview of high-income countries

Danielle Gallegos

Faculty of Health, School of Exercise and Nutrition Sciences, Queensland University of Technology, Australia

Food security is being able to feed yourself and your family with food that is of sufficient quantity and quality for a healthy and active life. Household food insecurity (HFI) in high income countries impacts 10-12% of the population with households experiencing financial constraints over-represented. Generally, food insecure households move through three phases: worry and anxiety about where the next meal is coming from; compromising the quality of the food consumed (eating more energy-dense, nutrient-poor foods); and finally reducing quantity by skipping or reducing the size of meals. Women bear the largest burden, for as long as possible. Indications are that households are extraordinarily adept at managing restricted time and financial resources and utilise a range of strategies to ensure food can be put on the table. Increasingly, however, we are recognising that food security is intertwined with household dynamics which are a complex nexus between a range of factors including income, time, violence and food literacy. The cascade of strategies and the intricacies of living with poverty has implications for weight and health status. There are indications that HFI contributes to obesity and disordered eating in women. The links are less clear for the impact on children and young people. This presentation will provide an overview of the links and possible mechanisms through which HFI may contribute to obesity, disordered eating and other chronic health conditions. It will raise questions for clinicians about their practice and considerations for working with clients as well as broader points for public health advocacy.

Biography



Danielle Gallegos is Professor of Nutrition and Dietetics at Queensland University of Technology and a Fellow of Dietitians Australia. She is currently Director of the Woolworths Centre for Childhood Nutrition Research funded by the Queensland Children's Hospital Foundation. Her research focuses on real world "wicked" problems that require interdisciplinary and transdisciplinary solutions for improving food and nutrition from a public health perspective. Her primary areas of research focus are on maternal, infant and child nutrition, household food security and food literacy. Current funded projects include:

Feeding Families in Tough Times (FFiTT), Responsive Feeding in Tough Times and optimising food and nutrition environments in primary schools.

S9.3 Not having enough food can lead to obesity: Is that possible?

Norhasmah Sulaiman

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

Introduction: The prevalence of overweight/obesity is increasing and is recognized as a public health issue. Food security is defined as when all people at all times access to sufficient, safe, and nutritious food have to maintain a healthy life. Meanwhile, food insecurity exists whenever the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain.

Objective: The purpose of this presentation is to discuss the association between the food insecurity and obesity and their mechanisms/pathways.

Methodology: This is a systematic review on a few papers, research, and articles according to studies and research by various organizations, experts, scholars on food security in developed and developing countries

Results: Food insecurity contributes to many chronic diseases such as obesity. Food insecurity and the prevalence of obesity among household members depend on sociodemographic factors such as age, sex, marital status, stressors, income levels, ethnicity, and race. The mechanisms/pathways that underscore the complex relationship between food insecurity, diet (dietary behaviors, diet quality) and obesity will be discussed.

Conclusion: Understanding the mechanisms/pathways, associated risk factors is important to mitigate the negative impact of obesity-related to food insecurity.

Biography



Norhasmah Sulaiman is a Professor of Community Nutrition and Head Department of Nutrition, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia. Her research interests are on food and nutrition security, food insecurity, malnutrition among low-income households and indigenous people (*Orang Asli*), evaluation of food and nutrition programme, development of health and nutrition instrument as well as food and culture. She currently serves as a Journal Editorial Board for national and international journals. She is also a Committee Member of National Technical Working Group for National Nutrition Advocacy and a Technical Committee of the Development of Nutrition

Research Priorities (NRP) in Malaysia for 12th Malaysia Plan (2021-2025), Ministry of Health, Malaysia.

SYMPOSIUM 10

Bariatric Surgery

CHAIRPERSON



REYNU RAJAN an Upper Gastrointestinal and Bariatric Surgeon at UKM Medical Centre. Dr Reynu Rajan is passionate about increasing public awareness on the role bariatric surgery in management of obesity and obesity related co-morbidities including reducing social stigma associated with the topic. A frequently invited speaker for international conferences in her field, Dr Reynu Rajan is also the co-trainer for the Fellowship in Upper Gastrointestinal Surgery at UKMMC, Secretary of the Malaysian Metabolic and Bariatric Surgery Society, Secretary of the Chapter of Women Surgeons Malaysia, Co-Chair of the Young IFSO APC (International Federation for the Surgery of Obesity & Metabolic Disorders - Asia Pacific Chapter) and a core member of the Working Committee that is responsible for putting together an updated multidisciplinary consensus statement outlining the role of bariatric surgery in treating obesity and obesity related metabolic syndrome in Malaysia. Dr Reynu actively participates in clinical teaching for both undergraduate and postgraduate students, engages in clinical research and has given numerous scientific presentations for which she has received awards both locally and internationally.

CO-CHAIRPERSON



ABDUL GAFOOR BIN ABDUL MUBARAK is the Vice President of the Malaysia Hernia Society, The Executive Board Member for APELS, the Executive Board Member for APHS and also the treasurer for SELSMA. Dr Gafoor has represented Malaysia on numerous occasions for both presentations and live surgery and is keen in publication. He has currently successfully published Malaysia's Consensus for Bariatric and Metabolic Surgery and is actively involved in drawing up the guidelines for obesity surgery in Malaysia.

S10.1 Metabolic outcomes of bariatric surgery

Muffazal Lakdawala

Institute of Minimal Invasive Surgical Sciences & Research Centre, Saifee Hospital, Mumbai, India

No abstract submitted.

ACCOMIASO 2021

Biography



Muffazal Lakdawala is an Indian surgeon and founder of Digestive Health Institute by Dr Muffi, Mumbai, which is the first Indian Centre for Excellence in Bariatric Surgery. He is the chairman of Institute of Minimal Invasive Surgical Sciences & Research Centre, Saifee Hospital, Mumbai and the president of IFSO-Asia Pacific chapter.

(Source: https://en.wikipedia.org/wiki/Muffazal_Lakdawala)



S10.2 Cost effectiveness of bariatric surgery — Why insurance providers should consider coverage

Chih-Kun Huang

China Medical University Hospital, Taichung, Taiwan

Morbid obesity had been proved to be one of the main causes of early mortality and risk factor for many chronic diseases, including sleep apnea, type 2 diabetes mellitus (T2DM), cardiovascular diseases, poly-arthritis and even cancer.

Conservative treatments (ie, medication, behavioural approach consisting of diet and lifestyle intervention) have been shown not effective in long-term weight loss, with only less than 5% of the obese population reaching or maintaining this goal.

For them, bariatric surgery is considered a safe approach, with low mortality and complication rates and the ability to produce best and consistent results in terms of long-term weight loss. Despite the cost-effectiveness of bariatric surgery compared with nonsurgical interventions (conservative treatments) being extensively shown, this treatment option is still underutilized, with an estimated 1% of potential candidates undergoing bariatric surgery.

The main barrier to diffusion of bariatric surgery is the high cost of the procedure and the insufficient reimbursement granted by different insurance coverage, public or private system. The presentation will include the present cost-benefit studies of bariatric surgery for morbidly obese patients and highlight importance of the cost saving for insurance system.

Biography



Chih-Kun Huang is the superintendent of Body science and Metabolic disorders International Medical Centre (BMIMC), China Medical University Hospital, Taiwan and the founding chairman of International Excellence Federation for Bariatric & Metabolic Surgery (IEF). Dr Huang completed full surgical training in Taiwan, has been devoted to minimally invasive surgery and Bariatric surgery since 15 years ago. Dr Huang has authored over 80 peer-reviewed journal articles, 6 books, and numerous textbook chapters. He has trained more than 90 international fellows. He was the first surgeon to be accredited by SRC as the International Centre of Excellence (ICE) for Bariatric & Metabolic Surgery in the Asia Pacific region.

S10.3 Latest innovations in bariatric procedures

Simon Wong

Upper GI & Metabolic Surgery, Prince of Wales Hospital, Hong Kong, & Department of Surgery, The Chinese University of Hong Kong

Since the first jejunio-ileal bypass in 1950s, many different bariatric procedures developed in the last 70 years. Currently, the 4 well-accepted standard operation are Adjustable Gastric Banding (AGB), Sleeve Gastrectomy (SG), Roux-Y gastric Bypass (RYGB) and Biliopancreatic Diversion with Duodenal Switch (BPD-DS). Although these standard operations are being used every day, none of them is ideal. They are being criticized for either its side effect or its safety. In order to overcome these disadvantages, new ideas are keep evolving which trying to overcome these shortcomings. However, novel procedure should not be recommended as a “better” procedure before its safety and efficacy are tested under IRB approved studies.

In Asia, the commonest procedure had been changed from AGB to SG in the last 10 years. Both procedures are restrictive but SG are superior as it produces more weight loss. However, new restrictive procedure like gastric clips has developed which try to minimize the risk of leakage and reflux after SG. On the other hand, RYGB was considered as the gold standard as it provides good weight loss and more powerful in amelioration of T2DM. However, risk of remnant stomach cancer and marginal ulcers is a great concern in Asia. SleevePlus procedures are evolving in the past few years as an alternative to RYGB to avoid remnant gastric cancer but retain its anti-diabetes effect.

On the other hands, endoluminal procedures provide a safe alternative to surgery. Various endoscopic intervention has been invented in order to mimic surgery – reduce gastric capacity, duodenal exclusion or even small bowel diversion. From intragastric balloon to endoscopic gastric plication, endoscopic treatment truly revolutionizes the bariatric intervention in managing obesity and diabetes.

Biography



Simon Wong is the President of Asia-Pacific Metabolic & Bariatric Surgical Society (APMBSS). He is also the Chairman of the Hong Kong Society of Metabolic & Bariatric Surgery (HKSMBS) and country council member of IFSO. Dr Wong is the Consultant Surgeon in Upper Gastrointestinal & Metabolic Surgery Unit of Prince of Wales Hospital, and appointed as the Honorary Clinical Associate Professor in Surgery at the Chinese University of Hong Kong (CUHK) since 2008. In 2018, he is appointed as Division Head of Upper GI Surgery division and the Deputy Chief of Service of Department of Surgery, Prince of Wales Hospital, Hong Kong.

S10.4 History and Progress of Bariatric Surgery in Malaysia

Nik Ritza Kosai Nik Mahmood

Department of Surgery, Faculty of Medicine, UKM Specialist Centre

Obesity has been recognized as a legitimate threat to global health quality since the 1980s with approximately 1.4 billion people worldwide identified as either overweight or obese. WHO has predicted that continuous westernization of dietary habits and the rapid spread of fast food culture outside the first world perimeter will cause obesity-related complications to emerge as the leading cause of death by 2030. An international study published in 2014 verified this finding declaring Malaysia to be the most obese nation in South East Asia and possibly Asia.

Historically, bariatric procedure in Malaysia started since the 1990s with open vertical banded gastroplasty being the first procedure to be performed circa 1996. This was followed by a wave of minimal access bariatric procedures such as LGB in 2001, LAGB in 2005 and LSG in 2006. The progression, however, was seen to be increasing only a decade later. This recent rise in popularity can be largely attributed to increase in awareness among healthcare providers regarding the surgical management of obesity and obesity-related co-morbidities, rigorous public awareness campaigns and the proactive involvement of both print as well as electronic media in dissemination of information pertaining to the ill effects of obesity and the various treatment options available.

The trend of bariatric procedures performed in Malaysia is similar to that observed in Asia and around the world with a shift from LAGB which is greatly dependent on patient compliance to other more permanent surgical solutions with higher percentage of excess weight loss such as RYGB and LSG. The risk of dumping syndrome associated with RYGB and much debated reflexogenic nature of LSG is most likely to have triggered the influx of newer procedures such as MGB and sleeve based or sleeve plus procedures such as LSG-PJB and LSG-DJB.

Biography



Nik Ritza Kosai Nik Mahmood is currently the Head of Upper Gastrointestinal, Metabolic and Bariatric Surgical unit, HCTM. Presently, he holds several notable positions in various organisations. He is also the President of the Malaysian Metabolic and Bariatric Surgical Society and Vice President of Malaysian Upper GI Society. He sits in the committee for the Subspecialty Upper GI training in Malaysia and NSR. He has over 100 peer reviewed publications and received research grants accumulating up to more than 4 millions USD. As being one of the key opinion leaders in his field, he has been invited as a speaker and faculty at numerous national and international conferences and surgical workshops.

SYMPOSIUM 11

Complications of Obesity

CHAIRPERSON



THAM KWANG WEI is a Senior Consultant Endocrinologist from Singapore who completed her Residency in Internal Medicine and Fellowship in Endocrinology, Diabetes and Metabolism at the Cleveland Clinic, USA. Her main interests are in obesity professional education, clinical interventions in obesity management and the medical outcomes of bariatric surgery. She is the current President of the Singapore Association for the Study of Obesity (SASO), the Secretary of the Asia- Oceania Association for the Study of Obesity (AOASO), the Vice-Chair of the Integrated Health Committee, IFSO-APC and a National SCOPE Fellow.

CO-CHAIRPERSON



MASNI BINTI MOHAMAD is a consultant endocrinologist at Endocrine Unit, Department of Medicine, Hospital Putrajaya, Putrajaya. She has served there since 2004. She obtained her M.D in Universiti Science Malaysia and proceeded to do her Masters in Internal Medicine in Universiti Kebangsaan Malaysia. She completed her subspecialty training which is Endocrinology in Universiti Kebangsaan Malaysia too. She is actively involved in research and teaching. An honorary lecturer for UiTM undergraduate medical school and UKM Masters program. She is also a trainer for Endocrine subspecialty program under Ministry of Health. Her thrust areas of interest include obesity, diabetes and Thyroid/Parathyroid. She is in charge of the multi disciplinary team obesity clinic in hospital putrajaya. She is currently the vice president of Malaysia Endocrine Metabolic Society (MEMS) council members and an Active Member of The Endocrine Society with a Professional Role of Clinical Practitioner since 2010.

S11.1 What positive changes have we seen in our fight with obesity?

Ian D Caterson

School of Life and Environmental Sciences, Faculty of Science, University of Sydney, Australia

In the 25 years of MASO there have been quite a number of changes in the “world of obesity” – many of them positive and we need to recognise this.

Whilst obesity prevalence has increased in many countries over this time there is now some evidence that, in some countries, the rise in prevalence is slowing in children and in women. In public health, and especially in the fields of diabetes, heart disease and liver disease, the underlying importance of obesity in producing these problems is clear and recognised. This has led to a change in public health emphasis in preventive interventions and produced changes in the environment – for example in the requirement for the reduction in soft drinks availability and the requirement for healthy canteens. The use of the internet, SMS messaging and virtual appointments has shown that these methods are effective and can reach a wider group of patients. The issue of obesity stigma still remains and is an issue that society needs to tackle.

Obesity is becoming recognised as a disease with statements by many professional and learned bodies acknowledging this fact. Such recognition leads to the development of guidelines for prevention and management but also, in some jurisdictions, consideration of the necessary health systems to deal with obesity. The management of obesity is much better understood and practiced. Behavioural weight management programs are more effective for longer, very low energy diets are effective, obesity pharmacotherapy produces greater weight loss than ever (though still is expensive and out of the reach of many) and bariatric surgery is effective relatively long term. We have the tools we need to find the ways of using them long term and rather than life-long therapy probably we need to embrace the fact that obesity is a chronic disease and it needs to be treated with different modalities and treated intermittently.

These are the views of an optimist but we do have better recognition of the problem of obesity, some effective community and public health interventions, and far more ability to treat obesity effectively. We must continue the fight!

Biography



Ian Caterson is currently Director of the Boden Collaboration for Obesity Nutrition Exercise and Eating Disorders and Boden Professor of Human Nutrition in the University of Sydney and Sydney Local Health District. He established the first multi-disciplinary weight management service in Australia. He is a past-president of the World Obesity Federation.

S11.2 Obesity and Its Complications, An Overview

Rosa Allyn Sy

Diabetes, Endocrine, Metabolic, and Nutrition Center, Cardinal Santos Medical Center, Philippines

Obesity remains a global public health concern. Despite the worldwide campaign against this chronic disease, the obesity rates continue to rise. WHO reports the worldwide prevalence of obesity nearly tripled between 1975 and 2016. The rise in childhood obesity mirrors the trends in adults. Although the concept of Obesity Paradox, introduced a decade ago, favors the protective effects of excess fat among patients with heart or kidney failure, the rise in the prevalence of obesity means a consequent rise in the many obesity-related complications. More recently, large reviews have been published which confirmed a direct relationship between BMI and mortality.

These obesity-related complications may be classified into three main components namely, metabolic, anatomical and mental effects. The two most prominent contributors of metabolic complications of obesity include INFLAMMATION AND GUT MICROBIOME. The excess adiposity activates the immune response of the individual, putting them in a state of chronic low-level inflammation (meta-inflammation) and dysregulates the immune system, leading to the different metabolic and vascular complications associated with obesity. It also helps explain the increased risk of cancer and infectious diseases including COVID-19 amongst people with obesity. The GUT microbiomes, on the other hand, impact host metabolism through signaling pathways with effects on inflammation, fat deposition and insulin resistance. Various published studies have demonstrated the association of profound microbial changes and obesity. Fecal microbiota transplantation from lean individuals to obese individuals have demonstrated improved insulin sensitivity and microbial diversity. The excess circulating pro-inflammatory cytokines explains the increasing prevalence of type 2 diabetes mellitus, cardiovascular diseases including hypertension, dyslipidemia, stroke and even gastrointestinal and hepatobiliary complications like non-alcoholic fatty liver disease (NAFLD), gallbladder diseases and esophageal diseases (GERD) associated with obesity. Other complications include asthma, cancer (breast and colon cancer), genitourinary effects and mental effects like depression and anxiety.

Obesity is a multi-system disease. A challenge to clinicians, early recognition and timely intervention is needed to make a difference and improve outcome and mortality .

Biography



Rosa Allyn G. Sy, MD, FPCP, FPSEDM, Rosa Allyn G. Sy, MD, FPCP, FPSEDM, diplomate and fellow of the Philippine College of Physicians (PCP) and the Philippine Society of Endocrinology, Diabetes and Metabolism (PSEDM). Finished clinical fellowship training in Endocrinology, Metabolism and Nutrition at the Columbia University in NYC, USA. She is the recipient of the 2016 PCP exemplar awardee in Clinical Practice and was the president and overall chair of the 2011 AOCO congress held in the Philippines. Currently, Dr Rosa is the Director, Division of Research Development and Innovation Division; Section Head of Endocrinology, Diabetes, Metabolism and Nutrition of Ospital ng Makati (OsMak) and Cardinal Santos Medical Center (CSMC). She

also heads the Nutrition Support Committee of OsMak and is a member of Nutrition Committee of CSMC. She was also the past president of the Philippine Diabetes Association, PASOO, PSEDM and the Philippine Lipid and Atherosclerosis Society .

S11.3 Molecular mechanism of insulin resistance and comorbidities linked to obesity

Takashi Kadowaki

Department of Diabetes and Metabolic Diseases, The University of Tokyo Hospital, Tokyo, Japan

This presentation will cover the role of M2 macrophages in insulin resistance in obesity. We demonstrated chronic hyperinsulinemia in obesity decreases expression of IRS-2 in M2a/M2b macrophages, leading to impaired IL-4 and insulin signaling, causing inflammation, gluconeogenesis and insulin resistance. I will also talk about the role of adiponectin receptor (AdipoR) in obesity-linked comorbidities. We showed decreased adiponectin and AdipoR actions in obesity are causally implicated in obesity-linked diseases. Adiponectin receptor agonist AdipoRon ameliorates obesity-linked diseases such as type 2 diabetes, NASH, atherosclerosis and shorter lifespan. Determination of 3D structure of AdipoR1/2 should help optimizing AdipoRon for clinical development.

ACCOMASO 2021

Biography



Takashi Kadowaki is currently President, Toranomon Hospital. He served as Professor and Chairman, Department of Diabetes and Metabolic Diseases, The University of Tokyo. He serves as Chairman of Board of Directors of Japan Society for the Study of Obesity. Dr Kadowaki has made seminal contributions in studies of genetics of type 2 diabetes, obesity-linked, insulin resistance, and adiponectin signalling. He has authored more than 700 original articles and reviews. He has received many national and international awards including Japan Academy Prize, Manpei Suzuki International Prize for Diabetes Research and Claude Bernard Prize from EASD.

S11.4 Obesity and non-alcoholic fatty liver disease (NAFLD) latest update

Chan Wah Kheong

Gastro-Enterology Unit, Department of Medicine, University Malaya Medical Centre, Malaysia

Non-alcoholic fatty liver disease (NAFLD) encompasses a spectrum of liver conditions characterized by excess accumulation of fat in the liver. Majority of NAFLD cases are related to obesity and NAFLD is considered as the liver manifestation of the metabolic syndrome. Non-alcoholic steatohepatitis (NASH) is the more severe form of NAFLD that is defined histologically by the presence of lobular inflammation and hepatocyte ballooning. NAFLD patients with NASH are more likely to develop liver fibrosis and cirrhosis, with increased risk of liver-related complications and mortality. In the United States, NASH is the most rapidly increasing etiology, and the second leading etiology, among new liver transplant waitlist registrants. NASH has also become the second leading etiology of hepatocellular carcinoma leading to liver transplantation in the United States. Because of the lag in the increase in obesity compared with the Western world, a lag in the increase in liver-related complications and mortality is expected in Asia, including in Malaysia. The time to act is now. The recently launched 6th Edition of the Malaysian Clinical Practice Guideline on the Management of Type 2 Diabetes Mellitus (T2DM) has, for the first time, included NAFLD. Patients with T2DM are more likely to have more severe NAFLD and represents an important target group for evaluation for case identification and management. Recently, the term metabolic dysfunction associated fatty liver disease (MAFLD), which is based on a set of positive diagnostic criteria, has been proposed by an international expert group. The term MAFLD has been endorsed by several international organizations, including the Malaysian Society of Gastroenterology and Hepatology. It is hoped that this new term will provide better focus for clinicians, patients, and other stakeholders to fight this increasingly prevalent condition that is expected to cause significant burden to our healthcare system.

Biography



Chan Wah Kheong is Professor of Medicine at the University of Malaya and Senior Consultant Gastroenterologist and Hepatologist at the University of Malaya Medical Centre and the University of Malaya Specialist Centre. He is a Member of the Academy of Medicine of Malaysia and a Committee Member for the Malaysian Society of Gastroenterology and Hepatology. He is the Scientific Co-Chair for the Asia Pacific Digestive Week 2021. He serves as Associate Editor for the Journal of Gastroenterology and Hepatology. He has published numerous full papers in peer-reviewed journals and presented in both local and international conferences.

S11.5 Obesity and cardiovascular disease (CVD)

Mohd Arimin Mat

*Research Fellow in Endocrinology with Obesity & Immunity Research Group (OIRG),
St. Vincent's University Hospital, Dublin Ireland*

Obesity is a low grade chronic inflammatory metabolic disease which is prevalent globally today. With WHO reporting nearly 40% of adult population as overweight and almost 15% obese, the healthcare burden from this condition on governments worldwide is immense. A major driver of multiple co-morbidities, obesity impacts the cardiovascular system directly as well as through T2DM of which nearly 80% of cases are weight related. In the adipose tissue (AT), the main population of leukocytes are macrophages. These are classified into several subsets, the two main ones are: M1, which are classically activated and proinflammatory and M2, which are alternatively activated and anti-inflammatory macrophages. In the obese state, M1 macrophage numbers increase in AT and correlates with chronic AT inflammation and insulin resistance which can eventually develop into T2DM. In contrast, M2 macrophages predominates in lean state and secrete anti-inflammatory cytokines to maintain AT homeostasis. In the obese AT, M1 produces proinflammatory factors including TNF- α , IL-1 β and MCP-1 to contribute and sustain the AT inflammation locally. These factors eventually enter the general circulation causing a state of low grade inflammation systemically and contribute to the development of cardiovascular disease (CVD). Atherosclerosis is characterized by chronic inflammatory status resulting in invasion and accumulation of fat-laden "foam cells" in arterial walls. The presence of inflammatory cytokines and increased levels of circulating FFA promotes vascular endothelial dysfunction and oxidative stress which lead to CVD. The tendency for dyslipidaemia in the obese (increased LDL and triglyceride with decreased HDL) further favours atheroma development. Obesity is also associated with hypertension and this contributes further towards CVD.

Biography



Mohd Arimin Mat is currently a Senior Clinical Fellow in GIM and Diabetes & Endocrinology in University Hospital Lewisham, London. Previous to this, he was a Research Fellow in Endocrinology with the Obesity & Immunology Research Group (OIRG) in Education & Research Centre (ERC), St Vincent's University Hospital, Dublin under the leadership of Prof Donal O'Shea, the National Clinical Lead for Obesity in Ireland. His research interest was the study into changes of sCD-163 and Gal-3 in obese patients following treatment with GLP-1 Receptor Agonist and the potential for these molecules to act as biomarkers for treatment response.

SYMPOSIUM 12

Lifestyle, Exercise & Diet

CHAIRPERSON



GAGA IRAWAN NUGRAHA, MD is an Associate Professor in Nutrition of Basic Medical Science Department of Universitas Padjadjaran. His major research interest includes obesity, body composition, chronic diseases and intergenerational of malnutrition. He is the vice president of Indonesian Society Study of Obesity (ISSO) 2017-2021, the chairman of West Java Branch of Indonesia Clinical Nutrition Physicians 2018-2021, and a member of the executive board of Asian Oceanian Association Study of Obesity 2014-2021. Apart from being an academician, he is also an active medical nutrition consultant at several hospitals in Indonesia.

CO-CHAIRPERSON



HAZIZI ABU SAAD is an Associate Professor in the Department of Nutrition, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia. He is the former Deputy Director of Sports Academy, Universiti Putra Malaysia. He holds the position of Honorary Treasurer Malaysian Association for the Study of Obesity and Treasurer of the Organizing Committee of the AOCO-MASO 2021. Hazizi's research team has been involved in research focusing on physical activity, nutrition and energy balance. Some of his main interests include objective assessments of sedentary behaviour and physical activity level, physical activity and nutrition interventions, and sports nutrition research.

S12.1 The role of 24 hour movement behaviours in understanding and responding to the global child obesity pandemic with a focus on Asia-Oceania region

Tony Okely

Director of the Early Start Research Institute, University of Wollongong, Australia

The World Health Organization (WHO) has identified the prevention of obesity in young children as one of its key priorities for the 21st Century; movement behaviours (physical activity, sedentary behaviour, and sleep) play a key role in contributing to this and are associated with many health and developmental outcomes in children. To promote healthy levels of these behaviours requires an understanding of the factors that influence them, and the current levels of participation. This presentation will review the evidence on the prevalence, correlates and determinants of movement behaviours in children, their links to health, and put forward evidence-based strategies for their promotion. A particular focus will be on countries in the Asia-Oceania Region, where there is a dearth of evidence but arguably the greatest need to understand and promote these behaviours.

Biography



Anthony Okely is a Senior Professor in the School of Health and Society and Research Director at Early Start at the University of Wollongong, Australia. He is a NHMRC Leadership Fellow (Level 2), and Theme Leader at the Illawarra Health & Medical Research Institute. His research focuses on movement behaviours (physical activity, sedentary behaviour, and sleep) in children, with a particular focus on low- and middle-income countries. Anthony led the team that developed the Australian 24-hr Movement Guidelines for Children birth to 5 years. He was part of the

Guideline Development Group for the WHO Global guidelines on physical activity, sedentary and sleep behaviours in children under 5 years of age, and for similar guidelines in South Africa, Canada and the United Kingdom. He currently leads an international study of movement behaviours in the early years called SUNRISE, which involves 39 countries, 24 of which are low- or middle-income.

S12.2 Structured nutrition in optimizing weight loss

Winnie Chee

Department of Nutrition & Dietetics, International Medical University, Malaysia

The clinical effectiveness of intensive lifestyle interventions in obesity and diabetes management has been established from randomised controlled trials conducted over the past two decades. Application of lifestyle recommendations is often challenging in routine clinical practice and poor compliance to diet and lifestyle changes are due to the complexities of the transition between awareness, motivation, and action. A recent study in Malaysia conducted among overweight/obese individuals with Type 2 diabetes demonstrated that providing a structured lifestyle intervention not only achieved weight reduction and improved glycaemic control but also improved self-efficacy that sustained the weight loss up to a year. Structured lifestyle intervention can be achieved through providing flexible low-calorie meal plans with snack choices, incorporation of meal replacements and exercise prescription. Behavioural counselling and use of technology further facilitated adherence to the lifestyle recommendations.

Biography



Winnie Chee is a Professor in the Dept of Nutrition & Dietetics and current Dean, School of Health Sciences, International Medical University (IMU), Malaysia. Her research focus on intervention studies for diet and lifestyle in obesity, diabetes and bone health. Prof Chee has published widely, invited speaker in national and international platforms and contributes her expertise in expert committees for formulating CPGs, MNT, and nutrition guidelines in Malaysia. She is also a practicing dietitian at IMU and President of the Malaysian Dietitians' Association.

S12.3 Abdominal fat reducing effect of exercise training

Kuo Chia-Hua

College of Kinesiology, University of Taipei, Taiwan

Exercise training has been well proven to decrease abdominal fat in humans in an intensity-dependent manner (Irving et al., 2008; Trapp et al., 2008; Vissers et al., 2013). This fat loss effect has been generally thought to mediate by increased fat burning, defined by conversion of fatty acid into carbon dioxide in consumption of oxygen. However, unchanged 24-h fatty acid oxidation during and after exercise does not provide reasonable support to the causal explanation between fat burning and fat loss. In this presentation, alternative perspectives on what have not been considered to explain the fat loss outcome are discussed, aiming to attract more studies to construct a better theory for practice.

Biography



Chia-Hua Kuo received Ph.D. from University of Texas at Austin in 1997. He has been recognized as Distinguished Professor since 2017 at University of Taipei and is Honorary President for Taiwan Society for Sports Nutrition (TSSN). He is also the Dean for the College of Kinesiology, University of Taipei. His most recent work has focused on the role of phagocytes in the adaptation against exercise under various nutritional conditions (ginsenoside Rg1, deep ocean mineral, and protein-to-carbohydrate ratio). He has published more than 190 Pubmed articles mostly in the area of sports nutrition and metabolism.

S12.4 How the gut talks to the brain?

Carel le Roux

Metabolic Medicine Group, University College Dublin, Ireland

A combination of factors either consciously or unconsciously influence eating choices, all of which converge to determine what, when, why and how much we eat. This presentation will focus on how appetite and behavior drive food choice. Various biological factors can have marked influences on appetite and food choices, including neurochemical and gut hormone signals. From in utero into childhood, research has shown how chemical senses shape present and future food preferences. Genetics can also influence food choice. Behavior is also a major determinant of food choices.

Behavior is shaped in large part by biology, education, environment, and experiences learned and acquired throughout life. Interactions with family, friends, peers, and other social structures influences food choices and behaviors. Physical activity and sleep can also influence behavior that drives food choices. Understanding how these biological, chemical, physical and social factors interact to determine food choices is critical to informing public health recommendations aimed at changing or improving food choices.

Biography



Carel le Roux (MBChB, MSc, FRCP, FRCPath, PhD) graduated from medical school in Pretoria South Africa, completed his Senior House Officer training at Barts and The London Hospital, his SpR training in metabolic medicine at the Hammersmith Hospitals and his PhD at Imperial College London. He accepted a Chair as Head of Pathology at University College Dublin in 2011. He received the President of Ireland Young Researcher Award from science Foundation Ireland, a Clinician Scientist Award from the National Institute Health Research in the UK and a Wellcome Trust Clinical Research Fellowship amongst others.

Working within the Diabetes Complications Research Centre the focus of his research is primarily concerned with increased mortality and morbidity associated with obesity and diabetes. A better mechanistic understanding of how the “gut talks to the brain” will allow safer and more effective treatments to be used in future.

S12.5 Effective Type 2 Diabetes management with very low-calorie diet (VLCD)

Saiful B. Kassim

Gleneagles Hospital Kuala Lumpur

The National Health and Morbidity Survey 2019 released by the Ministry of Health revealed that an estimated 3.9 million adults aged 18 above suffered from diabetes. The increase in the prevalence of type 2 diabetes (T2DM) has contributed significantly to the parallel increase in the prevalence of overweight and obesity. Obesity and diabetes have become inseparable; indeed, obesity is observed in 75% of Malaysians with T2DM.

The provision of very low-calorie diet (VLCD) is an emerging weight management option for obese patients to imitate the energy deficit and weight loss through bariatric surgery. Numerous studies of VLCD have demonstrated improved glycemic control and diabetes remission with weight loss greater than 10%. Current clinical practice guideline advocates VLCD as a dietary intervention for obese patients with T2DM to achieve diabetes remission. In this presentation, the effectiveness of VLCD in the management of patients with both short and long-standing T2DM will be discussed.

Biography



Saiful Kassim graduated with honours in multiple specialties in Medicine from National University of Ireland Galway and completed his specialist training in Endocrinology & Diabetes in Belfast. He obtained dual CCT in Endocrinology & Diabetes and Internal Medicine. He was RCP (UK) College Tutor as well as Undergraduate and Postgraduate Lead for the NHS Trust. He was actively involved in the MRCP (UK) examinations as well as undergraduate medical examinations in Queen's University Belfast, UK. He was awarded the

Fellowships of RCP(UK) of Edinburgh, Glasgow, London and Ireland Colleges. He has a special interest in insulin resistance and Obesity.



AOASO President Country Update



List of AOASO President: Country Update Titles

No.	Abstract ID	Title
1	PS1	Obesity in Australia - A decade of inaction
2	PS2	Obesity in Thailand
3	PS3	Enhancement of social media platforms for better community education on obesity
4	PS4	Updates on the Burden of Obesity in Indonesia
5	PS5	Prevalence of obesity and government programs and activities to help reduce the obesity prevalence in Korea
6	PS6	Obesity trends, interventions and policy options in Malaysia
7	PS7	Addressing the ROOTS of obesity in Singapore: Population health & obesity professional education
8	PS8	Policy implementation to stop the trend of rising obesity in Taiwan



AOASO PRESIDENT'S COUNTRY UPDATE

CHAIRPERSON



BANSHI SABOO is a Chief Diabetologist and Chairman of Diabetes Care & Hormone Clinic at Ahmedabad, India. He was honoured with Fellowship of American College of Endocrinology, American College of Physician, International College of Nutrition (FICN), Royal College of Physicians (RCP) of Edinburgh, Glasgow and London Colleges, as well as MNAMS (Diabetology). Dr. Saboo was awarded in the 100 Most Impactful Healthcare Leaders 2017 by World Health & Wellness Congress & Awards. Apart from being a renowned expert for several Diabetes management Guidelines, Dr. Saboo has published more than 50 publications in indexed journals and chapters in various textbooks and monographs.

CO-CHAIRPERSON



GAN WAN YING is an Associate Professor in the Department of Nutrition, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia. Her research interests include early childhood development, malnutrition, disordered eating and body image, and nutrition in underprivileged groups. She is currently served as a council member of the Malaysian Association for the Study of Obesity (MASO). She is also working closely with different stakeholders such as Ministry of Health and private agencies to improve nutritional and health status of the community.

PS1 Obesity in Australia — A Decade of Inaction

Jane Martin

Obesity Policy Coalition, Cancer Council Victoria, Australia

Introduction: This presentation will consider progress in Australia over the last ten years when compared to recommendations made a decade ago to ensure that Australia was the "Healthiest Country by 2020".

Objective: More than a decade ago the Australian government appointed a Preventative Health Taskforce which developed a comprehensive strategy on prevention, including an obesity strategy. This strategy consisted of ten key recommendations to address unhealthy weight in Australia. This presentation will discuss the progress around implementation of these recommendations to address obesity and deliver on - "Australia the healthiest country by 2020". It will also consider the recent challenges faced in Australia to prevent overweight and obesity - including reflecting on the impact of Covid-19.

Methodology: Each of the recommendations of the Taskforce on Obesity from the Preventative Health Strategy were examined over the intervening decade as to progression and an assessment made as to whether they were not implemented, partially implemented, or fully implemented. The review considered the Federal Government's response to each of the Taskforce's recommendations and what, if anything, had been achieved in each of the proposed actions. The methodology was based on one used for assessment of alcohol policies in the Preventative Health Strategy; analysing government reports, websites, media releases to assess the degree to which recommendations have been considered, developed and implemented since the Taskforce's report.

Results: The analysis showed that out of the 27 actions included in the ten recommendations, one had been fully completed, twenty have been progressed to some extent, and six have not been progressed at all.

Conclusion: The analysis found a lack of progress on the part of successive Australian governments to implement the elements of a comprehensive strategy to address obesity, including engaging on policy and regulatory reforms. A new National Obesity Strategy is expected to be released soon.

Biography



Jane Martin has a substantive role to lead the Obesity Policy Coalition which advocates for policies to prevent obesity and she oversees the Cancer Council of Victoria's healthy weight campaigns. Jane has spent thirty years working in advocacy covering in tobacco control, alcohol policy and obesity prevention. Her interests lie in research, knowledge translation and partnerships to support reform. She is a media commentator, adviser to governments and collaborates on research grants and academic papers.

PS2 Obesity in Thailand

Tanupol Virunhagarun

President, Bangkok Association of Regenerative Health and The Study of Obesity (BARSO), Thailand

The condition of being overweight and obese together make up one of the leading preventable causes of death in Thailand. Obesity is a chronic non-communicable disease (NCDs) that can seriously affect people's health and lead to a whole range of additional conditions and diseases. Obesity can be classified by excess weight (obesity) and body fat accumulation. Patients who are overweight or obese will have an elevated risk of various health problems. Numerous studies worldwide confirm that these include coronary heart disease, type 2 diabetes, asthma, high cholesterol, osteoarthritis, high blood pressure, sleep apnea and certain types of cancer. The spread of COVID-19 in Thailand is part of the worldwide pandemic of coronavirus disease 2019 (COVID-19) caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). People with pre-existing non-communicable diseases (NCDs) appear to be more vulnerable to becoming severely ill with the virus. World Health Organization Statistics reports a significant rate of comorbidities of COVID-19 deaths in Thailand co-occur with diabetes (41%), hypertension (36%), dyslipidemia (18%), heart disease (14%), kidney disease (9%), obesity (7%) and others (14%). The responsibility of our association is to carry out the vision to continue progression in the indepth study of obesity to increase awareness in surrounding health concerns and to minimize the burden of these diseases. Since its establishment BARSO has continuously evaluated the prevalence and awareness of NCDs reports amongst those under obese classifications, using nationally representative data to identify the significant risk factors for the severity of COVID-19.

Biography



Tanupol Virunhagarun is established as one of Thailand's leading experts in Regenerative medicine. As a well-known expert in Weight loss medicine, Sexual Medicine and Regenerative medicine, he is one of the pioneers in the field of Preventive Medicine in Thailand. As a member of the American College of Lifestyle Medicine (ACLM) and BARSO, he continues his work on the study of obesity. Dr. Tanupol founded and is President of the Bangkok Association of Regenerative Health and the Study of Obesity (BARSO) in 2014, with the mission to help society to reverse and prevent obesity within the population by improving one's lifestyle and overall health. Currently, he is the acting Chief Executive Officer and Director of BDMS Wellness Clinic, which is part of Bangkok Dusit Medical Services (BDMS) Thailand's largest, leading private healthcare networks. Having recently graduated from American Academy of Anti-Aging and Regenerative Medicine and supplemented his studies in medicine and business from Harvard Business School, he has become more committed in expanding his expertise through clinical research, healthcare consulting, medical education and business development. An avid spokesperson on the subject of Preventive Medicine, Dr Tanupol has regular podcasts to educate the public on the effects of lifestyle on their overall health.

PS3 Enhancement of Social Media Platforms for Better Community Education on Obesity

Francis CC Chow

President, Hong Kong Association for The Study of Obesity (HKASO), Hong Kong

In February 2019 we had an overwhelming response from media and public after a press conference reporting a population survey on obesity attitudes and knowledge in Hong Kong. As follow up actions, we had organized several public talks and interviews, and in addition, published 5 educational leaflets in Chinese on obesity.

Our key objective in 2019-2020 was to revamp our website to a more proactive and dynamic format and to create our 1st social media, Facebook, for better community networking. Below is a link to our mini-poster in Chinese summarizing all key messages on obesity in a nutshell: <https://bit.ly/3mfyn5S>.

The following 3 links summarizing leaflets on definitions, comorbidities; life-style modifications; and pharmacological treatments of obesity – all are available for downloads from our Website (www.hkaso.org) or Facebook (<https://www.facebook.com/pg/hkaso.org/photos/>): <https://bit.ly/3fHo7Ce>; <https://bit.ly/31lwntt>; <https://bit.ly/2Oozpju>.

Biography



Francis CC Chow is an Honorary Consultant Endocrinologist and Associate Professor at the Chinese University of Hong Kong (CUHK) in Hong Kong. In addition, he is currently Chairman and Managing Director of the Hong Kong Diabetes Specialist Centre and President of the Hong Kong Association for the Study of Obesity. Until recently, he was also Chief of the Service of the Department of Medicine and Therapeutics at Prince of Wales Hospital (PWH) in Hong Kong and Co-Director of the CUHK-PWH Diabetes and Endocrine Centre, an IDF

Centre of Education.



PS4 Updates on the burden of obesity in Indonesia

Dante S. Harbuwono

President, The Indonesia Association for The Study of Obesity (ISSO), Indonesia

Obesity continues to pose a significant health burden in Indonesia. The increasing prevalence of obesity and central obesity has reached an alarming rate, accounting for approximately 30% of the Indonesian adult population in 2018. The increasing prevalence of obesity in Indonesia is followed by a parallel increase in cardiometabolic diseases such as hypertension, pre-diabetes, diabetes, and cardio-cerebrovascular disease. The increasing prevalence of these diseases burdens the Indonesian health system significantly as obesity and their cardiometabolic complications are associated with high morbidity, mortality, and cost. The increasing burden of obesity and its associated cardiometabolic complications necessitate the importance of early detection at the community level in all primary healthcare settings and identification of high-risk groups at the earliest phase to prevent cardiometabolic complications and reduce disease burden. The increasing burden of obesity and its associated complications in Indonesia require comprehensive management and extensive health efforts from the government and all stakeholders, beginning at the community level focusing on prevention, early detection, and prompt intervention .

Biography



Dante S. Harbuwono is a lecturer in the Faculty of Medicine, University of Indonesia. Involved in both the academic and medical world, he specializes in Internal Medicine and Molecular Diabetes. In 2020, Dr. Harbuwono was appointed as Vice Minister of Health in Indonesia. He is also an active member of the Indonesian Internal Medicine Specialist Association and the Indonesian Endocrinology Association. Among the awards received by Dr. Harbuwono are the

Tajima Awards by Japan Epidemiology of Diabetes and Takeda Science Foundation Awards by Takeda Japan. He has also authored many academic publications, primarily focusing on obesity, diabetes and metabolic profiling.

PS5 Prevalence of obesity and government programs and activities to help reduce the obesity prevalence in Korea

Jae Heon Kang

President, Korea Society for the Study of Obesity (KSSO), Korea

The prevalence of class I, II, and III obesity has increased from 29.1%, 3.2%, and 0.3% in 2009 to 32.5%, 5.2%, and 0.8% in 2018, respectively. The obesity prevalence among male adolescents in Korea (26%) is higher than the average of the OECD countries (25.6%)., and the prevalence of morbid obesity among young adults is increasing. And, the prevalence of obesity is higher in regions with lower income level and rural areas.

Korean government set the following 4 strategies for the prevention and management of obesity. The first strategy was to reinforce education for appropriate dietary habits and to guide healthy food consumption. Specifically, the government strengthened breastfeeding education, enlarged fruits supply to local childcare centre, developed guidelines for alcohol consumption, and established monitoring process for media or advertisement that may lead to binge eating.

The second strategy was to encourage physical activities and to make healthy environment. The government reorganized standard curriculum of kindergarten and childcare centres in order to emphasize physical activities as well as appropriate dietary patterns. For adults and older people, the government provided incentives to those who improved their lifestyles and expanded standard physical activity program in senior centre.

The third strategy was active treatment of patients with morbid obesity and reinforcement of obesity management. National health insurance was applied to bariatric surgery as well as preoperative consultation in 2020.

The final strategy was to improve public awareness and to build scientific basis. National campaign was carried out to increase the public awareness. Furthermore, they provided the regional prevalence of obesity, medical costs, and determinants of obesity so that regional comparison could be made.

Biography



Jae-Heon Kang is a professor of medicine at Sungkyunkwan University, College of Medicine. He received M. D. and MPH degree on epidemiology and Ph.D on preventive medicine from Seoul National University. His current positions at Sungkyunkwan University include: chairman of Institute for Clinical Nutrition and chairman of Department of Family Medicine at Kangbuk Samsung hospital. His current research interests include the cost-benefit analysis of various treatments in obesity patients and development of mobile healthcare services for obese patients. Furthermore, he has been carrying out a cohort study on child-adolescent obesity since 2005, funded by the Korea Center for Disease Control.

PS6 Obesity trends: Interventions and policy options in Malaysia

Mohd Ismail Noor

President, Malaysian Association for the Study of Obesity (MASO), Malaysia

The epidemiology of obesity in Malaysia is very disturbing and the traditional approach to combat it, appears to have failed in producing the desired effect judging from the increase in prevalence of overweight and obesity in both adults and children in the last two decades. National Health Morbidity Survey data between 1996 to 2019 in adults, revealed almost a two-fold increase in overweight (16.6% to 30.4%) and five-fold increase in Obesity (4.5% to 19.7%), respectively. Several nationwide studies conducted in children between 6 to 12 years old reported a combined overweight and obesity prevalence of 34% while in adolescents aged 13-17 years old, 28.5% are either overweight or obese. A recent NHMS 2018 report revealed the prevalence for unhealthy weight status in Malaysian elderly population aged 60 years and above were 37% overweight, 17.6% obesity with 36.4% abdominal obesity. The NPANM III (2016-2025) have set a target of no increase in prevalence of overweight and obesity for all age groups by the year 2025. Although actions plan to help reduce the increasing prevalence are numerous and well documented by MOH, however, their implementation are few and over all rather uncoordinated while effectiveness of interventions are frustrated by a lack of scientific evidence. The Obesity Task Force have recommended both short-term and long-term preventive strategies including “hard policies” for the Government to consider. Unless we could make policy makers, food industries and professionals alike understand the threat obesity poses and the urgency to implement possible solutions now by assessing context-specific barriers and manage trade-offs, the natural course would be an epidemic that will continue to grow beyond control in the coming decades.

Biography



Mohd Ismail Noor is an Emeritus Professor in Nutrition, UKM and a Visiting Professor UniSZA. His major research interest includes energy requirements, obesity, body composition and public health nutrition. He was a member, WHO Consultation on Obesity, Geneva (1997) and on appropriate BMI for Asian populations, Singapore (2002) and FAO/WHO/UNU Expert Consultation on Energy in Human Nutrition, FAO, Rome (2001). He is the President MASO (2019-2021), Secretary IASO (2010-2014), President AOASO (2014-2018) and was elected Fellow, International Union of Nutritional Sciences, FIUNS (2005), Fellow, Academy of Sciences Malaysia, FASc (2006) and Foreign Correspondent, French Academy of Medicine FCFAM (2017).

PS7 Addressing the ROOTS of obesity in Singapore: Population health & obesity professional education

Kwang-Wei Tham

President, Singapore Association for the Study of Obesity (SASO), Singapore

Obesity is a complex chronic disease requiring multi-faceted approaches. Tackling obesity as a nation will require the ROOTS of obesity to be addressed.

In Singapore, the prevalence of obesity had increased more than 2-fold from 1998 to 2010, with 55% of the population with a body-mass index of $\geq 23\text{kg/m}^2$. If no action was taken, the prevalence of obesity was predicted to rise from 10.8% in 2010 to 15% by 2024. With the goal to keep obesity prevalence at $<10\%$, public health measures were implemented and these measures were shared previously. A favourable downward trend of obesity prevalence to 8.7% was subsequently observed in 2017.

The various root causes of obesity contribute variably in each society hence delineating these factors is crucial before measures can be taken effectively. Obesity professional education has also been shown to be a key factor in addressing obesity.

This presentation aims to give an update on ongoing programmes and research embarked to delineate the drivers of overweight and obesity and further measures taken to address the ROOTS of obesity in Singapore.

Biography



THAM KWANG WEI is a Senior Consultant Endocrinologist from Singapore who completed her Residency in Internal Medicine and Fellowship in Endocrinology, Diabetes and Metabolism at the Cleveland Clinic, USA. Her main interests are in obesity professional education, clinical interventions in obesity management and the medical outcomes of bariatric surgery. She is the current President of the Singapore Association for the Study of Obesity (SASO), the Secretary of the Asia- Oceania Association for the Study of Obesity (AOASO), the Vice-Chair of the Integrated Health Committee, IFSO-APC and a National SCOPE Fellow.

PS8 Policy implementation to stop the trend of rising obesity in Taiwan

Yi-Ching Yang

President, Taiwan Medical Association for the Study of Obesity (TMASO), Taiwan

In Taiwan, the main cause of obesity is calorie intakes exceeding calorie expenditure, and other causes are unhealthy diets, lack of physical activity, societal and environmental factors. From 1990s to 2010, the prevalence of overweight and obesity had increased by 8-12% for children and teenagers, and by 10.7% for adults.

To stop the trend of rising obesity, several policies implemented including promoting obesity prevention and cooperation in all settings, equipping comprehensive information and systems to improve obesity causing environment, re-orienting health services, strengthening community action, and developing people's skills to implement healthy living. Medical staffs and HPA (Health Promotion Administration) strives to promote building healthy cities with health promoting hospitals, workplaces, schools and communities, to establish healthy diet supply systems with development of healthy box meals and implementation of healthy diet guidance. In addition, a booklet titled "100+Q&A for Obesity" and e-learning training videos have been released to reinforce proper referral and adequate treatment of people with obesity.

The HPA's "Nutrition and Health Survey 2016-2019" indicates that the prevalence of overweight and obese students at elementary school, junior high schools and senior high schools has gradually decreased by 1.5-3% or maintained. The incensement of overweight and obesity in adults has also been mitigated from 10.7% in 20 years ago to 4.5% in these 10 years.

Biography



Yi-Ching Yang is a full professor of the Department of Family Medicine as well as the Institute of Public Health at National Cheng Kung University (NCKU). He had been in charge as secretary in Medical Affairs, Superintendent Office and director of Department of Family Medicine as well as Gerontology and Geriatric Medicine, NCKU Hospital, and also the Deputy Superintendent, Tainan Hospital, Ministry of Health and Welfare. Prof Yang is currently assigned as the superintendent of preparing office of NCKU Geriatric Hospital which is planned to be built with 12 storey aboveground, 5 storey underground and 465 beds. Prod Yang is the current president of Taiwan Medical Association for the Study of Obesity since 2015. He has published more than 160 scientific papers in various international I and national indexed journals. He is also the Editor in Chief of Taiwan Journal of Family Medicine.



RISING STARS ABSTRACTS



List of Rising Stars Abstracts

No.	Abstract ID	Title
1	RSS1	Activation of the medial-prefrontal cortex to lateral hypothalamic circuit reduces food intake and motivation to obtain sucrose reward
2	RSS2	Immune regulation of metabolic processes through myeloid production of IL-10
3	RSS3	Ventromedial hypothalamic primary cilia control energy and skeletal homeostasis
4	RSS4	Tick Tock: Overweight early bird vs night owl, which is healthier?
5	RSS5	Overall unsatisfactory knowledge in obesity signals an urgent need to incorporate obesity medicine teaching into current medical curriculum in Singapore
6	RSS6	Can anthropometry and body composition explain physical fitness levels in school-aged children?

RISING STARS

CHAIRPERSON



GARY WITTERT is a graduate of the University of the Witwatersrand in Johannesburg South Africa. He trained as an Endocrinologist in Christchurch, New Zealand followed by postdoctoral training was at Harvard Medical School and Oregon Health Sciences University. He is currently Professor of Medicine and Director of the Freemasons Centre for Men's Health and Wellbeing, University of Adelaide, Senior Consultant Endocrinologist Royal Adelaide Hospital, and Senior Principle Research Fellow at South Australian Health and Medical Research Institute. He is a Fellow of the Australian Academy of Health and Medical Sciences. His research relating to obesity and chronic disease has generated has over 400 research publication.

CO-CHAIRPERSON



DENISE KOH is a senior lecturer at the Faculty of Education, Universiti Kebangsaan Malaysia. She is trained in physical education and completed her doctoral studies at The University of Queensland, Australia. Her research interest is in physical activity and health, and currently, have active research grants that focuses on the measurement and evaluation of physical activity among children and adolescents. Denise also has smaller projects exploring innovative ways to develop physical literacy among children. Denise is currently a council member of MASO and a Section Editor for the Malaysian Journal of Movement, Health and Exercise (MoHE).



RSS1 Activation of the medial-prefrontal cortex to lateral hypothalamic circuit reduces food intake and motivation to obtain sucrose reward

Rachel Clarke, Romana Stark, Bowen Wei, Felicia Reed, Matthieu Mequinion, Zane Bruce Andrews

Department of Physiology, Monash University, Australia

Introduction: The medial pre-frontal cortex (mPFC) is a key brain region implicated in food reward valuation. Human imaging studies demonstrate that both obese and anorexic patients have altered mPFC activation in response to food cues, suggesting a broad role for the mPFC in disordered feeding. Specific mPFC circuits may regulate different aspects of feeding behaviour, with many mPFC circuits not yet investigated. The mPFC directly projects to the lateral hypothalamus (LH) — a brain region that coordinates both feeding and reward-seeking.

Objective: Here, we aim to record from and manipulate the mPFC-LH circuit in mice to determine a potential role in control of feeding behaviour.

Methodology: We used fibre photometry to record the activity of GCamp7s expressing mPFC-LH projection neurons in freely-behaving C57BL/6 mice. We then targeted hM3Dq or hM4Di designer receptors exclusively activated by designer drugs (DREADDs) to the mPFC-LH projection neurons of C57BL/6 mice and acutely activated or inhibited this circuit using clozapine-N-oxide (CNO) prior to assessing feeding behaviour.

Results: mPFC-LH projection neuron activity increased with exposure to stressful stimuli. Chemogenetic activation of the mPFC-LH circuit suppressed feeding behaviour, and reward-seeking in an operant conditioning task, suggesting this circuit might act as a brake over appetitive behaviours in response to acute stress. Supporting this idea, chemogenetic inhibition of the mPFC-LH circuit only increased feeding when mice were exposed to stress.

Conclusion: Our results suggest the mPFC-LH circuit responds to stressful stimuli and acts as an inhibitory controller of feeding and motivated reward-seeking behaviours. Hypoactivation of mPFC-LH circuit in humans could therefore contribute to feeding behaviours associated with obesity, while hyperactivation of the mPFC-LH circuit in humans may promote anorexia.



RSS2 Immune regulation of metabolic processes through myeloid production of IL-10

Gotaro Toda

Department of Diabetes and Metabolic Diseases, The University of Tokyo, Graduate School of Medicine, Japan

Introduction: Immune cells with their capacity to respond to multiple signals, may potentially regulate physiological processes.

Objective: Of note, the intake of food is a process where multiple signals are activated including LPS, which induces multiple genes in immune cells.

Methodology: Genetic knockout models, and primary cultures.

Results: LPS together with insulin rapidly induced IL-10 in macrophages through the Akt-mTOR pathway, which could also be detected in the postprandial portal vein in vivo. In primary hepatocytes, physiological levels of insulin together with medium from macrophages stimulated with LPS and insulin potently suppressed gluconeogenic gene expression in an IL-10 dependent manner, while normal levels of insulin alone did not. Plasma glucose concentration ad libitum was elevated and the normal suppression of hepatic gluconeogenic gene expression was compromised in mice with deficient IL-10 signaling in liver, and in mice with deficient Akt-mTOR dependent IL-10 production in myeloid cells, showing the importance of IL-10 in postprandial glucose metabolism. We further assessed the role of IL-10 in metabolism by conducting bone marrow transfer from IL-10 knockout mice to wild type mice. In line with past reports, body weight was decreased accompanied with markedly increased whole-body insulin sensitivity while conversely, postprandial glucose production was not decreased. In diet induced obese mice, Akt phosphorylation in response to insulin and IL-10 positivity among macrophages in adipose tissue was suppressed, and postprandial expression of gluconeogenic genes was compromised, accompanied by marked hyperinsulinemia. The postprandial response was improved in mice injected with adenovirus expressing IL-10, pointing to a postprandial insulin sensitizing effect of IL-10 in obese mice.

Conclusion: These results suggest that Akt-mTOR dependent increases of IL-10 production after feeding suppresses hepatic gluconeogenic gene expression, while base line IL-10 maintains normal body weight. Employing these pathways in future treatment of obesity must maintain the normal response of immune cells after feeding and otherwise.



RSS3 Ventromedial hypothalamic primary cilia control energy and skeletal homeostasis

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Introduction: Dysfunction of primary cilia is related to dyshomeostasis, leading to a wide range of disorders. The ventromedial hypothalamus (VMH) is known to regulate several homeostatic processes, but those modulated specifically by VMH-primary cilia are not yet known.

Objective: In this study, we identify VMH-primary cilia as an important organelle that maintains energy and skeletal homeostasis by modulating the autonomic nervous system.

Methodology: We established loss-of-function models of primary cilia in the VMH by either targeting IFT88 (IFT 88 KOSF-I) using steroidogenic factor I-Cre (SF1-Cre) or injecting an adeno-associated virus Cre (AAV-Cre) directly into the VMH.

Results: Functional impairments of VMH-primary cilia were linked to decreased sympathetic activation and central leptin resistance, which led to marked obesity and bone density accrual. Obesity was caused by hyperphagia, decreased energy expenditure, and blunted brown fat function, as well as associated with insulin and leptin resistance. The effect of bone density accrual was independent from obesity, as it was caused by the decreased sympathetic tone resulting in increased osteoblastic and decreased osteoclastic activities in the IFT88 KOSF-I and VMH-primary cilia knock-down mice.

Conclusion: Overall, our current study identifies VMH-primary cilia as a critical hypothalamic organelle that maintaining energy and skeletal homeostasis.



RSS4 Tick Tock: Overweight Early Bird vs Night Owl, which is healthier?

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Introduction: Chronotypes reflect an individual morningness and eveningness preferences and might play an important role in obesity.

Objective: To determine the chronotypes profile of adiposity traits, cardiometabolic risk factors and dietary practice at baseline, and whether the rate of weight loss is associated with chronotypes.

Methodology: This study was conducted among 299 overweight and obese employees [Age: 40.3±6.9y; 73.6% women; BMI: 31.7±5.0 kg/m²] in Klang Valley area. The chronotype measured by using Munich Chronotype Questionnaire. The glycaemic and cardiometabolic profiles were determined from fasting blood samples and the dietary habit was obtained from diet history questionnaire. A sub-sample (n=95) were recruited for 12 weeks of chronotype-based weight management program, weekly session. These participants received a personalized low caloric diet-daily caloric and macronutrient distribution were adjusted according to chronotypes.

Results: Although there was no significant difference in adiposity trait between morning and evening chronotype, the significant difference was observed in HbA1c [5.7 vs 6.1 p=0.009], fasting blood glucose [5.0 vs 5.6mmol/L, p=0.002], HOMA-IR [2.6 vs 3.4, p=0.038], total cholesterol [4.9 vs 5.2 mmol/L, p=0.020], non-HDLc [3.7 vs 3.9mmol/L, p=0.025] and systolic blood pressure [123.5 vs 128.2mmHg, p=0.022]. For dietary practice, evening chronotype significantly had greater energy intake, carbohydrate, protein and fat intake in the late eating window than morning chronotypes. Evening type also had delay time of the first [08:17 vs 08:35, p=0.020] and last meal [20:16 vs 20:52, p=0.002]. Following the weight management program, morning chronotypes had greater adiposity improvement than evening chronotype [Weight loss: -5.0 vs -3.2kg, p=0.035; BMI loss: -1.9 vs -1.2kg/m², p=0.027; Fat loss: -3.6 vs -2.0kg, p=0.031].

Conclusion: Evening chronotype is linked with increased cardiometabolic risk factors and reduced potency of weight management intervention. Future study needs to address the possible factors that might mediate and moderate the weight loss outcome between the chronotypes.





RSS5 Overall unsatisfactory knowledge in obesity signals an urgent need to incorporate obesity medicine teaching into current medical curriculum in Singapore

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Introduction: The obesity epidemic started in the 1970s and rates have almost tripled since. Obesity is associated with the top leading causes of death. One of the barriers faced by doctors is a lack of knowledge and confidence in managing weight in their practice.

Objectives: To survey the knowledge in weight management amongst year 5 medical students from a single undergraduate medical school and practicing doctors from a single healthcare group in Singapore.

Methods: A cross-sectional observational study was conducted, where eligible participants were invited via email to participate in an anonymised 25-question obesity knowledge quiz. The quiz focused on four sections of weight management with approximately equal weightage in physiology, lifestyle interventions, pharmacology, and bariatric surgery.

Results: There were 136 responses, consisting of 32% medical students and 68% medical doctors (69% enrolled in medical residency programmes). Majority of participating doctors had < 5 years' clinical experience (73%) and were practicing in hospitals (76%). Three quarters of all participants reported that they had no prior exposure to obesity education. The median quiz score was 64% (IQR 12). Twelve participants (8.8%) failed the quiz. There was no difference in performance between medical students and doctors. While prior exposure to obesity education was not associated with improved scores, it was associated with improved self-rated assessment of weight management knowledge ($p=0.03$) and self-rated confidence in managing persons with obesity ($p=0.05$) amongst doctors.

Conclusion: Despite the impact of obesity on common chronic conditions, most health authorities have been tardy in addressing one main gap in obesity management – education. We have shown that the overall knowledge of weight management amongst doctors and would-be doctors is unsatisfactory. Exposure to formal teaching in weight management was associated with improved confidence in managing persons with obesity. Obesity medicine should be incorporated into undergraduate and postgraduate medical courses.



RSS6 Can anthropometry and body composition explain physical fitness levels in school-aged children?

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Introduction: Physical fitness benefits children's cognitive functioning. However, the associations between anthropometry, body composition, and physical fitness are not well understood in children.

Objective: This quantitative cross-sectional study aimed to investigate the associations between demographic data (age, sex), anthropometric measures (body mass index z-score [BMI z-score], waist/height ratio [WHtR]), body composition measures (body-fat percentage [BF%], muscle weight), and physical fitness levels (endurance run [800-m run], flexibility [sit-and-reach], speed/agility [1-minute sit-and-ups], lower body power [standing long jump]) in school aged children.

Methodology: Data were retrieved for analysis from a school-based health promotion project conducted by Chang Gung Memorial Hospital, Linkou Main Branch, Taoyuan, Taiwan from 2013 to 2016. Continuous variables were categorized by median splits. Spearman correlation test was used to analyze the association between variables. The dichotomized variables were then assessed using multivariate logistic regression models. All p-values were two-sided, and statistical significance was accepted at $p < 0.05$.

Results: Multivariate logistic regressions revealed that girls, age ≥ 10 years, BMI z-score ≥ 20.46 , and BF% ≥ 17.1 independently correlated with 800-m run ≥ 299 sec. Girls and age ≥ 10 years were independently related to sit-and-reach ≤ 26 cm. Age ≥ 10 years and BF% ≥ 17.1 were independently associated with 1-minute sit-and-ups times. Girls, age ≥ 10 years, and WHtR ≥ 0.45 were independently correlated with standing long jump ≤ 135 cm.

Conclusion: Female gender, younger age, higher BMI z-score, and higher BF% were associated with poorer physical fitness performance among elementary school students. Health promotion for children should focus on not only metrics of anthropometry, but also those of body composition, and physical fitness. Further investigations will be of interests on understanding the interaction between weight status, body composition, and physical fitness.



**FREE COMMUNICATIONS
ABSTRACTS**



List of Free Communications Titles

No.	Abstract ID	Title
Free Communication Session 1		
1	FC1.1	Impact of self-monitoring digital interventions on body composition in obese patients: A randomized controlled trial
2	FC1.2	Therapeutic benefit and pharmacological aspects of Aegeline in the medicine for the treatment of Human health complications
3	FC1.3	Ramadan focused nutrition therapy in overweight and obese individuals with type 2 diabetes
4	FC1.4	Exercise prescription in the management of obesity in an osteoporotic female with Turner's syndrome
5	FC1.5	Nutritional therapy in obese patient with suprapubic diabetic abscess and sepsis: A case report
6	FC1.6	Association between self-efficacy in maintaining healthy lifestyle and barrier to change eating habit and weight status of secondary school students in Kuala Lumpur: NuTeen project
Free Communication Session 2		
7	FC2.1	Weight status differences in the associations between obstructive sleep apnea and pediatric hypertension
8	FC2.2	Impact of COVID -19 induced lockdown on the body weight, waist circumference and blood pressure in overweight and obese children and adolescents
9	FC2.3	Sonographic measurements of abdominal adiposity and atherosclerosis in Hong Kong Chinese obese adolescents
10	FC2.4	Examining the relationship between social exclusion, snack intake and body mass index in children
11	FC2.5	Social environmental factors influencing preschoolers' physical activity and sedentary behaviour
12	FC2.6	Childhood obesity in lower socio-economic families of Pakistan

No.	Abstract ID	Title
Free Communication Session 3		
13	FC3.1	You are what your mother eats: Maternal macronutrient intake and the effects on offspring metabolism and behaviour
14	FC3.2	Monitoring glycemic responses of selected foods using rtCGM and integrating it into a low glycemic index education among overweight and obese young adults
15	FC3.3	The effect of a family-based assessment and intervention healthy lifestyle programme on health knowledge and beliefs of children and their families
16	FC3.4	Hypnotherapy smartphone applications for weight loss: A narrative review
17	FC3.5	Physical Activity level and Association with Age among Nurses at the University College Hospital, Ibadan, Nigeria
18	FC3.6	Exploring digital use and needs among community health volunteers to inform effective and innovative digital health solution design
Free Communication Session 4		
19	FC4.1	Obesity triangle in Indonesia
20	FC4.2	Utilising machine learning model to predict obesity trends
21	FC4.3	Early impact of sweetened beverage excise duty in Malaysia-gauging the food and beverage manufacturers' response
22	FC4.4	Brown adipose tissue assessed by near-infrared time-resolved spectroscopy inversely correlates with BMI in T2D patients
23	FC4.5	Overweight and obesity negatively predict the concurrent attainment of glycosylated haemoglobin A1C, blood pressure and LDL-cholesterol goals in patients with Type 2 Diabetes

FREE COMMUNICATION SESSION 1

CHAIRPERSON



MOHD RAZIF SHAHRIL is an Associate Professor at Universiti Kebangsaan Malaysia and does research in Nutritional Epidemiology and Public Health Nutrition specifically on non-communicable disease (including obesity) prevention and control. Currently he is actively involved in research related to hybrid dietary pattern, objective measurement of sedentary behaviour, healthy ageing trajectory and their relationship with health outcomes (e.g. quality of life, biomarkers, recurrence) among cancer patients and survivors. He is also working on projects related to innovative dietary assessment methodologies. He works in hand with government agencies, NGOs and industries to advocate on healthy eating, cancer and obesity prevention to the public.

CO-CHAIRPERSON



WILFRED MOK KOK HOE is a post-doctoral research fellow at Southeast Asia Community Observatory (SEACO), Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia. He completed his PhD in Health Education from Universiti Kebangsaan Malaysia in 2019. Before joining Monash in September 2020, he was a research fellow at World Health Organization and Thai Health, working on a project on The Development of a Comparable and Comprehensive Surveillance System for Non-Communicable Diseases Prevention and Control and Health Promotion in Six Selected ASEAN Countries: Cambodia, Lao PDR, Malaysia, Myanmar, Thailand, and Vietnam (NCDs-ASEAN).

FC1.1 Impact of self-monitoring digital interventions on body composition in obese patients: A randomized controlled trial

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Introduction: Self-monitoring is a cornerstone of success in lifestyle interventions for obesity.

Objective: Aimed to evaluate effectiveness of digital technology using smartphone application (MyFitnessPal) and wearable devices (Fitbit) as a self-monitoring tool compared to standard weight loss monitoring methods. Secondary objectives reviewed effects on body fat composition, metabolic parameters and quality of life questionnaire SF36.

Methodology: A pioneer Malaysian large study based in a single center, conducted at the Endocrine Clinic, Hospital Putrajaya, Malaysia. Total of 80 subjects, aged 18 years and above with BMI over 27.5, fulfilling inclusion criteria's were enrolled for 6 months. Eligible subjects were randomized into two arms (n=40, each arm), control group (C) with standard diet recommendations and intervention group (TECH) which included standard diet recommendations plus MyFitnessPal (app) and wearable device (Fitbit). Anthropometric data including weight (kg), body mass index (BMI), waist circumference (cm) and percentage of fat mass was collected at baseline, 3rd and 6th month of the study. Repeated measures ANCOVA were used to evaluate the efficacy of the intervention.

Results: 72 patients (90%) completed the study at 6 months. For (C) group, mean of baseline weight was 130.0 kg (95%CI: 121.4, 138.3) and 6-month 128.2 kg (95%CI: 120.0, 136.4). For the TECH group, mean baseline weight was 117.8 kg (95%CI: 109.8, 125.7) and 6-month 116.8 kg (95%CI: 108.9, 124.4). There was no significant difference in weight loss between groups after 6 months (-0.67kg; 95%CI:-3.33, 1.99). Improvements were seen both groups in BMI and waist circumference, however not statistically significant. SF36 quality of life assessment revealed significant changes within the TECH group for energy levels (p=0.008) and improvement in role limitation secondary to physical health (p=.020) domains upon the on completion of the study.

Conclusion: The use of self-monitoring digital intervention tools in this study resulted in no significant weight loss compared to conventional methods.

FC1.2 Therapeutic benefit and pharmacological aspects of Aegeline in the medicine for the treatment of Human health complications

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Introduction: Herbs or medicinal plants are the natural products used in the society for curing diseases at low cost. Phenolic compounds, nitrogen compounds, carotenoids, ascorbic acid etc. are some of the best examples of phytochemical found in the Herbs, vegetables and fruits. Drugs of natural origin are well known for their beneficial role in the health care system and continue to play a significant role in the treatment of many diseases worldwide.

Objective: Medicinal importance and therapeutic benefit of aegeline in the medicine have been investigated through scientific data analysis.

Methodology: Medicinal importance and therapeutic benefit of aegeline for their effectiveness against various forms of human disorders have been investigated in the present investigation through literature data analysis of various research works. Pharmacological data of aegeline have been collected from various literature sources and analyzed for their effectiveness against various form of health complication of human beings. Numerous scientific data have been collected and analyzed in the present investigation in order to know the therapeutic benefit of aegeline in the medicine.

Results: Literature data analysis revealed the biological potential of aegeline in the medicine for the treatment of various human disorders and complications. Literature data analysis of various scientific research works revealed the biological potential of aegeline in the medicine for their anti-diabetic and anti-dyslipidemic activity which also significantly decreased the plasma cholesterol level.

Conclusion: Scientific data analysis of various literature works revealed the biological potential and therapeutic benefit of aegeline in the medicine for the development of better and effective medicine.

FC1.3 Ramadan-focused nutrition therapy in overweight and obese individuals with type 2 diabetes

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Introduction: Fasting during the whole month of Ramadan, one of the five pillars of Islam, is an obligatory duty for all healthy adult Muslims. Ramadan has a major impact on the management of diabetes in the Muslim population. Muslims with diabetes must refrain from eating and drinking between dawn and sunset, which may logically help them to improve body weight outcomes. Nonetheless, data that determine the effect of Ramadan fasting among overweight and obese individuals with diabetes are scarce and the best nutritional approaches for Ramadan fasting remains challenging.

Objective: This study aimed to synthesize the evidence on the literature on the effects of Ramadan-focused nutrition therapy for overweight and obese individuals with type 2 diabetes.

Methodology: We searched MEDLINE (via PubMed) and Science Direct databases for articles that included the component of nutrition for adult patients with type 2 diabetes (T2D), published in English between 2010 and 2020.

Results: Fourteen studies met the criteria. Eight of 14 studies had an intervention with a control arm. In comparison to the control group, all studies (n=8) showed a reduction in hypoglycemic events. However, only half of these studies (n=4) had shown at least one positive clinical outcome including body weight parameters. Features of nutrition therapy that appeared to have favourable clinical outcomes include individualized caloric prescription; distributing carbohydrates evenly; providing meal plans; adjusting food intake to suit Ramadan, and incorporating diabetes-specific formula as part of Suhoor or snack.

Conclusion: The review provides evidence for the effectiveness of Ramadan-focused nutrition therapy among overweight and obese people with T2D and identifies key features of nutrition therapy that may provide favourable clinical outcomes. Additional data on dietary quality and adequacy during Ramadan fasting warrants further studies

FC1.4 Exercise prescription in the management of obesity in an osteoporotic female with Turner's syndrome

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Introduction: Turner's Syndrome (TS) predisposes an individual to obesity and other related metabolic disorders. Careful exercise prescription and other lifestyle modifications play a major role in avoiding long-term complications.

Objective: To evaluate the effect of physical activity in managing obesity and bone health over a one year period in a female with TS.

Methodology: Case: A 20-year-old female with TS presented to us for weight reduction. After initial assessment with DEXA scan, bone mineral profile, serum estradiol and anthropometric measurements, she was found to have short stature, increased weight for age, Grade I obesity, Vitamin D deficiency, decreased serum estradiol and osteoporosis at Lumbar spine with T score of 3.1. An exercise programme consisting of aerobic and resistance training along with a customised diet plan and Vitamin D supplementation was advised. Serial anthropometric measurements were done and all the investigations were repeated after a period of one year.

Results: There was a significant decrease in weight with a fall of 11% in BMI from 30.1 to 26.8 in one year. A 4-fold rise in Serum Estradiol, Vitamin D3, and calcium levels was noted. DEXA scan showed improvements in T scores at the lumbar spine (-2.2). A 6.3% decrease in total body fat and a 5.4% increase in fat-free mass was also noted.

Conclusion: Early identification of females with TS and timely medical intervention with hormonal supplements, tailored exercise programme, healthy diet, regular follow-up, and psychological support from the community all play a huge role in preventing long-term complications.

FC1.5 Nutritional Therapy in Obese Patient with Suprapubic Diabetic Abscess and Sepsis: A Case Report

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Introduction: Obesity give rise to many complications, such as type 2 diabetes mellitus (T2DM), hypertension, congestive heart failure (CHF), and infection. Nutritional therapy become more challenging in this situation and glycaemic control was so blunt, as well.

Objective: We report a case 58-year-old obese woman presented with a 5-year history of T2DM.

Methodology: This was a case report.

Results: We report a case of 58-year-old obese woman presented with a 5-year history of T2DM. She was diagnosed with diabetic ketoacidosis and investigations disclosed infection in suprapubic abscess and sepsis. Patient had also heart failure mid-range with ejection fraction (EF) 48.6% and acute kidney injury (AKI). She had an Asia-Pacific body mass index (BMI) of 27.4 kg/m² (grade I obesity) and confirmed metabolic syndrome. Energy and protein were given by 30 kcal/ideal BW/day and 1.2 g/ideal BW/day, respectively. Balanced diabetic diet was fashioned with fat and carbohydrate composition were 25% and 60%, respectively. Micronutrient supplementation was given to enhance wound healing, particularly vitamin B complex 6 mg, vitamin C 500 mg, folic acid 1 mg, and zinc 20 mg. Ketoacidosis protocol therapy was set to this patient and insulin was gradually decreased to fixed dosed rapid acting 3x4 ICJ to achieve normoglycemia. Debridement and an adequate antibiotics were performed to control the abscess and sepsis. With this multimodal therapy, patient was improved and discharged from hospital at a 11th-day optimal nutritional support. Several notes should be taken in managing patient with this situation, where high protein intake is needed for abscess but due to septic condition, the protein should not be too high. Furthermore, carbohydrate composition should also be carefully counted in DM patient.

Conclusion: Multimodality management is essential in managing obese patient with suprapubic diabetic abscess and sepsis. Furthermore, nutritional support may increase patient outcome.

FC1.6 Association between self-efficacy in maintaining healthy lifestyle and barrier to change eating habit and weight status of secondary school students in Kuala Lumpur: NuTeen project

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Introduction: School serves as an important institution to influence students' food choice behaviors and to develop healthy dietary habits.

Objective: To determine the association of self-efficacy in maintaining healthy lifestyle and barrier to change eating habit with weight status of secondary school students in Kuala Lumpur.

Methodology: In the baseline study, a total of 924 students from 10 secondary schools were randomly selected from a total of 62 secondary schools in Kuala Lumpur. The students were assessed on self-efficacy in maintaining healthy lifestyle and barrier to change eating habit. These were accessed using a structured questionnaire. Anthropometric measurements included weight, height, waist circumference and total body fat percentage.

Results: The overall mean score for self-efficacy was 53.9 ± 24.2 and barrier was 38.9 ± 21.2 respectively which indicate a moderate level. There were significant differences between self-efficacy and students age group ($t=6.71, p<0.001$), barrier to change with gender and age group respectively ($t=2.49, p<0.05$; $t=17.1, p<0.001$). Self-efficacy had positive and weak correlation with waist circumference of the students ($r= 0.156, p<0.001$). Students with abdominal obesity had higher mean score of self-efficacies in maintaining healthy lifestyle (57.2) compared to no abdominal obesity category. Furthermore the result indicates students with obese status had higher mean score of self-efficacy in maintaining healthy lifestyle (60.4) compared to no obese category for body fat percentage. No statistical significance was observed between barrier to change eating habit and weight status among students ($F = 0.83, p = 0.509$). There was also no significant differences in barrier to change between waist circumference status or with total body fat percentage status.

Conclusion: Healthy home and school environment played a significant role in adolescent's self-efficacy and reducing barrier for healthy eating and lifestyle which confirms that interpersonal factors strongly influence health and dietary behaviour which further influences weight status.

FREE COMMUNICATION SESSION 2

CHAIRPERSON



GEETA APPANNAH is an Associate Professor of Public Health Nutrition. She completed her PhD in MRC Human Nutrition Research, University of Cambridge in 2013. Since completing her doctorate, she has been working on a number of research projects seeking to understand dietary determinants of poor health in children including adolescents as well adults, specifically on obesity, cardiometabolic risk factors and bone health, and the factors that influence dietary intake in populations, including food prices and affordability. Other research interests comprise of empirical methods to derive dietary patterns, life course dietary tracking and social

determinants of a specific dietary pattern or trajectory. Dr Appannah maintains close research linkages with a few international counterparts, for instance in Australia she co-heads the Diet Special Interest Group of a prospective study namely The Raine Study, a collaborator in a study conducted among young people in Ghana and recently obtained a Inaugural South East Asia fellowship from the National University of Singapore. Dr Appannah is an Honorary Secretary of Malaysian Association for the Study of Obesity (MASO) and an active member of Malaysian Dietetics Association (MDA) and Nutrition Society of Malaysia (NSM). She is an Associate Editor for the journal Public Health Nutrition, and a reviewer for various journals in the field of Nutrition and Dietetics. Dr Appannah also provides science advice to a number of dietary guidelines and reports in Malaysia .

CO-CHAIRPERSON



ANG YEOW NYIN is a researcher in Centre for Community Health Studies, Faculty of Health Sciences, Universiti Kebangsaan Malaysia (UKM). She received her PhD degree in Nutrition from UKM. Her research areas focus on childhood and adolescent nutrition. She has been involving in multi-disciplinary and multi-country research studies, included South East Asian Nutrition Surveys (SEANUTS) on assessment of nutritional status among children in Malaysia, Indonesia, Thailand, and Vietnam; and International Atomic Energy Agency (IAEA) project on assessment of body composition in children using stable isotopes techniques.

FC2.1 Weight Status Differences in the Associations between Obstructive Sleep Apnea and Paediatric Hypertension

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Introduction: Both obesity and obstructive sleep apnea (OSA) increase the risk and severity of hypertension in adults. However, their associations are not well understood in children.

Objective: This study aimed to investigate the relationships between paediatric hypertension, obesity, and apnea-hypopnea index in children with OSA.

Methodology: This study was a quantitative cross-sectional study. A total of 423 children with OSA were enrolled in the Sleep Center of Chang Gung Memorial Hospital, Linkou Medical Center. Medical records and standard full-night polysomnographic parameters were reviewed. Obesity was defined as a body mass index z-score ≥ 1.645 , severe OSA was defined as an apnea-hypopnea index ≥ 210 events/h, and hypertension was defined as a systolic or diastolic blood pressure ≥ 95 th percentile based on age, sex, and height percentiles. Variables of interest were further dichotomized according to the optimal cut-off value using receiver operating characteristic curves with the Youden's J-point for best trade-off between sensitivity and specificity. The dichotomized variables were then assessed using multivariate logistic regression models.

Results: One hundred and fifteen girls and 308 boys with a mean age of 7.5 ± 2.8 years, mean body mass index z-score of 0.668 ± 1.547 , and mean apnea-hypopnea index of 17.0 ± 19.5 events/h were reviewed. Age ≥ 8 years (exp B=2.74, 95% CI=1.23-6.12, $p=0.01$) and mean oxygen saturation $\leq 95\%$ (exp B=4.89, 95% CI=2.19-10.92, $p<0.001$) were independently related to hypertension in obese children with OSA, whereas neck circumference ≥ 32.3 cm (exp B=3.11, 95% CI=1.23-7.90, $p=0.02$) and severe OSA (exp B=2.05, 95% CI=1.13-3.74, $p=0.02$) were independently correlated with hypertension in non-obese children with OSA.

Conclusion: Older age, male sex, obesity, and disease severity contributed to paediatric hypertension among children with OSA. However, the risk factors differed with different weight status. Both weight reduction and disease management were important for paediatric OSA patients.

FC2.2 Impact of COVID -19 induced lockdown on the body weight, waist circumference and blood pressure in overweight and obese children and adolescents

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Introduction: COVID-19 induced lockdown has forced the children to stay at home.

Objective: To investigate the effect of COVID-19 lockdown on Body Weight (BW), Waist Circumference (WC), & Blood Pressure (BP).

Methodology: A total of 35 overweight & obese (17 boys, 18 girls) aged 6 - 22 were evaluated longitudinally for change in BW, WC & BP who were followed up regularly, post unlocking period since June 2020 in India. Patients who had at least one visit in the year preceding lockdown were evaluated from June 2020 - January 2021. The study was conducted at a dedicated obesity center, providing comprehensive care. Patients with known medical conditions, that were confounding & influencing body weight, including thyroid & genetic disorders were excluded.

Results: Mean age (years) was 13 (± 3.6). Mean increase in BW was 3.61 kg, pre 58 (± 17 , 95% CI=52 to 64) to post 62 (± 15 , 95%CI=57 to 67), ($p=0.34$ NS). Mean increase in WC was 3.4 cm, pre 83 (± 10 , 95%CI=80 to 87) and post was 87 (± 9.6 , 95%CI=84 to 90), ($p=0.14$ NS). Mean increase in systolic BP was 1.88 mmHg, pre 113 (± 12 , 95%CI=109 to 117) and post was 115 (± 14 , 95%CI=110 to 120), ($p=0.55$ NS). The mean increase in diastolic BP was 4.97 mmHg, pre 71 (± 7.4 95%CI=68 to 73) and the post was 76 (± 8 , 95% CI=73 to 79), ($p=0.009$). The highest HbA1c was 6.6%.

Conclusion: It appears that COVID-19 pandemic-induced lockdown has the potential to perpetuate childhood obesity. However, our results need corroboration through a large dataset. The numerically superior increase in BW, WC & BP needs to be addressed to mitigate the translation of the childhood obesity pandemic to a diabetic avalanche.

FC2.3 Sonographic measurements of abdominal adiposity and atherosclerosis in Hong Kong Chinese obese adolescents

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Introduction: To date, there is no reported data on visceral adiposity and atherosclerosis as measured by ultrasonography in Chinese adolescents.

Objective: To examine the association of ultrasonographic measures of abdominal adiposity with cardiometabolic risk factors and sonographic parameter of atherosclerosis in Hong Kong Chinese obese adolescents.

Methodology: Healthy adolescents aged 15-18 years with obesity, defined as body mass index (BMI) 295th percentile of Hong Kong local age- and sex-specific references, were recruited from secondary schools in Hong Kong. Abdominal adiposity was measured by mesenteric fat (MFT), preperitoneal fat (PFT) and subcutaneous fat (SFT) whereas atherosclerosis was assessed by carotid intima-media thickness (CIMT) by an experienced sonographer.

Results: A total 176 obese adolescents were included in this analysis [boys: 60.8%, mean±standard deviation (SD) of BMI=30.9±4.4kg/m², WC=92.7±11.4cm, systolic blood pressure (SBP)=122.3±10.6mmHg, diastolic blood pressure (DBP)=74.3±8.4mmHg, fasting plasma glucose (FPG)=4.6±0.4mmol/l, high density lipoprotein cholesterol (HDL-C)=1.3±0.3mmol/l, low density lipoprotein cholesterol (LDL-C)=2.6±0.7mmol/l, total cholesterol (TC)=4.3±0.8mmol/l, triglyceride (TG)=17±0.6mmol/l]. In this cohort of obese, otherwise healthy young individuals, mean±SD of CIMT=0.45±0.06mm, MFT=0.756±0.265cm, PFT=1.619±0.471 cm and SFT=3.689±0.90cm. MFT was positively and significantly associated with SBP (correlation coefficient, r: 0.338, p<0.007), DBP (r: 0.219, p=0.004), HDL-C (r=0.187 p=0.017), LDL-C (r=0.335 p<0.001), TC (r=0.315 p<0.001) and TG (r=0.238 p=0.002) and there was a trend for association between MFT and FPG (r=0.148, p=0.051). There was no significant association between MFT and CIMT .

Conclusion: Sonographic measures of abdominal adiposity is associated with cardiometabolic risk factors in Chinese obese adolescents. Prospective follow-up is required to explore the role of abdominal adiposity in predicting atherosclerosis.

FC2.4 Examining the relationship between social exclusion, snack intake and body mass index in children

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Introduction: Research suggests over-consumption following stressful situations is a contributing factor to obesity levels in children. Experiencing social exclusion may be one situation in which negative emotions are evoked and consequently lead to increased food intake. Previously, induced feelings of social exclusion in the laboratory has predicted children's intake of highly calorific foods.

Objective: In the current study we aim to examine whether the previously established relationship between social exclusion and food intake may contribute to variations in body mass index (BMI) across children. We also extend this to examine whether this relationship is independent of confounding processes such as trait depression and anxiety.

Methodology: Children (8.5 years old) from the Growing Up in Singapore Towards Healthy Outcome (GUSTO) cohort (N=290) completed the Cyberball task (virtual ball-tossing task to induce feelings of social exclusion), Needs-Threat Questionnaire (a measure of threat sensitivity), measures of state and trait mood and a snack task.

Results: Preliminary analysis revealed sex ($p=0.003$), BMI ($p=0.001$) and changes to positive affect ($p=0.045$) significantly predicted calorie intake following social exclusion ($F(8,226)=4.06$, $p<0.001$). There was a significant indirect effect of threat-sensitivity on BMI via calorie intake ($B=0.01$, $SE=0.01$, $CI=0.0008$ to 0.0209). The indirect effect remained significant after controlling for anxiety ($B=0.01$, $SE=0.01$, $CI=0.0007$ to 0.0210) but not for depression ($B=0.01$, $SE=0.01$, $CI=-0.0055$ to -0.0186).

Conclusion: Children with a greater threat-sensitivity consumed more calories which in turn predicted a greater BMI, however, further examination of the role of depression in the relationship between social exclusion, calorie intake and BMI is needed.

FC2.5 Social environmental factors influencing preschoolers' physical activity and sedentary behaviour

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Introduction: High physical activity and low sedentary behaviour are important in promoting growth and health of children. Social environment factors refer to support, interaction and constraints from parents, peers and teachers. They act as a key modifiable factor that influences physical activity and sedentary behaviour of young children.

Objective: This study aims to explore the social environmental factors that influence physical activity and sedentary behaviour of Malaysian preschoolers.

Methodology: Face-to-face in-depth interviews were conducted with 20 parents and 8 teachers of Malay, Chinese and Indian preschoolers aged 4 to 6 years from 8 kindergartens in Kuala Lumpur. Transcripts were analysed by thematic content analysis.

Results: From the interviews, a majority of parents perceived that their children were sufficiently active. None of the parents were aware of the recommended guidelines for physical activity and screen time. The main motivator of active play was social support from parents, peers and teachers. The social support components include co-participation, emotional, informational, instrumental and appraisal. Barriers of physical activity were the availability of screen equipment and engagement in other sedentary activities. The lack of playground and field safety had also limited outdoor play opportunities of children. Parental media parenting practices were associated with children's screen time. Peer preferences related to sedentary behaviour also encouraged children to engage in more sedentary activities.

Conclusion: Social environmental factors related to parents, peers and teachers played an important role in shaping the physical activity and sedentary behaviour of young children. We opine that when designing physical activity intervention programmes, it is important to consider these social environmental factors in order to effectively engage active lifestyles among preschoolers.

FC2.6 Childhood obesity in lower socio-economic families of Pakistan

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Introduction: Pakistan has been declared as the 9th most obese country out of 188 countries by the Global Burden of disease study. As per WHO, 26% women and 19% men are obese in Pakistan. Children comprised 35.4% of Pakistan's population. Pakistan health survey (2017-2018) reports that 3% of children are overweight. Childhood obesity if unattended predisposes to a generation of obese adults putting them at risk of cardiovascular diseases, diabetes and psycho social problems. Once considered as a problem of affluent families, lately, more overweight children coming from lower socioeconomic families in Pakistan. Children in low income families are not only predisposed to undernutrition but at the same time exposed to high fat, sugar, micro nutrient poor food which is cheaper.

Objective: To study the frequency and factors associated with childhood obesity in lower socio-economic families in Pakistan.

Methodology: The study was done in Community health center Paediatric clinic which caters to underprivileged families income

Results: The study shows 83 (2.3%) overweight and obese children in lower socioeconomic families. Mean age was 8 years 7 months (SD=3.96). Out of these, overweight 37 (44.6%), obese were 19 (22.9%) and morbid obesity was seen in 27(32.5%). Boys were more frequently (59%) found to be overweight/obese. Positive association was found between less physical activity (<0.001), more screen time, intake of fruits, vegetables (<0.001) less maternal education (0.024).

Conclusion: Childhood obesity is increasing in lower socioeconomic families in Pakistan.



FREE COMMUNICATION SESSION 3

CHAIRPERSON



YIT SIEW CHIN is the Head of Community Nutrition Unit, Faculty of Medicine and Health Sciences, and was formerly appointed as the Head of the Research Centre of Excellence Nutrition and Non-Communicable Chronic Disease (RCOE-NNCD), in Universiti Putra Malaysia (UPM). Her field of specialization in community nutrition has prompted research interests that include i) child nutrition and body composition, ii) body image, disordered eating and obesity, and iii) nutrigenetics and metabolic syndrome. She is the Hon. Secretary of both Nutrition Society of Malaysia (NSM) and Malaysian Society of Body Composition (MSBC), and Council Member of Malaysian Association for the Study of Obesity (MASO). She serves on the Editorial Boards of BMC Public Health, Asia Pacific Journal of Clinical Nutrition (APJCN) and Malaysian Journal of Nutrition (MJN).

CO-CHAIRPERSON



ZAITON DAUD graduated with BSc in Food Science and Nutrition, National University of Malaysia in 1993. She obtained her Master in Community Nutrition (MCN) from the University of Science Malaysia in 2008. She is currently the Deputy Director of Nutrition Division in the Ministry of Health Malaysia. With a background in Community Nutrition, she leads the Family Nutrition Section in responsible for policy making, planning for local and global nutrition programmes related to all ages for instance promotion of breastfeeding and children nutrition, intervention programme for malnourished children, school meal programmes, healthy cafeteria, Universal Salt Iodisation and flour fortification. She is passionate and actively involved in BFHI Accreditation as a National Assessor, research and advocates for society.

FC3.1 You are what your mother eats: maternal macronutrient intake and the effects on offspring metabolism and behaviour

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Introduction: It is well accepted that in utero exposure to maternal diet can program offspring body composition and susceptibility to disease in later life. While animal studies have focused primarily on the effects of either maternal under-nutrition (e.g. calorie or protein restriction), or over-feeding of high fat diets, little is known about the effects of macronutrient balance in modulating offspring health.

Objective: We aim to investigate how maternal protein to carbohydrate (P:C) balance influences protein-specific appetite in offspring and the implications for the development of obesity.

Methodology: 30 female mice were placed on either a low protein diet (P10), containing 10% Protein, 70% Carbohydrate and 20% Fat, or high protein diet (P35) with 35% P, 45% C and 20% F, from 4 weeks prior to mating. At 3 weeks of age, 64 male and 64 female offspring were randomly chosen (n=32/sex/maternal diet group) for metabolic testing. From 3-weeks of age, a food choice experiment was conducted, where the offspring were free to choose between P10 and P35 diets. Starting from 8 weeks of age, the offspring were constrained to 1 of 2 adult diets- a standard chow diet (19% P, 63% C, 18% F) or a Western diet (10% P, 50% C, 40% F). Food intake and body weights were measured once weekly. Additionally, body composition, glucose and insulin levels were measured at 16, 24 and 46 weeks of age.

Results: Using choice experiments, we show that offspring from dams fed high P:C diets have greater protein targets, a result consistent across sexes. Additionally, greater protein targets increase food intake when placed on no-choice diets, resulting in obesity and consequences to overall metabolic health.

Conclusion: This work could help untangle known patterns in the epidemiology of obesity and will provide fundamental new understanding of the ways in which maternal nutrition shapes offspring health.

FC3.2 Monitoring glycemic responses of selected foods using rtCGM and integrating it into a low glycemic index education among overweight and obese young adults

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Introduction: Self-monitoring of health markers and behaviour has been proven to be an effective approach to improve intervention adherence. We hypothesize that utilization of a digital health tool will be able to tackle overweight and obesity among young adults.

Objective: This study aims to determine the glycemic responses of three rice-based mixed meals using real-time Continuous Glucose Monitoring (rtCGM) as well as its feasibility as an education tool among overweight and obese young adults.

Methodology: In this prospective open label trial, 14 participants (age: 22.8±4.6 years, BMI: 32.9±5.8 kg/m²) were randomly assigned to receive three rice-based mixed meals containing 50g of available carbohydrate (white rice meal=WRM, brown rice meal=BRM and parboiled basmati rice meal=PBRM) and 50g of glucose reference drink on alternate days. GI, glycemic variability, 24h mean glucose levels and target ranges were analyzed. Participants' carbohydrate preferences and postprandial glucose levels 27.8 mmol/L determined at the end of the study period were compared with baseline data.

Results: The meals were designed and classified as low (PBRM, GI=45.35±2.06), medium (BRM, GI=56.44±2.34), and high (WRM, GI=83.03±2.19) GI based on glycemic database. CGM is able to distinguish these meals with PBRM having significantly lower ($p<0.05$) 24h mean glucose level and in-target 24h glucose level percentage compared to WRM. The preference of PBRM over WRM and BRM changed significantly ($p<0.05$) from 21.4% to 71.4% after the participants were shown their individual postprandial glucose levels generated by rtCGM. The frequency of the postprandial glucose level 27.8 mmol/L was reduced by an average of 61.5±20.3% from the baseline among all participants.

Conclusion: Our findings revealed the potential use of rtCGM as an educational tool that provides real-time feedback on eating habits and guiding overweight and obese young adults in selecting lower GI foods. Randomised controlled trials are warranted to further validate this innovative approach.

FC3.3 The effect of a family-based assessment and intervention healthy lifestyle programme on health knowledge and beliefs of children and their families

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Introduction: Childhood obesity remains an ongoing global challenge, which imposes a significant health burden for at-risk populations, and financial burden on health care systems. The Whānau Pakari Programme is a New Zealand based, multi-disciplinary, family-focused programme for children and adolescents affected by obesity or who are overweight with weight-related comorbidities.

Objective: The aim of this study was to investigate the impact of the Whānau Pakari programme health knowledge and beliefs for participants and their caregivers over time.

Methodology: This mixed-methods study included quantitative analysis of health knowledge and qualitative content analysis of health beliefs over five years. Comparison with the 2008/2009 National Survey of Children and Young People's Physical Activity and Dietary Behaviors in New Zealand was also undertaken.

Results: Improvements in the health knowledge of the Whānau Pakari cohort were observed over time and were sustained up to 5 years post baseline assessment. By 12 months the health knowledge of the Whānau Pakari cohort surpassed that of the New Zealand cohort in the majority of categories. Beliefs regarding the benefits of healthy living centered around an improvement in physical functioning, mental and emotional wellbeing, and enhancement of appearance. An increase in the depth and development of health beliefs was observed over time.

Conclusion: The retained health knowledge and development of health beliefs long term shows promise of a foundation of knowledge that could motivate families and communities to make healthy behaviour change in the future. This study highlights the importance of context when interpreting findings surrounding health knowledge and beliefs and emphasises the important role that community based healthy lifestyle change programmes have within the delivery of effective health promotion.

FC3.4 Hypnotherapy smartphone applications for weight loss: A narrative review

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Introduction: Despite the current popularity and potential use of smartphone applications to encourage healthy behaviours, hypnotherapy applications focusing on weight reduction are scarcely available and the credibility of existing ones is of concern.

Objective: To compile existing weight-loss hypnotherapy smartphone applications and to evaluate the functionality and information provided in the mobile apps.

Methodology: Google Play and Apple's iTunes stores were searched from 20 August 2020 to 20 September 2020 for available hypnotherapy-related applications targeting weight loss. Only free, English applications were included. Applications in which the hypnotherapy was not utilize for weight loss or did not contain any hypnotherapy components were excluded.

Results: Of 291 identified applications, 22 met the inclusion criteria and were further reviewed. Fourteen of the apps (63.6%) focused on reducing calorie intake and limiting the intake of fattening and sugary foods through hypnotic suggestions. Most applications delivered hypnotherapy via an audio track (77.3%) and 68% enabled the session to be customized. More than 40% of apps developers claimed to have used a licensed hypnotherapist and 25% contained disclaimers in the descriptions. Additionally, 31.8% of the classified apps earned high ratings from users (between 4 and 5 stars).

Conclusion: Overall results indicate that weight-loss hypnotherapy applications may be useful as an additional tool to assist conventional weight management strategies. However, several issues regarding the contents and credibility should be highlighted in order to boost the quality and substantiate the effectiveness of weight-loss hypnotherapy apps in future.

FC3.5 Physical activity level and association with age among nurses at the University College Hospital, Ibadan, Nigeria

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Introduction: Physical inactivity is one of the major leading risk factor for mortality. Studies have revealed that regular physical activity is effective in preventing and managing several non-communicable diseases such as cerebrovascular disease, diabetes, hypertension and obesity. Health care professionals are meant to be role models when it comes to physical activity. Nurses represent the largest group of health care professionals.

Objective: The aim of this study was to investigate the association of physical activity level and age among nurses at the University college Hospital, Ibadan.

Methodology: This was a population-based study with cross sectional survey design. A convenience sampling technique was used to select all available and willing nurses. The short form of the International Physical Activity Questionnaire (IPAQ-SF) was used to collect information on the physical activity levels of the participants and age of participants was recorded to the nearest birthday. Data were analysed using descriptive statistics (mean, standard deviation, frequencies and percentages). Inferential statistics (Chi-square test) was used to test association between age and physical activity level. The level of significance was set at 0.05.

Results: A total of 230 nurses participated in this study. The mean age of the participants was 40.4 ± 8.2 years. Out of the 230 participants, 56 (24.3%) had high physical activity level while 100 (43.5%) and 74 (32.2%) had moderate and low physical activity levels respectively. There was no significant association between age of participants and their physical activity levels.

Conclusion: Age did not have any significant effect on physical activity level among the participants. Although age did not affect the physical activity level of participants, there is need for improvement of physical activity level among nurses ($p=0.846$).

FC3.6 Exploring digital use and needs among community health volunteers to inform effective and innovative digital health solution design

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Introduction: Harnessing digital technologies for community-based obesity prevention is promising, especially during the COVID-19 pandemic. However, getting the right digital support is imperative, especially in low-resource urban communities in Malaysia.

Objective: A digital needs assessment was conducted with community health volunteers (CHVs) before the implementation of a community-driven obesity prevention programme to identify CHVs' digital needs, gaps and perceptions. Findings were used to inform the design of digital health solutions aimed at improving health literacy and modifying the obesogenic environment for poor urban communities. This study is part of the UK Prosperity Fund Better Health Programme with the Ministry of Health Malaysia and is reviewed by the UK National Health Service Joint Unit.

Methodology: Face-to-face interviews were conducted with CHVs using a structured questionnaire to explore their digital tools access, use, literacy, perceptions, and perceived challenges. Some of the CHVs are under the KOSPEN programme. Following descriptive analysis, a composite index score was generated from digital literacy variables to assess levels of digital knowledge.

Results: A total of 28 CHVs participated in the study. Almost all (96.4%) had access to and used mobile phones compared to computers (46.4%). The digital knowledge composite index score was between 0.68-0.90/1.0 among CHVs where 89.3% reporting knowledge on navigating the Internet on a smartphone, and 75% knowing how to navigate a mobile app. Many CHVs (67.9%) had positive perceptions of mobile apps for health promotion, and most agreed that apps can assist their work (96.4%). Perceived challenges to employing digital technology in community-based obesity prevention included costs, privacy, and community member comprehension.

Conclusion: Most CHVs demonstrate digital knowledge and are prepared to adopt digital health solutions in their health promotion work. An appropriately tailored, user-centred digital approach incorporating digital literacy training to address the digital gaps and challenges could deliver effective obesity prevention interventions.

FREE COMMUNICATION SESSION 4

CHAIRPERSON



MAHENDERAN APPUKUTTY is Associate Professor of Sports and Exercise Nutrition at Universiti Teknologi MARA, Malaysia. He was the Head of Centre of Postgraduate Studies at Faculty of Sports Science & Recreation. He serves as Vice President of Nutrition Society of Malaysia, Vice President of Malaysian Association of Sports Medicine and Council Member of Malaysian Association for the Study of Obesity (MASO). He also contributing to Clinical Care Committee for World Obesity (WO) since 2013 . He has experiences more than 15 years in research on functional food and exercise sciences. He contributes to the Malaysian Dietary Guidelines as Chair for Malaysian Vegetarian Dietary Guidelines. He contributes to capacity building of nutritionists (Southeast Asia Nutrition Leadership Program, SEAMEO-RECFON, Malaysian Nutrition Leadership Program and South East Asia Public Health Nutrition Leadership Programme).

CO-CHAIRPERSON



JASMINE CHIA SIEW MIN is a Postdoctoral Research Officer at the Faculty of Health Sciences, Universiti Kebangsaan Malaysia. She holds a PhD in Human Physiology from Universiti Putra Malaysia, where her research focused on neuropathic pain and compound mechanism of action. She is currently a Project Manager for the South East Asian Nutrition Surveys II (SEANUTS II) Malaysia, a multi-centre study conducted concurrently with Indonesia, Thailand and Vietnam, which investigates the nutritional status and lifestyle behaviour of children.

FC4.1 Obesity triangle in Indonesia

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Introduction: The prevalence of overweight and obesity is doubling globally including Indonesia. Furthermore, obesity has received considerable attention as a major health hazard in line with the increasing prevalence of metabolic syndrome, in which hypertension is the primary contributor to the prevalence of metabolic syndrome.

Objective: This article review aims to elaborate obesity triangle in Indonesia based on theoretical, findings and proposed programmatic approach to prevent the increasing prevalence of obesity.

Methodology: Article review.

Results: It is widely known that obesity can occur because of an imbalance between the energy from the food that comes in, which is greater than the energy used by the body. The limbic core of the brain controls starvation (ventromedial hypothalamus), heightens rewards (ventral-tegmental area and nucleus accumbens), and attenuates stress (amygdala) in promoting food-seeking, ingestive behavior while conserving energy output is the limbic triangle of neuroendocrine mechanism of obesity. Furthermore, there is also the triangle of metabolism, i.e. excess of macronutrients in the adipose tissues stimulates release of inflammatory mediators that were predisposed to a proinflammatory state and oxidative stress which in turn stimulates the liver to synthesize and secrete C-reactive protein. As a risk factor, inflammation is an imbedded mechanism of developed cardiovascular diseases, in which, there is evidence in the triangle between obesity, hypertension and metabolic syndrome/diabetes mellitus in Indonesia.

Conclusion: Urgent programme and policy action is needed to reduce and prevent obesity. Based on the UNICEF framework, a triangle on defining immediate, underlying, and basic causes of obesity can identify several cross-cutting factors that influence, interact, and impact one another and obesity outcomes.

FC4.2 Utilising machine learning model to predict obesity trends

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Introduction: The Obesity epidemic is on the rise and has become a major global health concern. Excessive weight is highly associated with adverse health consequences. Understanding the global trends in obesity in children and adolescent is paramount in addressing the Obesity prevalence.

Objective: We aimed to estimate the obesity trajectories for three consecutive decades to 2050 at a global level.

Methodology: Different machine learning model have been experimented to predict obesity rate in children and adolescent at a global level. Linear Regression model has been used to predict obesity in children at different age group 2-4; 5-9; 10-14; 14-19; 20-24; 25-29 and 30-34 subsequently for both boys and girls. We used data from the Global Health Data Exchange of the Institute for Health Metrics and Evaluation (USA), in a report titled: "Global Burden of Disease Study 2015 (GBD 2015) Obesity and Overweight Prevalence 1980-2015", with use of a global population-based survey that had measured obesity rate for children and adolescent in age.

Results: We applied machine learning models to predict the growing rise in Obesity prevalence across the world. We obtained promising results with model prediction accuracies of 99% R2 using ANN model in the main study, and 92% R2 using Lasso regression model in the SDI study.

Conclusion: This study aimed to extrapolate the Obesity rate in children, adolescents, and young adults across the globe. It was found that there is a steady increase in the disease prevalence and if not prevented it will become an Obesity pandemic. There is no doubt that leveraging resources to measure Obesity prevalence at a global and national level will alleviate the increase of child Obesity. To stem the tide multi-level interventions are needed to use the measurement as a building block to design an effective framework to achieve a sustainable decline in child Obesity rate.

FC4.3 Early impact of sweetened beverage excise duty in Malaysia-gauging the food and beverage manufacturers' response

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Introduction: Sugar-sweetened beverage (SSB) tax is a public health strategy to tackle obesity. It aims to reduce population sugar intake through reformulation and awareness promotion. Impact of tax in reducing non-communicable diseases is evaluated in the long-term. Early evaluations track food industry's response to SSB tax using indicators such as changes in (1) price, (2) sugar content (reformulation) and (3) packaging size. Malaysia imposed the Sweetened Beverage Excise Duty (SBED) of RM0.40/L (approx. 0.1 USD) on SSB, in July 2019. This warranted an early evaluation.

Objective: To evaluate food industry's response to Malaysian SBED as a measure of early impact.

Methodology: The list of taxable SSB (n=178) was obtained from the Ministry of Health, Malaysia, before SBED implementation. Data on sugar content, price and packaging size on eight categories of taxed beverages (botanical and malt-chocolate-ready-to-drink beverages, coffee, flavoured carbonated, flavoured non-carbonated, fruit, isotonic, and tea drinks) were collected before (May-June 2020) and after (July-August 2020) SBED implementation. Changes in price and sugar content and packaging size of the taxed SSBs were evaluated.

Results: One-year post-SBED implementation, 47% of taxed SSBs had reduced sugar while 40% remained unchanged. Overall, taxed SSBs had a mean (\pm SD) reduction in sugar content of 1.85 ± 3.05 g/100ml (Pre vs. Post-SBED: 9.42 ± 2.79 to 7.57 ± 3.13 g/100ml). Reductions in sugar content were specific to flavoured carbonated, flavoured non-carbonated, fruit and tea drinks. During this period, the mean price of taxed SSB in Malaysia increased by RM0.70/L (95%CI: 0.50 to 0.90). Price increases were observed in botanical beverages, coffee, flavoured carbonated, flavoured non-carbonated and tea drinks. No price change was observed for malt-chocolate-ready-to-drink, isotonic and fruit drink categories. Only 14/178 (8%) of taxed SSBs had smaller packaging size.

Conclusion: Findings were encouraging and showed that food industries responded to Malaysian SBED through reformulating SSBs (less-sugar versions) while increasing their prices. Reducing packaging size was uncommon.

FC4.4 Brown adipose tissue assessed by near-infrared time-resolved spectroscopy inversely correlates with BMI in T2D patients

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Introduction: Near-infrared time-resolved spectroscopy (NIR-TRS) is a non-invasive method that facilitates analysis of human brown adipose tissue (BAT) density. The correlation of supraclavicular hemoglobin concentration as assessed by NIR-TRS with the amount of BAT as assessed by fluorodeoxyglucose positron emission tomography (FDG-PET) was previously demonstrated in young adults.

Objective: To investigate the application of NIR-TRS for the assessment of BAT density in diabetic patients.

Methodology: We studied 36 Japanese middle-aged type 2 diabetes patients (31 male and 5 female, age 53.9 ± 9.9 years, BMI 26.6 ± 5.9 kg/m², and HbA1c 7.23 ± 1.1). We used NIR-TRS to measure the supraclavicular region's total hemoglobin concentration (sHb), normalized the values by subcutaneous fat thickness, and examined the relationship of total Hb concentration to clinical parameters.

Results: The sHb was 51.1 ± 17.7 PM, well below the equivalent 77.8 PM detection threshold of BAT by FDG-PET/CT in young adults. The sHb concentration was significantly higher in nonobese (BMI less than 25) patients than in obese (BMI over 25) patients (57.6 ± 4.4 PM vs 42.4 ± 2.9 PM). Univariate regression analysis showed that the sHb was inversely correlated with BMI ($r = -0.55$, $p < 0.001$) and systolic blood pressure ($r = -0.47$, $p = 0.006$) and positively correlated with insulin treatment ($r = 0.45$, $p = 0.009$). Multivariate regression analysis suggested that BMI ($\beta = -0.42$, $p = 0.005$), systolic blood pressure ($\beta = -0.29$, $p = 0.042$), and insulin treatment ($\beta = 0.34$, $p = 0.015$) independently account for BAT density.

Conclusion: There was an inverse correlation of total Hb concentration in the supraclavicular region assessed by NIR-TRS with BMI in middle-aged type 2 diabetes patients. This correlation implies that BAT may relate to obesity in general adults more closely than previously thought.



FC4.5 Overweight and obesity negatively predict the concurrent attainment of glycosylated haemoglobin A1C, blood pressure and LDL-cholesterol goals in patients with Type 2 Diabetes

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Introduction: Overweight and obesity increase the risk of developing type 2 diabetes (T2D) and cardiovascular diseases. Meanwhile, concurrent control of glycosylated haemoglobin A1C, blood pressure, and LDL-cholesterol ('ABC') prevent cardiovascular complications in patients with T2D.

Objective: To determine the association between body mass index (BMI) categories at study baseline with the attainment of all ABC goals at study exit among patients with T2D.

Methodology: A five-year retrospective open cohort study was conducted using the National Diabetes Registry data. The study setting was all primary care clinics (n = 47) in Negeri Sembilan, Malaysia. Patients with T2D aged ≥ 18 years and had 2two clinical audits between 2013 and 2017 were included. The first audit formed the baseline characteristics, while the last audit represented the exit information. The exposure of interest was baseline BMI categories following the World Health Organization classification - underweight (< 18.5 kg/m²), normal (18.5-24.9 kg/m²), overweight (25.0—29.9 kg/m²), and obesity (≥ 30.0 kg/m²). The primary outcome was attaining all ABC goals, namely A1C $< 7\%$, blood pressure $< 130/80$ mmHg, and LDL-cholesterol < 2.6 mmol/L. Interval-censored proportional hazard modelling was used to adjust for demographics, comorbidities, complications, and treatment profiles.

Results: The mean follow-up duration was 2.5 ± 1.1 person-years. Among 17,592 participants, there were 56.3% female, 64.9% Malays, and 59.1% older adults. Thirty-nine percent of patients were overweight and 30.0% obese. Only 5.8% of patients achieved all ABC goals at study exit. Compared to the normal BMI category, patients with overweight [aHR:0.78 (95%CI: 0.67, 0.90)] and obesity categories [aHR:0.73 (95%CI: 0.61, 0.86)] at baseline were less likely to attain all ABC goals later on.

Conclusion: Overweight and obesity negatively predict the concurrent achievement of all ABC goals in patients with T2D. Public health and clinical intervention programs should be intensified to control this modifiable risk factor, thus preventing cardiovascular complications.

**POSTER PRESENTATION
ABSTRACTS**



TRACK 1 BASIC SCIENCE

List of Poster Titles

No.	Abstract ID	Title
1	P1.01	Obesity, Insulin Resistance and DNA methylation in Polycystic Ovary Syndrome among Malay women
2	P1.02	WITHDRAWN
3	P1.03	Transcriptional regulation of brown-fat-specific genes by nuclear factor I-A and its role in energy homeostasis
4	P1.04	Therapeutic benefit and pharmacological activities of eupafolin in the medicine through scientific data analysis
5	P1.05	Biological importance and therapeutic benefit of sciadopitysin in the medicine: Scientific data analysis through literature database
6	P1.06	Validity of bioelectrical impedance analysis (BIA) equations in estimating total body water and fat mass among paediatric patients with acute leukaemia
7	P1.07	The effects of high-intensity interval exercise performed before or after a meal on postprandial glycemia in overweight males
8	P1.08	Health and nutritional status of Muslim women in Coimbatore City
9	P1.09	BIA based predictive equation for the estimation of body composition in paediatrics using deuterium dilution as reference technique: a systematic review
10	P1.10	Biological potential of canadine in the medicine for their antimicrobial activity: Therapeutic benefit in the medicine

P1.01 Obesity, Insulin Resistance and DNA methylation in Polycystic Ovary Syndrome among Malay women

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Introduction: Polycystic ovary syndrome (PCOS) is a complex endocrine disorder in women where obesity and insulin resistance are common metabolic disfunctions. The peroxisome proliferator-activated receptor- γ coactivator-1 α (PPARGC1A) promoter methylation and mitochondrial DNA (mtDNA) content were found to be potential biomarkers for the prediction of metabolic risk in women with PCOS.

Objective: To study obesity prevalence, measure insulin resistance using Homeostatic Model Assessment-Insulin Resistance (HOMA-IR) and analyse methylation level of PPARGC1A promoter and mtDNA content among PCOS Malay women who were diagnosed based on Rotterdam criteria.

Methodology: A total of 34 PCOS patients' data was used, which was a subsample from a bigger study. Body mass index (BMI) was calculated and blood samples collected after an overnight fast for glucose and insulin measurement for HOMA-IR. Blood DNA was extracted and analysed for PPARGC1A promoter methylation status and mtDNA content using real time polymerase chain reaction.

Results: Mean BMI was 27.56 ± 6.36 and 59.7% of PCOS women were overweight/obese (O/O). BMI was significantly different between the O/O and normal weight (NW) groups. Three (3) patients with HbA1c (diabetic) were all obese. Prediabetes cases (HbA1c between 5.6 to 6.2%) were found in both groups. The prevalence of insulin resistance in PCOS women was 50% using HOMA-IR cut-off value of 2.00. PPARGC1A promoter methylation and mtDNA content analysis showed no significant difference between O/O and NW.

Conclusion: Mean BMI of the PCOS women was in the overweight category where more than half were overweight/obese. There are many mechanisms mediating the effects of weight-gain and obesity in PCOS development. However, our results did not show any evidence that methylation and mitochondrial content could be potential biomarkers for the prediction of metabolic risk in overweight/obese women with PCOS.

P1.03 Transcriptional regulation of brown-fat-specific genes by nuclear factor I-A and its role in energy homeostasis

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Introduction: High-throughput sequencing technology allows us to investigate the epigenome in a global and comprehensive manner and provides previously unrecognized findings and insights into how cell fate is regulated. Brown fat dissipates energy in the form of heat while white fat stores energy in the form of triglyceride.

Objective: To explore the molecular mechanism(s) underlying brown-fat-specific transcriptional regulation.

Methodology: We utilized epigenetic analyses coupled with high-throughput sequencing technology (FAIRE/ATAC/ChIP-seq) to reveal the characteristic feature of brown fat of wild-type mice compared to white fat. The motif analysis was performed to determine candidate transcription factors responsible for the characteristic epigenome of brown fat. A cell culture system was used to determine the functions of the transcription factor. Knockout mice and transgenic mice were used to examine the roles of the factor in the whole body metabolism.

Results: By using a genome-wide open chromatin analysis of murine brown and white fat, we identified nuclear factor I-A (NFIA) as a transcriptional regulator of brown-fat-specific genes. NFIA stimulates the brown-fat-specific gene program when overexpressed in myoblasts and makes the cells differentiate into brown adipocytes. Mechanistic studies using ChIP-seq revealed that NFIA does so by co-localizing with PPAR γ at the enhancers. Analyses on mouse models in which NFIA are overexpressed or deleted in differentiated adipocytes *in vivo* indicate that NFIA controls brown-fat-specific genes in white adipose tissues, leading to an alteration in whole-body energy expenditure and adiposity.

Conclusion: NFIA is one of the critical regulators of the brown-fat-specific gene program in both brown and white fat and targeting NFIA in adipocytes may be useful to combat obesity and obesity-related diseases.

[Poster not submitted]

P1.04 Therapeutic benefit and pharmacological activities of eupafolin in the medicine through scientific data analysis

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Introduction: Plant and their derive active phytochemical have been used in the medicine by the tribal peoples for their primary care. Polyphenols are one of the abundant phytochemical found to be present in the plant material and considerable amount of these phytochemical is needed in the plants and other higher animal for the maintenance of the better health.

Objective: Therapeutic benefit of eupafolin in the medicine have been investigated in the present investigation through scientific data analysis.

Methodology: Scientific data analysis of various research works has been performed in the present investigation in order to know the therapeutic benefit of eupafolin in the medicine. Various scientific research data has been collected and analyzed for the effectiveness of eupafolin in the medicine. Therapeutic benefit of eupafolin in the medicine against various forms of cancerous disorders has been investigated through literature data analysis of various research works.

Results: Literature data analysis revealed the biological importance of eupafolin in the medicine for the treatment of various form of cancerous disorders. Literature data signified that eupafolin significantly inhibited VEGF induced cell proliferation Literature data analysis revealed their importance against various form of tumor growth including the suppression of esophagus cancer growth in the medicine.

Conclusion: Literature data analysis revealed the biological potential of eupafolin in the medicine against various form of cancerous disorders.

P1.05 Biological importance and therapeutic benefit of sciadopitysin in the medicine: Scientific data analysis through literature database

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Introduction: Nature has endowed great diversity to the flora of the biological world and more than 50,000 plants have already been used in the medicine for therapeutic purpose but only a small portion of plants has been screened for their phytochemical investigations. Medicinal plants are the only sources of medicine in the ancient time for the treatment of human diseases. Sciadopitysin is an important plant chemical found to be present in the Ginkgo biloba plant

Objective: Therapeutic benefit of sciadopitysin in the medicine have been investigated through literature data analysis of various scientific research works.

Methodology: Biological potential and therapeutic importance of sciadopitysin in the medicine have been investigated through literature data analysis of various scientific research works of the scientific field in the present investigation. Detailed pharmacological activities of sciadopitysin have been investigated in the present investigation through literature data analysis of various scientific research works.

Results: Literature data analysis of various scientific research works revealed the biological potential and therapeutic benefit of sciadopitysin in the medicine. Literature data analysis of various scientific research works signified the biological potential of sciadopitysin in the medicine for the treatment of diabetes and its complications. However sciadopitysin in the medicine have been also known for their osteoclastogenesis and inflammatory potential.

Conclusion: Scientific data analysis of the present investigation revealed the biological potential and therapeutic effectiveness of sciadopitysin in the medicine against numerous human health complications.

P1.06 Validity of bioelectrical impedance analysis (BIA) equations in estimating total body water and fat mass among paediatric patients with acute leukaemia

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Introduction: Cancer treatment alters the body composition of growing children and such changes can potentially influence disease course and clinical outcomes, as well as physical growth. Bioelectrical impedance analysis (BIA) is a simple and non-invasive tool for estimating body composition. However, BIA requires the application of population-specific equations and the applicability of these predictive equations to diverse populations has been a concern.

Objective: To determine the agreement of BIA predictive equations with deuterium dilution method (D2O) as the reference method in total body water (TBW) and fat mass (FM) estimation among pediatric patients with acute leukaemia.

Methodology: Secondary analysis was conducted on data obtained from a cross-sectional study involving paediatric patients with acute leukaemia. Six published BIA predictive equations (Maltron, Kushner, Essa'a, Masuda, Danford, and Gregory) were compared against D2O in 47 children aged 3-12 years.

Results: Positive correlation was observed between D2O and all the BIA predictive equations estimates with correlation coefficients ranging from 0.92 to 0.95 and determination coefficients ranging from 0.85 to 0.91. These equations explained 85-91 % of the variance in TBW and FM estimates. TBW (ICC,0.94-0.97; 95% CI,0.90-0.99) and FM (ICC,0.95-0.96; 95%CI,0.90-0.98) estimated from all equations had strong intra-class correlation coefficient (ICC) with D2O. Of all the equations tested, four equations (Kushner, Masuda, Danford, and Gregory) showed lack of agreement when assessed using Bland-Altman analysis. Most of the BIA equations showed significant differences ($p < 0.05$) from D2O, with tendency to underestimate TBW while overestimating FM.

Conclusion: The findings suggest that predictive equations by Maltron and Essa'a may be the most suitable for TBW and FM estimations as indicated by low fixed bias and small limits of agreement among all the BIA predictive equations tested. Since predictive equations for body composition are population-specific, there is a need to develop a valid BIA predictive equation in paediatric patients with cancer.

P1.07 The effects of high-intensity interval exercise performed before or after a meal on postprandial glycemia in overweight males

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Introduction: Evidence suggests that light-to-moderate intensity exercise for 20-30 min performed after meal is more effective at lowering postprandial glucose response, compared to exercise before meal. Little is known about the effects of high-intensity interval exercise (HIIE) on postprandial glycemia in relation to meal timings.

Objective: The purpose of this study was to investigate the effects of HIIE performed before or after meal on postprandial glucose and insulin responses.

Methodology: Twelve, apparently healthy, overweight males (mean age: 25.3 ± 3.5 years, mean BMI: 25.9 ± 2.2 kg/m²) completed three conditions in random order: exercise 30 min pre-meal (EX-M), exercise 30 min post-meal (M-EX), and no exercise control. Subjects consumed a standardised, carbohydrate-rich meal consisting of 800 kcal (50% carbohydrate, 36% fat, 14% protein) in all conditions. The HIIE was a 20-min protocol, comprised of 10 bodyweight exercises, each performed for 30 sec with 30 sec rest intervals, in two sets. Exercise intensity was set at 85% HR_{max}. Blood glucose and insulin was measured at baseline, and 30, 60, 120, 180 and 240 minutes after meal consumption. Postprandial glucose and insulin responses were calculated as area under curve (AUC_{240min}) and analysed using repeated one-way RM-ANOVA.

Results: Results (mean \pm SEM) showed that performing exercise before meal (EX-M) or after meals (M-EX) did not lead to significant differences in postprandial glucose (EX-M: 1289 ± 67 ; M-EX: 1351 ± 43) and insulin responses (EX-M: 9142 ± 781 ; M-EX 7957 ± 573) compared to no-exercise control (glucose 1343 ± 43 ; insulin 9489 ± 714)

Conclusion: This finding is somewhat interesting as it may suggest two possibilities with regards to intense exercise in the regulation of postprandial glycemia: delayed hypoglycemic effects or impaired glucoregulation during exercise. Further studies are warranted to establish the efficacy of HIIE in improving blood glucose control, compared to light-to-moderate intensity exercise.

P1.08 Health and nutritional status of Muslim women in Coimbatore City

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Introduction: Coimbatore is the third largest city in India's state Tamilnadu. According to Census, Muslims cover 8.63% of total population. Muslim women follow unique cultural practices. This may influence their dietary intake and health.

Objective: To study the health and nutritional status of Muslim women in Coimbatore city.

Methodology: 30 Muslim women between the age of 25 to 45 years were selected from areas with dense Muslim population in Coimbatore city by purposive sampling method. Health status was assessed through anthropometric measurements like height, weight circumference, hip circumference, biochemical tests like fasting blood sugar and lipid profile and clinical examination. Dietary intake was assessed by 24 hour recall method through a structured interview schedule The data obtained was analyzed and compared with the standards.

Results: The study showed difference in mean height of the women was +3.07, mean weight +11.48 , mean BMI +2.89, mean waist hip ratio was +0.83 when compared with standards. Biochemical tests showed 40% with prediabetic and 17% with diabetic fasting sugar levels. 33% showed borderline cholesterol and 16.6% had high cholesterol levels, while 76.6% of women had normal triglyceride level. 66.7% and 63.4% showed LDL and VLDL levels, respectively, were above borderline values. 90% of women had HDL level above 40. Clinical examination showed prevalence of bone and back pain, muscle pain, impaired wound healing and dry cornea . Mean nutrient intake showed excess intake of energy (+437.81 Kcal), carbohydrates (+65.29g), fat (+17.79g) and low intake of fibre (-8.43g), calcium (-35.53mg) and iron (-4.13mg).

Conclusion: Hence we conclude that Muslim women in Coimbatore city were overweight, Prediabetic and have borderline lipid profile level. Clinical symptoms indicated calcium, vitamin A and vitamin D deficiency. This can be due to excess of carbohydrate and fat, and low micro-nutrient intake among Muslim women.



P1.09 BIA based predictive equation for the estimation of body composition in paediatrics using deuterium dilution as reference technique: a systematic review

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Introduction: Childhood obesity remain as an urgent public health issue that needs to be concerned and addressed. Bioelectric impedance analysis (BIA) considered as an optimal method to assess body compositions. Many BIA predictive equations have been developed using reference methods for assessing body composition in paediatric populations but its accuracy only applies to the population from which they have been derived.

Objective: To summarize and assess whether the developed BIA based predictive equations are able to accurately estimate body composition in paediatrics populations using deuterium dilution as the reference method.

Methodology: The review protocol was based on Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines. Literature search was conducted in PubMed and Scopus database for observational studies developing an equation to estimate TBW and FFM using deuterium dilution as criterion among paediatrics. The manual search was also conducted to find more related studies.

Results: A total of 15 studies were included in this systematic review. The quality of included studies was assessed using the Effective Public Health Practice Project (EPHPP). The majority of the equations developed were able to explain more than 80% of variance of body composition estimated. Out of 25 equations available, 16 of them were cross-validated and showed a precise estimation of TBW and FFM.

Conclusion: All 25 BIA equations identified were precise and reasonably accurate for estimation of body composition. BIA appeared to be a valuable tool to accurately address the estimation of body composition only to the populations from which they have been derived. Continuous research using multi-component models as criterion and cross-validating developed predictive equations is needed to overcome present obstacles and further improve the estimation of paediatrics body composition.

P1.10 Biological potential of canadine in the medicine for their antimicrobial activity: Therapeutic benefit in the medicine

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Introduction: Alkaloidal compound has been used in the medicine for the treatment of numerous human health complications and also paying important role in the defense mechanism in the plants. Benzylisoquinoline alkaloids are an important class of plant secondary metabolites contains numerous active phytochemical in the medicine.

Objective: Biological potential and therapeutic role of canadine in the medicine has been investigated through scientific data analysis of various research work.

Methodology: Biological potential and therapeutic role of canadine in the medicine for their antimicrobial activity has been investigated through scientific data analysis of various literature works. Effectiveness of canadine against various form of microorganism has been investigated through literature data analysis of various scientific research works.

Results: Literature data analysis signified the biological importance of canadine an active phytochemical of *Hydrastis canadensis* against numerous microorganisms including *Staphylococcus aureus*, *Escherichia coli*, *Streptococcus sanguis* and *Pseudomonas aeruginosa*. Literature data analysis revealed the biological effectiveness against some oral pathogens and revealed effectiveness against *Streptococcus mutans* and *Fusobacterium nucleatum*.

Conclusion: Present work analysis revealed the therapeutic benefit of canadine against various form of tested microorganism signified their antimicrobial activity.

TRACK 2

Childhood and Adolescent Obesity

List of Poster Titles

No.	Abstract ID	Title
1	P2.01	Associations between nutritional factors with body weight status in children with Autism Spectrum Disorder at Autism Intervention Centers in Malaysia
2	P2.02	Association between neighbourhood environment, physical activity, physical fitness and weight status of urban poor adolescents in Kuala Lumpur, Malaysia
3	P2.03	WITHDRAWN
4	P2.04	Increase circulating protein disulfide isomerase A4 (PDIA4) levels in metabolically unhealthy obese (MUHO) men
5	P2.05	Prevalence of obstructive sleep apnoea syndrome among obese Malaysian children: a single centre study
6	P2.06	Obesity clinic in a Malaysian paediatric tertiary center: Dyslipidaemia and 2-year outcome
7	P2.07	Association of dietary glycemic index and dietary glycemic load with body fat among aboriginal children in Negeri Sembilan
8	P2.08	Energy and macronutrients intake among non-obese and obese adolescents in Malaysia
9	P2.09	Taste sensitivity and taste preference in a sample of Malay children in Kuala Lumpur - A Pilot Study
10	P2.10	Umami taste perception and its correlation with various indices of obesity and blood pressure among primary school-aged children in Malaysia
11	P2.11	Need Analysis in the Development of Interactive Booklet for School Community in Improving Obesity Intervention: An Exploratory Single Case Study with Multiple Unit of Analysis
12	P2.12	South East Asian Nutrition Survey II (SEANUTS II) Malaysia: study objectives, design and methodology of a comprehensive nutrition and health survey of children
13	P2.13	Association between healthy eating index and abdominal obesity among aboriginal children in Negeri Sembilan

No.	Abstract ID	Title
14	P2.14	Correlations between body composition and physical fitness among school-aged children: a sample from urban-poor community settings in Malaysia
15	P2.15	A higher body mass index z-score was associated with body image dissatisfaction among Malaysian adolescents
16	P2.16	Association between dietary patterns and weight status of Aboriginal children in Negeri Sembilan
17	P2.17	Association nutrition intake, body image, sleep quality and nutritional status of adolescents in urban Jakarta
18	P2.18	ROHHAD Syndrome : a rare case of early and rapid-onset childhood obesity
19	P2.19	Parental perceptions of healthy eating and physical activity in children enrolled in an online clinic-community intervention programme
20	P2.20	Predictors of overweight and obesity among Singapore children
21	P2.21	Association between eating behaviour and abdominal obesity among primary school children (aged 7 to 10 years old)
22	P2.22	Impact of Movement Control Order (MCO) during the pandemic of COVID-19 on body weight status and health-related quality of life among Malaysian adults
23	P2.23	Factors Associated with the incidence of obesity in school adolescents in the City of Banda Aceh, Indonesia
24	P2.24	Association between Dietary Inflammatory Index and overweight among the Aboriginal primary school children in Negeri Sembilan
25	P2.25	A Comparison between World Health Organization, International Obesity Task Force and Center for Disease Control References in assessment of overweight and obesity among Aborigine children
26	P2.26	Correlation for the total body fat with Body Mass Index and Tri-Ponderal Mass Index in overweight & obese children & adolescent
27	P2.27	Rapid weight gain in the first 6 months of life and overweight/obesity at 2 years among infants in Seremban, Malaysia

No.	Abstract ID	Title
28	P2.28	The i-MaChEL Study: Two-group, cluster-RCT involving 460 preschool's child-parent dyads to prevent childhood obesity in Terengganu, Malaysia
29	P2.29	Predictive Equations for assessing body composition in pediatric populations using DXA as the reference method: a systematic review
30	P2.30	Development and usability of mobile application on nutrition and oral health (Gigiku Sihat) among parents of pre-school children in Tumpat, Kelantan.

ACCOMMASO 2021

P2.01 Associations between nutritional factors with body weight status in children with Autism Spectrum Disorder at Autism Intervention Centers in Malaysia

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Introduction: Children with Autism Spectrum Disorder (ASD) were prone to unhealthy weight status compared to children with typical development. Identification of nutritional factors associated with poor weight status in these children is crucial for prevention of childhood obesity.

Objective: This cross-sectional study aimed to determine the associations of parental feeding practices, child eating behaviors, and dietary intake with body weight status among children with ASD.

Methodology: A total of 385 children with ASD (83.6% boys and 16.4% girls) aged 2 to 18 years old and their mothers were recruited using convenience sampling from 25 autism intervention centers in Kuala Lumpur, Melaka, and Sarawak. A self-administered questionnaire on sociodemographic background, parental feeding practices, and child eating behaviors were completed by the mothers. The 3-day dietary intake of children was also recorded by mothers. Body weight and height of the children were measured by researchers.

Results: A total of 4.4% of the children were underweight (5.3% boys and 0% girls), 64.7% were normal weight (63.0% boys and 73.0% girls), 15.3% were overweight (14.0% boys and 22.2% girls), and 15.6% were obese (17.7% boys and 4.8% girls), with significant difference between two sexes ($p < 0.05$). More than half of the children did not achieve recommended nutrient intakes for thiamin (69.4%) and calcium (90.2%). Children with older age (AOR=1.27, 95% CI=1.12-1.45) and mothers with high perceived child weight (AOR=3.87, 95% CI=1.83-8.15) and high concern about child weight (AOR=1.63, 95% CI=1.20-2.21) were more likely to develop overweight or obese. Conversely, children with mothers who practiced monitoring feeding practices (AOR=0.73, 95% CI=0.54-0.97) were less likely to be overweight or obese.

Conclusion: The prevalence rates of overweight and obesity among children with ASD in this study were high. Training on optimization of feeding practices and monitoring during mealtimes should be provided to caregivers of children with ASD.

P2.02 Association between neighbourhood environment, physical activity, physical fitness and weight status of urban poor adolescents in Kuala Lumpur, Malaysia

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Introduction: Urban poor adolescents were reported to be physically less active due to poor safety, overcrowding, and inadequate facilities in their neighbourhood. Understanding these neighbourhood environment factors may help in improving the physical activity level (PAL) among adolescents.

Objective: To determine the association between neighbourhood environment safety, physical activity, and weight status of urban poor adolescents in Kuala Lumpur, Malaysia.

Methodology: A total of 211 adolescents aged 13 to 18 years were recruited for this study. Data on socio-demographic, neighbourhood environmental safety scores and PAL were assessed using Physical Activity Neighbourhood Environmental Survey (PANES) and Physical Activity Questionnaire for Adolescents (PAQ-A). Physical fitness index (PFI) were assessed through the modified Harvard step test. Weight status was assessed through height and weight measurement; body mass index (BMI) was calculated.

Results: The distribution of males and females was 52% and 48% respectively, with mean age of 14.83 ± 1.84 years. Most of them perceived that their neighbourhood environmental support for physical activity was moderate (55%). More than half of them had low PAL (60%) and low average score of PFI (56%). About a quarter of them were overweight or obese (22%). Males were physically more active (2.59 ± 0.6), perceived greater neighbourhood environmental support for physical activity (3.00 ± 0.46) and physically fitter (65.32 ± 8.26) than females respectively (2.82 ± 0.29 ; 1.99 ± 0.5 ; 60.95 ± 6.31). Significant relationships were found between transit access ($r=0.158$, $p=0.022$), recreational facilities ($r=0.144$, $p=0.037$) and traffic safety ($r= -0.139$, $p=0.043$) with PAL. Perceived neighbourhood environment safety ($r = 0.138$, $p = 0.045$), PAL ($r = 0.189$, $p = 0.006$) and PFI ($r= -0.29$, $p < 0.001$) were correlated significantly with BMI of the adolescents.

Conclusion: Results highlight the link between neighbourhood environment safety and PAL of urban poor adolescents. Future efforts to promote physical activity should aim to improve neighbourhood environment safety to increase PAL, fitness level and improve BMI of these adolescents.

P2.04 Increased circulating protein disulfide isomerase A4 (PDIA4) levels in metabolically unhealthy obese (MUHO) men

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Introduction: Obese individuals without metabolic disorders are known to be metabolically healthy obese (MHO), but this MHO status may turn into a metabolically unhealthy obese (MUHO) as time passed by. After reaching a critical threshold, adipocytes begin to show signs of stress, one of which is the mechanism of endoplasmic reticulum stress (ER stress) which is associated with metabolic dysfunction and disease. Protein disulfide isomerase A4 (PDIA4), is known as endoplasmic reticulum stress marker. However the correlation between PDIA4 in obesity is unknown yet.

Objective: To determine the correlation of circulating PDIA4 as ER stress marker in adipose tissue on MHO and MUHO individuals regarding inflammatory events.

Methodology: The study design was an observational study with a cross sectional study approach. The subjects were 64 men with central obesity (waist circumference > 90 cm), aged between 30-50 years, and fulfilled the exclusion criteria. Subjects were divided into 2 groups, which were 37 men with MUHO (adiponectin < 4.0 µg/ml) and 33 men with MHO (adiponectin ≥ 4.0 µg/ml). Serum Protein disulfide isomerase A4 (PDIA4) were quantified by ELISA principles. Serum hsCRP were quantified by immulite 2000. All assays were performed according to the manufacture instruction.

Results: The mean serum level of circulating PDIA4 were significantly higher ($p=0.042$) in MUHO group (21.52 ± 15.71 ng/ml), compared to MHO group (74.47 ± 9.47 ng/ml). The mean serum level of hsCRP is higher in MUHO group (4.04 ± 2.54 ng/ml), compared to MHO group (323 ± 2.34 ng/ml), however there was no significant difference.

Conclusion: In conclusion this result provides evidence that in MUHO have higher level of circulating PDIA4. This finding shows that circulating PDIA4 as ER stress marker in MUHO as "bad factor" to be unhealthy. Further study with larger sample sizes is needed to validate the role circulating PDIA4 in obesity dan disease development.

P2.05 Prevalence of obstructive sleep apnoea syndrome among obese Malaysian children: a single centre study

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Introduction: The prevalence of childhood obesity in Malaysia is 12.7%. Prevalence of obstructive sleep apnoea syndrome (OSAS), a known obesity-related complication, has not been studied in Malaysian children.

Objective: To evaluate the prevalence and severity of OSAS among obese children.

Methodology: A retrospective study on children who attended the paediatric obesity clinic at University Malaya Medical Centre between 2010-2020 was conducted. Overweight and obesity were defined according to the WHO standards. Morbid obesity was defined as a body mass index (BMI) > 120% of the 97th centile. Polysomnography (PSG) is the gold standard investigation for diagnosing OSAS. The apnoea/hypopnoea index (AHI) is useful to categorise the severity of OSAS. AHI > 10 events/hour is considered severe, 6-10 events/hour is moderate, and 1-5 events/hour is mild.

Results: A total of 191 obese children were identified during the study period. The majority (137, 71.7%) were morbidly obese. Sixty-eight (35.6%) had symptoms suggestive of OSAS and thus underwent PSG. Sixty (88.2%) of these, were confirmed to have OSAS. Twenty-eight (46.7%) had severe OSAS, 17 (28.3%) and 15 (25%) were moderate and mild, respectively. Mean age at diagnosis of OSAS was 10.24 ± 2.74 years old. The male-to-female ratio of children with OSAS was 2.51. The commonest symptoms were snoring (55/60, 91.6%) and daytime somnolence (21/60, 35%). Nearly two-thirds (27/45, 60%) of children with moderate-severe OSAS had adenotonsillectomy, 55.6% (25/45) was offered nasal continuous airway pressure and 26.7% (12/45) had intranasal steroid. Daytime somnolence was correlated strongly with moderate-severe OSAS ($p < 0.05$).

Conclusion: OSAS is a prevalent complication, occurring in 1 out of 3 obese Malaysian children. OSAS develops at a young age, predominantly severe in nature, and requires intervention. Further studies are required to delineate if the symptoms of OSAS are under-reported and establish whether all obese children require a baseline PSG irrespective of the presence of symptoms.



P2.06 Obesity clinic in a Malaysian paediatric tertiary centre: Dyslipidaemia and 2-year outcome

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Introduction: Childhood obesity and dyslipidaemia is associated with cardiovascular disease. Regular screening can identify high-risk patients and guide timely intervention.

Objective: To review the outcome of obesity and dyslipidaemia after 2 years of follow-up.

Methodology: A retrospective study on children attending the obesity clinic at University Malaya Medical Centre from 2014-2020 was conducted. Data on demographics, anthropometry and serum lipid levels were collected at baseline and at 2-years. Overweight and obesity were defined using the WHO standards. Morbid obesity was defined as a BMI >120% of the 97th centile. Dyslipidaemia was defined if any one of the following were met: triglyceride (TG) >1.7mmol/L, total cholesterol (TC) >5.2 mmol/L, HDL<1.1mmol/L and LDL >3.4 mmol/L. Children with underlying comorbidities, syndromic obesity and those lost to follow-up were excluded.

Results: Of the 50 children analysed, 36 (72%) were male. At baseline, the mean age was 10.7±3.0 years; 22 (44%) were <10 years old. The mean BMI was 29.6±5.2 kg/m² [SDS 3.1±0.8]; 35 (70%) morbid, 12 (24%) obese and 3 (6%) overweight. Thirty-three (66%) had dyslipidaemia (34.5% hypertriglyceridaemia, 22% hypercholesterolaemia, 30% low HDL and 16% high LDL) with one already on treatment. Dyslipidaemia was present in 65.7% of morbidly obese, 66.7% obese and 66.1% overweight children. At 2-years, the mean BMI was 30.7±5.7 kg/m² (p <0.05) [SDS 2.9±0.8] with 30 (60%) morbid, 15 (30%) obese, 3 (6%) overweight and 2 (4%) had normalised. Twenty-six (79%) had persistently abnormal lipids. Six (35%) with initially normal lipids developed dyslipidaemia at follow-up and one was started on statin therapy. Seven (21%) were no longer dyslipidaemic.

Conclusion: Dyslipidemia is prevalent in children with obesity. Hospital-based management offer minimal improvement in BMI and dyslipidaemia after 2 years of intervention. Prevention of obesity and optimal management of dyslipidemia with pharmacotherapy is needed to further improve outcomes.



P2.07 Association of dietary glycemic index and dietary glycemic load with body fat among aboriginal children in Negeri Sembilan

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Introduction: Foods with high glycemic index and high glycemic load absorbed faster by our body and resulted in high glycemic response, which promoted fat oxidation and higher fat storage.

Objective: To determine the association between dietary glycemic index and dietary glycemic load in relation to body composition measures of aboriginal children in Negeri Sembilan.

Methodology: This was a cross-sectional study conducted in three Aboriginal primary schools in Negeri Sembilan which involved 286 Aboriginal children. Semi-quantitative food frequency questionnaire was used to assess their food consumption. DietPLUS software was used to obtain GI and GL of foods and all the data was analyzed using IBM SPSS Statistics software.

Results: The prevalence of obesity was 21.5%. The prevalence of obesity was higher among the children aged 10-12 years old compared to 7-9 years old (33.7% vs 8.2%; $\chi^2 = 16.99$, $p < 0.001$). The proportion of high GL (Q4) was high among unemployed aborigines' parents (30.9% vs 20.7%; $\chi^2 = 9.13$, $p = 0.043$). The proportion of high GI (Q4) was higher among children diet reported by mother (27.6% vs 16.7%; $\chi^2 = 9.07$, $p = 0.028$). There were significant positive but weak correlation between body fat percentage and total glycemic index ($r = 0.17$, $p = 0.041$) and total glycemic load ($r = 0.167$, $p = 0.047$) of fruit group. There was a significant positive but weak correlation between fat weight and total glycemic index of fruit group ($r = 0.181$, $p = 0.030$).

Conclusion: Based on the data analysis, dietary advocations should concentrate on enhancing on fruits with low GI and GL in order to prevent accumulation of body fat.

P2.08 Energy and macronutrients intake among non-obese and obese adolescents in Malaysia

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Introduction: Childhood obesity is rapidly emerging as a global epidemic across countries. This trend will harm public health because obese children tend to become obese adults. This study aims to investigate the difference in energy and macronutrient intake among non-obese and obese adolescents.

Objective: Data for this study was derived from the Adolescents Nutrition Survey (ANS) 2017. It is a nationally representative school-based cross-sectional study.

Methodology: Data of 24-hour diet recall were used for analysis. Adolescents' dietary intake was categorized into four food groups according to the NOVA food classification system. However, the foods without disaggregated recipes were retained as composite foods. A total of 1371 adolescents who were attending secondary schools completed the 24-hour diet recall, and data of 950 respondents were used for analysis after removing missing data and underreporting. An independent t-test was conducted to determine the difference in energy and macronutrient intake among obese and non-obese adolescents using SPSS software.

Results: Overall, obese adolescents consumed significantly higher energy from unprocessed or minimally processed food groups and composite dishes than non-obese adolescents. The percentage of energy intake from total fat and carbohydrate was comparable among non-obese and obese adolescents. Non-obese adolescents consumed a significant higher percentage of energy from protein than obese adolescents, especially from composite foods. However, obese adolescents consumed a significantly higher percentage of energy from fat in unprocessed or minimal processed food groups.

Conclusion: Non-obese adolescents consumed more protein from healthier food groups than obese adolescents. This study suggests more daily protein intake to reduce the body weight of obese adolescents.

P2.09 Taste sensitivity and taste preference in a sample of Malay children in Kuala Lumpur - A Pilot Study

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Introduction: Childhood obesity could be a major cause of several chronic health diseases. One in seven Malaysian children aged 5 to 17 years were classified as obese: the highest amongst the Asian countries. Children's taste and food preferences can affect their food intake and potentially impacting their body weight. Bitter and sweet taste sensitivities were identified as underlying contributors to the selection of various foods.

Objective: To determine the taste sensitivity and preference of bitter and sweet taste disposition in children.

Methodology: A case-control study was conducted among 15 pairs of Malay children aged 7 to 12 years of age from local schools and communities. The children were matched by their age, gender, and body mass index. Seven concentrations were tested for each taste. Sensitivity for the bitterness was analysed using 6-n-propylthiouracil (PROP) solutions while for sweet sensitivity sucrose by rating its intensity with a 100mm Labelled Magnitude Scale (LMS) were used. Taste preference of the solutions was rated using a 5-point Likert scale.

Results: The participants' mean age was 10.13 ± 1.57 years. The children were better at identifying bitter than sweet taste (median score 6/7 vs 4/7, $p > 0.05$) The preference towards sweetness increased according to the concentration of sucrose while an inverse relationship was observed in bitter solutions. No significant difference were detected for both taste between normal weight and overweight group based on the median scores of LMS results [bitter: 350 vs 413, $p = 0.273$; sweet: 154 vs 263, $p = 0.068$] and Likert readings (bitter 9 vs 8: $p = 0.490$; sweet 22 vs 22: $p = 0.677$).

Conclusion: In this sample, Malay children were more sensitive to bitterness than sweetness, however, the taste sensitivity and preference were similar irrespective of weight status. Future nutrition education strategies focusing on taste preference and food intake could be incorporated to promote healthy body weight status.

P2.10 Umami taste perception and its correlation with various indices of obesity and blood pressure among primary school-aged children in Malaysia

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Introduction: High savoury food consumption may increase the risk of developing obesity and hypertension. Umami taste is one of the basic taste sensations that provide savoury flavour to food. However, there are limited studies which investigate whether obesity indices are correlated with the differences in umami taste perception, particularly in children.

Objective: To examine the correlation between umami taste perception with various obesity indices and blood pressure among primary school-aged children in Malaysia.

Methodology: A total of 140 children (50 boys, 90 girls) aged 9 - 11 years were recruited. Participants comprised of almost equal distribution of children from three main ethnicities (37.2% Malays, 37.4% Chinese and 37.4% Indians). Eighteen concentrations of monosodium glutamate (MSG) solutions ranging from 0.056mM to 1.0M were prepared to investigate umami detection thresholds by using the two-alternative, forced-choice (2-AFC) staircase procedure. Body weight, height, waist circumference, and blood pressure of children were measured. Body composition was assessed using bioelectrical impedance analysis (BIA) method.

Results: Mean threshold for umami taste in children was 1.22 ± 1.04 mM. Umami threshold in boys (7.52 ± 1.39 mM) was slightly higher than girls (7.06 ± 0.74 mM). No ethnic differences were observed in umami detection threshold among children. Body fat percentage was negatively correlated ($r = -0.171$, $p < 0.05$), while lean body mass percentage was positively correlated ($r = 0.171$, $p < 0.05$) with umami detection threshold. However, no significant correlations were found between BMI-for-age z-scores, waist circumference, systolic blood pressure and diastolic blood pressure with umami detection threshold among children.

Conclusion: These findings revealed that umami taste perception was correlated only with percentage of body fat and lean body mass, but not other anthropometric indicators and blood pressure among Malaysian children. Future studies may be conducted to further explore the correlation between umami taste perception and children's total dietary intake.

P2.11 Needs Analysis in the Development of Interactive Booklet for School Community in Improving Obesity Intervention: An Exploratory Single Case Study with Multiple Unit of Analysis

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Introduction: Schools serve as a focal point to engage students, school communities, and other agencies in implementing obesity intervention. By bringing them together mainly teachers, parents, and canteen operators are beneficial to ensure healthy eating among children and create a healthy school environment. However, there are barriers and success factors in the implementation. The use of interactive booklet enhanced by technology seems to be one of the potential tools as a guide for future obesity intervention.

Objective: This study aimed to perform need analysis in developing an interactive booklet in accordance with the needs of the school community

Methodology: An Exploratory Single Case Study with Multiple Units of Analysis was applied. It involved three stages of data collection: interview, document analysis, and survey. The interview involved teachers and nutritionists (n=6). Documents related to the intervention were also reviewed to support the results. While the survey involved teachers (n=30), school canteen operators (n=13), and parents (n=78) to seek their feedback and perception towards interactive booklet development. Pattern matching technique was used to formulate case study results.

Results: The results showed that barriers consisted of the school system, parental awareness, staff availability, and also children's compliance and attitude. While success factors consisted of the teacher's role, the nutritional approach used in the previous program, compliance of Healthy Canteen Guidelines by canteen operators, and strong collaboration with the Parents Teachers Association (PTA) Therefore, the findings suggested the development of education material with some improvements in enhancing the impact of obesity intervention, including strengthening the role of the school community, integrating nutrition education with technology, application of intervention elements in the school curriculum, and children as role models to influence their peers.

Conclusion: Based on the findings, the interactive booklet is a necessity for the school community to ensure the positive impact of the obesity intervention.

P2.12 South East Asian Nutrition Survey II (SEANUTS II) Malaysia: Study objectives, design and methodology of a comprehensive nutrition and health survey of children

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Introduction: The prevalence of childhood obesity is on an upward trend in Malaysia. The National Health and Morbidity Survey 2019 reported that 29.8% of children aged 5 to 17 years were overweight or obese. The South East Asian Nutrition Surveys II (SEANUTS II) is a multi-country study involving Malaysia, Vietnam, Indonesia and Thailand that aims to assess nutritional status and lifestyle behaviour of children aged 6 months to 12 years old.

Objective: This paper highlights the methodology used in SEANUTS II Malaysia to assess the inter-relationship between socioeconomic status, lifestyle and environmental factors relative to the prevalence of childhood obesity.

Methodology: SEANUTS II Malaysia is a cross-sectional nationwide study involving children from urban and rural areas in Central, Northern, East Coast and Southern regions of Peninsular Malaysia, Sabah and Sarawak. Multi-stage cluster sampling approach was used to recruit a target sample of 3864 children. Information regarding demographics, socioeconomic status, child food habit, physical activity and sleep behaviour were collected using self-reported (child) or proxy-reported (parents or caregivers) questionnaires. Dietary intakes were assessed using 24-hour recall interviews. Children's anthropometry, body composition and blood pressure were measured. A subsample of children was subjected to blood analysis, accelerometry and sunlight exposure measurements. This study protocol is approved by the institutional ethics committee and registered with the Netherlands Trial Register (NL7975).

Results: SEANUTS II provides comprehensive and recent data on lifestyle behaviour and eating habits of Malaysian children. Further understanding towards underlying risk factors may prevent childhood obesity.

Conclusion: The findings of this study will have important implications for planning public health strategies and for future interventions to curb childhood obesity in Malaysia. SEANUTS II is one of the largest multi-centre nutrition and health survey collaboration in Southeast Asia, which serves as a global effort to address the ever-growing epidemic of obesity.

P2.13 Association between healthy eating index and abdominal obesity among aboriginal children in Negeri Sembilan

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Introduction: There is a continuing need to examine the relationship between the Health Eating Index (HEI) and abdominal obesity especially among aboriginal children.

Objective: This study aimed to determine the relationship between HEI and abdominal obesity among aboriginal children.

Methodology: An analytical cross-sectional study was conducted among primary school aboriginal children from in Negeri Sembilan and their respective parents. The HEI score (HEIs) and HEI component scores (HEIcs), were calculated based on diet data from SFFQ. All data was analysed using SPSS.

Results: The prevalence of abdominal obesity among aboriginal children was 17.5%. According to HEI, 47.1 % of children had diet that requiring improvement (\sum Hels <80). Children aged 10-12 years old have significantly larger waist circumference ($t=-9.32$, $p<0.001$), higher \sum HEIs ($t=-2.231$, $p=0.027$), higher HEIcs for vegetable ($t=-1.475$, $p=0.142$), legume ($t=-3.099$, $p=0.003$) and dairy ($t=-4.065$, $p<0.001$). Compared to boys, girls have significantly higher HEIcs for meat, poultry and eggs ($t=-3.35$, $p=0.001$). Compared to the scores reported by children's mother, other relatives have significantly higher HEIcs of legumes intake ($t=-2.13$, $p=0.036$). The HEIcs for fruit intake was significantly higher in children from family with household size >5 members ($t=-2.154$, $p=0.033$) and with single parents ($t= 7.119$, $p<0.001$). HEIcs for meat, poultry and egg, fish and seafood were also higher among single parents ($t=2.776$, $p=0.006$ & $t=5.029$, $p<0.001$), while HEIcs for legume were higher among children with two-parent ($t=-2.441$, $p=0.019$). The HEIcs for meat, poultry and egg intake was significantly highest among parents with tertiary-education ($p=0.028$). Temuan children has significantly higher \sum HEIs ($t=2.244$, $p=0.026$); higher HEIcs for fish and seafood ($t=2.384$, $p=0.029$), legumes ($t=2.805$, $p=0.006$); milk or dairy products ($t=3.204$, $p=0.003$); meat, poultry and egg ($t=5.013$, $p<0.001$). No significant relationship was observed between waist circumference and HEIs.

Conclusion: HEI provide comprehensive assessment of diet quality; however, not in relation with abdominal obesity among Aborigine children. Longitudinal studies are needed to evaluate whether HEIs predicts risk of abdominal obesity among Aborigine children.

P2.14 Correlations between body composition and physical fitness among school-aged children: a sample from urban-poor community settings in Malaysia

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Introduction: Health-related physical fitness consisted of body composition, cardiorespiratory fitness, muscular endurance, muscular strength and flexibility. Body fatness could possibly influence on the other physical fitness components.

Objective: To determine the associations between the body composition indicators and physical fitness components among school-aged children.

Methodology: A total of 412 school-aged children (male 71.8%; female: 28.2%) were recruited, with a mean age of 9.73 ± 1.57 years, were recruited. Body composition indicators, including body fat percentage (BF%), fat mass (FM), and skeletal muscle mass (SMM), were measured by using bioelectrical impedance analyser (InBody 270). The children's FM and SMM were then used to generate the muscle-fat-ratio (MFR). Besides, their physical fitness (cardiorespiratory fitness, muscular endurance, flexibility, lower limb muscle strength) were assessed through 3-min Kasch Pulse Recovery Test, 1-min curl-up test, v sit-and-reach test, and vertical jump test, respectively.

Results: The mean BF% of the children were $21.7 \pm 9.9\%$, whereby 12.9% and 20.4% of them were classified as overfat and obesity, and the mean FM and SMM of the children was $7.56 \pm 6.43\text{kg}$ and $11.91 \pm 3.34\text{kg}$, respectively The mean MFR of the children were 2.26 ± 1.12 . The BF% of the children was significantly correlated with the higher heart beats per minute ($r=0.16, p=0.001$) which indicated lower cardiorespiratory fitness, as well as lower muscular endurance ($r=-0.29, p<0.007$), whereas the SMM was correlated with the lower flexibility ($r=-0.098, p=0.046$) and better lower limb muscle strength ($r=0.14, p=0.006$). The MFR of the children was significantly correlated with better cardiorespiratory fitness ($r=0.17, p<0.007$), better muscular endurance ($r=0.27, p<0.007$) and better lower limb muscle strength ($r=0.097, p=0.049$).

Conclusion: Most of the body composition indicators have significant but negligible or weak correlations with the other health-related physical fitness components. Future intervention program should consider body composition as one of the important factors that could potentially impact the other health-related physical fitness components.

P2.15 A higher body mass index z-score was associated with body image dissatisfaction among Malaysian adolescents

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Introduction: Body image dissatisfaction in adolescents can lead to unhealthy lifestyles such as dieting and subsequently eating disorder. However, little is known on the risk factors associated with body image dissatisfaction among Malaysian adolescents.

Objective: To determine the risk factors associated with body image dissatisfaction among adolescents aged 13 years old.

Methodology: This was a cross-sectional study among 933 adolescents recruited from randomly selected secondary schools in three southern states of Peninsular Malaysia. A set of self-administered questionnaires, which included sociodemographic, MyUM Adolescent Food Frequency Questionnaire and Contour Drawing Rating Scale was used to obtain information on sociodemographic, dietary intakes and body image. Body image dissatisfaction was determined by discrepancy score more and less than 0. Body weight (kg) and height (cm) was measured and body mass index (BMI) was estimated and classified according to WHO growth chart 2007. Associations between the potential risk factors and body image dissatisfaction were measured using regression models.

Results: Majority of the study adolescents (79.1%) were dissatisfied with their body image. After adjusting for sex, maternal education, energy intake and diet misreporting, adolescents who were overweight (OR= 5.583; 95% CI: 2.752, 11.325) and obese (OR= 9.546; 95% CI: 4.098, 22.238) were more likely to have body image dissatisfaction compared to adolescents who were in the normal weight category Higher fruit intakes were significantly associated with higher body image dissatisfaction (OR= 1.655; 95% CI: 1.023, 2.677).

Conclusion: The findings in this study highlighted that prevalence of body image dissatisfaction was high among adolescents. Higher BMI z-scores and fruit intakes were found to significantly associated with body image dissatisfaction. Due to the high prevalence of body image dissatisfaction, the need of appropriate intervention program is needed to promote body satisfaction among adolescents.

P2.16 Association between dietary patterns and weight status of Aboriginal children in Negeri Sembilan

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Introduction: Weight status is an effective indicator of identifying malnutrition among children. Rural areas had a higher prevalence of severely underweight and moderately underweight children than urban areas. Using dietary pattern approach, which considers a more comprehensive overview of the diet could provide more interpretable findings than studying single nutrients or foods since foods are not consumed separately. However, studies on the association between dietary patterns and weight status is limited among Aborigine children.

Objective: To study the association between dietary patterns and weight status of Aboriginal children in Negeri Sembilan.

Methodology: An analytical cross-sectional study was conducted in three aboriginal primary schools in Negeri Sembilan involving 296 children. Semi-quantitative food frequency questionnaire was used to generate dietary pattern using principle component analysis. AnthroPlus software was used to calculate BAZ and all the data was analyzed using IBM SPSS statistic software.

Results: Two dietary patterns were identified namely staple food pattern (eigen value=9.08, variance=11.22%) and high dense food pattern (eigen value=2.54, variance=9.72%). The prevalence of overweight was 17.7% and obesity was 16.7% among aborigine primary school children. Children with high household income significantly had higher BAZ compared to lower household income ($F= 3.457, p=0.018$). Children aged 10-12 years old showed a significant higher adherence to staple food pattern ($t=-3.20, p=0.002$) as well as for high dense food pattern ($t= -3.71, p<0.01$) compared to children aged 7-9 years old. Adherence to staple food pattern was high among children with parents with tertiary education background ($F=4.801, p=0.01$). High adherence for high dense food pattern was significantly higher among children with household >5 members compared to household :55 members ($04=64.5\%$ vs 35.5% ; $X^2=8.171; p=0.043$) There is no significant relationship between dietary pattern and BAZ.

Conclusion: Sociodemographic background plays crucial role in determining both dietary pattern and weight status.

P2.17 Association nutrition intake, body image, sleep quality and nutritional status of adolescents in urban Jakarta

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Introduction: Obesity and overweight in adolescent are factor of non-communicable disease. The prevalence of obesity of adult in Indonesia increase from 14.8% to 21.8%.

Objective: To examine the association of nutrition intake, body image, sleep quality and nutritional status of adolescents in urban Jakarta, Indonesia.

Methodology: This was a cross-sectional study of 2,459 adolescents aged 15-16 years. The variable nutrition intake was used a food recall, body image was used Body-Self Relations Questionnaire (BSRQ) and sleep quality was used he Pittsburgh Sleep Quality Index (PSQI).

Results: The prevalence of overweight and obesity was 24.6% for the total sample (55.3% male, 44.7% female). The average of nutrient intake (1600±439 Cal, 60.1 g protein, 64.5 g fat, 189.6 g carbohydrate). The body image (56% positive and 44% negative). Overall, 67.7% reported good and 32.3% reported poor sleep quality. The energy intake, body image and sleep quality significant association with nutritional status ($p < 0.05$), however no significant association was found carbohydrate, fat and protein with nutritional status ($p > 0.05$).

Conclusion: The present study suggests that energy intake, sleep quality and body image was positively associated with overweight and obesity in adolescent.

P2.18 ROHHAD Syndrome : a rare case of early and rapid-onset childhood obesity

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Introduction: Rapid-onset obesity with hypoventilation, hypothalamic dysfunction and autonomic dysregulation (ROHHAD) syndrome is a rare, progressive and potentially fatal syndrome with unknown aetiology to date. It is characterized by progression from early normal growth and development to a sudden, rapid hyperphagic weight gain, hypothalamic dysfunction, and central hypoventilation, and is often accompanied by personality changes and developmental regression. Cardiac arrest secondary to alveolar hypoventilation has been reported in cases with poor prognosis. It can also mimic genetic obesity syndromes and several endocrine diseases.

Objective: To raise awareness among healthcare workers about ROH HAD Syndrome.

Methodology: A case of ROHHAD, followed-up from age of 2 year until now in Hospital Putrajaya, was identified. Medical records were reviewed to determine the characteristics of ROHHAD in this case. Parental consent was obtained for case report.

Results: A 5-year-old girl presented with rapid hyperphagic weight gain since the age of 2 years and hypertension. After initial investigations, features matching ROHHAD syndrome were identified such as rapid-onset obesity, alveolar hypoventilation, central hypothyroidism, hyperprolactinemia, and water-balance disorder. Her initial polysomnography done at 3 years old showed moderate sleep apnea only. Subsequent polysomnography repeated at 5 years old showed evidence of alveolar hypoventilation and appropriate follow-up was initiated.

Conclusion: Recognition and early diagnosis of ROHHAD syndrome and subsequent monitoring for complications are important for better management regarding the high risk of sudden death due to cardiorespiratory arrest. Thus, the possibility of ROHHAD syndrome needs to be considered in all paediatric cases of rapid-onset obesity in infancy associated with hypothalamic-pituitary endocrine dysfunction.

P2.19 Parental perceptions of healthy eating and physical activity in children enrolled in an online clinic-community intervention programme

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Introduction: COVID-19 threatens the rise of childhood obesity rates. Adapting a US-based clinic-community intervention model into an online clinic-community programme may be an effective and sustainable treatment. The adaptation process was conducted in collaboration with Duke University childhood obesity experts, parents and community stakeholders (Sports Singapore and Health Promotion Board).

Objective: To describe parental perceptions on the barriers and facilitators to healthy lifestyle habits of participants enrolled in the online intervention programme and to explore parental suggestions on effective components of the online programme and the impact of COVID-19 on lifestyle habits to better tailor the programme to their needs.

Methodology: We recruited 13 parents of children aged 4-7 years with obesity allocated to the online intervention to participate in a semi-structured online individual interview. Parents were asked about their concerns regarding their child's weight, exercise and dietary habits, and the impact of COVID-19. Parental perceptions on effective components of the online intervention were also elicited. Interviews were recorded, transcribed and analysed using thematic analysis.

Results: A few themes relating to the barriers and facilitators of healthy lifestyle habits were identified. Barriers relating to healthy nutritional habits include preferences for less healthy food, large portion sizes, dislike of fruits and vegetables and excessive snacking. Barriers relating to physical activity include parental time constraints to bring children out for activities, space constraints and lockdowns from COVID-19 leading to a reduction in outdoor activities. Parents prefer to learn nutritional recommendations, such as portion sizes and ways to increase consumption of fruits and vegetables, and learning a variety of physical activities.

Conclusion: Despite experiencing multiple barriers to healthy lifestyle habits worsened by the COVID-19 pandemic, several facilitator themes emerged amongst parents of children with obesity. Understanding these barriers and facilitators and programming suggestions will be helpful in successful implementation of the online programme.

P2.20 Predictors of overweight and obesity among Singapore children

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Introduction: Childhood obesity is a growing problem in Singapore and it is important to understand its predictors. However, the current literature is primarily based on Western population and little is known about the Singaporean population.

Objective: We aimed to assess the association of child and maternal predictors with child weight and BMI. We also aimed to examine the association of breastfeeding with rapid weight gain (RWG) in the first 6 months of life and overweight or obesity (OWO).

Methodology: Retrospective data on infants attending a government-subsidised primary care clinic between July 2019 to August 2020 was collected. Weight and BMI were measured at birth, 1,3,6,9,12 and 18 months. Children characteristics (gender, race) and maternal characteristics (type of feeding, maternal age and maternal education) were recorded. Mixed Model Repeated Measures analysis was performed to compare weight and BMI within each gender, race and duration of breastfeeding. Multivariable logistic regression was used to test the association between breastfeeding with RWG and OWO adjusting for other predictors.

Results: 7125 infants participated in this study. Males and Chinese race were associated with higher BMI. 20.1 % (461 /2297) and 18.5% (371 /2008) were OWO at 12 and 18 months respectively. Longer duration of breastfeeding of at least 12 months was associated with a lower risk of OWO at 12 and 18 months. RWG from birth to 6 months was associated with greater than 3-fold increased risk of OWO at 12 and 18 months. There was no significant association with breastfeeding and RWG from birth to 6 months.

Conclusion: Longer duration of breastfeeding was protective against early childhood OWO. Children who undergo RWG from birth to 6 months are at higher risk of becoming overweight in early childhood. Thus, close growth monitoring of children with RWG in the first 6 months of life may be an important childhood obesity prevention strategy.

P2.21 Association between eating behaviour and abdominal obesity among primary school children (aged 7 to 10 years old)

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Introduction: Abdominal obesity is a component of metabolic syndrome and a better predictor of cardiovascular risk and certain cancers. Studies show that eating behaviour is one of the risk factors that associated with obesity; however, there are limited findings on eating behaviour associated with abdominal obesity in children.

Objective: To determine the association between eating behaviours and abdominal obesity among children.

Methodology: A total of 614 children who were randomly selected from 6 selected primary schools in Batu Pahat, Johor, participated in this study. The waist circumference of each child was measured by a trained researcher and the abdominal obesity of the child was determined based on the percentile values. Parents were required to complete the multidimensional Children's Eating Behaviour Questionnaire (CEBQ) to assess the eight different dimensions of the eating style of their children. Binary Logistic Regression was used to determine factors that associated with abdominal obesity of the children.

Results: About one in five (22.0%) of the children had abdominal obesity, with a mean waist circumference of 61.0 ± 10.2 cm. Logistic regression analysis revealed that those children with higher enjoyment of food and lower satiety responsiveness were significantly associated with higher risk of abdominal obesity ($p < 0.05$).

Conclusion: In conclusion, the prevalence of abdominal obesity among children is high. This study highlights that children should be educated on ways to respond to satiety signals and limit the food intakes when in higher enjoyment of the foods in order to prevent childhood obesity.

P2.22 Impact of Movement Control Order (MCO) during the pandemic of COVID-19 on body weight status and health-related quality of life among Malaysian adults

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Introduction: The health-related quality of life (HRQOL) is a health indicator that not only concerned about how long an individual can survive, but more concerned about how well an individual live.

Objective: The present study aimed to assess the impact of the Movement Control Order (MCO) during the pandemic of COVID-19 in Malaysia on body weight status and HRQOL among Malaysian adults.

Methodology: This was an online cross-sectional study that involved 1,319 Malaysian adults. The participants self-reported their height, weight before and during MCO, while their perceptions of HRQOL during MCO was assessed using the WHOQOL-BREF instrument.

Results: More adults perceived their HRQOL as good (54.4%) and satisfied with their health (55.3%) when compared to those who perceived their HRQOL as poor (5.5%) and those dissatisfied with their health (10.4%), respectively. Within the four domains of the HRQOL, respondents scored highest on social relations health domain (mean score 75.9 ± 7.5) and scored lowest on physical health domain (mean score: 56.3 ± 9.5). During MCO, the prevalence of OW, OB and UW were 25.5%, 12.0% and 7.8%, respectively. There were no significant differences in body weight and body weight status before and during MCO. About one-third of adults reported to have lose weight (32.2%) while another three in ten of adults reported weight gained (30.7%). Adults who were overweight and obese were associated with poorer HRQOL and dissatisfied with their current health, respectively ($p < 0.05$). In addition, those who have gained weight was associated with poorer HRQOL and dissatisfied with their current health as compared to those who have weight reduction ($p < 0.05$).

Conclusion: A majority of the Malaysian adults had significant body weight changes during MCO, whereby adulthood obesity and weight increment may have impacted on their HRQOL. Healthcare professionals should take this opportunity in promoting healthy weight management during the pandemic of COVID-19.

P2.23 Factors Associated with the incidence of obesity in school adolescents in the City of Banda Aceh, Indonesia

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Introduction: Current adolescent obesity is one of the nutritional problems that causes the risk of degenerative diseases in the future. Some factors that influence adolescent obesity are light physical activity, wrong eating habits, genetic factors, psychological factors, low knowledge of nutrition, socioeconomic status, age, and gender.

Objective: This study aims to analyze the factors associated with obesity in adolescents in the city of Banda Aceh.

Methodology: The research design was cross-sectional with the Accidental Sampling method. Total respondents were 100 adolescents in Senior High Schools in Banda Aceh City. Data on respondent characteristics and nutritional knowledge used a questionnaire. Data on adolescent obesity status was calculated using Z-score ($BMI / U > 2$) and good nutrition knowledge score (> 80). Factors associated with adolescent obesity status were analyzed using the chi-square test

Results: It was found that 27.0% of high school adolescents were obese according to BMI / U, the risk of obesity based on abdominal circumference was 21.0%, the habit of using screen time was 63.0% in the high category, 47% low knowledge of balanced nutrition, and bad eating habits 85%. The factor that was significantly related to the occurrence of obesity in adolescents was knowledge of nutrition ($p = 0.003$)

Conclusion: Knowledge of nutrition is related to obesity in high school adolescents in Banda Aceh City.

P2.24 Association between Dietary Inflammatory Index and overweight among the Aboriginal primary school children in Negeri Sembilan

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Introduction: The Dietary Inflammatory Index (DII) is used as a new dietary tool to assess the inflammatory potential of an individual's diet. Numerous epidemiological studies had been conducted and consistently showed positive association between DII and overweight but few studies had been conducted among children.

Objective: This study aims to investigate the association between DII and prevalence of overweight among aboriginal children in Negeri Sembilan.

Methodology: It is a cross-sectional study involving 160 primary school aboriginal children. DII scores were calculated from dietary data collected using a semi-quantitative food frequency questionnaire (SFFQ). The WHO BMI-for-age (5-19 years) reference was used to categorize the weight status of the subjects into normal (-2SD to 1 SD) and overweight (>+ 1 SD). The statistical software IBM SPSS v.20 was used to analyse the data.

Results: The prevalence of overweight(>+ 1 SD) is 34.4%. There is a significant higher proportion of children aged 10-12 years old who are overweight compared to children aged 7-9 years old (43% vs 27.1%; $X^2=7.595$, $p=0.006$). Children 7-9 years old had a significantly higher DII compared to children 10-12 years old (47.3% vs 25.9%; $X^2= 9.357$, $p= 0.009$) There is no significant relationship between DII and overweight ($X^2= 1.428$, $p=0.49$).

Conclusion: Although a higher inflammatory index score (pro-inflammatory diet) was associated with obesity, it does not predict overweight in the aborigine children.

P2.25 A Comparison between World Health Organization, International Obesity Task Force and Center for Disease Control References in assessment of overweight and obesity among Aborigine children

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Introduction: The prevalence of overweight/obesity among Aborigine children have been reported increasing gradually over the time, but the results of the studies are not consistent. Discordant in overweight/obesity prevalence may be attributed to the different criteria used for defining overweight and obesity.

Objective: This study compares the World Health Organization (WHO), Center for Disease Control (CDC) and International Obesity Task Force (IOTF) references in assessment of overweight/obesity among Aborigine children in Malaysia.

Methodology: This is an analytical cross-sectional study conducted in August 2020 among 375 Aboriginal primary school children in Negeri Sembilan, Malaysia. Height and weight of the children were assessed, and further categorized as overweight/obesity based on WHO, CDC and IOTF criteria. Kappa agreement was determined to compare the strength, sensitivity and specificity of overweight/obesity assessment based on these three criteria.

Results: The prevalence of overweight/obesity among Aboriginal primary school children was 34.6% based on WHO criteria, 32.9% based on IOTF criteria and 18.0% based on CDC criteria. WHO criteria were successfully diagnosed in 72.2% of overweight/obese children based on IOTF criteria. On the other hand, 16.2% of the children were categorized as normal by the IOTF but were overweight/obese based on WHO (sensitivity=83.7%, specificity= 74.6%). Based on the kappa index, the WHO criteria showed a moderate agreement with the IOTF, at 0.55 ± 0.05 ($P < 0.007$). The WHO criteria identified that 22.6% of normal BMI children were overweight/obese based on CDC criteria and 25.2% of the children who were identified as normal based on CDC criteria were overweight/obese based on WHO criteria (sensitivity = 75.6%, specificity = 71.9%). The kappa index showed a moderate agreement between the CDC and the WHO criteria ($\text{kappa} = 0.38 \pm 0.06$, $P < 0.001$).

Conclusion: The findings suggest a better agreement between the WHO and IOTF criteria in assessment of overall overweight/obese prevalence among Aborigine children compared to CDC criteria.

P2.26 Correlation for the total body fat with Body Mass Index and Tri-Ponderal Mass Index in overweight & obese children & adolescent

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Introduction: Obesity in children and adolescents is exponentially growing. Body Mass Index (BMI) is a common parameter for the evaluation of obesity. However, Tri-Ponderal Mass Index (TMI) is postulated to be a better tool to relate Total Body Fat (TBF) in children weighing more than normal and is suitable even in individuals with too short or too tall a height

Objective: To evaluate anthropometric indicators TMI and BMI for the correlation with TBF.

Methodology: A total of 83 obese (42 boys & 41 girls) aged 8 to 18 were analyzed, at a dedicated obesity center. The children were from higher socio-economic strata and underwent body composition analysis by Dual Energy X-Ray Absorptiometry (DEXA) A portable stadiometer was used to measure the height.

Results: Mean age (years) was 13 (± 2.4) Mean BMI (kg/m^2), TMI (kg/m^3), TBF (%), HbA1c (%) was 27 (± 3.7 , minimum 21, maximum 37, 95% CI 26 to 28), 18 (± 2.2 , minimum 13, maximum 25, 95% CI 17 to 18), 48 (± 5.6 , minimum 4.3, maximum 6.2, 95% CI 47 to 49), 5.4 (± 0.37 , minimum 4.3, maximum 6.2, 95% CI 5.3 to 5.4), respectively. There was a positive correlation between BMI and TBF%, TMI and TBF% ($r=0.53$, 95% CI 0.35 to 0.67, $p<0.0001$), ($r=0.58$, 95% CI 0.41 to 0.70, $p<0.0001$), respectively. Difference between mean BMI and TMI was comparable across genders ($p=0.17$, $p=0.93$, respectively). Difference between mean TBF%, among males (45.6) and females (50.32) was highly significant ($p<0.0001$).

Conclusion: In concurrence with the literature, our study suggests that TMI appears to be a superior metric and may be more effective than BMI for estimating body fat levels. The higher fat percentage in females as compared to males is a metabolic threat Our study is limited by a single-center evaluation with a small population. The results need further corroboration with larger studies.

P2.27 Rapid weight gain in the first 6 months of life and overweight/obesity at 2 years among infants in Seremban, Malaysia

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Introduction: Rapid growth usually occurs in infancy to compensate for intrauterine growth impairment. Infants who experienced rapid weight gain are at higher risk of overweight/obesity in childhood.

Objective: To determine the association between rapid weight gain at 6 months and the prevalence of overweight/obesity at 2 years.

Methodology: This cohort study followed-up 117 at-term infants (m=62; f=55) from birth to 2 years. Gestational age, birth weight and length were obtained from patient health clinic card, and ponderal index was calculated. Weight and length were measured every 6 months from 6-24 months. Z-score of weight-for-age, length-for-age and weight-for-length of infants were determined. Change of $>0.67SD$ in the weight-for-age between birth and 6 months indicates rapid weight gain.

Results: Overall, 17.1 % of infants had rapid weight gain at 6 months. These infants had lower birth weight, length and ponderal index than infants without rapid weight gain. At birth, the prevalence of underweight (15% vs 3.1 %), stunting (10% vs 1%), and wasting (30% vs 25.8%) were higher among those with than without rapid weight gain. None of the infants with rapid weight gain was overweight/obese at birth. However, at 6 months, 35% of them became overweight/obese, while the prevalence for those without rapid weight gain was 4.1 % ($p<.01$). The prevalence of stunting was about the same among those with (10%) and without (8.2%) rapid weight gain. None of the infants with rapid weight gain was underweight or wasted at 6 months. Similar patterns of nutritional status were observed at 2 years. Rapid weight gain at 6 months was associated with higher risk of overweight/obesity at 2 years (Adj OR = 15.54, 95% CI [3.18, 75.84])

Conclusion: Rapid weight gain in infancy is associated with overweight/obesity at 2 years. Weight gain monitoring in infancy is important as a strategy to prevent early childhood obesity.

P2.28 The i-MaChEL Study: Two-group, cluster-RCT involving 460 preschool's child-parent dyads to prevent childhood obesity in Terengganu, Malaysia

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Introduction: Strategies to treat and prevent obesity are urgently required in Malaysia, and it is now considered a public health priority.

Objective: The primary objective of the present study is to compare the changes in the child BMI-for-age z-score at 6- and 12-month after baseline measurement. The secondary objectives of the present study are to compare the changes in child dietary intake, child physical activity, child health-related quality of life, parental self-efficacy, parental role modeling, and parental policies at 6- and 12-month after baseline measurement.

Methodology: The Interactive Malaysian Childhood Healthy Lifestyle Program (i-MaChEL) intervention is a single-blind, two-group cluster-randomized controlled trial that evaluates the effectiveness of the obesity prevention intervention on preschool's child-parent dyads. The participating preschools (n=12) will be randomized to either the intervention or control group in a 1:1 ratio. The present study will involve 460 child-parent dyads of preschool children aged 5 and 6 years old in Terengganu, Malaysia. Briefly, the preschool children in the experimental group will be received the i-MaChEL program delivered through interactive classroom instruction, and their parents will have access to the i-MaChEL Web-based program. In the control group, the preschool children will be received a standard preschool health education curriculum, and their parents will have access to the general Web-based health newsletters. Instruments: Anthropometric measurements (body weight and height) will be assessed. The dietary intake of children will be measured using dietary records for three days. Child physical activity, child health-related quality of life, parental role modeling, parental policies, and parental self-efficacy will be assessed using previously validated questionnaires.

Results: N/ A

Conclusion: The combinations of the two modes of delivery (interactive classroom instruction for preschool children and a Web-based program for parents) will have a strong potential to be effective strategies to sustain child-parent engagement and participation in the obesity-related behavior change program.

P2.29 Predictive equations for assessing body composition in paediatric populations using DXA as the reference method: a systematic review

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Introduction: A simple and practical method such as bioelectrical impedance analysis (BIA) and the anthropometric predictive equation is important to assess the body composition of pediatrics for the prevention and management of childhood obesity.

Objective: To review the BIA- and anthropometric-based predictive equations for assessing body composition in pediatric populations using dual-Energy X-ray absorptiometry (DXA) as the reference method from observational studies.

Methodology: Comprehensive search of English articles was conducted from electronic databases of PubMed (2005-2020), Scopus (2005-2020). Search terms included predictive equation, bioelectrical impedance analysis (BIA), anthropometric, skinfold, body composition, fat mass, fat-free mass, pediatric populations, children, adolescents, and dual-energy x-ray absorptiometry (DXA). The included studies were those that use BIA and/or anthropometry as predictor variables, relative or absolute fat mass (FM) or fat-free mass (FFM) were assessed, and using DXA as the reference method for the healthy pediatric population aged between 2-21 years old. Data extraction was conducted by researcher using predefined data fields, followed by study quality assessment using the Effective Public Health Practice Project (EPHPP).

Results: A total of 16 studies (25 equations) were included, with the majority of the equations developed from Western countries, cross-sectional study design, and with a moderate rating of study quality. Development of predictive equations produces R² ranges from 0.64 to 0.99, with a low level of RMSE and CV. Only 8 out of 16 studies were cross-validated which have high R² ranges from 0.80 to 0.99, with reasonable value for PE, ICC, bias, and limits of agreement.

Conclusion: In conclusion, all of the included BIA- and anthropometric predictive equation appears to be acceptable and valid to be used as an alternate method of DXA in the current clinical and field settings. Nevertheless, more validation of predictive equation needs to be done especially in Asian countries.

P2.30 Development and usability of mobile application on nutrition and oral health (*Gigiku Sihat*) among parents of pre-school children in Tumpat, Kelantan

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Introduction: Although caries in pre-school children was largely preventable, it was reported that children in Malaysia consumed a lot of sugar which aggravated the problem because sugar is a crucial dietary factor in the development of dental caries and obesity. Remote communication and education particularly in general health as well as directed at the prevention of oral diseases and the protection of children's oral health are more critical than ever during an epidemic time like COVID-19.

Objective: The aim of this study was to record the development and usability of *Gigiku Sihat*, a mobile application for nutrition and oral health that is primarily intended for use by parents and guardians of pre-school children.

Methodology: The System Development Life Cycle theory was used to create the mobile application. The initial requirement gathering process included situational analysis, design creation, content production, features and functional requirement selection on the Android platform. The architecture and development of the mobile device improved as the project progressed, and it was eventually completed. *Gigiku Sihat* has been established successfully in Bahasa Malaysia. The translated and tested System Usability Scale questionnaire, namely *Skala Kebolegunaan Aplikasi Mudah Alih (SKAMA)*, was used to assess the usability.

Results: 10 beta tester participated in this study. A score of 68 or higher indicating good usability. The mean (SD) usability score for *Gigiku Sihat* was 77.0 (14.18) in this study.

Conclusion: The findings were positive, suggesting that *Gigiku Sihat* has a good usability. As a conclusion, the development of this mobile application focused on nutrition and oral health served as a new source of oral health education, as well as setting the foundations for potential better mobile application development for parents in the prevention of early childhood caries.

TRACK 3

Epidemiology, Diet, Activity and Behaviour

List of Poster Titles

No.	Abstract ID	Title
1	P3.01	Glycemic index and glycemic load: knowledge, attitude and practice among adults and values of selected Malaysian foods
2	P3.02	Maternal chrononutrition, melatonin rhythm and gestational weight gain
3	P3.03	Maternal weight gain and vitamin D deficiency among Malaysian pregnant women
4	P3.04	The relationship between Vitamin D status and biomarker of bone turnover among adolescents in Peninsular Malaysia
5	P3.05	Trends in dietary intake among Malaysian adolescents from 2012 to 2016: An outcome from the Malaysian Health and Adolescents Longitudinal Research Team Study (MyHeART study)
6	P3.06	Associations between chrononutrition and chronotype among Chinese young adults in Malaysia: Spotlight on timing
7	P3.07	Body Mass Index and its association with quality of life among breast and gynecology cancer survivors in Malaysia
8	P3.08	The serving styles of fruits and vegetables and its relationship with average fruits and vegetables intake among Indian children in Malaysia
9	P3.09	Biological potential of apigenin for the treatment of human health complications: Medicinal importance through analysis of scientific research work
10	P3.10	Association between socio-demographic characteristics and nutritional status with physical activity among elderly in Samarahan division, Sarawak, Malaysia
11	P3.11	An application of 7000 steps walking and self-efficacy program to promote physical activity among elderly in Samarahan, Sarawak
12	P3.12	Diet and physical activity practices among the residents of public low-cost housing in Kuala Lumpur
13	P3.13	Minding the gap: Assessing knowledge and self-confidence on obesity and NCD prevention among community health volunteers

No.	Abstract ID	Title
14	P3.14	Understanding the social determinants of eating behaviour among low-income groups in urban Kuala Lumpur: A qualitative study
15	P3.15	The association of psychological characteristics and sleep quality with gestational weight gain among pregnant women
16	P3.16	Prevalence of vitamin D deficiency among Malaysian adolescents and its major risk factors
17	P3.17	Factors associated with poorer life satisfaction among adolescents aged 13 years in Malaysia
18	P3.18	Can seven-to-nine year-old Malaysian children report their food intake? A comparison of accuracy by weight status
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20	P3.20	Body Mass Index of patients with colorectal carcinoma: A retrospective study in HUSM
21	P3.21	Pre-pregnancy body mass index is associated with dietary patterns and type 2 diabetes risk in Malaysian parous women
22	P3.22	Serum vitamin D, HMW adiponectin and cardiometabolic biomarkers in lean and overweight/obese male workers in Kelantan, Malaysia
23	P3.23	Determination of satiety scores, glycemic index and glycemic load of selected breakfast cereals
24	P3.24	WITHDRAWN
25	P3.25	Factors affecting consumer purchase among retailers in selected urban poor community in Kuala Lumpur
26	P3.26	What does the Malaysian Weight Management Registry tell us about weight loss?
27	P3.27	Self-perceived weight status and weight control effort in Korean obese young men and women
28	P3.28	Food taboos among postpartum mothers with preterm infants in Selangor
29	P3.29	Association of daily nutrient intake and diet quality with weight status of undergraduate students in Universiti Sultan Zainal Abidin (UniSZA), Terengganu

P3.01 Glycemic index and glycemic load: knowledge, attitude and practice among adults and values of selected Malaysian foods

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Introduction: Foods that have a high glycaemic index (GI) and glycaemic load (GL) have been reported to be associated with obesity and diabetes, which is at an escalating rate among Malaysian adults.

Objective: To determine the knowledge, attitude and practice (KAP) levels of GI and GL among adults and to access the GI and GL values of selected Malaysian foods.

Methodology: In the KAP study, a total of 424 subjects (29.5±10.2 years) were recruited to fill in KAP questionnaires. The GI of the 10 selected Malaysian foods (Pattaya fried-rice, chicken rice, egg roti canai with dhal, char kuey tiaw, kuih buah Melaka, keria and seri muka) and beverages (ready-to-drink: chocolate malt, tea and coffee) was determined using the standard GI method.

Results: The knowledge score of GI and GL was low (33.2±21.8%) with only 31.4% and 10.8% of subjects have heard about GI and GL, respectively. Nevertheless, the attitude and practice scores were at moderate levels (63.7±6.7% and 50.0± 11.1%, respectively). There were significant positive correlations ($p<0.001$) between the KAP parameters, which were significantly ($p<0.05$) influenced by education levels. Additionally, female subjects had significantly ($p<0.05$) higher knowledge and attitude scores compared to male subjects. GI results showed that only chicken rice, ready-to-drink coffee and tea had moderate GI levels whilst the rest of the foods had high GI levels. All the carbohydrate-based meals had high GL levels and only ready-to-drink coffee had a low GL level. the rest had moderate levels of GL.

Conclusion: The lack of awareness of GI and GL among Malaysian adults needs to be addressed. Determination of GI and GL of other Malaysian foods should be done on a large scale so it can be used as a reference for Malaysians to plan their daily diet.

P3.02 Maternal chrononutrition, melatonin rhythm and gestational weight gain

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Introduction: Chrononutrition and melatonin are important components of circadian rhythm, which is recognized as a novel approach in obesity studies. Time-based eating has been linked to maintaining energy metabolism, similarly with melatonin. Therefore, understanding these roles in gestational weight gain (GWG) provides an insight into maternal weight regulation.

Objective: To examine the association between chrononutrition and melatonin rhythm during pregnancy GWG.

Methodology: A total of 115 primigravidas were recruited at randomly selected government maternal and child clinics in Kuala Lumpur, Malaysia. Pre-pregnancy body mass index (BMI) and GWG were extracted from clinic records. Components of chrononutrition including meal frequency, eating window, breakfast skipping and night eating during the third trimester were assessed using 3-day food record. Mid-sleep was determined using Pittsburgh Sleep Quality Index. Subsample (n=51) provided salivary samples at 4 time-points over 24 hours for melatonin assay.

Results: Mean gestational age of subjects was 33.0 (2.1) weeks; 13% were underweight and 24% were overweight/obese before pregnancy. Results showed 29% and 31% had inadequate or excessive GWG, respectively. Mean mid-sleep time was at 4:13am (1:15). Average daily meal frequency was 4 (0.9). Majority (70%) practiced a shorter eating window (≤ 12 hours); 23% skipped breakfast and 31% ate within 2 hours pre-bedtime. No significant association was observed between chrononutrition components with GWG. Primigravidas with excessive GWG had a significantly earlier-timed melatonin acrophase advanced by approximately 2.5h compared to those with adequate GWG ($p=0.10$). In the adjusted logistic model, those with excessive or inadequate GWG had their mid-sleep significantly deviated from melatonin acrophase, with acrophase occurred at an earlier time than mid-sleep (Odds ratio (OR) 0.53, 95% CI:0.3-0.9; $p=0.025$ and OR:0.33, 95% CI:0.1-0.9; $p=0.047$, respectively).

Conclusion: Findings suggested that misalignment between melatonin rhythm and sleep/wake cycle may contribute to improper GWG, which may increase the risk of adverse infant outcomes. Chronobiological approaches could be explored to manage GWG.



P3.03 Maternal weight gain and vitamin D deficiency among Malaysian pregnant women

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Introduction: Existing evidence on maternal weight gain and vitamin D deficiency associations is scarce, and prior studies showed conflicting results.

Objective: This study investigated whether maternal weight gain influences vitamin D status in Malaysian pregnant women .

Methodology: A cross-sectional study was conducted among 179 healthy pregnant women aged 21-45 years, from various ethnicity in early pregnancy (≤ 20 weeks of pregnancy). Information ranging from sociodemographic characteristics, anthropometric measures, skin type, obstetrics, and vitamin D intake was collected. Blood test for serum 25-hydroxyvitamin D (25(OH)D) was performed and assessed. Maternal weight gain (GWG) was calculated according to the pre-pregnancy body mass index (BMI) by the Institute of Medicine (IOM) and was categorized as inadequate, normal, and excessive. Statistical analyses were performed using logistic regression models to determine the association between maternal weight gain and serum 25(OH)D status level.

Results: The prevalence of vitamin D deficiency ($25(OH)D < 50$ nmol/L) among pregnant women in early pregnancy was high (89.9%). The study revealed that 6 out of 7 healthy pregnant women in Malaysia urban had maternal weight gain incompatible with the Ministry of Health (MOH) Malaysia recommendations, with 45.3% of them had excessive, and 39.1 % had inadequate maternal weight gain in early pregnancy. Only 15.6% had shown to gain weight within the normal range in early pregnancy. However, no significant association was observed between excessive maternal weight gain and the risk of vitamin D deficiency among Malaysian pregnant women (OR: 1.21; 95% CI: 0.51, 2.88, p-value >0.05).

Conclusion: Maternal weight gain does not influence vitamin D deficiency in pregnant women.

P3.04 The relationship between Vitamin D status and biomarker of bone turnover among adolescents in Peninsular Malaysia

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Introduction: Bone mineral density has been widely used either in clinical or population based studies to evaluate the bone status. However, limited studies are looking at bone turnover especially by using biomarkers such as serum C-terminal telopeptide among adolescents in Asia.

Objective: This study aimed to investigate the association of vitamin D status and biomarker of bone turnover among 15-year-old adolescents in Peninsular Malaysia.

Methodology: A cross-sectional study was conducted among adolescents from 15 urban and rural public secondary schools in Selangor, Perak and Kuala Lumpur. Subjects were from the Malaysian Health and Adolescents Longitudinal Research Team Cohort study (MyHeARTs). The sampling was discussed in previously published articles. A total of 1234 subjects were recruited. Information regarding socio-demographic characteristics, anthropometric and clinical data, sun exposure and protective behaviours were collected. Serum 25-hydroxyvitamin D and biomarker of bone turnover (C-terminal telopeptide (CTX)) were assessed. The generalized linear model was used to determine the association between vitamin D status on bone turnover and its associated factors.

Results: The prevalence of vitamin D deficiency was considerable, 31%. A higher prevalence of vitamin D deficiency was reported among females, 46%. The mean of CTX level, revealed that the females had a higher mean of CTX level than males (2.32 ± 0.47 vs 2.24 ± 0.44). However, in multivariate analysis, the analysis shows the strength of the association between 25-hydroxyvitamin D and CTX level was weak ($\beta = -0.075$, $p\text{-value} < 0.01$). It appears calcium intake has a relationship with CTX but not body fat percentage. In addition, those who live in the urban area have a significant greater relationship with the level of CTX ($\beta = 0.126$, $p\text{-value} < 0.01$).

Conclusion: Calcium intake and place of residence has a relationship on bone turnover in this adolescents. It is crucial for future nutrition intervention to be specific which also includes place of residence.

P3.05 Trends in dietary intake among Malaysian adolescents from 2012 to 2016: An outcome from the Malaysian Health and Adolescents Longitudinal Research Team Study (MyHeART study)

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Introduction: Adolescents are facing a series of nutritional challenges which are not only affecting their growth and development but also their livelihood as adults. This is a vulnerable period in the human life cycle for the development of nutritional deficiencies particularly anaemia which has been neglected by public health program. The nutritional and health needs of adolescents are high because of the growth spurt and the increased physical activity.

Objective: The aim of this study is to determine the trend of dietary intake among Malaysian adolescents from 13 to 17 years old.

Methodology: This is a secondary analysis of data from MyHeART adolescent cohort. The 7-day historical assessment of habitual food intakes was conducted by qualified dietitians who were facilitated by flipcharts and household measurement tools. Nutritionist Pro™ Diet Analysis software was used to analyze the dietary records. Generalized estimating equation (GEE) was constructed to evaluate the trend of total energy, protein and iron intake over the 5 years period.

Results: The percentage of adolescents who did not meet RNI for iron continued to increase progressively from 2012 to 2016 [26.6% (95% CI: 21.1,32.9), 63.9% (95% CI: 56.4, 70.8), 77.8% (95% CI: 71.3,83.2)] with p-value<0.0001. It was more significant among the females whose prevalence of not meeting RNI for iron intake increased drastically [22.4% (95% CI: 18.5), 86.6% (95% CI: 79.5,91.4), 93.8% (95% CI: 88.2,96.9)] with p-value<0.0001. More than 80% of the adolescents did not meet RNI for total energy intake over the 5 years. Generally, the trend of dietary intake showed that majority of the adolescents did not meet the Recommended Nutrient Intake (RNI) for total energy and iron intake daily throughout the 5-years period.

Conclusion: Thus, the planning and implementation of a structured and specific intervention is recommended to overcome this nutritional inequality in adolescent age group.

[Poster not submitted]



P3.06 Associations between chrononutrition and chronotype among Chinese young adults in Malaysia: Spotlight on timing

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Introduction: Chrononutrition encompasses the frequency, timing, and regularity of meal consumption. Chronotype refers to personal preferences on timing when an individual performs best. Both chrononutrition and chronotype are emerging as important factors that can affect wellbeing. Hence, the relationship between chrononutrition and chronotype should be explored as a public health measure to promote healthy eating behavior, with regards to timing.

Objective: Current study aimed to determine the association between chrononutrition and chronotype among Chinese young adults in Malaysia.

Methodology: An online cross-sectional survey was conducted among Malaysian Chinese young adults aged 18-29 years. Sociodemographic data were collected. Chrononutrition profile (breakfast skipping, eating window, evening latency, night eating, the largest meal of the day) was assessed using the Chrononutrition Profile-Questionnaire. Chronotype (morningness, intermediate, eveningness) was determined via the Morningness-Eveningness Questionnaire.

Results: In total, 188 young adults (73.4% female) aged 23.0 ± 1.9 years participated. Approximately half of the participants had normal BMI ($n=102$, 54.3%). The majority of the respondents have an "intermediate" chronotype (66.5%), followed by "evening" (27.7%), and "morning" (5.9%). Adjusted logistic regression demonstrated that increased breakfast skipping frequency [OR: 1.69 (95% CI: 1.37, 2.08)] was associated with eveningness chronotype. Adults that consumed dinner as their largest meal (as opposed to lunch/breakfast) were more likely to be an evening chronotype [OR: 3.08 (95% CI: 1.35, 7.04)]. In addition, adults from low- [OR: 0.29 (95% CI: 0.09, 0.89)] and middle-income households [OR: 0.13 (95% CI: 0.03, 0.56)] were more likely to be morning/intermediate chronotype as compared to those from high-income household.

Conclusion: Findings showed the associations between chronotype and chrononutrition, particularly on breakfast skipping and consuming dinner as the largest meal of the day with being an evening chronotype. These findings can be useful to inform health professionals on the role of timing and chronotype on eating behaviour.

P3.07 Body Mass Index and its association with quality of life among breast and gynecology cancer survivors in Malaysia

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Introduction: Being overweight and obese increase the risk of cancer recurrence and mortality among cancer survivors.

Objective: The objective of this study is to determine the association between Body Mass Index (BMI) and Quality of Life (QOL) among Malay breast and gynecology cancer survivors.

Methodology: This cross-sectional study involved 200 Malay breast and gynecology cancer subjects from outpatients Oncology and Radiotherapy Clinic, and Gynae-oncology Clinic at Hospital Kuala Lumpur (HKL) and Hospital Counselor Tuanku Muhriz UKM (HCTM). The Malay European Organisation for Research and Treatment of Cancer (EORTC) QLQ-C30 questionnaire was used self-administered to assess quality of life of the subjects. Sociodemographic, clinical characteristic and anthropometric measurements were also obtained in this study.

Results: The mean age of the subjects was 51.4 ± 9.6 years old and duration of survivorship was 4.2 ± 3.5 years. Majority of the subjects were married (74.5%), had secondary education or lower (58.5%) and were housewives (46.0%). Subjects mean BMI was 28.4 ± 5.7 kg/m², ranging between 18.5 to 47.2 kg/m². 31.0% of subjects were normal BMI, 32.5% overweight and 36.5% were obese. Subjects with endometrium cancer ($p=0.004$) and subjects with comorbidities ($p<0.001$) showed significantly higher BMI. There was a significant negative relationship between BMI and social function ($r_s = -0.147$, $p=0.038$). This indicated subjects with higher BMI had slightly lower family life and social interaction. Additionally, higher BMI subjects demonstrated they had more severe symptoms of fatigue ($r_s=0.147$, $p=0.038$), pain ($r_s=0.207$, $p=0.003$) and diarrhea ($r_s=0.186$, $p=0.008$).

Conclusion: BMI was related to the quality of life of cancer survivors after cancer treatment. Therefore, monitoring weight changes after treatment were especially important among endometrium cancer survivors and those with comorbidities. Intervention to manage BMI is crucial to improve the QOL as well as the rate of cancer survivorship.



P3.08 The serving styles of fruits and vegetables and its relationship with average fruits and vegetables intake among Indian children in Malaysia

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Introduction: Consumption of fruits and vegetables are very important to reduce the prevalence of non-communicable diseases (NCO) and metabolic syndrome (Mets) among children in Malaysia. Serving styles of fruits and vegetables are attracting children to eat by changing their perception and feel of these foods.

Objective: To determine the average intake of fruits and vegetables according to (MDG 2013), to determine the relationship between daily average fruits and vegetables consumption and serving styles of fruits and vegetables preferred by children.

Methodology: Subjects comprised 102 parents of Indian children aged 10 to 11 years old. Parents filled in the Google Form questionnaire, distributed through social media such as WhatsApp and Facebook which consisted of daily average fruit and vegetable intake by children and serving styles of fruit and vegetables preferred by children through convenience and snowball sampling methods.

Results: Majority of the Indian children in this study did not achieve the daily recommended servings of fruit (54%) and vegetables (81.4%) set by Malaysian Dietary Guidelines for Children and Adolescents 2013. A total of 82.4% Indian children preferred "Macedoine" serving style for fruits compared to 57.9% for vegetables. More than 70% of Indian children preferred "Julienne" and "Shapes" serving styles for vegetables. There is a significant relationship between daily average fruit consumption and serving styles of "Slices" ($p=0.032$) and "Macedoine" ($p=0.020$) for fruits. There was no significant relationship ($p>0.05$) between daily average vegetable consumption and all types of vegetable serving styles.

Conclusion: The intake of fruits and vegetables were low among Indian children in this study. Different serving styles in fruits increased children's fruits consumption. Therefore, parents need to be more creative in preparing fruits and vegetable dishes according to the taste preferred by children and use repeated exposure method by presenting various forms of serving styles that appeals to children. This will help children to eat more fruits and vegetables in the future.

P3.09 Biological potential of apigenin for the treatment of human health complications: Medicinal importance through analysis of scientific research work

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Introduction: Plants derived Natural products have been used in the health sectors for the treatment of numerous disorders of human being and generated better options for the treatment of various forms of cancerous disorders. Flavonoidal classes chemical were used in the medicine due to their different pharmacological activities including the best anticancer agents.

Objective: Apigenin is a flavonoidal class chemical found to be present in the different sources including vegetables and fruits. Health beneficial aspect of apigenin in the medicine and other allied health sectors have been investigated in the present investigation through literature data analysis.

Methodology: Here in the present investigation numerous scientific data of apigenin have been collected from different literature sources for their medicinal benefit in the health sectors. Detailed pharmacological activities of apigenin have been investigated in the present work through scientific data analysis of various literature works. Biological importance of apigenin in the medicine against various human disorders has been investigated through scientific data analysis of different literature work.

Results: Scientific data analysis of various literature works revealed the biological importance of apigenin in the medicine due to their antioxidant and anti-inflammatory activities. Literature database analysis revealed that apigenin has selective inhibitory potential on cancerous cells. Further apigenin also have beneficial role in the obesity disease as it has significant effect on 3T3-L 1 cells.

Conclusion: Scientific data analysis of various research work of the literature revealed their pharmacological effects on various model systems including anti-inflammatory and antioxidant activity.

P3.10 Association between socio-demographic characteristics and nutritional status with physical activity among elderly in Samarahan division, Sarawak, Malaysia

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Introduction: The physical activity among elderly has been associated with reduction of risk from all-cause mortality and improve physical, mental and social well-being. Higher level of physical activity would increase an odd of healthy ageing by 39%.

Objective: To determine the physical activity status among elderly in Samarahan Division, Sarawak and its predictors of physical activity based on socio-demographic characteristics and nutritional status .

Methodology: A cross-sectional study was carried out on 199 elderly, aged between 60 to 90 years, from rural area in Samarahan Division (Asajaya and Simunjan district). Socio-demographic characteristic was taken via questionnaire, nutritional status and body composition of the elderly was measured using anthropometric measurement, and physical activity using pedometer. Data were analysed using IBM SPSS version 26.0 .

Results: The proportion of physically active among elderly was 12.6% and mean daily steps are 3946 steps (SD=1669 steps). Multiple linear regression revealed that age, BMI, and sex were significantly associated with physical activity.

Conclusion: Lack of physical activity among elderly remain a problem. Understanding these predictors related to physical activity is important for designing intervention program.

P3.11 An application of 7000 steps walking and self-efficacy program to promote physical activity among elderly in Samarahan, Sarawak

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Introduction: Overweight and obesity among the elderly are associated with physical inactivity, and a number of non-communicable diseases. A recent recommendation suggested that the accumulation of 7000 steps per day was adequate for the elderly.

Objective: The aim of the study was to investigate the effects of 7000 steps walking programme on anthropometric measurements among the elderly in Samarahan, Sarawak, Malaysia.

Methodology: A quasi-experimental study was conducted involving 128 elderly participants with BMI > 24.9 kg/m² (60 in the intervention group and 68 in the control group). BMI, body composition and pedometer steps were taken at baseline, 6 weeks, and 12 weeks. Data were analysed using IBM SPSS version 26.0 and repeated measure ANOVA was used as inferential analysis.

Results: About 48 participants adhere completely to the intervention program and 61 participants completed the study in the control group. Data analyses showed a significant interaction between time and group. Post-hoc analysis showed that significant differences noted within the group of intervention from baseline and 12 weeks. The differences were increment number of steps about 103% with a reduction of body weight (2.2kg), BMI (0.94kg/m²), body fat % (3.52%), visceral fat % (1.29%) and waist circumferences (2.91cm). Also, a significant increment of skeletal muscles % by 1.67%.

Conclusion: A 7000 steps program over 12 weeks among the elderly with overweight and obesity produces a significant modest effect on anthropometric measurements in previously sedentary and overweight/obese adults.

P3.12 Diet and physical activity practices among the residents of public low-cost housing in Kuala Lumpur

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Introduction: Urbanisation has contributed to changing patterns of diet and physical activity, creating an obesogenic environment that increases the risk of obesity and non-communicable diseases. In Malaysia, obesity prevalence is higher in low-income populations than nationally.

Objective: This study is part of the United Kingdom Prosperity Fund Better Health Programme with Ministry of Health Malaysia and reviewed by the United Kingdom National Health Service Joint Unit. It aims to understand the dietary and physical activity practices amongst low-income populations in urban Kuala Lumpur and identify associated socio-demographic characteristics.

Methodology: This is a cross-sectional study conducted with 2983 adults from six low-cost residential flats under the People's Housing Project in Kuala Lumpur. We used stratified sampling to recruit participants from different gender, age, and ethnic groups. Data were collected via face-to-face interviews using structured questionnaires.

Results: A staggering 99.2% (n=2959/2983) of respondents reported consuming inadequate daily fruits/vegetables against the WHO dietary recommendation for adults. Another 68.1% (n=2031/2983) reported consuming sugar-sweetened beverages (SSBs) at least once per week. SSBs intake was significantly higher among men, young age groups (≤ 30 years), Malay and Indian ethnicities, and students. Respondents reported buying food products based on food quality (85.3%), price (79.5%), and taste (73.0%). Only 38.8% perceived that healthy food was easily available in their neighbourhood and 23.9% perceived the prices of these healthy foods to be low. Although 53.9% of respondents reported that they had time to exercise, 71.9% (n=2144/2983) reported insufficient physical activity. Insufficient physical activity was significantly higher among female, older age groups (>50 years), Chinese ethnicity, homemakers, unemployed, and those with lower school education (\leq SRP/PMR level).

Conclusion: Adults in public low-cost housing communities have unhealthy dietary patterns and engaged in insufficient physical activity. These findings highlight the urgent need for effective targeted health promotion interventions to improve the health practices among low-income people.

P3.13 Minding the gap: Assessing knowledge and self-confidence on obesity and NCD prevention among community health volunteers

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Introduction: Community health volunteers (CHVs) have been actively engaged in disseminating knowledge in the prevention and management of obesity and noncommunicable diseases (NCDs). Yet, NCD prevalence remains on the rise particularly within low-resource communities. This incongruence may be attributed to a gap in CHVs' understanding of complex NCD issues within their context and a lack of self-confidence in reaching out to community members.

Objective: A baseline study was conducted to understand CHVs' knowledge on obesity, NCDs and risk factors to determine their knowledge level and self-efficacy in knowledge dissemination. Some CHVs are part of the KOSPEN programme. This study is part of the UK Prosperity Fund Better Health Programme with the Ministry of Health Malaysia and reviewed by the UK National Health Service Joint Unit.

Methodology: A questionnaire assessing respondents' prior knowledge of NCDs and risk factors, self-perception, and confidence in sharing their knowledge with their communities was administered to 30 CHVs via in-person completion and phone calls.

Results: There appears to be a distinct gap in CHVs' knowledge and self-confidence. Overall, only 43.3 percent of CHVs successfully answered all NCDs and risk factor questions correctly. Additionally, only 43.3 percent of CHVs' demonstrated appropriate knowledge of adverse cultural medicinal practices related to diabetes management, although 70 percent were confident that they had sufficient NCD knowledge. Most of the CHVs also reported being confident to deliver NCD-related knowledge to their families (86.7%) and communities (70%).

Conclusion: The findings of this assessment suggest the need for CHVs to be equipped with appropriate knowledge on obesity and NCD prevention, together with capacity building skills to disseminate this knowledge to their family and community members. An interactive, locally informed, and bespoke CHV training curriculum prioritising knowledge and skills for obesity and NCD prevention may address the gaps in CHV knowledge and capacity.

P3.14 Understanding the social determinants of eating behaviour among low-income groups in urban Kuala Lumpur: A qualitative study

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Introduction: Obesity prevalence has risen sharply in Malaysia and particularly affects urban, low-income communities. Low socio-economic status is often related to unhealthy dietary habits, including high consumption of relatively inexpensive staples and unhealthy foods due to low purchasing power, financial constraints and high cost of living in urban areas.

Objective: The study explored the concerns and limitations hindering healthy dietary practices among low-income community members in urban Kuala Lumpur. This study is part of the UK Prosperity Fund Better Health Programme with the Ministry of Health Malaysia, and reviewed by the UK National Health Service Joint Unit.

Methodology: Three focus group discussions (FGDs) were carried out with 28 community leaders and representatives from three low-cost housing residential flats in Kuala Lumpur. Data was collected using an FGD guide.

Results: Most participants demonstrated basic understanding of healthy eating habits, including the association between healthy food and a balanced diet, eating correct proportions and utilising healthy cooking methods. However, findings suggested a lack of interest in reading food labels with most participants externalising misconceptions about food labelling. Many participants were primarily concerned with the price tags, branding, and popularity of certain foods. Perceived challenges to healthy dietary practices include the lack of self-discipline and motivation, as well as the social influences on eating behaviours. Participants would choose to forgo healthier diets due to time, financial constraints and communal eating culture. Street or restaurant foods were commonly consumed due to cost and easy access, even though these alternatives are energy-dense and high in salt, oil and sugar.

Conclusion: Social-economic-environmental influences pose significant challenges for urban low-income communities to adopt healthy dietary practices. The design of community diet-related interventions could consider working with local businesses to create a supportive environment by marketing affordable and accessible food products/menus to enable communities to choose healthier food options.

P3.15 The association of psychological characteristics and sleep quality with gestational weight gain among pregnant women

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Introduction: Pregnancy is a critical period for fetal growth and development. Adverse maternal influences could lead to oxidative stress that is known to negatively trigger fetal programming, further contributing to poor maternal and offspring's health.

Objective: To determine the association of psychological characteristics (stress, anxiety, depression) and sleep quality with gestational weight gain (GWG) among pregnant women.

Methodology: This was a prospective observational study involving 239 pregnant women in 2nd trimester. Socio-demographic data was collected. Anthropometric measurements were done using standard protocol in maternity clinics. Psychological characteristics and sleep quality data were assessed using Depression, Anxiety and Stress Scale -21 Items (DASS-21) and Pittsburgh Sleep Quality Index (PSQI) respectively

Results: Around one-fourth of the pregnant women exhibited mild to severe stress (16.3%, n=39) and depression level (20.9%, n=114), meanwhile almost half exhibited symptoms of anxiety (47.7%, n=50). In addition, 68.9% (n=157) of pregnant women reported poor sleep quality (PSQI scores ≥ 5). A total of 38.8% (n=47) of pregnant women gained excessive weight throughout pregnancy, while 30.6% gained adequate and inadequate weight correspondingly. PSQI scores were positively correlated ($p < 0.001$) with maternal stress ($r = 0.322$), anxiety ($r = 0.387$), and depression ($r = 0.366$) level. GWG was positively correlated with maternal stress ($r = 0.222$, $p = 0.017$) and depression level ($r = 0.201$, $p = 0.031$). Adjusted multiple linear regression showed that those with mild ($\beta = 4.522$, 95% CI: 1.031-8.014, $p = 0.012$) and moderate ($\beta = 6.111$, 95% CI: 0.163-12.060, $p = 0.044$) stress level had higher gestational weight gain as compared to those with normal stress level.

Conclusion: Findings suggested that high stress level is linked with greater GWG during pregnancy. Future studies are needed to understand the influence of antenatal psychological stress on maternal and future offspring's health.



P3.16 Prevalence of vitamin D deficiency among Malaysian adolescents and its major risk factors

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Introduction: While vitamin D deficiency has been frequently reported in Malaysia, limited studies were conducted on the factors associated with this nutritional deficiency among healthy young people.

Objective: This cross-sectional study was aimed to establish associations between socio-demographic characteristics, body mass index (BMI), abdominal obesity, dietary calcium intake, physical activity level and vitamin D deficiency among adolescents aged 13 years three southern states of Peninsular Malaysia.

Methodology: A self-administered questionnaire was used to collect data on socio-demographic characteristics while anthropometry measurements including weight, height and waist circumference. BMI was estimated and classified according to WHO Growth Reference 2007. My UM Food Frequency Questionnaire (FFQ) was used to estimate dietary calcium intake and Physical Activity Questionnaire for Older Children (PAQ-C) questionnaire was used to measure physical activity level and venepuncture for blood sample was done by a certified phlebotomist to assess serum 25-hydroxyvitamin D 25 (OH)D. Vitamin D status was classified as, <12.5 nmol/L=severely vitamin D deficient; <37.5 nmol/L=vitamin D deficient; between 37.5 and 50 nmol/L=vitamin D insufficient; ≥50nmol/L=sufficient vitamin D.

Results: A total of 585 adolescents [173 boys (29.6%)] participated in this study and the prevalence of both vitamin D deficiency in this study was 30.4% (n=102) Vitamin D deficiency was significantly higher in females (OR=11.207; 95%CI 4.517-27.772) compared to males, Malay ethnic group (OR=11.276; 95%CI: 3.838-33.129) compared to non-Malay ethnic group and in those adolescents whose mothers were highly educated (OR=8.964; 95%CI 2.169-37.042) compared to those whose mothers with lower education levels. No significant associations were observed between BMI and abdominal obesity, and vitamin D deficiency.

Conclusion: Three out of ten adolescents were found to be vitamin D deficient. Being a female, Malay ethnic group and those whose mothers were highly educated were more likely to be vitamin D deficient.

P3.17 Factors associated with poorer life satisfaction among adolescents aged 13 years in Malaysia

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Introduction: Life satisfaction is the cognitive judgments of one's quality of life as a whole or based on its several domains, which is one of the crucial elements for good well-being. However, little is known on the risk factors that may influence life satisfaction among Malaysian adolescents, including body weight.

Objective: To determine factors associated with life satisfaction in adolescents aged 13 years in three southern states of Peninsular Malaysia.

Methodology: This cross-sectional study comprised 300 boys and 633 girls recruited from national secondary schools. A self-administered questionnaire was used to assess the adolescents' socio-demographic background, life satisfaction (Multidimensional Students' Life Satisfaction Scale), dietary intake (MyUM Adolescent Food Frequency Questionnaire) and physical activity (Physical Activity Questionnaire for Older Children). The adolescents' weight and height were measured and body mass index (BMI) was classified according to WHO body mass index-for age (z-score) year 2007. The median of the overall life satisfaction score was used as a cut-off point to classify low and high life satisfaction. Associations between the above-mentioned factors and life satisfaction were assessed using regression models.

Results: Approximately 50.9% of the study adolescents have lower life satisfaction. After controlling for covariates (gender, physical activity, race, household income), females compared to males (OR=0.555; 95%CI: 0.396,0.778), Indians compared to other ethnic groups (OR=0.331; 95%CI: 0.124,0.883) and adolescents who were physically active (OR=0.480; 95%CI: 0.335,0.687) compared to those who were not physically active were less likely to have a lower life satisfaction score. No significant associations were observed between overweight and obesity, and life satisfaction score after adjusting for covariates.

Conclusion: The prevalence of having low life satisfaction was high among adolescents in this study. Protective factors included being a female, Indian ethnic group and adolescents who were physically active. This study highlights target population at risk to improve life satisfaction among adolescents.



P3.18 Can seven-to-nine year-old Malaysian children report their food intake? A comparison of accuracy by weight status

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Introduction: Age and weight status are two of the key factors that influence the accuracy of children's dietary reporting. The ability of young children in self-reporting their food intake at schools, and whether this differed by weight status remain unclear.

Objective: To compare the accuracy of primary school children aged 7-9 years in reporting their food intakes by weight status.

Methodology: A total of 105 Malaysia children (54 boys, 57 girls) aged 8.0 ± 0.8 years from urban schools in Selangor participated in this study. Based on BM I-for-age, 8.6% (n=9), 17.1% (n=18) and 8.6% (n=9) were classified as underweight, overweight and obese, respectively. Individual meal intakes during school recesses were determined using a food photography as a reference method. Children were interviewed on the next day to recall their previous-day recess meal intakes. Match, omission and intrusion rates were used to determine accuracy in reporting food items, while correspondence rate and inflation ratio describes accuracy in reporting food amount.

Results: The average match and omission rates were 85.8% and 14.2% respectively, with no difference by weight status. The intrusion rate was significantly higher among children with obesity (10.6%) compared to those of normal weight (1.9%, $p < 0.05$). The accuracy in reporting food amount was not different by weight status. On average, children achieved 85.9% correspondence rate and 6.8% inflation ratio.

Conclusion: School children aged between 7-9 years were able to accurately report their previous-day intake of a meal. While children with obesity tend to over-report food items, the accuracy in reporting food amounts were similar across weight categories.

P3.19 Association between sleep quality and body weight status in adults: A narrative review

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Introduction: Body weight status, viewed as a Body Mass Index (BMI), is a proven and accurate body fat status measure for general health designation. BMI acts as a predictive tool of disease; as BMI rises, so does some diseases' risk. A wide variety of negative health impacts of insufficient sleep, such as the risk of obesity, diabetes, cerebrovascular disorders, musculoskeletal diseases, and metabolic syndrome, have also been correlated. Obesity, particularly overweight among adults, is approaching epidemic proportions worldwide, while sleep quality has dramatically impacted both individuals and their society.

Objective: This review aims to highlight the assessment of body weight status and sleep quality, summaries the recent literature, and provides an overview of the association between sleep quality and body weight status among the adult population.

Methodology: Studies on sleep and BMI were reviewed, and findings were used to develop a link between sleep quality and body weight status. This paper offers a current review of the literature on the association between sleep quality and body weight status in adults.

Results: This review discusses contradictory literature showing that shorter and longer sleep duration is associated with obesity. However, in most subjects with shorter sleep duration, there was a higher BMI trend than those who slept more. This is due to shorter sleep duration was correlated with enhanced ghrelin and decreased leptin. Low sleep quality was significantly correlated with severe obesity in male and female subgroups.

Conclusion: There is an association between sleep quality and body weight status. More research is recommended to examine the impacts of lifestyle intervention on sleep quality improvement. Better health is associated with longer and sufficient duration of sleep. Therefore, it is of great significance to enhance the public awareness of their sleep quality on body weight status.

P3.20 Body Mass Index of patients with colorectal carcinoma: A retrospective study in HUSM

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Introduction: The increasing incidence of colorectal carcinoma (CRC) is in parallel with the increasing cases of obesity, which may indicate an association between CRC and obesity. However, the relationship between Body Mass Index (BMI), a parameter of obesity with CRC risk is not well understood.

Objective: The aim of the study was to determine a descriptive data of BMI of CRC patients diagnosed in Hospital USM.

Methodology: Data was retrieved via Laboratory Information System (LIS) and medical records from the Pathology Department, Hospital USM. Patients' information that include BMI were extracted and recorded. Descriptive analysis was done using SPSS version 26.

Results: A total of 89 CRC cases were retrieved in a 8-year period (2012-2019) CRC patients showed a mean age of 59 years old, equalised in both genders, highest in Malay (90%), followed by Chinese (5%) and others race (5%). Adenocarcinoma is the most common type of CRC being diagnosed (75%), followed by mucinous adenocarcinoma (20%) and signet ring cell carcinoma (5%). Of all cases, the BMI were available in 20 CRC cases. According to Asia-Pacific BMI classification, 7 (35%) CRC patients were categorised as normal, 4 (20%) as overweight and 9 (45%) as obese. In contrast, data using WHO BMI classification showed that 11 (55%), 5 (25%) and 4 (20%) of the CRC patients were grouped as normal, overweight and obese, respectively.

Conclusion: Data using the Asia-Pacific BMI classifications revealed that the majority of CRC patients were of obese subgroup, which the trend is in contrast to those observed using WHO BMI classification. Obese CRC patients may presented themselves without any complication or end stage disease. Presumably, patients with malnourished due to the complication or at end stage will have a significant reduction in body weight.



P3.21 Pre-pregnancy body mass index is associated with dietary patterns and type 2 diabetes risk in Malaysian parous women

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Introduction: Overweight and obesity before pregnancy are associated with a greater risk of adverse pregnancy outcomes, including future risk of type 2 diabetes (T2D). Nevertheless, data among Malaysian parous women are limited.

Objective: This study investigated the correlation between pre-pregnancy body mass index (BMI) with background characteristics, T2D risk and dietary patterns of parous women.

Methodology: A total of 64 female staffs at Universiti Putra Malaysia aged 25-49 years participated in this cross-sectional pilot study. We calculated pre-pregnancy BMI based on respondents' height and self-reported pre-pregnancy weight. Food intake was assessed using a validated 165-item food frequency questionnaire. The principal component analysis was conducted to derive their dietary patterns (DP). Finnish Diabetes Risk Score assessed their risk of T2D.

Results: Mean age and parity of respondents were 36.8±5.9 years and 1.8±0.6, respectively. Respondents had normal pre-pregnancy BMI (24.2±5.2kg/m²) but were currently overweight (26.0±5.1kg/m²). Prevalence of overweight and obesity was 39.1% prior to pregnancy, and 48.4% currently. Pre-pregnancy BMI significantly, positively correlated with current BMI, current waist circumference, T2D risk score; and negatively correlated with gestational weight gain and postpartum weight retention. Those with a family history of diabetes also had significantly higher pre-pregnancy BMI. At bivariate level, pre-pregnancy BMI was significantly, positively associated with DP 3 (characterized by high positive loadings of starches; meat, poultry, and eggs; and plant protein). However, this association was not significant after adjusting for confounders.

Conclusion: Increasing pre-pregnancy BMI was associated with adverse outcomes, such as higher current BMI, waist circumference and T2D risk. A dietary pattern characterized by high starch and protein intakes were positively correlated with pre-pregnancy BMI. Further research is warranted to determine the influence of maternal overweight and obesity on dietary patterns and T2D risk.



P3.22 Serum vitamin D, HMW adiponectin and cardiometabolic biomarkers in lean and overweight/obese male workers in Kelantan, Malaysia

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Introduction: The metabolic consequences of obesity are associated with vitamin D deficiency and an imbalance of adipocytokines, such as adiponectin.

Objective: The study aimed to compare the levels of serum vitamin D, high molecular weight (HMW) adiponectin and cardiometabolic biomarkers between lean and overweight/obese adults in Kelantan, Malaysia. In addition, the relationship between body mass index (BMI) with vitamin D and HMW adiponectin were also investigated.

Methodology: A cross-sectional study was conducted among 168 Malay male workers of which 75% and 25% were outdoor and indoor workers, respectively. Data collection involves anthropometric measurements (height, weight, waist circumference and body mass index), blood pressure assessment and blood test (25-hydroxyvitamin D [25(OH)D], HMW adiponectin, lipid profile and glucose).

Results: The results showed that 53.6% of study participants were lean (BMI 18.50-24.99kg/m²) while 46.4% were overweight/obese (BMI≥25.00kg/m²). Between group comparison shows that overweight/obese participants had significantly lower serum 25(OH)D (p=0.006) and HMW adiponectin (p=0.001) than lean participants. In terms of cardiometabolic biomarkers, both lean and overweight/obese participants were similar in age (p=0.234), systolic blood pressure (p=0.066), LDL cholesterol (p=0.232) and blood glucose (p=0.142). However, overweight/obese workers had significantly higher diastolic blood pressure (p=0.004), triglycerides (p<0.001), total cholesterol (p=0.030) but lower HDL cholesterol (p=0.028) as compared to lean workers. Analysis with simple linear regression revealed that increase in 1kg/m² of BMI will decrease serum 25(OH)D and HMW adiponectin by 2.04nmol/l (p=0.004) and 0.051µg/ml (p=0.002), respectively.

Conclusion: In conclusion, adiposity was inversely related with vitamin D and HMW adiponectin. Therefore, workers should be advised to maintain normal BMI in order to achieve optimum levels of vitamin D and HMW adiponectin .

P3.23 Determination of satiety scores, glycemic index and glycemic load of selected breakfast cereals

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Introduction: A nutritious breakfast such as ready-to-eat breakfast cereal (RTEC) is essential to supply energy and nutrition. However, information on (glycemic index) GI and (glycemic load) GL in RTEC is less reported in Malaysia.

Objective: This study aims to determine satiety scores, the GI and GL values in selected RTECs.

Methodology: A survey study was conducted on 326 subjects around Semenyih to select RTEC with highest preference. The majority of subjects were over 25 years old (69.7%) consisting of women (79.4%) and men (20.6%). Four RTECs with highest preference which are Koko Krunch (KK), Cornflakes Gold (CFG), Milo (M) and Honey Stars (HS) have been tested for satiety scores in comparison with Kellogg's Special K using 30 subjects. Evaluations were conducted on labelled magnitude scale and "neither hungry nor full" (NHNF) point were determined and area under curve (AUC) were calculated. Three RTECs with highest consumer preference (KK, CFG and M) were tested for GI and GL values using 10 healthy subjects conforming to ISO 24462:2010 standard.

Results: The findings showed that among the four tested RTECs for satiety scores, HS had the highest value (2990.2 ± 314.5) and NHNF was at 97.1 minutes followed by CFG with AUC of 2648.5 ± 310.7 and NHNF at 90.1 minutes. The results for GI showed that these RTECs have GI values of at 83 ± 9.6 (KK), 77 ± 16.7 (M) and 75 ± 32.1 for CFG, respectively. Calculated GL values indicate that all RTECs falls into the medium GL category. The GL values for M, KK and CFG were at 16 ± 3.4 , 17 ± 2.0 and 18 ± 7.5 , respectively.

Conclusion: The study found that all RTECs evaluated were classified as high GI with moderate GL values. The GI and GL should be considered during manufacturing to produce healthy products for consumers.

P3.25 Factors affecting consumer purchase among retailers in selected urban poor community in Kuala Lumpur

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Introduction: Double burden of malnutrition is a serious public health issue, and obesogenic environment, including food retail, is a factor contributing to the rise in prevalence of obesity in Malaysia. Hence, understanding consumer experiences and factors affecting consumers' food purchase decision is important to improve access to healthy food.

Objective: The aim of this study is to evaluate the consumer experience regarding food retail environment with a specific focus on low income community in urban areas.

Methodology: The study area will be selected based on below 40% (B40) income group and poverty incidence tabulated in accordance with statistical data gathered from various sources, including Dewan Bandaraya Kuala Lumpur (DBKL) and Department of Statistics Malaysia (DOSM). Different types of retailers within the vicinity of urban poor neighbourhoods will be selected based on proportionate stratified sampling. Consumer intercept survey will be carried out using structured questionnaire to obtain information on socio-demographic characteristics, consumer experience on food retail, factors influencing food purchase and household food security status. The targeted sample size is 1000 respondents.

Results: This study will offer new evidence on opportunities to improve the food retail environment and nutrition outcomes. Furthermore, findings pertaining to consumer experiences of the food environment will be useful, and provide the opportunity for policy recommendation to help create healthier food retail environment in Malaysia, inclusive of people from the B40 community.

Conclusion: The findings of this study will provide new data on factors that influence selection of healthier food options and help to increase public health concern among the urban poor population. Future research may adopt the INFORMAS approach to assess availability of healthy and unhealthy foods and beverages in the food retail sector.

P3.26 What does the Malaysian Weight Management Registry tell us about weight loss?

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Introduction: Malaysia is listed as one of the topmost countries with a large number of people living with overweight and obesity. The Malaysian Weight Management Registry (MWMR) was set up in 2020 to gather data on the success rates of losing weight and weight changes characteristics among people living with overweight and obesity.

Objective: To examine the weight loss profile, strategies used to successfully lose weight among participants of the MWMR and its impact on their life.

Methodology: Potential study respondents were invited to join the registry via social media and the data was collected primarily using a self-administered online questionnaire after informed consent was obtained. Data on socio-demographic, weight, height, weight loss and its duration, strategies used to lose weight were collected. Besides, the registry also explores their triggering event and difficulties, the difference in the areas of life after weight loss and current practices after losing weight.

Results: A total of 225 adults participated in this registry and over a duration of 45.1±63.1 weeks, the participants managed to reduce a mean weight of 13.7±10.5kg with a mean BMI change of 5.4±4.1kg/m². The most prevalent dietary strategies used among the participants to lose weight were eating all food in moderation (40.8%), high fruit/vegetable intake (33.8%), reduce sugar intake (32.9%) and counting calories (32.9%). Meanwhile, exercise at least 30 minutes daily (43.1%) and reduced sedentary behaviour (15.1%) are the most common physical activity strategies practised to achieve weight loss. When asked regarding their experience, 81.1% reported that it was not an easy Journey.

Conclusion: In conclusion, a significant amount of intentional weight loss was achieved by the registry participants over a varied duration. Further longitudinal studies would be needed to track the progress of registry participants among a representative Malaysian population.

P3.27 Self-perceived weight status and weight control effort in Korean obese young men and women

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Introduction: Health problems of obesity in young age is increased in recent years and progressive to multiple comorbidities in middle-age. Appropriate self-perception of weight and weight control effort are important for weight management in obese young adults.

Objective: In this study, we aimed to evaluate self-perceived weight status and weight control effort in Korean obese young men and women.

Methodology: We analyzed 2050 young obese adults (1325 men and 725 women) in the KNHANES 2016 to 2018. Participants were aged between 19 and 44 years and their BMIs were $\geq 25.0 \text{ kg/m}^2$. The ORs and 95% CIs for poor lifestyle factors, comorbidities, inappropriate weight perception, and lack of weight control effort in men compared with women were calculated by multivariate logistic regression analysis.

Results: The mean BMI and WC for obese young men were $28.2 \pm 0.1 \text{ kg/m}^2$ and $93.6 \pm 0.2 \text{ cm}$; whereas, those for women were $28.6 \pm 0.7 \text{ kg/m}^2$ and $88.7 \pm 0.4 \text{ cm}$. The prevalences of heavy drinkers and low physical activity among men were 25.6% and 48.5%; whereas, those among women were 20.4% and 54.7%. The ORs and 95% CIs for current smoking (6.98, 5.05-9.63), abdominal obesity (7.40, 1.04-1.89), hypertension (3.08, 2.20-4.31), hypercholesterolemia (1.50, 1.13-2.00), hypertriglyceridemia (3.45, 2.44-4.88), and elevated ALT (6.54, 4.58-9.33) were higher in obese young men compared with obese young women. Despite higher prevalences of comorbid conditions, the ORs and 95% CIs for inappropriate weight perception (6.69, 3.09-14.45) and lack of weight control effort (2.40, 1.71-3.36) were also higher among men. In addition, the odds for not taking anti-obesity drugs, herbal medicine, health functional food, and one food diet were higher among men.

Conclusion: Appropriate weight perception and weight control effort are insufficient in obese young men even though they have higher risks of comorbid conditions. Reinforcement of education for weight control is needed more in obese young men.

P3.28 Food taboos among postpartum mothers with preterm infants in Selangor

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Introduction: Traditional postpartum dietary intake, known as food taboos, was broadly practiced among Malaysian mothers. Food taboos' benefits are uncertain as some previous research showed that food taboos could lead to insufficient nutrient intake among postpartum mothers.

Objective: To determine the practices of food taboos among postpartum mothers with preterm infants and its association with Body Mass Index (BMI) and infant's gestational age.

Methodology: A total of 300 mothers with preterm infants were recruited from government hospital in Selangor, with an average age of 31.3±5.4 years. A demographic questionnaire, anthropometric measurement, and Confinement Practices questionnaire were administered.

Results: Results showed most mothers were overweight and obese (57.8%) and had infants with late preterm gestational age (55.7%). Based on the trend of postpartum dietary intake, most mothers avoid consumption of certain carbohydrate foods, such as yellow noodle (80.3%), vermicelli (60.7%), and roti canai (69%), and protein foods, such as organ meats (87.7%), seafood (87.0%) and mutton (78.3%). Most of the subjects avoided local fruits (67%), but imported fruits were accepted (60%). Highly consumed foods include white rice (74%), leafy (75.0%) and non-leafy vegetables (66.0%), milk (54%) and milk products (67.0%). According to the chi-square analysis, only carbohydrate food groups were associated with infant's gestational age and BMI ($p < 0.05$). The results showed that mothers with very preterm and moderate preterm infants had consumed less white rice (17.3% vs 4.8%), yellow noodle (97.7% vs 94.6%), kuey-teow (88.7% vs 86.2%), and roti canai (88.7% vs 86.2%), but consumed higher local fruits (13.5% vs 5.9%) than mothers with late preterm infants. Besides, mothers with overweight or obese BMI had less consumed roti canai (93.1 %) compared to underweight or normal BMI (79.5%).

Conclusion: We concluded that mothers with preterm infants strongly adhered to food taboos, and infant's gestational age was most likely influences postpartum dietary intake.

P3.29 Association of daily nutrient intake and diet quality with weight status of undergraduate students in Universiti Sultan Zainal Abidin (UniSZA), Terengganu

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Introduction: Daily nutrient intake and diet quality of undergraduate students can be influenced by food availability, financial restriction, and time constraint. Excessive intake of high calorie food has contributed to the escalating prevalence of overweight and obesity in Malaysia.

Objective: To determine the association of daily nutrient intake and diet quality with weight status among undergraduate students in Universiti Sultan Zainal Abidin (UniSZA), Terengganu.

Methodology: A cross-sectional study was conducted among 208 undergraduate students aged 18-25 years old. Data collection consisted of anthropometric measurements, and daily nutrient intake and diet quality assessments. Body weight and height were measured and body mass index (BMI) was calculated. Daily nutrient intake and diet quality were assessed using three non-consecutive days of 24-hour dietary recall and Diet Quality Index questionnaire, respectively.

Results: Mean body weight, height and BMI were 56.00 (12.05) kg, 1.58 (0.07) m, and 22.37 (4.65) kg/m², respectively. Most of the students did not achieve the recommended nutrient intake (RNI) for energy (86.3%), carbohydrate (78.7%), fiber (100%), vitamin E (98.1%), vitamin C (93.8%), calcium (97.6%), and iron (82.9%), while 84.4% of them had exceeded the RNI for sodium consumption. There were significant differences in energy, protein, carbohydrate, total fat, saturated fat, monounsaturated fat, thiamine, calcium, magnesium, phosphorus and zinc intake between sexes ($p < 0.05$), yet there was no significant difference in diet quality between sexes ($p > 0.05$). Pearson's correlation test indicated that BMI was significantly correlated with total fat ($r = -0.14$, $p < 0.05$), polyunsaturated fat ($r = -0.20$, $p < 0.05$), and vitamin E ($r = -0.20$, $p < 0.05$) intake. There was no association between diet quality and weight status.

Conclusion: Students' BMI is associated with intake of several nutrients, but not diet quality. Effective intervention is needed to promote healthy eating among young adults especially university students that results in healthier weight status for better health in future.

TRACK 4 OBESITY TREATMENT AND MANAGEMENT

List of Poster Titles

No.	Abstract ID	Title
1	P4.01	Efficacy of a preoperative dietitian-led Very Low-Calorie Diet Clinic model of care for obese patients requiring elective surgery
2	P4.02	Eucheuma denticulatum supplementation with high fat diet ameliorated histological changes on the liver, kidney and adipose tissue of Sprague Dawley rats
3	P4.03	WITHDRAWN
4	P4.04	A hybrid structured weight management program (SLIMSHAPE™ Mind) during pandemic COVID-19 is effective among employees of a public institution
5	P4.05	Case study: Weight loss in patient with metabolic syndrome: In combination of intensive Medical Nutrition Therapy (MNT) and pharmacotherapy
6	P4.06	Zebrafish obesity model: A study to investigate the anti-adipogenic effects of penta-methoxy flavones
7	P4.07	WITHDRAWN
8	P4.08	Anti-diabetic and anti-obese effects of glycytin in the medicine: Phytopharmaceutical approach for their medicinal importance and pharmacological activities
9	P4.09	Effect of Elacteriospermum Tapos extracts on the male offspring of obesity-induced Sprague Dawley rats
10	P4.10	Effectiveness of structured lifestyle intervention following transcultural Diabetes Nutrition Algorithm (tDNA) on glycaemic control and eating self-efficacy in patients with overweight/obesity and type 2 diabetes
11	P4.11	Preventive effect of Elateriospermum tapos extraction in maternal obesity-induced cognitive function decline among their offspring
12	P4.12	Protective effects on combination of Zinger officinale, Allium sativum, Citrus lemon, honey, and Malus domestica vinegar (ZACA) extract in rats fed with high cholesterol diet

List of Poster Titles

No.	Abstract ID	Title
13	P4.13	A comparative study of nutritional status, vitamin D levels and lifestyle factors of adults with and without Type 2 Diabetes in Baghdad, Iraq
14	P4.14	Prevalence, risk factors and lifestyle interventions of obstructive sleep apnea in adults: A scoping review
15	P4.15	The effects of Daily Healthy Checklist score on obese employees' fitness, BMI, and body fat percentage
16	P4.16	An innovative approach to teaching obesity management for healthcare professional students during the pandemic of COVID-19
17	P4.17	ToyBox Study Malaysia: Extending the reach, impact and sustainability of a kindergarten-based healthy behaviour intervention
18	P4.18	Septic shock and hyponatremia after transsphenoidal surgery for pituitary adenoma in obesity patient: A case report
19	P4.19	Marketing of confectionary and sweet beverage products in Malaysia on Instagram: A content analysis
20	P4.20	WITHDRAWN
21	P4.21	WITHDRAWN
22	P4.22	Development of purple sweet potato cracker: New perspective of potential consumption of purple sweet potato as anti-obesity source for Malaysians
23	P4.23	Effects of 4-week Zumba exercise on selected body composition and physical fitness among overweight female during movement control operation
24	P4.24	Community-based randomized controlled trial of the Malaysia Diabetes Prevention Program (MyDiPP) for high-risk individuals of type 2 diabetes: lifestyle intervention using a mobile app
25	P4.25	The effectiveness of community-based, type 2 diabetes prevention programme on health-related quality of life: Malaysia Diabetes Prevention Program (MyDiPP)

P4.01 Efficacy of a preoperative dietitian-led Very Low-Calorie Diet Clinic model of care for obese patients requiring elective surgery

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Introduction: Adults with obesity undergoing elective surgery have significantly increased risk of excess blood loss, wound infection, and prolonged hospital stay, and surgeons may prohibit surgeries for such patients until they lose weight.

Objective: The dietitian-led preoperative very low calorie diet (VLCD) model of care was established to achieve significant weight loss for patients with obesity prior to non-bariatric elective surgery. This study aimed to determine efficacy of the model.

Methodology: Eligible patients were adults referred by surgeons over 23 months who engaged in VLCD treatment (n=78). Weight loss targets were set by the surgeon, while the dietitian prescribed a VLCD based on meal replacement products which met individual requirements. Patients attended fortnightly appointments, with treatment generally limited to 12 weeks but continued until surgery. The primary outcome of the study was efficacy, which was evaluated through effectiveness of treatment, feasibility, and stakeholder value. Data were collected from medical charts, and patients and surgeons were surveyed. Descriptive analyses were used.

Results: Seventy-eight eligible patients were treated (45±13 years, 90% F, BMI 44.3±6.2kgm²). Weight loss achieved was 9.0±6.7kg (7.4±5.3% body weight). Most patients (70%, n=50/71) achieved sufficient weight loss to proceed to surgery. Fifty-six percent of patients (n=43/77) reported mild side effects, most of which were resolved. All patients (n=24) reported being satisfied with the service. Surgeons reported that VLCD treatment assisted with ease of operation (83%, n=10/12) and shortened operating time (75%, n=9/12).

Conclusion: The dietitian-led preoperative VLCD model of care was effective in achieving clinically and statistically significant weight loss which was adequate to proceed with elective surgery for most patients. Dietitian-led treatment was highly valued by patients and surgeons, and surgeons perceived benefits to surgery. This model could be beneficial for healthcare facilities which offer elective surgery to obese patients. A larger randomised controlled trial is planned to confirm reduction in surgical risk and complications.

P4.02 Eucheuma denticulatum supplementation with high fat diet ameliorated histological changes on the liver, kidney and adipose tissue of Sprague Dawley rats

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Introduction: The concept of functional food and renewed interest in finding cure for diseases from nature encouraged the researches to explore the scientific benefits of alternative as well as complimentary remedies which may aid the management of diabetes and obesity.

Objective: The present study was carried out to evaluate the histopathological effects of E. denticulatum (ED) supplementation with high fat diet (HFD) on the organs (liver, kidney and adipose tissue) of male Sprague Dawley rats.

Methodology: Male Sprague Dawley rats aged 6-7 weeks (weighing 200-250g) were divided into six groups (n=6 per group) according to the following diet; normal diet group (ND), high fat diet group (HFD), HFD with orlistat (50 mg/kg) (HFD+OR), HFD with 10% ED (HFD-10), HFD with 15% ED (HFD-15) and HFD with 20% ED (HFD-20). Each group was fed for 7 weeks ad libitum. At the end of the experimental period, the rats were euthanised by exsanguination (blood loss via cardiac puncture) under anesthesia and their organs (liver, kidney and fat tissue) were removed, rinsed with physiological saline solution, blot dried, and weighed. The selected organs were fixed with 10% formalin, dehydrated, and embedded in paraffin. The tissue sections were stained with hematoxylin and eosin (H&E) to allow morphological examination.

Results: Histopathology examination revealed that ED supplementation (10%, 15%, and 20%) in the HFD reduced liver weight, hepatic lipid accumulation and hepatic vacuoles formation. There were no significant changes observed in the kidney except for the swollen glomeruli which is associated with obesity. Fat tissue analysis indicated the anti-obesity activity of all E. denticulatum supplemented groups by the reduced size of adipocytes supported by decreased fat mass compared to HFD.

Conclusion: In conclusion, supplementation of E. denticulatum at various doses (10%, 15%, and 20%) in HFD diet effectively ameliorated hepatic steatosis and adiposity in rats.



P4.04 A hybrid structured weight management program (SLIMSHAPE™ Mind) during pandemic COVID-19 is effective among employees of a public institution

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Introduction: The prevalence of overweight and obesity in Malaysia keeps increasing each year. Effective intervention for obesity at workplace remains limited, especially during the COVID-19 home confinement period.

Objective: This study aims to compare the effectiveness of a structured weight management program with mindful eating interventions among overweight and obese employees with a standard dietary counselling program.

Methodology: This is a quasi-experimental study where 162 of overweight and obese employees were recruited and divided into two groups (intervention group, n=83 and control group, n=79). Participants in the SLIMSHAPE™ Mind group received six months of weekly program (seven face-to-face and 17 online interventions) which included talks, demonstrations, interactive activities, hands-on activities and exercise sessions. The control group received a routine weight management consultation from dietitian. Data analysis was conducted using ANOVA repeated measures.

Results: Significant group effect was found on weight, BMI, body fat (BF) percentage and waist circumference (WC) in men ($p < 0.05$). Significant interaction effect found on weight, BMI and WC in women ($p < 0.05$). Men from the intervention group had reduced their weight by 2.9% (-3.2kg), BMI by 3.2% (-1.2kg/m²), WC by 5.5% (-6.4cm) and BF by 1.1% (-0.4%) as compared to controls of 0.1 % weight loss (-0.1kg), 0.7% (-0.2kg/m²) BMI reduction, 1.1% (-1.0cm) WC reduction and 0.7% (-0.6%) BF loss. Significant interaction effect was observed for HDL-cholesterol and total cholesterol/HDL-cholesterol ratio among both men and women. The group and interaction effects remain significant after including Mindful Eating Questionnaire (MEQ) score as covariate.

Conclusion: The SLIMSHAPE™ Mind program effectively improved weight, BMI, WC and BF in men, but not in women.

P4.05 Case study: Weight loss in patient with metabolic syndrome: In combination of intensive Medical Nutrition Therapy (MNT) and pharmacotherapy

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Introduction: According to the World Population Review 2019, Malaysia has the highest prevalence of obesity among adults in South East Asia. In National Health and Morbidity Survey (NHMS) 2019, one in two adult population being either obese or overweight. The drastically increase in rate of obesity contributes to the prevalence of non-communicable disease. Weight loss of 5 to 10% has been shown to reduce complications related to obesity and improve quality of life.

Objective: To illustrate the combination of MNT with pharmacotherapy to enhance weight reduction and improve metabolic parameters in patient with morbidly obesity and metabolic syndrome.

Methodology: A case study of a 38-year-old male with a history of metabolic syndrome and severe obstructive sleep apnoea under intensive MNT in combination of pharmacotherapy (liraglutide). Nutritional assessment was assessed including anthropometric such as weight, skeletal muscle mass, body fat mass by bioelectrical impedance analysis (BIA), biochemical results (fasting glucose level and HbA1c), clinical and dietary assessment. Patient was on a low-calorie diet (1500 calories per day) and on the mild exercise of walking 45 minutes at least three times per week.

Results: With intensive low-calorie diet, lifestyle intervention in combination of liraglutide, at week 4, patient had lost 10.9kg in body weight, optimised fasting blood glucose from 14.9mmol/L to 5.2mmol/L and reduction in HbA1c from 7.5 to 6.5%. At week 30, patient had a total loss of weight 22.4kg (16% of his body weight), body fat mass 13.8kg, HbA1c improved to 5.5% and fasting blood glucose to 5.2mmol/L from baseline. Over the 30 weeks of regular monitoring, the patient experienced significant improvement in co-morbidities and progress in locomotion.

Conclusion: In conclusion, intensive Medical Nutrition Therapy (MNT) adjunct with pharmacotherapy (liraglutide) associated with clinically meaningful weight loss and improved glycaemic control, furthermore enhancement in health-related quality of life.

P4.06 Zebrafish obesity model: A study to investigate the anti-adipogenic effects of penta-methoxy flavones

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Introduction: Obesity is one of the greatest medical complications affecting over a third of the world's population. The morbidity and mortality rate of this health condition is drastically increasing, with figures suggesting that a rise of 18% in men and 21 % in women is estimated by year 2025. Though the currently available anti-obesity drugs are effective, a majority of these cause numerous side effects that limit their overall usefulness.

Objective: To evaluate the anti-obesogenic effects of penta-methoxy flavones (PMF) using obese zebrafish model.

Methodology: This study is designed in two phases. During the first phase, an in vivo toxicity assay will be carried out to assess the toxicity of the PMF compound. The information derived from the toxicity study will provide a base for classification, hazard assessment, its therapeutic dose, and safety in animals. In the second phase, their anti-obesogenic effects will be investigated through physical parameters, lipid profile, histological parameters, and AMPK pathway in adipose tissue by treating the obese-induced model with PMF compound. We aim to use the transcriptomics and proteomics approach to explore the anti-obesogenic role of PMF.

Results: We hypothesized that PMF may inhibit adipogenesis in adipose tissue in an obese zebrafish model through activation of the AMPK pathway (a negative regulator of adipogenesis).

Conclusion: This study will identify the anti-obesogenic effects of PMF through diverse molecular mechanisms. This study may assist in developing new, effective medicine with fewer side effects. Additionally, PMF can potentially reduce the gap between modern and traditional medicine practices, by adding value to the natural medicine market to boost the economy of the country.

P4.08 Anti-diabetic and anti-obese effects of glycitin in the medicine: Phytopharmaceutical approach for their medicinal importance and pharmacological activities

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Introduction: Flavonoids are pure phytoconstituents found to be present in various natural sources including various plant sources and their derived material. Soy isoflavones particular glycitin have been found to exhibit chemo-preventive, cardio-protective and anti-osteoporosis effects. Isoflavones have been also available in the market in the form of supplements, tablets and capsules.

Objective: To know the medicinal importance of glycitin for their anti-obese and anti-diabetic effects, present investigation included data analysis of the different research published in the various literatures.

Methodology: Various literature databases have been searched to collect needed document for the anti-obese and anti-diabetic activity of glycitin. However all the molecular mechanism for their anti-obese and anti-diabetic activity of glycitin have been also collected and analyzed through literature data analysis of different scientific work. Molecular simulation study data have been also searched for the better correlation in the present investigation. All the literature data analysis has been done statistically to get better result.

Results: From the literature data analysis of various scientific researches it was found that glycitin is having significant anti-obese and anti-diabetic activity. Pharmacological activity of glycitin revealed their medicinal importance in the pharmaceutical sectors. Various literature databases described the pharmacological importance of isoflavones for the prevention and treatment of cancers, cardiovascular complication, osteoporosis, menopausal manifestations and cognitive impairment. Literature data analysis revealed the effectiveness of glycitin for their anti-diabetic effects on blood glucose, serum HbA1c, and serum insulin level and suppression of adipose tissue. Literature data analysis revealed the biological importance of monascus-fermented soybean extracts enriched with glycitin on the serum total cholesterol, triglyceride and LDL-C levels and HDL-C in the hyperlipidemic rats.

Conclusion: In the present study literature data analysis signified the importance of glycitin in the medicine for the treatment of diabetes and related disorders.

P4.09 Effect of Elacteriospermum Tapos extracts on the male offspring of obesity-induced Sprague Dawley rats

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Introduction: Obesity has been considered as a great public health concern, that has spread in both economic and poor resources countries.

Objective: This study aimed to investigate the effect of Elacteriospermum tapos (E. tapos) supplementation on the male offspring of female obesity-induced Sprague Dawley (SD) rats at weaning and adult age.

Methodology: A total of thirty (30) female and fifteen (15) male Sprague Dawley rats (N=45) were purchased for this study. Of the 30 female rats, six (n=6) were randomly selected as the control group (CG) and fed separately with male on standard chow diet, while the remaining rats (n=24) were fed on a high-fat diet for 5 weeks. The obese group were further randomly divided into 4 groups, positive control group (PG), orlistat treatment (DG) at 200mg/kg, treatment 1 (TX1, 200mg/kg E.tapos seed) and treatment 2 (TX2, 200mg/kg E.tapos shell) for 6 weeks. One male pup from each dam was culled at weaning [postnatal day 21 (PND21)] and adulthood (12 weeks). The liver, kidney, retroperitoneal white adipose tissue (RpWAT) and brown adipose tissue (BAT) were collected for histopathological study. Serum lipid profiles, liver enzyme activities and creatinine were measured.

Results: The body weight of male offspring from treatment 1 (MTX1) and 2 (MTX2) was significantly lower ($p < 0.05$) compare to MNG group. The RpWAT weight in MTX1 and MTX2 for adult offspring also were significantly lower ($p < 0.05$) compared to MPG. The histopathological examination of liver in MCG, MDG, MTX1 and MTX2 showed normal hepatocytes while the MPG group revealed the presence of ballooning cell and hypertrophy of adipocytes was also observed in MPG group compared to other group's rat.

Conclusion: The E.tapos extracts from the shell have greater therapeutic potential on maternal obesity in short and long term treatment.



P4.10 Effectiveness of structured lifestyle intervention following transcultural Diabetes Nutrition Algorithm (tDNA) on glycaemic control and eating self-efficacy in patients with overweight/obesity and type 2 diabetes

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Introduction: Patients with overweight/obesity and type 2 diabetes mellitus (T2DM) often face challenges when attempting weight reduction especially adhering to lifestyle recommendations and having poor self-efficacy of changing eating behaviour.

Objective: To investigate the effectiveness of structured lifestyle intervention based on transcultural Diabetes Nutrition Algorithm (tDNA) on weight, haemoglobin A1c (HbA1c) and eating self-efficacy in patients attending primary care clinic.

Methodology: Patients with overweight/obesity and T2DM (n=230) were randomized either into the tDNA group receiving a structured low-calorie meal plan using normal foods, incorporation of diabetes-specific meal replacements, and an exercise prescription or usual diabetes care (UC) for 6 months. Patients in the tDNA group also received either motivational interviewing (tDNA-MI) counselling or conventional counselling (tDNA-CC). The UC group received standard dietary and exercise advice using conventional counselling. Eating self-efficacy was assessed using a locally validated Weight Efficacy Lifestyle (WEL) questionnaire. All patients were followed up for additional 6 months' post-intervention.

Results: At 6 months, patients in the tDNA-MI group compared to the tDNA-CC and UC groups, who had significantly greater weight loss (tDNA-MI: -4.8 ± 0.3 kg vs. tDNA-CC: -2.9 ± 0.3 kg vs. UC: -0.6 ± 0.2 kg, $p < 0.001$) and HbA1c reduction (tDNA-MI: $-1.0 \pm 0.1\%$ vs. tDNA-CC: $-0.6 \pm 0.1\%$ vs. UC: $-0.2 \pm 0.1\%$, $p < 0.001$), also significantly improved their eating self-efficacy (tDNA-MI: 25.4 ± 2.1 vs. tDNA-CC: 12.9 ± 2.8 vs. UC: -6.9 ± 1.9 , $p < 0.001$). After one year, patients in the tDNA-MI group who maintained a significant weight loss (tDNA-MI: -3.6 ± 0.4 kg vs. tDNA-CC: -0.9 ± 0.3 kg vs. UC: 0.4 ± 0.2 kg, $p < 0.001$) and HbA1c reduction (tDNA-MI: $-0.5 \pm 0.2\%$ vs. tDNA-CC: $0.1 \pm 0.1\%$ vs. UC: $0.1 \pm 0.1\%$, $p = 0.007$), continued to maintain a significant improvement in their eating self-efficacy (tDNA-MI: 28.9 ± 3.1 vs. tDNA-CC: 11.6 ± 3.6 vs. UC: -13.2 ± 2.1 , $p < 0.001$).

Conclusion: Provision of structured lifestyle with motivational behavioural counselling led to better adherence to lifestyle recommendations, and, consequently improved patients' weight, glycaemic control and self-efficacy to change eating behaviour.



P4.11 Preventive effect of elateriospermum tapos extraction in maternal obesity-induced cognitive function decline among their offspring

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Introduction: This study was aimed to investigate the influence of Elateriospermum tapos (E.tapos) supplementation in obese rats prior to pregnancy on the offspring's body weight, lipid metabolism and memory function.

Objective: Pre-pregnancy obesity is a significant issue with epidemics that have a detrimental effect on the offspring's neurodevelopment. Elateriospermum tapos (E. tapos) is widely used in obesity therapy to improve weight loss.

Methodology: Thirty adult female Sprague Dawley rats were used. Six rats were assigned to normal diet group (DND). The remaining rats were fed with high-fat and cafeteria diet (HFCD) for 5 weeks to generate obesity. Obese rats were further divided into 4 groups: Negative Control (DNC; HFCD), Positive Control (DPC; Orlistat 200mg/kg), treatment 1 (DTX1; E. tapos seed 200mg/kg of bodyweight) and treatment 2 (DTX2, E. tapos shell 200 mg/kg of bodyweight). Treatments were given daily for 6 weeks prior mating. At weaning, offspring of both sexes were designated into 6 groups according to their dam's group (n=6/group). All offspring groups were fed with cafeteria diet except for control group. Memory tasks for object and place recognition were conducted on offspring at 8 weeks of age. The offspring were culled at 12 weeks of age for blood sample collections.

Results: Offspring of both sexes from DTX2 has significantly reduced in body weight and triglyceride. In memory tasks, offspring from DTX2 showed significant increase in exploration rate in place test as compared to offspring from DNC group.

Conclusion: This study highlights E. tapos as an anti-obesity agent and protecting memory deficit in obese dams offspring E.tapos consist high content of flavonoids known as Trimethoxyflavone, that promotes fat oxidation by removing the uptake and storage of fat by the adipose cells and also decrease the fatty acid synthase.

P4.12 Protective effects on combination of *Zinger officinale*, *Allium sativum*, Citrus lemon, honey, and *Malus domestica* vinegar (ZACA) extract in rats fed with high cholesterol diet

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Introduction: Hyperlipidemia is defined as an abnormal lipid metabolism that presents in the bloodstream. Based on American Health Rankings, the unhealthy level of cholesterol is considered when it reaches more than 240mg/dl.

Objective: The study aims to investigate the effects on a combination mixture of *Zinger officinale*, *Allium sativum*, Citrus lemon, honey, and *Malus domestica* vinegar (ZACA) in rats fed with high cholesterol diet (HCD).

Methodology: 36 male Sprague Dawley rats were divided into 6 groups. ZACA extracts (1mg/kg, 3mg/kg, 5mg/kg of body weight) were administered along with high cholesterol diet (HCD) for 18 weeks. Simvastatin 10mg/kg of body weight was used as a control.

Results: In vitro; ZACA extracts had oxygen radical absorbance capacity (ORAC) of 2000 μ mol TE/100ml, total phenolic content (TPC) is 7537 \pm 54.5%, 2,2-diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging activity is 27.34 \pm 2.71%, Elastase inhibitory assay is (29.29 \pm 1.65% and lipoxygenase inhibitory assay is 98.58 \pm 1.42%. The high-performance liquid chromatography (HPLC) detected the presence of Hesperidin in ZACA extract which acts as an anti-oxidative and anti-inflammatory agent. In vivo, ZACA extract decreased body weight, adipose tissue weight, improved lipid profiles (total cholesterol, triglycerides, low-density lipoprotein, and high-density lipoprotein), and positive improvement in histology analysis.

Conclusion: The results demonstrate that ZACA extracts have a protective effect against hyperlipidemia and beneficial as a dietary supplements.



P4.13 A comparative study of nutritional status, vitamin D levels and lifestyle factors of adults with and without Type 2 Diabetes in Baghdad, Iraq

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Introduction: Type 2 Diabetes mellitus (T2DM) is a chronic metabolic disease that results in high blood glucose levels. High blood glucose levels lead to various organs' dysfunction, including eyes, kidneys, nerves, heart and blood vessels. T2DM is increasing tremendously worldwide. In Iraq, about 10.2% of the Iraqi are affected with T2DM and even higher in Baghdad.

Objective: The study aimed to compare the socio-demographic, nutritional status, vitamin D levels, and lifestyle factors between non-T2DM and T2DM and its contribution to diabetes status.

Methodology: This cross-sectional study recruited participants from Al-Kindi hospital in Baghdad, Iraq. The assessments include socio-demographic, nutritional status, vitamin D levels, and lifestyle factors. The ultimate analyses were to determine the factors that contributed to diabetes status in the study population.

Results: We recruited 170 participants (T2DM; n=85, non-T2DM; n=85) with their mean age of 47.5 ± 8.7 years and fasting blood glucose (FBG) of 8.5 ± 4.3 mmol/L. There is a significant difference in educational level, vitamin D level, waist-hip-ratio, body fat percentage, FBG, and family history of T2DM. In terms of dietary intake, weekly consumption of red meat, pizza, cake, nuts, bread and brown bread per week was significantly higher in non-T2DM than T2DM. The educational level and FBG had a statistically significant contribution to the model. High educational level reduces T2DM risk by 1 and increasing one unit of FBS contributes to T2DM risk by 67%.

Conclusion: This study shows that low educational level and high FBS contributes to T2DM risk in the final model.

[Poster not submitted]

P4.14 Prevalence, risk factors and lifestyle interventions of obstructive sleep apnea in adults: A scoping review

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Introduction: Obstructive sleep apnea (OSA) is a sleep-disordered breathing which remains a critical concern in the obese population. It is associated with an increased risk of cardiovascular diseases.

Objective: Our scoping review assesses the prevalence, risk factors, and lifestyle interventions of OSA among the adult population.

Methodology: This scoping review uses the 5-stage methodological framework of Arksey and O'Malley. A comprehensive search of academic journals published from 2010 to 2020 was conducted in electronic databases such as PubMed, Med line in EBSCOhost, and Google Scholar. The initial search yielded 8,915 articles and a final result of 23 articles was selected.

Results: The prevalence of OSA among obese adults ranged from 19.1% to 85.0%. The significant influence risk factors for OSA are older age, male, obesity, some components of metabolic syndrome such as hypertension, hyperglycemia, and dyslipidemia, physical inactivity, smoking, hours of work, and clinical symptoms, such as snoring, excessive daytime sleepiness, nocturnal awakenings, and respiratory pauses. Increasing daily physical activity, dietary modification, and weight loss are the lifestyle interventions for OSA.

Conclusion: Obese individuals are at greater risk of developing OSA and are generally undiagnosed. It is important for healthcare professionals to screen individuals who are at high risk. Screening for OSA is recommended particularly among those obese older male adults with co-morbidities, presenting OSA clinical symptoms, and practicing unhealthy lifestyles. For individuals with mild to moderate OSA, lifestyle interventions are essential to decrease the prevalence of OSA, improve sleep quality, neurocognitive function, mood, and quality of life.

P4.15 The effects of Daily Healthy Checklist score on obese employees' fitness, BMI, and body fat percentage

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Introduction: Low physical fitness level among obese employees might worsen their overweight/obesity problem and/or other obesity-related comorbidities. Daily Healthy Checklist (DHC) is developed by researcher based on recommendation from Ministry of Health in Indonesia and other obesity research.

Objective: The aim of this study is to analyse the effect of DHC score on various components of fitness level, body composition and body mass index (BMI).

Methodology: 34 obese employees were recruited from one of the FMCG company office in its Indonesia Branch using convenience sampling method. Fitness level was assessed by bleep test, sit-up, push-up and sit-and-reach. Body composition was measured using bioelectrical impedance analysis (BIA). Anthropometric measurements included weight and height were taken; and BMI was calculated. Linear regression analysis was used to determine the effect of DHC score on fitness level, BMI and body fat percentage.

Results: There was no significant effect of each type of DHC score on each output variable. However, multiple linear regression showed that there was a simultaneous effect of DHC score on BMI (28.9%), body fat percentage (25.1%), sit-up amount (31.1%), push-up amount (42.5%), flexibility (27.1%) and VO₂ max. Among all DHC's individual aspects, the variable which had the most affect for BMI was morning stretching ($\beta=0.193$); for body fat percentage was walking ($\beta=-0.244$); for sit-up was also walking ($\beta=0.440$); for push-up was also morning stretching ($\beta=0.266$); for flexibility was vegetable consumption ($\beta=0.180$) and for VO₂ max was morning stretching ($\beta=0.189$).

Conclusion: Adherence to fulfil DHC score is needed to improve fitness level, body composition and BMI.

P4.16 An innovative approach to teaching obesity management for healthcare professional students during the pandemic of COVID-19

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Introduction: Obesity must be viewed as a multifactorial pathology requiring multidisciplinary team members to ensure effective treatment and management. Each team member, including the physician, dietitian, physiotherapist, behavioural specialist and nurse, presents a unique set of skills and roles to facilitate the patient needs. The concept of multidisciplinary approaches can be introduced to the health professional students using the pedagogical approach known as interprofessional education (IPE). Nonetheless, the adoption of IPE in the current curriculum is quite challenging and may not be feasible, especially during the pandemic of COVID-19.

Objective: Since virtual reality (VR) is an emerging concept in education, this presentation aimed to describe the development process of VR to teach obesity management among multidisciplinary healthcare professional students.

Methodology: This project developed the virtual obesity clinic as a model using the Second Life[®] platform to provide an engaging and immersive learning experience that reflects students' real-clinical scenarios.

Results: In this Second Life[®] platform, we created an individual with obesity who attended the obesity clinic that healthcare professional students would manage. The students would come together with their respective role, either as a medical student, dietetics student or a nursing student, to discuss and manage the patients using their set of unique skills that they have learned. The students would be taught to conduct the assessment, make a collaborative diagnosis and provide holistic intervention using the obesity care process modules. One of the unique development in this VR clinic is the healthy cafeteria to visualise food selection and modifications options for the students to intervene with the patients.

Conclusion: The developed VR is ready to be tested for its feasibility. It would allow students from various locations to come together for real-time interactive training in order to manage obesity effectively with the innovative approach.

P4.17 ToyBox Study Malaysia: Extending the reach, impact and sustainability of a kindergarten-based healthy behaviour intervention

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Introduction: ToyBox Study Malaysia is a kindergarten-based obesity prevention programme aimed to promote healthy lifestyle in young children. Adapted from European ToyBox-Study, it was conducted in 2017-2018 and had positive feedback from teachers and parents with significant improvements in children's healthy lifestyle behaviour.

Objective: This study aims to increase the reach, impact and sustainability of ToyBox Study Malaysia for prevention of obesity in preschool children.

Methodology: The present study will be conducted in two phases. Phase I concerns sustainability of the ToyBox intervention by assessing the role of teachers as change agents and their perception on success and barriers in implementing the programme. Phase II involves development of the modules into an online innovative and interactive learning management system, known as eToyBox. The eToyBox will incorporate animated learning modules, such as classroom activities guide, educational posters, tip cards and newsletters, based on four key energy balance related behaviours, namely healthy eating and snacking, increasing physical activity, reducing sedentariness, and water consumption, for the use of preschool teachers, parents, and children. The usability of eToyBox will be evaluated through a mixed method testing approach in two iterative cycles to gather user experience from the target groups.

Results: The eToyBox programme will extend the reach of ToyBox Study Malaysia programme via online learning while Phase I will contribute to the extant literature on success factors and barriers to intervention programme sustainability.

Conclusion: With the COVID-19 pandemic movement control in place, eToyBox can easily be accessed by the target groups and is expected to help improve health literacy and knowledge, and contribute positive impact towards children's dietary behaviour to prevent risk of childhood obesity. Lastly, findings and benefits of eToyBox will be disseminated to key stakeholders, professional associations, and Ministries to further enhance the impact and reach of ToyBox Study Malaysia.



P4.18 Septic shock and hyponatremia after transsphenoidal surgery for pituitary adenoma in obesity patient: A case report

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Introduction: Hyponatremia is a well-known complication of pituitary adenoma and transsphenoidal removal tumor surgery.

Objective: A 49-year-old Indonesian man was referred to our hospital because of general weakness, disturbance of consciousness, and hyponatremia. He is a grade 1 obese man with body mass index (BMI) of 25.7kg/m² using World Health Association (WHO) Asia Pacific category. He had four previous trans sphenoidal surgeries due to pituitary adenoma, and had recurrent episodes of polyuria and hyponatremia since the third surgery. After the last surgery, patient fell into septic shock suspected due to retroperitoneal abscess from CT scan finding, complicated with grade 1 acute kidney injury, and was admitted to intensive care unit (ICU).

Methodology: He was haemodynamically stabilized with norepinephrine and dobutamine, and infection was treated with antibiotics intravenously. Hyponatremia was successfully corrected with 3% sodium chloride (NaCl) infusion 500ml/24h, continued by 0.9% NaCl infusion 500ml, and 3x500mg NaCl powder.

Results: Trophic feeding of 6kcal/kg ideal BW/day was delivered by 30ml/h within 24 hours of surgery, intermittently, with polymeric formula. Then, hypocaloric feeding was set as nutritional treatment to this patient. After overcoming high gastric residual volume due to hypokalemia, hyperglycemia, and sedative use, energy gradually increased up to 18kcal/kg ideal BW/day.

Conclusion: After 6 days of ICU stay, the patient stepped down to ward.

P4.19 Marketing of confectionary and sweet beverage products in Malaysia on Instagram: A content analysis

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Introduction: Food marketing through social media has major impact on consumer's food choices, particularly teenagers and adults.

Objective: To conduct content analysis of marketing strategies of confectionary and sweet beverage products in Malaysia on Instagram.

Methodology: A cross-sectional method was done to explore the marketing of confectionary and sweet beverage products in Malaysia on Instagram. Content analysis was conducted for 3 months from 1st April 2019 to 30th June 2019 using the Social Baker.com website. A pre-established coding guide was used to identify the marketing strategy of each post. Products with nutrition claim were compared with Malaysian Food Regulations 1985.

Results: A total of 63 food confectionary and sweet beverage products were selected. Image posts were found to be the most used (898, 68%), followed by 418 (32%) video posts. The brand Amazin' Graze posted the most image posts (49, 5.5%), while 100 Plus brand with the most video posts (57, 12.2%). A total of 22 marketing strategies were used. Studies show that brand element strategies were used fully (100%) followed by hashtags (95%) and photos (90%) but there was no significant difference ($p = 0.459$) between these strategies. In evaluating nutrition claims, only 14 products (16%) made nutrition claims for their products, and of these, 3 (5%) products were found to be inaccurate in their nutrition claims based on Malaysian Food Regulations 1985. In comparing frequency of Instagram posts over the 3 months study period, the month of May had the highest median post frequency of 7 posts followed by June (6 posts) and April (5 posts). However, there were no significant difference between frequencies.

Conclusion: Brand elements was one of the most widely used marketing strategies by confectionary and sweet beverage products on Instagram. More stringent enforcement should be made to avoid unauthorized nutrition claims of food that are harmful to public health.

P4.22 Development of purple sweet potato cracker: New perspective of potential consumption of purple sweet potato as anti-obesity source for Malaysians

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Introduction: In culinary perspective, sweet potato especially purple sweet potato is not a major ingredient in most traditional dishes including Malay traditional food. Not only that, dessert is the only meal course that consumers normally use purple sweet potato in Malay traditional food preparation. Desserts such as che mek molek (Kelantan kuih) and bubur keledak are examples of Malay traditional food that use orange sweet potato but not the purple type. Most Malaysians only eat boiled sweet potato root especially the purple sweet potato. Majority of children, adolescents and young adults do not prefer to eat purple sweet potato. It is a common phenomenon in the supermarket whereby most of the local purple sweet potatoes are unsold as compared to the other local vegetables. Recently, some manufacturers have produced snacks from sweet potato as an addition to snack varieties without promoting its health benefits to the population. Nonetheless, the local purple sweet potato with high nutritional values is still abandoned. Purple sweet potato has the functional properties, such as an anti-oxidative, hepatoprotective, anti-inflammatory, anti-tumor, anti-diabetic, anti-microbial, anti-aging effects and anti-obesity.

Objective: Considering the problems of overweight and obesity among Malaysian population, an alternative healthy snack with high nutritional content and functional properties, purple sweet potato cracker has been developed as potential of anti-obesity source for Malaysians.

Methodology: An analysis on physico-chemical properties has been conducted on new developed purple sweet potato cracker in order to examine its nutritional contents.

Results: It has various health benefits due to its unique nutritional and functional properties. High in carbohydrates, proteins, minerals and high in fiber are some of the nutrients contents.

Conclusion: Thus, purple sweet potato can be further developed as a sustainable crop for diverse nutritionally enhanced and value-added food products to promote human health.

P4.23 Effects of 4-week Zumba exercise on selected body composition and physical fitness among overweight female during movement control operation

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Introduction: Being overweight has a high risk of developing non-communicable diseases. Previous studies found that there was a significant relationship between body composition and physical fitness with risk of developing non-communicable diseases.

Objective: This study was to examine the effect of 4-week of Zumba exercise on selected body composition and physical fitness among overweight female during movement control order.

Methodology: Forty overweight female were randomly selected and divided into two groups, namely control group (n=20; age: 22.4±3.0 years; BMI: 31.7±4.6kg/m²; WHR: 0.86±0.07) and experimental group (n = 20; age: 22.9±1.4 years; BMI: 29.1±4.4kg/m²; WHR: 0.84±0.08). Subjects in the experimental group performed Zumba exercise for three times a week and 50 minutes for each session for 4 weeks. Measurements of body weight, waist and hips, body mass index, waist-hip ratio and physical fitness (push up, sit up and plank) were measured at pre and post four weeks of intervention. Food diary were recorded and analysed by DietPlus nutrient software. Statistical analyses were performed using independent t-test and paired t-test.

Results: There was no significant difference in caloric intake between control group and experimental group during four weeks of intervention (p>0.05). There were significant decreases in body weight, waist measurement and body mass index between pre and post tests in the experimental group (p<0.05) while there was no significant decrease in the control group (p>0.05). There were significant increase in push up, sit up and plank between pre and post tests in experimental group (p<0.05).

Conclusion: This present study found that Zumba exercise for four weeks showed positive effects on body weight, waist measurement, body mass index, sit up, push up and plank which can reduce the risk of developing non-communicable diseases among overweight female.

P4.24 Community-based randomized controlled trial of the Malaysia Diabetes Prevention Program (MyDiPP) for high-risk individuals of type 2 diabetes: lifestyle intervention using a mobile app

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Introduction: Prediabetes is an upcoming global public health issue. Approximately 70% of untreated prediabetes individuals will eventually develop into type 2 diabetes in lifetime. In Malaysia, the prevalence of diabetes has increased substantially which demand an urgent need to operationalise the country preventive approach for diabetes.

Objective: To evaluate the efficacy of MyDiPP for preventing type 2 diabetes in overweight or obese adults at 6 months of the programme.

Methodology: A total of 47 MyDiPP and 45 CG (Control Group) eligible participants were invited to take part in the study. MyDiPP participants received a mobile phone app intervention with multiple approaches (weight loss, dietary modification, physical activity and quality of life) while the CG received standard care. Anthropometrics and HbA1c were measured at baseline and 6 months. Primary endpoints are HbA1c and weight changes as secondary outcome.

Results: This present study consist of 58.5% males and 41.5% females with mean (SD) age of 39.32 (10.96) years old. There were no statistically significant differences within the two groups over the six months for HbA1c. There was no significant difference between the groups for the six-month changes in HbA1c ($p=0.637$). Within group comparisons showed increased in weight in CG group (baseline 74.95kg versus 6 months 76.20kg; $p<0.05$), but with no difference in between-group comparisons ($p=0.364$). Although there was a reduction in weight in MyDiPP group, the reduction was not significant (baseline 80.28kg versus 80.70kg; $p= 0.78$).

Conclusion: The present study suggests that a mobile app for type 2 diabetes intervention in high risk individuals in Malaysia might have modest benefits which are broadly comparable to those achieved by similar interventions in the developed world, though longer-term follow-up would be required to confirm whether or not the benefits persist .

P4.25 The effectiveness of community-based, type 2 diabetes prevention programme on health-related quality of life: Malaysia Diabetes Prevention Program (MyDiPP)

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Introduction: There is an alarming increase in the prevalence of diabetes among adults worldwide where people who are overweight have a greater risk of developing diabetes. Adults at high risk for diabetes may have reduced health-related quality of life (HRQoL).

Objective: To assess changes in HRQoL after MyDiPP intervention program aimed at diabetes risk reduction via a mobile application (app).

Methodology: A total of 86 participants (mean [SD] age, 43.78 [11.61] years; mean [SD] body mass index, 30.77 [5.25] kg/m²) were randomized to MyDiPP intervention group (n=41) or to standard clinic healthcare (control group) (n=45). MyDiPP participants received a mobile phone app intervention with multiple approaches (weight loss, dietary modification, physical activity and quality of life) while the control group received standard care. Main HRQoL outcome measures included the SF-36 health survey physical component summary (PCS) and mental component summary (MCS) scores. Baseline mean (SD) scores were 333.87 (57.35) for PCS and 347.32 (58.69) for MCS.

Results: Within-group comparisons showed no significant changes in all groups post-intervention for both MCS and PCS scores. Although not statistically significant, improvement in MCS and PCS scores were observed in MyDiPP group [MCS 9.96 (-24.24 to 4.32); p=0.17 and PCS 8.48 (-22.97 to 6.01); p=0.24]. For between-group comparison, a significant difference was observed in the MCS component only (p<0.05).

Conclusion: This study provides evidence that a culturally adapted mobile app-based diabetes prevention program is effective in improving the health-related quality of life of individuals who are overweight or obese through lifestyle behavioural modifications. It will be necessary to conduct further studies to see if similar results are produced in different socio-economic or geographic contexts.



TRACK 5 Public Health and Policy

List of Poster Titles

No.	Abstract ID	Title
1	P5.01	"It felt like we never got anywhere": Health system barriers to accessing care for children with obesity and their families
2	P5.02	WITHDRAWN
3	P5.03	Relationship between field-testing cardiorespiratory fitness and adiposity-related co-morbidities risk among Malaysian adults
4	P5.04	Waking up the sleeping giant by saving the fattest nation in Asia
5	P5.05	Physical activity and depressive symptoms among overweight and obese pregnant women in Terengganu
6	P5.06	Sociodemographic factors, food security status and nutritional outcome among women in Kuantan, Pahang
7	P5.07	Relationship between physical activity and BMI-for-age among preschool children in Malaysia : Preliminary results from SUNRISE Study Malaysia
8	P5.08	Potential effectiveness of menu labeling legislations to prevent obesity among adolescents in a private school in the Klang Valley

P5.01 "It felt like we never got anywhere": Health system barriers to accessing care for children with obesity and their families

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Introduction: In addition to population-level prevention efforts, it is important that children and youth affected by obesity and their families have access to appropriate programmes focusing on healthy lifestyle change, and care for weight related comorbidities.

Objective: The aim of this study was to identify the barriers created and maintained by the health system that affect engagement in a family-based multidisciplinary healthy lifestyle programme for children and adolescents, and to identify those factors that also affected participant engagement in the context of the wider health system:

Methodology: Sixty-four semi-structured interviews with past participants of the programme (n=71) with varying levels of engagement, including those who declined contact after their referral. Half the interviews were with families with Maori (New Zealand's Indigenous population) children, allowing for appropriate representation. Interviews were analysed using thematic analysis to identify system-level barriers.

Results: Five key system-level factors were identified which affected participants' abilities to access both the community-based programme and the wider health system: the national policy environment, funding constraints, lack of coordination between services, difficulty navigating the system, and the cost of primary health care.

Conclusion: Engaging with a health system that creates and maintains substantial barriers to accessing services is difficult, affecting programme engagement even where service-level barriers have been minimised. The health system's relative inaccessibility is an impediment to improved health outcomes for children and their families experiencing childhood obesity. Policymakers need to consider these factors when making decisions about future direction of care for childhood obesity in Australasia and the wider Asia-Pacific region.

P5.03 Relationship between field-testing cardiorespiratory fitness and adiposity-related co-morbidities risk among Malaysian adults

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Introduction: Adiposity is a modifiable major risk factor for non-communicable diseases. Commonly, adiposity is clinically quantified by body mass index (BMI) and waist circumference (WC), which have been recommended by the World Health Organisation for co-morbidities risk stratification. Improvement in cardiorespiratory fitness has been advocated as measures to reduce risk of co-morbidities and mortality .

Objective: To determine the relationship between field-testing cardiorespiratory fitness and adiposity-related risk for co-morbidities among Malaysian adults.

Methodology: Convenient sampling was adopted to voluntarily recruit adult who visited the outpatient clinic in Selangor State Hospital (11-15 November 2019). BMI and WC were quantified, and adiposity-related co-morbidities risk was stratified. Cardiorespiratory fitness was measured using the YMCA step test protocol.

Results: Total 175 adults enrolled (88 male, 87 female). Mean weight and height were 69.4kg (\pm SD 16.4) and 1.61 m (\pm SD 0.08) Mean BMI was 26.4kg/m² (\pm SD 5.3), and mean WC was 89.1cm (\pm SD 13.4). Majority were Obesity Class 1 (n=58, 33.1 %), followed by overweight (n=55, 31.4%). Seven participants (4%) fall into Obesity Class 2, while three participants (1.7%) were Obesity Class 3. The remaining were normal weight (n=48, 27.4%) and underweight (n=4, 2.3%). 117 participants (66.9%) performed the YMCA step-test. Majority demonstrated very poor cardiovascular fitness (n=44, 37.6%). None had neither good nor excellent cardiovascular fitness. Nineteen participants (16.2%) failed to accomplish it. Thirty-two participants (18.2%) had clinical contraindication to perform, while 26 participants (14.9%) declined to join. Adiposity-related co-morbidities risk classified the majority of the participants as high risk (n=54, 30.9%), followed by moderate risk (n=39, 22.3%). Four participants (2.3%) low risk , while seven participants (4%) had no risk. Spearman correlation demonstrated statistically significant correlation between field-testing cardiorespiratory fitness and adiposity-related co-morbidities risk ($r=0.253$, $p<0.01$).

Conclusion: Field-testing cardiorespiratory fitness should be routinely performed in clinical practice in tandem with adiposity measurement, as it provides valuable objective measurement for patients with poor cardiorespiratory fitness and at risk for NCD.

P5.04 Waking up the sleeping giant by saving the fattest nation in Asia

Ravinder Singh

Malaysia Tower Running Association

Introduction: The war against obesity continues; no country is showing an improvement. It is time for Malaysia to lead with creative, out-of-the-box and low risk solutions. Education alone is ineffective and post-COVID means limited budget will be available.

Objective: To identify 5 parties that can play effective roles together to help Malaysians successfully go through behavioural change, using 5 innovative tools.

Methodology: 15-20% Malaysians will be mobilized to be "Health & Fitness Ambassadors" to mentor and coach the 50% of Malaysians who are overweight and obese. #KitaJagaKita and #PeopleHelpingPeople, starting with their family, friends and colleagues. Fitness professionals will be able to easily introduce available exercise options like stairs climbing and maximizing "non-exercise activity thermogenesis (NEAT)" to burn excess calories. Dietitians and nutritionist can better engage restaurants by using gaming principles of "Calories In Calories Out (CICO)" by providing calorie listings in their menus. Finally, medical practitioners must actively address obesity and health risk, via a National Health Score.

Results: The goal in 6 months is to have more Malaysians walking up stairs and doing more NEAT. The introduction of CICO and restaurant menu calorie listings makes diet management a daily topic of conversation, leading to more healthier options available in restaurants. Finally, the National Health Score will provide real-time data to the Ministry of Health, and create more conversations on diet, exercise, overweight and obesity with medical providers. All these will act as an early warning system which hopefully inspires health transformation to delay onset of critical illnesses.

Conclusion: Put championing obesity at the top of the nation's goals. Working together is key to save Malaysia from obesity.

P5.05 Physical activity and depressive symptoms among overweight and obese pregnant women in Terengganu

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Introduction: Depression during pregnancy would affect not only the mother but also the child's development. The prevalence of depression during pregnancy in Malaysia has increased from 8.3% to 12.2% in 2018. It is presumed that exercise and physical activity prevent depression and decrease depressive symptoms by altering neurotransmitter and depression-related hormone levels.

Objective: To evaluate the association between physical activity and depressive symptoms score among overweight and obese pregnant women in Terengganu.

Methodology: A total of 26 pregnant women (n=14 overweight and n=12 obese) in their second and third trimester who registered in health clinics in Terengganu, aged ranging from 22 to 41 years completed this study. This cross-sectional study used self-administered questionnaires consisting of socio-demographic characteristics, Pregnancy Physical Activity Questionnaires (PPAQ-Malay) and Edinburgh Postpartum Depression Scale (EPDS-Malay). The data were analysed by using IBM SPSS version 23.

Results: Majority of the participants working in government sectors (61.5%, n=16), with monthly income range from RM1001-RM3000 (42.3%, n=11). More than half of the participants (61.5%, n= 16) were in their third trimester. Most of the participants participated in light-intensity activity (18.1±11.5 MET-hr/week) in the form of occupational type (42.2%, 50.6±40.8 MET-hr/week) while 31.5% were in inactivity category (37.7±28.3 MET-hr/week). 15.4% (n=4) of them have an EPDS score of more than 10 which signifies depressive symptoms. There was a fair positive correlation between physical activity and depression symptoms score (r=0.469, p=0.016).

Conclusion: Physical activity is related to depressive symptoms among overweight and obese pregnant women in Terengganu. Appropriate measures should be taken to increase awareness and reduce depressive symptoms risk during pregnancy.

P5.06 Sociodemographic factors, food security status and nutritional outcome among women in Kuantan, Pahang

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Introduction: Food security can be defined as the availability of and accessibility to food, acquired in an acceptable means at any given time and place in a way that could maintain health and wellbeing. Food insecurity is increasingly recognized as a public health issue in developed and developing countries including Malaysia and women are among the vulnerable group to be food insecure which needs to more attention.

Objective: This study aimed to determine the demographic factors, food security status and nutritional outcome among women in Kuantan, Pahang.

Methodology: This cross-sectional study was participated by 180 mothers aged 20 years to 59 years old. Mothers were interviewed to obtain the information on demographic factors, food security status (Food Insecurity Experience Scale) and anthropometric measurement. Chi-square, ANOVA and multiple logistic regression were used to determine the association between factors and food security status. Significance level was set at 0.05.

Results: The mother's mean age was 38.10±9.80 years. About 60.2% were food secure while 39.8% experienced food insecurity, whereby 29.5% were moderate food insecurity while 10.3% experienced severe food insecurity. Low household income, (p=0.047), low income per capita (p=0.032) and household size (p=0.028) were significant risk factors to household food insecurity. Body mass index (BMI) shows the inclining trend as food insecurity worsen but the difference is not significant (p=0.057).

Conclusion: The result warrants the need for further investigation. Health intervention programs should include food security into consideration based on its adverse implications towards public health.

P5.07 Relationship between physical activity and BMI-for-age among preschool children in Malaysia : Preliminary results from SUNRISE Study Malaysia

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Introduction: Physical activity (PA) is important for children's health, wellbeing and development. PA helps children stay at healthy weight. WHO 2019 guidelines state that children aged 3-4 years should participate in at least 180-minutes of PA daily including at least 60-minutes of moderate-to-vigorous-intensity PA (MVPA).

Objective: To determine prevalence of children aged 4 years who meet the WHO guidelines on physical activity behaviour and to explore relationship of physical activity with BMI-for-age z-score (BAZ).

Methodology: A total of 82 preschoolers from urban and rural localities in Kuala Lumpur, Selangor and Negeri Sembilan states in Malaysia participated in this study. PA was measured using Actigraph GT3X+ accelerometers worn on the waist for 5 days (Monday to Friday). Children were required to have at least one 24-hour day of data to be included in the data analysis. Weight and height were measured and BAZ was determined using WHO Anthro Survey Analyser.

Results: Subjects comprised 51% boys with 52% from urban areas. Slightly more than half (57.3%) of the children achieved MVPA recommendation of at least 60-minutes a day. However, only a third of these children (36.6%) participated in at least 180-minutes of PA daily. Majority of children (81.7%) have normal weight, with 6.1% at possible risk of overweight, 6.1% overweight and 4.9% obese. No relationship was found between physical activity and BAZ among preschool children.

Conclusion: The results showed that nearly two thirds of preschoolers in Malaysia have insufficient PA. Appropriate interventions that includes a PA component may help to increase PA among children. Future studies can focus on school-based interventions that promotes and inculcate good PA behaviours among young children.

P5.08 Potential effectiveness of menu labeling legislations to prevent obesity among adolescents in a private school in the Klang Valley

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Introduction: The obesity rate in Malaysia is increasing exponentially among adolescents. The quality of health of adolescents is of paramount importance to a sustainable nation. To safeguard the health of adolescents in this country, there are international and national laws such as Convention on the Rights of the Child 1989, Statutes of CODEX 1963, Federal Constitution 1957, Food Act 1983, Consumer Protection Act 1999 and Contracts Act 1950 which are the legal basis to promote public health among adolescents. In 2025, another legal tool to prevent obesity, the menu labeling legislations will be gazetted to ensure nutrition information is displayed mandatorily in fast food chains.

Objective: To evaluate the potential effectiveness of menu labelling legislations in obesity prevention among adolescents.

Methodology: Qualitative methodology using 8 focus group discussions and short questionnaires with participants comprised of 12 boys and 12 girls aged 12-15 years in a private school in the Klang Valley were conducted. The aim was to explore and evaluate if this proposed menu labeling legislation would work. It is useful to understand the reasons behind the level of food literacy of these adolescents on nutritional labelling if these regulations are to be fully implemented in fast food chains.

Results: Based on the data collected, 86.4% of adolescents are aware of menu labelling but do not use them to make informed choices. The identified impediments include information asymmetry, insufficient nutrition literacy, lack of user-friendly menu labelling display, undesirable influence by parents, guardians or peers and low self-monitoring.

Conclusion: The effectiveness of menu labeling legislations must be complemented by using user-friendly format, increment in self-awareness in health literacy and advertisements, public campaigns involving the adolescents' communities and positive influence from guardian/parent. Promoting the use of menu labels from adolescence would enable them to be mindful of nutrition literacy and hence increase the effectiveness of menu-labeling legislations.

P5.09 MOB®: Malaysian Obesity Bank towards developing holistic anti obese nation wide strategy

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Introduction: Malaysian Obesity Bank (MOB) the first obesity database in South East Asia under Sustainable Development Goals (SDG3) of WHO and in future undertakings, the data will be not only helpful for developing anti-obesity strategy in Malaysia but will also be complementing HapMap and Malaysian node of Human Variome Project in future with a direct effect on health related economy of Malaysia.

Objective: With prevalence of 15.1% of obesity according to Malaysian National Health Morbidity Survey (2011), there is a dire need to combat the pandemic.

Methodology: Obesity with its implications hold burden on healthcare industry. This is going to be of its first kind in Malaysia with purpose of collect, curate and collate the information at the molecular level for the obesity.

Results: No such baseline data is available in Malaysia and it is speculated that the differences in obesity prevalence among racial/ethnic groups also provides genetic cognizance. The pathophysiology of obesity being multifaceted disorder involves intricate choreography of environmental, behavioural and genetic factors. The genetics factors may influence metabolism or diet intake thus leading to increased adiposity. Besides, the database provides with all domains targeting the obesity in all dimensions of life; social aspect, psychological, biochemical, nutrition and awareness to deal and prevent obesity has been addressed and consultation is provided when and to whom its needed at personalized level.

Conclusion: Since its inception in 2015, MOB has attracted the significant number of Malaysian clinicians and researchers to participate and contribute their data to this project. MOB also act as the centre of coordination for genotypic and phenotypic variation studies of the Malaysian obese and normal population under personalized obesity prevention and treatment.

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Inbody Asia Sdn. Bhd.

Novo Nordisk Pharma (Malaysia) Sdn. Bhd.

Pharm-D Sdn. Bhd.

Totalife (M) Sdn. Bhd.

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OATS CONTAIN IRON FOR IMMUNITY



HOW DOES IRON SUPPORT IMMUNITY?

- Iron is a fundamental element for normal development of the immune system.¹
- Iron deficiency can negatively influence the normal defence systems against infections.²

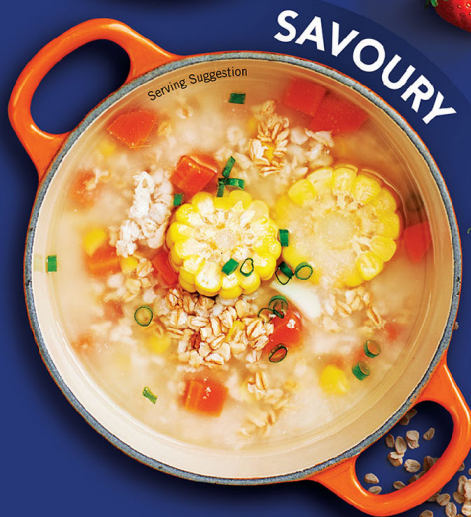
OATS IS A NATURAL SOURCE OF IRON

- It is a “Super Grain” that contains a wide range of vitamins and minerals, including iron.
- Oats is also a natural source of fibre, protein and carbohydrates.
- It contains the highest amount of Iron and Zinc compared to white rice, brown rice, white bread, barley and corn.³

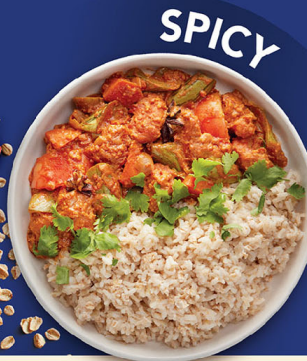
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REFERENCES

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³ USDA Nutrient Data per 100g reference amount (Oats-08402, White Rice-20444, Brown Rice-20036, White Wheat Flour-20481, Pearled Barley-20005, and Whole Corn Flour-20016).



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Rujukan:
Daly RM et al. (2020) AJCN.
*Berbanding kumpulan kawalan, mereka yang mengambil 2 gelas susu ditambah dengan MFGM & nutrien penting bersama senaman kerap mengalami peningkatan dalam 16 minggu.

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¹Berbanding dengan setiap 100g Anlene Biasa

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