1ST INTERNATIONAL SCIENTIFIC CONFERENCE ON BODY COMPOSITION 2021

9 - 10 NOVEMBER 2021

1ST INTERNATIONAL SCIENTIFIC CONFERENCE ON BODY COMPOSITION

BODY COMPOSITION ASSESSMENT IN ADDRESSING PUBLIC HEALTH ISSUES

9 - 10 NOVEMBER 2021

ABSTRACT BOOK

Main organiser:

Malaysian Society of Body Composition

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The artwork on the cover page was designed by Patricia and Joseph from the Malaysian Society of Body Composition. The cover page illustrated the human anatomical structure and human cell, which represent the body composition, to reflect the conference's theme.

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FOREWORD

The 1st International Scientific Conference on Body Composition (ISCBC), which organised by the Malaysian Society of Body Composition (MSBC), serves as a global scientific platform to showcase the latest body composition research. On behalf of the organizing committee, I am honoured and delighted to invite you to participate in the 1st International Scientific Conference on Body Composition (ISCBC) on 9 - 10 November 2021. The conference is conducted on a virtual platform taking into consideration of the uncertainty of the COVID-19 pandemic situation.

In this Conference, we are excited to bring you the world leaders and eminent scientists in body composition to share their knowledge and experience in this platform. We have prepared a two-day programme that consists of two keynote lectures, four plenary lectures, four symposia sessions, three free communication sessions and poster presentations. To encourage and drive good research in body composition, awards are be given for the Best Oral Presentation and Best Poster Presentation. With this initiative, we believe that the 1 ISCBC can bring together both local and international researchers and practitioners from various disciplines who are passionate and interested in body composition, which foster novel interdisciplinary and international networking and collaborations.

We look forward to welcoming you to the 1st International Scientific Conference on Body Composition (ISCBC). Join us virtually and make this Conference a memorable event!

Yours sincerely,

ASSOC. PROF. DR. YIT SIEW CHIN

Chairperson, Organising Committee of the 1st International Scientific Conference on Body Composition

Hon. Secretary, Malaysian Society of Body Composition

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Assessment of Body Composition in Epidemiology Studies

OA04: Applicability of Visceral Adiposity Index (VAI) in Predicting Metabolic Risk Factors Among Malay Adolescents

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Introduction: Increased visceral adiposity has been known to be associated with increased cardiometabolic risk such as abdominal obesity, hyperglycaemia, dyslipidemia andincreased blood pressure. However, limited study had been carried out to determine the predictive ability of visceral adiposity index (VAI) in the evaluation of the metabolic Syndrome (MetS) and its components among Malaysian adolescents. **Objective**: This cross-sectional study aimed to predict the risk of MetS and its components using VAI as predictors and to develop a cut-off value for VAI in predicting MetS among Malay adolescents in Terengganu. **Methods:** A total of 238 adolescents aged 18-19-year-old participated in the study. Anthropometric consisted of weight, height and waist circumference (WC). Blood pressure was measured using a digital blood pressure monitor. Fasting blood glucose(FBG), total cholesterol (TC), triglycerides (TG), high-density lipoprotein cholesterol (HDL-c), low-density lipoprotein cholesterol (LDL-c) were determined from an overnight fasting blood sample. VAI was calculated using a sex specific equation based on WC, BMI, HDL-c and TGlevel. MetS was diagnosed based on IDF definition for adolescents aged 16-year-old and over. **Results**: Binary logistic regression revealed that VAI significantly predicted abdominal obesity ($p < 0.01$), low-HDL-c ($p < 0.001$), hypertriglyceridemia ($p < 0.05$), hyperglycaemia ($p < 0.05$) and MetS ($p < 0.01$). An increase in one unit of VAI has a 6.694 (95% CI: 2.288 to 19.581) times odds of developing MetS. Receiver operating characteristics (ROC) curve analysis showed that the optimal cut-off value for VAI in predicting MetS was 1.01 with AUC of 0.851 (95% CI: 0.799, 0.893). **Conclusion**: VAI can be a good predictor of MetS and its components as well act as an applicable screening tool in identifying MetS due to its good discriminatory ability among Malay adolescents. Hence, future intervention programmes are needed to reduce the level of body adiposity to prevent the risk of MetS among Malay adolescents.

OB03: Excess Body Fat in Normal Body Mass Index of Mobile Health Counselling Services Client in Bogor, Indonesia.

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Introduction: Mobile health counselling services is a community service that aims to identify the client's nutritional status and serve as a reference in formulating a nutrition program suitable for healthy populations. **Objective**: This observational study aimed to reflect data on nutritional status for public health recommendations. **Methods**: Primary data were collected using interview and direct measurement. Age and body height data through an interview, while the body weight, Body Mass Index (BMI), total body fat and visceral fat were measured using a portable body composition analyser. **Results**: Data collected between March 2015 and March 2020 (n = 3482) showed that most visitors were female (64.7%) with the largest age group were 40 to 49 years old (22.8%). Half of the clients (50.9%) have a normal nutritional status (BMI 18.5–25 kg/m^2), but more than half (64.0%) had a percentage of total body fat above the normal value. Among clients with normal BMI, 44.4% have an excess total body fat percentage. Proportion based on gender shows that normal BMI males tend to have excess body fat (49.5%) and visceral fat (43,1%) compared to females (41.5% and 7.0% for total body fat and visceral fat, respectively). **Conclusion**: Normal BMI with excess body fat is associated with metabolically normal phenotype which may lead to incorrect health risk analysis. Thus, it might be relevant when formulating a public health program to account for adiposity in preventing the development of metabolic disorders.

OC02: Aqua Zumba Fitness: The Benefits on Body Composition Parameters Among Obese Young Adult Women

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Introduction: Obesity leads to multiple chronic morbidities and mortality. Weight loss significantly reverses the morbidities related to obesity and prolongs life expectancy. Undoubtedly, regular physical exercise has succeeded in achieving the desired weight. However, there is limited scientific evidence to study the effectiveness of Aqua Zumba Fitness. **Objective**: The aim of this study was to determine the effects of Aqua Zumba Fitness on body composition in sedentary female adults. **Methods**: Forty obese womenwere randomly assigned to an exercise group (n = 20, age 26.75 ± 5.34 years, height 160.88 ± 4.40 cm, weight 83.67 ± 8.40 kg) and control group (n = 20, age 26.80 ± 5.23 years, height 157.74 ± 5.83 cm, weight 81.37 ± 8.47 kg). Exercise group was subjected to aqua exercise programs over 12-weeks, 3 times per week, 60 minutes per session, with the intensity of 50- 75% of maximum heart rate. Fat mass (FM), lean mass (LM), body fat percentage (BFP), waist to hip ratio (WHR), and body mass index (BMI) were measured at baseline (week-0) and post exercise intervention (Week-13). **Results**: Significant differences ($p < 0.05$) between the experimental and control groups were found for all variables measured. **Conclusions**: Twelve weeks of moderate intensity and 180mins per week of Aqua Zumba Fitness produced significant impact on body composition parameters among obese young adult women. Future studies should determine the intensity of physical activity with the most beneficial effect on blood variables in middle-aged and older individuals.

Body Composition and Sports Performance

OB01: Somatotype Analysis and Relationship of Body Fat Percentages Toward Aerobic and Anaerobic Performances Among *Silat Olahraga* Athletes

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Introduction: To investigate the prevalence of somatotype and find the relationship between body fat percentages toward aerobic and anaerobic performance among *silat olahraga* athletes. **Methods:** 33 well-trained male athletes from UiTM Negeri Sembilan, SUKMANegeri Sembilan, Universiti Teknikal Malaysia (UTEM) and SUKMA Melaka were selectedas participants in this study. Body composition test consisted of skinfold measurement, weight, height, girth measurement, and bone breadth to get body fat percentages and somatotype. Aerobic test was conducted by using 20m multistage fitness test and anaerobic test was conducted by using running anaerobic sprint test (RAST). One shot of data was taken and the data was analysed using frequency test and Pearson correlation test.**Results:** Result showed in correlation test that p-value of body fat percentage and VO2maxwas (0.001) and r- value was (-0.568), peak anaerobic power was (0.002) and r-value was (0.519), average anaerobic power showed p-value was (0.003) and r- value was (0.504) and fatigue index showed p-value was (0.088) and r- value was (0.302). Frequency tests showed that endomorph was 15.2%, mesomorph was 66.7% and ectomorph was 18.2%. **Conclusion:** This study showed that there was a significant difference between the percentage of body fat with aerobic and anaerobic performance. The majority of the athletes were mesomorphs.

OC05: Does Hypnotherapy Lead to Weight Loss of Obese and OverweightIndividuals?

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Introduction: Hypnotherapy has been increasingly used in recent years as an alternative treatment to maintain well-being. Yet, limited evidence available regarding its role in weight management especially in Malaysia, a country with an escalating prevalence rate of obesity. **Objective:** This prospective pre- and post-study attempt to evaluate whether hypnotherapy was effective in determining weight loss among staff and students at a public university in Terengganu, Malaysia. **Methods:** Participants with body mass index (BMI) ≥ 25.0 kg/m^2 were randomly assigned to either intervention group (IG = 53) or control group (CG = 54), for 12 weeks. All participants received health education (diet + exercise + behavioural recommendations) while those in IG undergo additional three hypnotherapy sessions, once a month. Body weight was measured at week one, seven and 12 while body compositions (body mass index, waist circumference, body fat percentage) were measured at week 1 and 12. Descriptive, univariate and repeated measures analysis of covariance (ANCOVA) were utilised. **Results:** Eligible 107 Muslim participants were recruited (age = 26.28 ± 8.01; female = 82.2%; students = 71.0%; BMI = 31.39 ± 4.89) and 104 of them managed to complete the post-intervention phase (drop-out = 3). A significant weight loss was observed in the intervention (-4.61%) and control (-3.04%) groups (mean difference= -1.57; 95%CI: -2.59, -0.54; p = 0.003) after 12 weeks. However, body fat percentage and waist circumference did not significantly change from baseline in both groups. **Conclusion:** Essentially, the positive outcomes indicated the promising potential of hypnotherapy as an alternative tool in facilitating weight loss efforts for those in need.

Current Advancement in Body Composition and Analysis Methods

OA06: Relationship Between Arm Circumference and BMI-For-Age for Identifying Wasting Among Orang Asli Infants and Children in Gua Musang, Kelantan

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Introduction: Mid-upper arm circumference (MUAC) is one of the simplest and easiest measure for screening undernutrition in the field. However, its use has not been explored as body mass index (BMI) is extensively used in local community settings. **Objective**: This study aimed to assess the relationship and agreement between MUAC and BMI-for-age in identifying wasting among *Orang Asli* infants and children. **Methods**: This cross-sectional study was conducted in 16 *Orang Asli* villages around Gua Musang district, Kelantan, Malaysia using convenience sampling to recruit *Orang Asli* infants and children aged 6 to 60 months. Anthropometric measurements of weight, length/ height and MUAC were taken in duplicates based on a standardised International Society for the Advancement of Kinanthropometry (ISAK) procedure. Wasting was defined as < -2SD using BMI-for-age and < 11.5cm based on MUAC. **Results**: A total of 114 *Orang Asli* infants and children aged 6 to 60 months (mean age 34.8 ± 16.03) participated in the study. A total of 28.3% and 3.5% of infants and children were found to be wasted using BMI-for-age and MUAC, respectively. The correlation coefficient was 0.254 ($p < 0.01$) while Cohen's Kappa of 0.082 ($p = 0.14$) showed almost no agreement between MUAC and BMI in classifying wasting among children. **Conclusion**: The weak correlation and lack of agreement between MUAC and BMI in detecting wasting among *Orang Asli* children could be due to high measurement variability and low sample size. Future studies are needed with more sample size to determine the correlation and agreement between these two indicators.

OC03: Associations of Anthropometric and Body Composition Measures with Sprint Performance in Rugby Sevens Players

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Introduction: Explosive movements such as sprint running requires high force production that may depends directly or partially on anthropometric features such as stature, muscle mass, and limb girths of an athlete. **Objective:** To investigate the relationship between anthropometric and body composition measures with sprint performance among rugby seven players. **Methods:** Sixteen male rugby seven players (age 19-23) participated in this study. Athletes' stature, body mass, body mass index, skinfolds (sum of 3 and 7), limb girths, somatotypes, and body composition (lean body mass and body fat percentage), were profiled. Muscle thickness of the vastus lateralis, vastus medialis, and rectus femoris was determined using ultrasound imaging. Sprint performance was assessed during a 40-m sprint trial (i.e., acceleration and maximal sprint ability), with a split-time at 10m distance (i.e., early acceleration). Pearson's correlation coefficients (r) were used to determine the relationships and interpreted as trivial (r = < 0.10), small (0.10 - 0.29), moderate (0.30 - 0.49), large (0.50 - 0.69), very large (0.70 - 0.89), almost perfect (0.90 - 0.99), and perfect (1.00). **Results:** Very large relationships were found between 40-m sprint and body mass, body mass index, sum of 3 skinfolds, lean body mass, arm-relax and arm-flex girths, waist-girth, hip-girth, and calf-girth ($r = 0.70–0.81$, $p < 0.05$). Large relationships were observed between 40-m sprint and stature, sum of 7 skinfolds, body fat percentage, and the endomorphic and mesomorphic levels ($r = 0.52–0.65$, $p < 0.05$). For the 10-m sprint, very large relationships occurred with arm-relax girth ($r = 0.75$) and waist-girth ($r = 0.76$), both $p< 0.05$. Besides, large relationships occurred with body mass, body mass index, lean body mass, mesomorphic level, arm-flex girth, and calf-girth ($r = 0.53 – 0.67$, $p < 0.05$). **Conclusion:** The findings underline the influence of anthropometric and body composition measures for linear sprint performance, which are vital for training reference and athlete's monitoring. Importantly, these data can be obtained without relying on sophisticated devices (e.g., ultrasound technologies).

Clinical Applications of Body Composition Measurements

OA01: Fighting All Metabolic Syndromes (FAMES): Healthy Lifestyle Program to Improve Employee's Body Composition in PT. Nutrifood Indonesia

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Introduction: Metabolic syndrome is a group of risk factors that raises the risk for chronic diseases. In a group of office workers in Indonesia, 24.4% of the diseases are associated with metabolic syndrome. Workplace health program could be potential to fight this problem as office workers spend most of their time at the office. PT Nutrifood Indonesia held a 24-weeks program called "FAMES" to improve the health state of workers with metabolic syndrome in three different workplaces, located in Jakarta, Ciawi, and Cibitung. **Objective**: This study aimed to evaluate FAMES program in improving employee's body composition. **Methods**: Participants were given series of health education and body composition measurement (body mass index, body weight, body fat percentage, visceral fat, and waist circumference). The measurement was done before and after the program was implemented (24 weeks). **Results**: A total of 73 workers (in three workplaces) with certain criteria of metabolic syndromes were recruited. A dependent t-test and Wilcoxon signed rank test were carried out to determine the effectiveness of the program. All statistical analyses used 95% confidence intervals. The result showed that 71.2% participants lost their weight and furthermore, 20.6% of them successfully achieved the target by losing more than 5% weight. Average of three locations (Jakarta, Ciawi, Cibitung) showed a decrease in body weight, body fat percentage, visceral fat, and waist circumference as much as 1.46 kg ($p < 0.001$), 0.75% ($p < 0.001$), 0.81 unit ($p < 0.001$), and 5.38 cm ($p < 0.001$), respectively. **Conclusion**: The intervention program had shown as a promising step in improving body weight, body fat percentage, visceral fat and waist circumference.

OB02: The Prognostic Impact of Body Compositions for Nasopharyngeal Carcinoma Patients in Public Hospitals, Malaysia: A Matched Case Control Study

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Introduction: Despite a greater risk of cancer, body compositions have a paradoxically lower risk of overall mortality. **Objective**: This study aims to profile body compositions among nasopharyngeal carcinoma (NPC) cases compared to controls and determine their association with survival of the cases. **Methods**: This is a match case-control study conducted in Hospital Kuala Lumpur and Hospital Pulau Pinang: cases are histologically confirmed new NPC patients (n=300) and controls are patients free from cancers or any chronic diseases (n=600). Cox regression was used to determine the survival rate. **Results**: Median WHR was significantly higher among cases across the cancer stages compared to controls ($H(4) = 55.778$, $p < 0.0001$). Dunn post hoc test, with a Bonferroni correction showed that WHR was significantly lower in stage 2 cases vs. controls ($Z = -107.431$, $p < 0.0001$), stage 3 cases vs. controls ($Z = -96.508$, $p < 0.0001$) and stage 4 cases vs. controls ($Z = -107.161$, $p < 0.0001$). In one-way ANOVA, BMI, WC and BF% were found significantly associated with NPC stage ($F = 24.287$, $p < 0.0001$, $F = 24.668$, $p < 0.0001$ and $F = 15.454$, $p < 0.0001$ respectively). Tukey's honestly significant difference (HSD) post hoc test revealed BMI was significantly higher in controls ($26.57 \pm 5.50 kg/m^2$) compared to cases in stage 2 ($22.66 \pm 4.89 kg/m^2$, $p < 0.0001$), stage 3 ($22.33 \pm 4.58 kg/m^2$, $p<0.0001$) and stage 4 ($22.60 \pm 4.5 kg/m^2$, $p < 0.0001$) of NPC. WC was found significantly higher in controls compared to cases

OC01: Bioelectrical Impedance Analysis Derived-Phase Angle as a Pragmatic Tool to Detect Protein Energy Wasting Among Multi-Ethnic Hemodialysis Patients in Malaysia

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Introduction: Protein energy wasting (PEW) is a catastrophic maladaptive metabolic state accompanied by fat and muscle reduction that heightens morbidity and mortality in hemodialysis (HD) patients. **Objective:** This study aimed to determine the diagnostic test accuracy of bioelectrical impedance analysis (BIA) derived-phase angle (PhA) in detecting PEW among Malaysian HD patients. **Methods:** This was a multi-centre, cross-sectional study conducted among 152 multi-ethnic HD patients in Klang Valley, Malaysia. Data collection was performed via face-to-face interview along with physical measurements (i.e., anthropometric and BIA measurements) by trained research dietitians. PEW was assessed using the universally recognised International Society of Renal Nutrition and Metabolism criteria. PhA at the frequency of 50 kHz was measured using multi-frequency bioelectrical impedance spectroscopy. Pearson correlation was used to determine the bi-variate relationships between PhA and PEW criteria. Multiple and logistic regressions were used to determine factors associated with PhA and PEW diagnosis, respectively. Gender-specific cut-offs for PhA to detect PEW were established using the receiver operating characteristics curve analysis. **Results:** PEW was evident in 21.1% of the Malaysian HD patients. PhA significantly correlated ($p < 0.001$) with body composition markers, namely mid-arm muscle circumference ($r = 0.444$), serum creatinine ($r = 0.542$) and body fat percentage ($r = -0.382$). Age ($\beta = -0.199$), body mass index ($\beta = 0.266$), body fat percentage ($\beta = -0.344$), serum creatinine ($\beta = 0.299$), serum albumin ($\beta = 0.205$), and serum cholesterol ($\beta = 0.171$) were significant predictors of PhA ($p < 0.05$). PhA was significantly lower ($p < 0.001$) in the PEW group (3.75° ± 0.90) compared to the non-PEW group (4.43°± 0.87). PhA was found as an independent predictor of PEW (AOR = 0.308, $p = 0.001$), with acceptable to excellent discriminative performance ($adjAUC_{male} = 0.809$, $adjAUC_{female} = 0.719$). The PhA cut-off to detect PEW among male patients was 4.26° (sensitivity = 68.8%, specificity = 67.7%). Nonetheless, female had lower PhA cut-off at 3.30° (sensitivity = 68.8%, specificity = 85.5%). **Conclusion:** PhA appears as a pragmatic and valid biomarker in the clinical setting to detect PEW among multi-ethnic Malaysian HD patients.

SCIENTIFIC POSTERS ABSTRACTS

Assessment of Body Composition in Epidemiology Studies

PA01: BMI and Body Type Changes of Indonesian Adolescents (2000 - 2017)

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Introduction: The monitoring of body mass index (BMI) and body type is based on the assessment of morphological parameters, which allows generations living in different periods to be compared**. Objective:** The objective of this study was to analyze BMI and body type changes of Javanese adolescents in Indonesia (2000 – 2017). **Methods:** This cross-sectional study was conducted over two time periods (2000 and 2017) with 581 Javanese adolescents aged 7 to 12 years. Ten anthropometric measurements were taken, and BMI was calculated. The Carter-Heath formula method was used to define somatotype components. **Results:** The mean, standard deviation and variance (ANOVA) of somatotype components and BMI in adolescents aged 7 – 12 years were calculated. Between 2000 and 2017, the mean BMI and mesomorphy increased significantly by 0.9 kg/m^2 and 0.8 units, respectively, while endomorphy and ectomorphy components decreased by 1.5 and 0.6 units, respectively. BMI increased by 0.8 kg/m^2 in boys and 0.9 kg/m^2 in girls. All somatotype components decreased in boys, while endomorphy decreased (1.5 units), but mesomorphy and ectomorphy increased in girls (0.8 and 0.7 units, respectively). The mean difference in endomorphy component was smaller in boys and girls, but mesomorphy increased with age. **Conclusion:** Nutritional status trends among Indonesian adolescents were positive and improved significantly between 2000 and 2017. Although, there were no changes in body type, children in 2000 were more endomorphic and less mesomorphic than children in 2017 according to age, and there was no specific pattern in ectomorphy.

PA02: Relationship Between Food Insecurity and Anthropometric Status in Urban Poor Adolescents Living in Kuala Lumpur, Malaysia

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Introduction: Food insecurity is a concerning public health issue associated with an increased risk of malnutrition, particularly among the vulnerable group. **Objective:** This study aimed to determine the relationship between food insecurity and anthropometric status in urban poor adolescents living in Kuala Lumpur, Malaysia. **Methods:** A cross-sectional survey was conducted among 118 adolescents aged 13 to 18 years old. Food insecurity was assessed using Radimer/Cornell scale and anthropometric indicators include weight, height, waist circumference (WC), and body fat percentage (BF%). **Results:** The study revealed that most of the adolescents experienced household insecurity (47.9%), followed by individual insecurity (25.5%), food security (18.6%), and child hunger (8.0%). The adolescents generally have normal body weight (63.3%), however, the presence of both thinness/severe thinness (16.0%) and overweight/obese (20.7%) reflected the double burden of malnutrition in the study. About 13.8% of adolescents were abdominally obese (> 90th percentile). The prevalence of underfat, overfat, and obese were 14.9%, 12.8%, and 9.0%, respectively. Adolescents experiencing child hunger had a significantly lower BMI-for-age than those who were household insecure and food secure ($p = 0.024$). No significant difference was reported for WC and BFP according to food security status ($p > 0.05$). A weak, inverse relationship was found between BMI-for-age ($r_s = -0.203$, $p = 0.005$) and WC ($r_s = -0.179$, $p = 0.014$) with food security. This indicated that adolescents with greater severity of food insecurity tended to be thinner and smaller in WC as compared to food-secure counterparts. **Conclusion:** Food insecurity among adolescents is prevalent with increasing severity linked to poor weight status. The findings stressed the importance of food security related interventions to improve adolescent nutrition and health, particularly among the urban poor community.

PA03: Correlation Between Sugar Intake and Anthropometric Indices Among Urban Poor Adolescents in Kuala Lumpur, Malaysia

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Introduction: High sugar intake has been one of the significant factors that cause the rise in prevalence of obesity and metabolic diseases worldwide. To date, there is a lack of information related to the sugar intake among the urban poor adolescents in Malaysia. **Objective:** The objective of this study was to determine the sugar intake and its correlation with anthropometric indices. **Methods:** A total of 235 adolescents aged 13 to 18 years were recruited from six *Program Perumahan Rakyat* (PPR) flats in Kuala Lumpur, Malaysia. The sugar intake of adolescents was determined using Food Frequency Questionnaire (FFQ) for sugar intake. Height, waist circumference and body fat percentage were measured, and body mass index (BMI) was calculated. **Results:** Most of the adolescents have normal BMI (61.7%), followed by overweight/ obese (22.9%) and thin/ severely thin (15.3%). Almost a quarter (20.9%) of the adolescents had waist circumference above the 90^{th} percentile. Majority of the adolescents have normal body fat level (53.2%), followed by underfat (28.1%), obese (11.5%) and overfat (7.2%) respectively. The mean sugar intake among the adolescents was 45.29 **±** 7.3 g per day, with sugar-sweetened beverages (SSBs) contributing the most sugar in the adolescents' diet (35.4%). There were positive relationships between sugar intake with BMI ($r = 0.17$) and waist circumference ($r = 0.169$), and these are found to be significant ($p<0.05$). A higher amount of sugar intake is associated with greater BMI and waist circumference, but not with body fat percentage ($p > 0.05$). **Conclusion:** High sugar intake increases the risk of obesity among adolescents, which may lead to other unfavourable health outcomes later in adulthood. Nutrition education programme should be designed to educate on how to choose healthier food options with low sugar level as a means to obesity prevention among the urban poor adolescents.

PA05: Association of Sugar Intake with Body Composition Among 10-11 Years Old Primary School Children in Kuala Lumpur

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Introduction: Prevalence of childhood obesity has increased more rapidly in low- and middle-income countries than in developed countries. A growing body of evidence suggests sugar intake was associated with childhood obesity, while its association with body composition is under-studied. **Objective**: This cross-sectional study was conducted to determine the association of total sugar intake with Body Mass Index (BMI) and waist circumference (WC) among primary school children aged 10 to 11 years in Kuala Lumpur. **Methods**: Weight, height and waist circumference were measured according to standard techniques. Sugar intake of children was evaluated using two days diet recall and analyzed using Nutritionist Pro software. Statistical analysis was performed using SPSS software with $p < 0.05$ were considered significant**. Results**: For boys, 20.2% were overweight and 11.9% were obese while for girls, 14.2% were overweight and 15.1% were obese. A total of 21.9% of boys and 15.1% of girls were centrally obese. There was a correlation between BMI and WC ($r = 0.898$, $p < 0.01$). The average sugar intake was 62.86 ± 25.59 g per day, contributed 15.5% to the average daily energy intake (1617 ± 177 kcal per day). Increased sugar intake increases overall energy intake and there was a significant correlation available ($r = 0.350$, $p < 0.01$). This study showed that sugar intake was high among primary school children and majority (79%) of them exceeded the RNI sugar recommendation. This study provides no indication that increased total sugar intake positively affects BMI and WC. However, the correlation between energy intake and BMI ($r = 0.241$, $p = 0.001$) and the correlation between energy intake and WC ($r = 0.19$, $p = 0.009$) were positive. **Conclusion**: In conclusion, sugar intake of the children was higher than the recommendation. However, sugar was not the cause of the high obesity rate among these children, total energy intake still counts.

PA06: Shift in Maternal Chrononutrition Across Gestation: Its Implication on Gestational Weight Gain (GWG)

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Introduction: Maternal dietary habits play a crucial role in ensuring healthy fetal and pregnancy outcomes. During pregnancy, changes in meal habits are evident, however a lesser extent is known on its influence on pregnancy outcomes. Unfavourable chrononutrition profile during pregnancy could influence gestational weight gain across gestation. **Objective:** To determine the association of chrononutrition shift across trimesters with gestational weight gain (GWG). **Methods:** This was a prospective observational study involving 148 pregnant women. Maternal socio-demographic and chrononutrition data was collected. A 3-day food record was utilized for dietary data. Maternal and infant outcomes were recorded from clinic records. **Results:** Pregnant women ate 2102 (462) kcal and 4.33 (1.00) meals daily in second trimester, while 2057 (413) kcal and 4.00 (1.58) meals daily in third trimester. Maternal eating window was similar in both trimesters (~11.5 hours)). Around 6% and 9% were breakfast skippers in their second and third trimesters, respectively. More pregnant women ate 2 hours before bedtime in their third trimester (35%) as compared to second trimester (23%). A total of 40% gained excessive weight throughout their pregnancy and 27% had inadequate weight gain. Excessive GWG risk was higher among pregnant women with a higher frequency of breakfast skipping from second to third trimester (OR: 3.76, CI: 1.26, 11.27, p = 0.018). **Conclusion:** Irregular meal habits, especially breakfast skipping showed greater weight gain among pregnant women. Future studies are warranted to explore meal quality and factors leading to meal irregularity among pregnant women.

PA07: Associations of Socio-Demographic Factors and Lifestyle Habits on Body Mass Index (BMI) Among Brunei Adults

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Introduction: There has been limited reports on Brunei's adults weight status and its determinants. The association between socio-demographic, lifestyle habits and body mass index (BMI) could be beneficial for understanding the discrepancy in weight status among Brunei adults. **Objective:** To determine the associations of socio-demographic factors and lifestyle habits on body mass index (BMI) among Brunei adults. **Methods:** A cross-sectional study was conducted. Subjects aged ≥ 18 to 59 years old were interviewed to complete a pre-designed questionnaire containing items on demographic, lifestyle, and medical history. This was followed by anthropometric measurements of height and weight. **Results:** A total of 143 participants were included in the study consisted of 44 males and 91 females with a mean age of 31.9 ± 12.1 years. The prevalence of normal, overweight, and obese were 31.9%, 36.3%, and 31.9%, respectively. There were no associations between sex, educational level, marital status, household income, smoking status, physical activity, morbidity, and BMI ($p > 0.05$). However, there was a significant association between daily sleep duration ($p = 0.012$) and BMI whereby subjects with more than 8 hours of sleep had higher BMI. A significant positive correlation was found between increasing age with higher BMI ($r = 0.182$, $p = 0.035$). **Conclusion:** Our findings revealed that BMI was influenced by sleeping duration and advancing age. No other socio-demographic characteristics was associated with Brunei adult's weight status. Further studies to explore on understanding the role of sleeping hours to weight status and health outcomes is needed among Brunei adults.

PA08: A Survey on the Nutritional Assessment and the Effect of Nutrition Education on Functional Foods and Nutraceuticals Among School Teachers in Karaikudi District, India

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Introduction: Functional foods are foods that have a potentially positive effect on health beyond basic nutrition, which are claimed to promote optimal health and help to reduce the risk of disease. **Objective:** This study aims to assess the awareness of functional foods and nutraceuticals among school teachers and to evaluate the effectiveness of nutrition education on knowledge of functional foods and nutraceuticals. **Methods:** Knowledge on functional foods and nutraceuticals were assessed using self-administered questionnaire. After disseminating the nutritional awareness package through lectures with PowerPoint presentation, attitude was re-assessed. Comparison was made between the result of pre-awareness and post-awareness to monitor the impact of nutritional awareness package. **Results:** A total of 50 participants participated in the study. The prevalence of overweight and obesity were 45% and 12% respectively. A total of 20% of the women and 10% of men had higher waist-hip ratio. There were 16% participants found to be anaemic, 18% were hypertensive and 22% were diabetics. A total of 14% had skin problems, 12% had teeth discolouration, 4% had dryness in eyes and 4% had spooning of nails. There were 80% of them were non-vegetarians and 48-hours diet recall revealed that most of their diets were deficit in protein, vitamins and minerals and excess in fat and carbohydrates. Paired t-tests showed significance difference on awareness after intervention ($t = 1.63$, $p < 0.05$). **Conclusion:** Nutrition education was effective in improving the knowledge on functional foods and nutraceuticals among school teachers. Working women like school teachers must follow and practice to pack their food attractive by including lots of colourful fruits and vegetables for preventing themselves and also their family members from degenerative diseases.

PA10: Effect of Different Diets on the Adrenocorticotrophic Hormone (ACTH) And Corticosterone Hormone Level

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Introduction: The pituitary gland is the master gland which regulates the body hormones. From the corticotrophs of the anterior pituitary gland, adrenocorticotrophic hormone (ACTH) is secreted and influences corticosterone production in adrenal glands of rodents via the hypothalamic–pituitary–adrenal (HPA) axis. ACTH and corticosterone are frequently used in research as hormonal markers of stress level. Disturbance in the ACTH and corticosterone blood levels were observed in many diseases especially Addison's disease, Cushing's syndrome, and metabolic syndrome. **Objective:** Our objective was to observe which diet produces the most and least stress to the Sprague Dawley rat's physiology. **Methods:** Thirty-five Sprague Dawley male rats were grouped into five groups (n = 7) and were given five different types of diets (control, high-fat, high-protein, high-sugar, and high-starch) with tap water supplied as drinking water ad libitum after acclimatization for 2 weeks. Room temperature was controlled at 22 degrees Celsius with 12-hours night/day lighting modulation. By the end of eight weeks, the rat's blood was collected, and serum separated. The individual components of ACTH and corticosterone from the blood was extracted, purified, identified, and quantified using the High-Performance Liquid Chromatography (HPLC) with photodiode array (PDA) analysis method. **Results:** HPLC analysis showed high-fat diet and high-sugar diet caused increased corticosterone blood concentrations. There was not much difference of ACTH secretion among the diet groups. **Conclusion:** Chronic high-fat diet and high-sugar diet consumption induce HPA axis dysregulation as evidenced in this study while high-protein and high-starch diet did not show any HPA axis hyperactivity.

PA11: Prevalence of Prehypertension and Its Associated Risk Factors Among Adults in the Malaysian Community Salt Study (MYCOSS 2017-2018).

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Introduction: Prehypertension is not a disease category but a precursor for hypertension which elevates the risks of cardiovascular diseases and coronary heart disease. Current research in Malaysia in 2015 has found that the prevalence of prehypertension among adults was 37.1%, a rate higher than the prevalence of hypertension itself. **Objective:** The aim of this study was to determine the prevalence of prehypertension and the associated risk factors among adults in Malaysia. **Methods:** Data for this cross-sectional population-based study were obtained from the Malaysian Community Salt Survey. This study was carried out from October 2017 to March 2018. Adults aged 18 years and above were recruited for this study. Data on socio-demography, medical history and physical activity were collected through a face-to-face interview using a mobile tablet. Anthropometric measurements were carried out using validated instruments. Blood pressure measurements were taken using a digital blood pressure monitor (Omron HBP-1300). Multiple logistic regression was applied to determine the associated factors for prehypertension using IBM SPSS version 26. **Results:** The prevalence of prehypertension was 67.3% from a total of 624 respondents with response rate 80.5%. It was highest among the 25 to 44 years old age group and Malay ethnicity. Factors associated with prehypertension were males (aOR = 2.13, 95% CI: 1.16, 3.91), Malay ethnic (aOR = 4.57, 95% CI: 1.98, 10.52), other Bumiputera ethnics (aOR = 9.54, 95% CI: 3.60, 25.30), living in rural area (aOR = 1.74, 95% CI: 1.07, 2.83), being overweight (aOR = 2.58, 95% CI: 1.33, 5.02) and having diabetes (aOR = 4.36, 95% CI: 1.53, 12.43). **Conclusion:** In this study, one in three adults in Malaysia was having prehypertension. Identifying the factors associated with prehypertension is important in planning strategies to prevent progression to hypertension and to reduce the cardiovascular risk. Early screening aimed at primary health care settings may reduce the burden of the disease and related morbidities.

PA12: Stunting in Urban Poor Children Aged 2 to 5 Years Old Living in Low-Cost Flats at Kuala Lumpur: A Preliminary Finding

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Introduction: Childhood stunting is one of the major public health issues in most of the developing countries including Malaysia. It could affect early child health and development. **Objective:** This cross-sectional study aimed to determine the associations of socio-demographic factors, mother's height and food security status with stunting among urban poor children aged 2 to 5 years old living in low-cost flats in Kuala Lumpur during COVID-19 pandemic. **Methods:** A set of self-administered questionnaires consisted of sociodemographic information such as child's age, gender, birth weight, monthly household income and food security status were completed by the mothers. Both body weight and height of the mothers and children were self-reported by the mothers. **Results:** A total of 106 children (46.2% boys and 53.8% girls) were recruited using multistage sampling method. Results showed that 34% of the children were stunted, in which more girls (43.9%) were stunted compared to boys (22.4%; χ^2=4.473, p=0.034). More mothers of the stunted children (47.2%) had short stature (<150 cm) compared to mothers of the non-stunted children (25.7%; χ^2=4.048, p=0.044). Child's age, birth weight, monthly household income and food security status were not associated with stunting (p>0.05). **Conclusion:** Findings from this study showed that child's gender and mother's height were associated with stunting among urban poor children living in low-cost flats at Kuala Lumpur. Health promotion programs targeted at reducing child stunting should incorporate strategies to improve women's nutrition and child's well-being.

PA13: Prevalence of Malnutrition and Its Association with Body Compositions Among Older Adults in Selected Long Term Care Facilities Selangor, Malaysia

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Introduction: Changes in body composition occur when an individual aged, even in the absence of changes in body weight. Body composition assessments such as body mass index (BMI) and mid upper arm circumference (MUAC) are often used to determine nutritional status of an individual. However, the role of body composition on nutritional status of older adults in the presence of other potential risk factors of malnutrition is unclear. **Objective:** This study was to determine the prevalence of malnutrition and the factors that associated with poor nutritional status among older adults in long-term care facilities in Selangor. **Methods:** A cross-sectional study was conducted among 97 older adults. Information on sociodemographic, health indices, body composition (total body fat %, skeletal muscle mass and visceral fat), functional status, presence of depressive symptoms, appetite, sleep quality and nutritional status of the participants were obtained using appropriate instruments. Factors that contribute to malnutrition were analysed using multiple linear regression model. **Results:** Slightly more than 40% were malnourished and 50% had poor appetite among older adults. Muscle wasting was prevalent, with more than 70% and 80% of the older adults had muscle wasting at the calf circumference and MUAC, respectively. Poor sleep quality was present in 80% of the participants. Multiple linear regression analysis showed low skeletal muscle mass (B = 6.452, $p < 0.05$), low BMI (B = 3.656, $p < 0.05$) and poor sleep quality (B = -0.212, $p < 0.05$) contributed significantly to poor nutritional status (adjusted R^2 = 23.1%, $p < 0.05$). **Conclusion:** Our findings highlighted factors contributing to poor nutritional status (poor sleep quality, low skeletal muscle mass and low BMI) among residents at long-term care facilities were highly modifiable. In lieu of the poor health outcomes associated with malnutrition, appropriate interventions are needed to address the sleep quality, skeletal muscle mass and BMI among older adults in long-term care facilities.

PA14: Breast Milk Carbohydrate Content and Its Association with Infant's Appetite, Growth and Body Composition

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Introduction: Breastfeeding is the gold standard for infant feeding, as early nutrition is critical for infants' health. Nevertheless, breast milk composition across lactation period and its relation with infant outcomes are largely unexplored. This includes the major nutrients in breast milk, the carbohydrates, and its trend across time. **Objective**: To determine breast milk carbohydrates level and its association with infants' appetite, growth and body composition in the first-four months. **Methods**: This study involved 64 mother-infant dyads in Klang-Valley, Malaysia. Breast milk samples were collected alongside the infant appetite (using a 5-likert scale BEBQ questionnaire) and weight measurement at two-week, 1.5-month and 3.5-month of age. Infant's body composition was measured using the deuterium (stable-isotope) method at four-month. The breast milk total carbohydrates and lactose were measured using MIRIS analyser and high-performance-liquid chromatography, respectively. **Results**: The average total carbohydrate and lactose levels across time-points were 7.02±0.40 g/dl and 6.69 ± 0.39 g/dl, respectively. Their levels were stable and highly correlated across three-interval-times (r-range = 0.279 - 0.550, $p < 0.05$). Average weight-for-age, fat mass and fat-free mass at 4 months were -0.54±0.88 Standard Deviation, 1.23 ± 0.57 kg and 4.98 ± 0.76 kg, respectively, indicating normal growth. The average general appetite across intervals was 4.11 ± 0.59, indicating high appetite. Higher carbohydrate levels at 1.5 months were associated with fat mass ($rs = 0.441$, $p = 0.024$) and fat percentage ($rs = 0.265$, $p = 0.034$) at four months, but not correlated with fat free mass and weight-for-age. Milk total carbohydrates were associated with appetite traits, specifically milk enjoyment ($rs=0.265$, $p=0.034$) and responsiveness ($rs=-0.308$, $p=0.013$). **Conclusion**: Milk carbohydrates levels were stable throughout the first-four months, showing associations with infant body fat mass and appetite. This demonstrates the role of early nutrition in shaping infant's growth and appetite. It is recommended to further explore these associations in a longer study period and larger sample size population.

PA15: Association of Adiposity with Risk of Eating Disorder in Malay Adolescents: A Longitudinal Study

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Introduction: The tracking of obesity and eating disorders in adolescence is important for early prevention effort but related literature is scarce. **Objective:** This study aimed to identify the relationship between adiposity and risk of eating disorders among Malay adolescents over a period of 18 months. **Methods:** A total of 234 participants (97 boys; 137 girls) aged 10 to 14 years were recruited from national schools in Kuala Lumpur using single-stage cluster sampling method. Body mass index (BMI) was calculated from measured weight and height. Body fat percentage (%BF) was measured using bioelectrical impedance analysis. Eating Disorder Inventory for Children (EDI-C) was used to assess risk of eating disorders. **Results:** Mean age, weight, height, BMI and %BF at baseline were 12.1 ± 1.6 years, 44.0 ± 15.3 kg, 146.4 ± 11.4 cm, 20.1 ± 5.2 kg/m^2 and 26.1 ± 6.0 %, respectively. Some 16% of participants (22% girls; 11% boys) were found to be at risk of eating disorders at baseline. All anthropometric variables and %BF increased at 18-month follow-up ($p < 0.05$). Participants who had heightened levels of eating disorders risk had greater %BF than their counterparts during follow-up. Results from a linear mixed-model showed certain subscales of EDI-C [Drive for Thinness (Beta = 0.04, p = 0.001), Body Dissatisfaction (Beta = 0.02, p = 0.002) and Interoceptive Awareness (Beta = 0.02, p = 0.034)] were significantly associated with BMI and %BF over the 18 months. **Conclusion:** Adiposity is associated with risk of eating disorders during adolescence. This finding is crucial as obesity and eating disorders are each associated with health consequences. Early efforts prior to onset of behavioural patterns that tend to continue over time are as important as on-going prevention and interventions to address these issues in order to prevent tracking of adiposity from adolescence through to adulthood.

PA16: Body Fat Percentage in Predicting Pre-pegnancy Body Mass Index Among Pregnant Women with Depressive Symptoms in Terengganu

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Introduction: Latest studies have shown that body fat percentages (BF%) and pre-pregnancy obesity were associated with an increased risk of developing depressive symptoms during pregnancy. However, there are still some controversial issues about this association. **Objectives**: Therefore, this cross-sectional study aimed to determine the association of BF% with depressive symptoms; and to explore the applicability of pre-pregnancy Body Mass Index (BMI) in predicting BF% during pregnancy and its suitable cut off among pregnant women in Terengganu. **Methods**: The socio-demographic characteristics, medical history, factors and symptoms of depression (EPDS) data were collected by using structured questionnaires. Anthropometric comprised current weight, pre-pregnancy weight and height, while the BF% was assessed using Bioelectrical Impedance Analysis. Receiver operating characteristic (ROC) curve were used to determine the discriminatory ability of BMI in predicting BF%. **Results**: A total of 128 pregnant women were recruited from ten health clinics in Terengganu, aged between 18 to 45 years old. The majority of the respondents were in their third trimester (56.3%), received university education (53.1%), employed (59.4%) and categorized in B40 income range (78.1%). For pre-pregnancy BMI, 48.4% have normal weight, while 44.5% were overweight/obese. The prevalence of depressive symptoms among pregnant women was 11.7%. There was no correlation between BF% and depressive symptoms among pregnant women. Pre-pregnancy BMI was significantly correlated with BF% during pregnancy ($r = 0.519$, $p < 0.001$). The ROC curve had an area under the curve (AUC) of 0.867 (95% CI: 0.840, 0.930). The optimal threshold for BF% in identifying pre-pregnancy BMI was 33.9% which had a specificity and sensitivity of 77.5% and 77.2%, respectively. **Conclusion**: Overall, there was no association between BF% with depressive symptoms among pregnant women in Terengganu. Nevertheless, BF% demonstrate fairly good discriminatory capacity in predicting pre-pregnancy BMI and may be used as an alternative adiposity indicator in pregnant women's health.

PA18: Reduction of Maternal Weight Retention Risk Following Short-Term Postpartum Exercise-Based Intervention: The Result of a Meta-Analysis

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Introduction: Exercise has been suggested as a way to manage the undesirable effects of postnatal weight retention. **Objective:** The purpose of this systematic review was to ascertain the effectiveness of exercise-based interventions (ranged from one day to six-month after delivery) in managing postpartum weight gain, with the following goal of identifying more effective intervention strategies. We searched electronic databases (Web of Science, Scopus, PubMed, Cochrane Central and Google Scholar) for published randomized or non-randomized controlled trials examining the effects of exercise interventions on postpartum weight retention. The odds ratios, relative risks, and standardised mean differences (SMD) for the specific outcomes were aggregated via the comprehensive meta-analysis software. The publication bias was assessed using the Revised Cochrane Risk-of-Bias tool for randomized trials (RoB-2) while the evidence's quality was evaluated by the GRADEpro tool. **Results:** An additional of two subgroup analyses were conducted to compare study treatments and exercise modalities which includes total duration of exercise-based intervention and type of exercise intervention. Fifteen studies met the eligibility criteria, involving 932 participants, 593 of whom were in the exercise intervention group and 482 of whom were in the control group. The principal meta-analysis combined all 13 studies which discovered a SMD on weight loss of approximately -3.12 kg (95% CI -3.48 to -2.76). Further analysis revealed that structured and consistent exercise using exercise tools and/or tracker such as heart rate monitor or exercise tracker/wearable (SMD: -5.11 kg—95% CI -6.02 to -4.21, I^2 = 0%) and combination with rigorous dietary intervention (SMD: -5.69 kg—95% -5.15 to -5.25, I^2 = 0%) was the most effective interventions for weight loss in postpartum women. **Conclusion:** This systematic meta-analysis demonstrates short-term exercise-based intervention efficacy in lowering the risk of postpartum weight retention. Physical activity is advantageous for postpartum women which can result in lifestyle modification that have long-term health benefits.

PA19: Sarcopenic Obesity Among Older Adults in an Urban Area of Malaysia: Prevalence and Determinants

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Introduction: Sarcopenic obesity (SO) is characterised by the coexistence of sarcopenia and obesity due to multiple factors, most notably in the elderly. It has been postulated that the synergistic effect of sarcopenia and obesity leads to other unfavourable health consequences. **Objective:** The purpose of this cross-sectional study was to ascertain the prevalence and predictors of SO in 102 older adults in Kuala Lumpur. Sarcopenia was defined as skeletal muscle mass index (SMI) less than 6.42 kg/m² and 8.87 kg/m² for women and men. Obesity refers to Body mass index (BMI) ≥30.0 kg/m^2. **Methods:** Data on socioeconomic status (SES), multimorbidity, physical activity, and frail psychosocial status were collected via an interview-based questionnaire. BMI, calf circumference, body composition, and handgrip strength were determined. **Results:** The majority of the participants were between the ages of 60 and 69 (76%), female (53%), married (73%), had completed secondary or tertiary education (79%) and had a monthly household income greater than RM1200 (64%). The mean age of the participants was 66.63 ± 5.22 years. The prevalence of SO was 14.7%. A binomial logistic regression analysis reveals that participants with multiple morbidities (OR = 1.69, CI: 1.04 - 2.8), a higher BFP (OR = 1.27, CI: 1.09-1.48), and a higher household income (OR = 1.00, CI: 1.00 - 1.01) are more likely to exhibit SO. **Conclusion:** Future research could be conducted to elucidate the multifactorial nature of the issue and to recommend appropriate nutrition interventions for SO prevention and management for older adults.

PA20: The Effects of Socio-Demographic Characteristics and Dietary Intake on Cognitive Health of Middle-Aged and Older Malaysian Adults in Segamat, Johor

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Introduction: As the age increase, the risk of develop cognitive impairment is higher. Lifestyle factor such as diet can be a modifiable factor to preserve cognitive function. **Objective:** The aim of this study was to determine the correlation between dietary intake, socio-demographic and cognitive health. **Methods:** This cross-sectional study was conducted among middle-aged and older adults (50 - 75 years old) in Segamat, Johor. Anthropometric data (weight and height) were taken from the respondent. Dietary data were collected by using 1- day 24hour dietary recall and were analysed by using NutritionistPro 7.5.0 Cognitive function was assessed by using Mini Mental State Examination (MMSE) for screening and Montreal Cognitive assessment (MoCA). All statistical analyses were performed by using Statistical Package for Social Sciences (SPSS) for Windows version 20.0. **Results:** The prevalence of cognitive impairment among middle-aged and elderly was 87.1%. It was not associated with socio-demographic factors (age, ethnicity gender, marital status, education level, employment status, total income, and BMI). **Conclusion:** Cognitive impairment risk were high among the population in Segamat. In this study, there were no significant association between sociodemographic and development of cognitive impairment. This study can be used for future research to develop nutritional intervention strategies to prevent cognitive decline.

PA21: A Geospatial Approach in The Assessment of BMI And Dietary Patterns Among Adults at Peninsular Malaysia

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Introduction: The role of environmental influence was often neglected in the assessment of BMI and associated dietary patterns. Geospatial approach had been recommended to assess environmental influence and identify spatial clusters of obesity and dietary patterns for precise public health strategies. **Objective**: This study aims to assess the spatial distribution of BMI and dietary patterns and their potential spatial overlap (similar locations) among MANS 2014 and NHMS 2015 respondents at Peninsular Malaysia. **Methods**: Data on location (latitude and longitude), measured BMI (n = 14219) and self-reported food intake (n = 1647) of respondents aged 18-59 years old were utilized. Three dietary patterns (Western, Healthy and Traditional) were derived with principal component analysis using the intake frequencies of 18 food groups aggregated from 126 foods types from MANS 2014. Spatial distribution was assessed with the Global Moran's I (general clustering) and Getis-Ord Gi (hotspot analysis) within a neighborhood of 8km buffer distance or five nearest neighbours using the ArcGIS v10 software. **Results**: Spatial clustering of BMI (Moran's index = 0.02; z = 12.95), Western diet (Moran's index = 0.04; z = 4.20), Healthy diet (Moran's index = 0.11; z = 12.08) and Traditional diet (Moran's index = 0.17; z = 19.55) were significant and indicated positive spatial dependence and variability in the environmental influences. Spatial overlapping of lower BMI with higher adherence to Western and Healthy dietary pattern but lower adherence to Traditional diet was identified at similar urban location. The lack of overlap between areas of higher BMI with any dietary patterns highlighted the difficulty in finding direct associations between them. **Conclusion**: Geospatial approaches identified specific areas presenting higher BMI and lower adherence to Healthy diet which could assist in prioritizing public health strategies. Despite no overlapping, significant spatial dependence of BMI and dietary patterns implied that environmental determinants needed to be accounted for in future research.

PA22: Effectiveness of 12-Weeks Lifestyle Intervention on Anthropometry and Biochemical Profile Among Overweight and Obese Healthcare Workers

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Introduction: The prevalence of overweight and obesity in Malaysia has been growing since the past 10 years among the Malaysian population. **Objective:** The present study assessed the effectiveness of 12-weeks lifestyle intervention program on anthropometry and biochemical assessments among overweight and obese healthcare workers before and after the intervention. **Methods:** Quasi-experimental design was adopted in the two study worksites, one group for intervention group and the other one is control group. The intervention group was subjected to lifestyle intervention program comprising of nutrition education, physical activity session, psychological well-being education and sleep quality assessment followed by post-test assessment while control group did not receive any educational material. **Results:** Sixty-seven healthcare workers were enrolled in the study (33 -Intervention Group, 34 -control group). Significant differences were seen in the decrease in weight status (75.64 ± 17.43kg vs 74.64 ± 18.16kg; $p < 0.001$), BMI (30.32 ± 5.2 vs 29.90 ± 5.50 kg/m2; $p < 0.003$) and waist circumference (91.45 ± 10.70cm vs 88.46 ± 11.48cm; $p < 0.001$) was found ($p < 0.05$). Significant differences in the decrease in biochemical profiles in the intervention group for total cholesterol (5.22 ± 0.987mmol vs 4.8 ± 0.85; $p < 0.001$) and fasting blood glucose (5.97 ± 5.72g/dl vs 4.93 ± 0.47; $p < 0.01$). **Conclusions:** The 12-week lifestyle intervention program was effective in changing the anthropometry and biochemical of healthcare workers.

PA23: Changes of Body Composition Among Primary School Children in Batu Pahat District, Johor: A 6-Month Follow-up Study

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Introduction: The prevalence of childhood obesity is on the rise and Malaysia has the second highest rate of childhood obesity in Southeast Asia. Obese children are more likely to grow into obese adults and develop non-communicable diseases. **Objective:** This study aims to describe the body composition changes of the primary school children based on body mass index (BMI)-for-age, waist circumference (WC) and body fat percentage (BF%) within six months. **Methods:** The present study involved 253 school children (aged 7 to 11 years) from six primary schools in Batu Pahat district of Johor. Anthropometric measurements were implemented according to the International Society for the Advancement of Kinanthropometry method (ISAK). Children's body weight and height were measured by using stadiometer and digital weighing scale. WC of children was measured by using Lufkin tape. BF% was assessed using Omron Body Fat Analyser for children aged 10 years and above. **Results:** There were 46.6% of boys and 53.4% of girls, while the mean age of boys were 9.1 ± 1.4 years and 8.9 ± 1.3 years for girls, respectively. The prevalence of OW and OB increased from 36.4% of boys and 25.2% of girls at baseline to 38.1% of boys ($X^2 = 0.881$, $p < 0.05$) and 30.4% of girls ($X^2 = 0.902$, $p < 0.05$), respectively. Further, the prevalence of children with high WC increased by 5.1% in boys ($X^2 = 0.713$, $p < 0.05$) and 4.5% in girls ($X^2 = 0.737$, $p < 0.05$), respectively. Boys and girls with high BF% increased from 53.8% and 19.6% to 61.5% ($X^2 = 0.695$, $p < 0.05$) and 26.1% ($X^2 = 0.705$, $p < 0.05$), respectively. **Conclusion:** Boys were more likely to be affected with overweight and obesity problems than girls. There were significant changes in body composition for both boys and girls within six months. Nutrition and health promotion interventions should be undertaken the soonest in preventing childhood obesity.

PA24: Associations of Maternal Pre-pregnancy BMI and Gestational Weight Gain with Infant Growth During the First Year of Life

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Introduction: The first 1000 days of life is a critical period for infant growth and has been linked to long-term health outcomes. Identifying prenatal factors that contribute to infant growth during this critical period is important for primary prevention strategies. **Objective:** This study aim to determine the associations of maternal pre-pregnancy body mass index (BMI) and gestational weight gain (GWG) with physical growth of infants. **Methods:** A total of 380 pregnant women were recruited during third trimester from six selected government health clinics in Selangor and Kuala Lumpur, Malaysia and their children were followed up prospectively at three-,six-, and 12-months of age. Anthropometric data of the pregnant women and infants were extracted from medical records. Pre-pregnancy BMI was categorised using WHO classification, while GWG was determined based on Institute of Medicine (IOM) recommendations. Infant growth was assessed by z-scores and classified using WHO Child Growth Standards. **Results:** About one-third of the women were overweight or obese (38.4%) and 7.9% were underweight before pregnant. While 30.8% of the pregnant women had inadequate GWG throughout pregnancy, 29.5% had excessive GWG. The prevalence of stunting, underweight, and wasting in infants showed an increasing trend over the first year of life, with the prevalence increased to 16.3%, 11.6% and 7.6%, respectively at 12 months. After adjustment for confounding factors, results from the multivariable generalised linear mixed model showed that maternal pre-pregnancy obese was associated with increased weight-for-length (B = 0.57, 95% CI = 0.21 - 0.93), weight-for-age (B = 0.33, 95% CI = 0.02 - 0.64), and BMI-for-age (B = 0.61, 95% CI = 0.23 - 0.98) in infants at 12 months. Meanwhile, maternal excessive GWG was associated with increased weight-for-length (B = 0.34, 95% CI = 0.08 - 0.61) and BMI-for-age (B = 0.30, 95% CI = 0.02 - 0.57). **Conclusion:** Maternal pre-pregnancy obesity and excessive weight gain throughout pregnancy were positively associated infant growth during the first year of life. This study highlights the importance of the preconception and prenatal periods for prevention of childhood obesity.

PA26: Do the Malnourished Children Food Secure? Findings From Rural Household in Malaysia

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Introduction: Food insecurity is a prevalent occurrence in Malaysian households. Nevertheless, there was a paucity in statistics pertaining the relationship between household food security status in malnourished and well-nourished children. **Objective:** The aims are: 1) to determine the household food security status and its relationship in malnourished and well-nourished children, 2) to assess the nutrient consumption in malnourished and well-nourished children aged six to 60 months. **Methods:** Approximately 52 malnourished children (cases) and 50 well-nourished children (controls) participated in a community-based case-control study in Kuala Langat, Selangor. The age, gender, and residence location of the case group individuals were matched to those of the control group. The Food Security Survey Module (FSSM) was used to measure household food security for a family. A three-days 24-hour diet recall (2 weekdays and 1 weekend) were completed upon estimating nutrients consumption through daily food intake in both groups. **Results:** Descriptively, more than two-third of the case (76.9%) and control (76.0%) groups were ranked as food secure, while 23.1% (cases) and 24.0% (controls) struggled with food insecurity. Statistically, a chi-square test revealed that there was no significant relationship ($p = 0.876$) detected on household food security status among cases and controls. However, some nutrients namely energy, carbohydrate, protein, fat, calcium, vitamin A and zinc were significantly lower in malnourished children as compared to well-nourished children ($p < 0.05$). **Conclusion:** Household food security status was not significantly related to malnourished and well-nourished children. Malnourished children had lower levels of several nutrients than children who were adequately fed. Despite the fact that household food security status and nutritional status of children are unrelated, nutrient dense meals should be provided to the child to ensure that the essential nutrients are sufficient in achieving optimum growth in accordance with the growth chart as prescribed by the World Health Organization.

PA28: Association Between Anthropometric Status and Lipid Profile Among Malay Adolescents in Kuala Lumpur

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Introduction: Increasing prevalence of overweight and obesity among children and adolescents has been associated with syndrome metabolic and linked to other diet-related chronic diseases in adulthood. **Objective:** This study was carried out to identify the association between antropometric status and lipid profile among young adolescents in Kuala Lumpur. **Methods:** A total of 277 healthy Malay adolescents (116 boys; 161 girls) aged 10 to 14 years were recruited from primary and secondary schools in Kuala Lumpur using single-stage cluster sampling method. Socio-demographic information was obtained from parent-administered questionnaire. Anthropometric measurements, including body weight, height and waist circumference were assessed; and weight status was classified using BMI-for-age z-scores (BAZ) based on 2007 WHO growth reference. Body composition was estimated through bioelectrical impedance analysis. Blood lipid profile comprising triglyceride (TG), high-density lipoprotein cholesterol (HDL-C), low density-lipoprotein LDL cholestrol (LDL-C) and total cholesterol (TC) were determined using overnight fasting blood sample. **Results:** Mean age was 11.6 ± 1.4 years; mean height, weight, BAZ and waist circumference were 143.4 ± 10.6 cm, 38.0 ± 18.0 kg, -0.2 ± 1.6SD, and 63.5 ± 12.7 cm, respectively. Some 30.7% of subjects were overweight or obese and 18.8% have abdominal obesity. Mean body fat in boys and girls were 24.3% and 25.9%, respectively. Mean TC, HDL-C, LDL-C are 4.5 ± 0.8 mmol/L, 1.6 ± 0.4 mmol/L, and 2.6 ± 0.71 mmol/L, respectively. Some 7.1% of subjects had hypertriglyceridemia. Regression analysis showed that adolescents who were overweight or obese had nearly 6 times higher odds of having hyperlipidemia (OR = 5.9; 95%CI = 2.0 - 18.0; $p < 0.01$) as compared to normal and underweight group. **Conclusion:** In conclusion, overweight and obesity are linked to hyperlipidemia, and consistent monitoring of school children's BMI status is crucial to prevent hyperlipidemia from young.

PA29: Higher Chewing Associated with Favorable Anthropometric Indices of Obesity: Finding From 3-Day Self Recorded Video-Based Dietary Assessment in Free-Living Adults

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Introduction: To date, studies determining 'overweight/obese eating style' have produced equivocal results, the different methodological approaches employed by these studies may have altered the conscious nature during the masticatory process, consequently affecting the results. **Objective:** The purpose of this investigation was to determine the masticatory characteristics and their association with anthropometric indices of obesity in the free-living population. Following a series of anthropometric measurements, participants were asked to video record (using a personal mobile phone) their dietary intake continuously for five days, with the recording of the final three days averaged for the assessment of chewing characteristics (chewing cycle, chewing rate, and chewing duration). Appetite ratings were assessed prior to and immediately at the end of each meal. **Results:** From 58 fully dentulous young adults show that overweight/obese participants have a significantly greater number of chewing count ($p < 0.05$) compared to normal-weight participants. There was a significant negative correlation between anthropometric indices measured (body mass index, waist-to-hip ratio, waist-to-height ratio) and the number of chewing counts (all $p < 0.5$). **Conclusion:** In conclusion, these results suggest that chewing behaviour is associated with anthropometric indices of obesity in the young adult population.

Body Composition and Sports Performance

PB01: Body Mass Index: A Predictive Measure of Body Fatness

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Introduction: The body mass index (BMI) has been the most commonly used as a screening test to characterize body fatness or adiposity in individual. However, BMI has been criticized as being an inaccurate measure of body fatness among active individuals. **Objective:** Therefore, the aim of this study was to identify the relationship between BMI and waist to hip ratio (WHR), percentage of body fat (PBF) and visceral fat (VF) among active individuals. **Methods:** A cross-sectional study involving 242 sports science students was participated in this study. BMI, WHR, PBF and VF were measured using Bioelectrical Impedance Analysis (BIA). **Results:** There was a positive relationship between BMI and WHR, PBF and VF. Results show high correlation between BMI and WHR, $r = 0.615$, $p = 0.001$. While moderate correlation between BMI and PBF, $r = 0.421$, $p = 0.001$. Besides, there was high correlation between BMI and VF, $r = 0.529$, $p = 0.001$. **Conclusion:** Based on the results, BMI was moderate to high relationship between WHR, PBF and VF. This indicates that the higher the person's BMI, the higher the WHR, PBF and VF. Therefore, BMI can be considered as one of reliable assessment to determine body fatness among active individuals.

PB02: Does Body Fat Percentage Associate with Change of Direction and Explosive Power Performance in Varsity Football Players?

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Introduction: Body composition has been known to play an important criterion in athletic development for specific sports, including football. **Objective:** This study aims to identify the association between football athletes' body fat percentage with their performances in change of direction and explosive power performance. **Methods:** Body mass, height, and body fat percentage of 43 male varsity football players (age: 18.7 ± 1.1 years; height: 1.69 ± .05 m; mass: 62.2 ± 5.9 kg) from U19 and U21 teams were recorded during the pre-season screening. All players completed an arrowhead and vertical jump test, where their best results were recorded. Correlation and regression analyses were conducted to identify the relationship between body fat percentage, arrowhead time, and peak and average power. **Results:** Peak power and average power were significant and moderately correlated with body fat percentage (peak power: r = .359, p = .018; average power: r = .381, p = .012), while arrowhead time displayed no significant correlation with body fat percentage (p = .781). Regression analyses revealed that body fat percentage may be a unique predictor to peak power and average power (peak power: $\beta_{\text{body fat percentage}}$ = 60.548, *p* = .019; average power: $\beta_{\text{body fat percentage}}$ = 34.717, p = .012) outputs. **Conclusion:** Body composition may provide coaches and trainers considerable insight of varsity football player' explosive performances to develop suitable training programs.

PB03: Comparison of High-Intensity Interval Training and High-Intensity Resistance Training in Reducing Body Fat Percentage and Improving Aerobic Fitness

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Introduction: The global prevalence of being overweight or obese has increased, and this has been associated with increased risk factors for cardiovascular disease and metabolic syndrome. Existing studies had not directly compared the effects of HIT and HIRT in reducing body fat and improving aerobic fitness. **Objective:** To compare the effects of six weeks of HIIT and HIRT on body fat percentage and aerobic fitness among overweight female adults. **Methods:** Fourteen sedentary overweight female adults (aged 22.57 ± 1.40 years, heights = 155.93± 2.84cm, weights = 63.46 ± 5.87 kg and BMI = 26.08 ± 2.03 kg/m^2) were recruited and randomly assigned into one of two groups: HIIT (*n* = 7, 90% of HR max or RPE of 18, which included 12 types of bodyweight exercises performed for 30 seconds with 10 seconds of transition time between bouts of exercises in 2 to 3 sets) or HIRT (*n* = 7, a 70% 1-RM compound of push, pull and squat/lunge movement exercises targeting large muscle groups, with 10 repetitions in 3 sets with 2-minute rest intervals). Body weight and body fat percentage were measured using bioelectrical impedance analysis (Omron Karada Scan HBF-212). Height was measured using a stadiometer to the nearest 0.1cm. In terms of aerobic fitness, a 20m multistage shuttle run test was performed. A 48-hour recovery period between sessions was employed for both training programmes. **Results:** HIIT and HIRT showed comparable effects within the groups in terms of body fat percentage (HIIT = - 1.96%, HIRT = -2.6%) and aerobic fitness (HIIT = 3.47%, HIRT = 8.16%). Comparing the two training programmes, HIRT improved aerobic fitness more significantly than HIIT, but not body fat percentage. **Conclusion:** Both HIIT and HIRT were effective in reducing body fat percentage and improving aerobic fitness among overweight female adults over a six-week period.

PB04: Weight Self-Stigma and Its Relationship with Body Mass Index and Levels of Physical Activity Among University Students

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Introduction: The rising prevalence of overweight and obese adults also applies to emerging adults, that is, university students. Consequently, stigmatisation is widespread, including weight self-stigma. **Objective**: The purpose of this study was to measure the relationship between weight self-stigma with BMI and physical activity among university students and to identify how this relationship differed based on gender. **Methods**: A cross-sectional study was performed among four hundred and ninety-seven (N = 497) university students from UiTM Samarahan Campus Sarawak, which was sampled using a stratified sampling technique. The Weight Self-Stigma Questionnaire and the International Physical Activity Questionnaire (IPAQ) were distributed online platform to gather the student's weight self-stigmas and levels of physical activity. Body weight and height were gathered during the survey using self-reported measurement. **Results**: Half the sample had a normal BMI (54.7%) and 20.5% were underweight. Those overweight comprised 24.9% of the sample. Regarding the level of physical activity, the majority were moderately active (51.7%) or sedentary (42.8%). Few were highly active (5.6%). Significant relationships were identified between weight self-stigma with BMI ($r = 0.375$, $p = 0.01$) and physical activity ($r = -0.178$, $p = 0.01$). In the comparison based on gender, females perceived greater weight-self stigma than males ($t = -3.04$, $p = .003$) ($p < .05$). **Conclusion**: Weight self-stigma increased when BMI was higher. In contrast, weight self-stigma decreased with higher levels of physical activity. The results also revealed that female university students experienced greater self-stigma concerning their body weight and shape than male university students. The study recommends educating university students on self-acceptance regardless of their body weight and shape, as well as inculcating healthy and active lifestyles lifestyle behaviours.

PB05: Assessment of the Impact of Movement Control Order (MCO) During COVID-19 Pandemic on the Body Composition of Sports School Athletes

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Introduction: There is limited information on the changes in body composition among sport school athletes during COVID-19 pandemic in Malaysia from sports background. **Objective:** The aim of the study was to determine the impact of the COVID-19 pandemic on the body composition of sports school athletes. **Methods:** The study was conducted by assessing the secondary data from Dietetic Clinic in one of the Sports Schools in Malaysia. The data included the record of body composition for 193 sports school athletes bases on different sports categories that were taken during MCO phase one from January until August 2020. The data was collected by using Bioelectrical Impedance Analysis. **Results:** During the MCO, 76.0% of the total sports school athletes gained weight, 81% of them gained body fat mass and 48% of them lost body muscle mass. On average, female athletes gained body fat mass by +2.5kg and lost body muscle mass by -0.5kg with p-value < 0.05 on both fat and muscle change value compared to male athletes. Athletes who continued self-training at home under coaches' online training throughout the pandemic experienced significant muscle mass gain of +0.34kg, meanwhile, athletes who did not continue training at home had significantly lost muscle mass by -0.45kg with p > 0.05. **Conclusion:** During MCO, the sports school athletes experienced fat mass gain and the result was better which means less fat mass gain in group of athletes who continued the training at home. The survey was done among sports school students and the results may be worse among ordinary school students. The online training programmes provided by the coaches and dietetic advice by dietitians are important to maintain the body composition among sports school athletes during MCO.

PB06: Gender Specific Response of Overweight Young Adults to Sprint Interval Training on Anthropometric Variables

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Introduction: Overweight and obesity is related to chronic non-communicable diseases and it is important to build a body composition that can reduce the risk of mortality and morbidity. Sprint interval training (SIT) is proven to improve skeletal muscle mass and enhance fat oxidation. But, there is scarcity with regards to gender specific response of overweight adults to SIT on anthropometric variables. **Objective:** To compare the effectiveness of SIT on anthropometric variables between overweight young men and women. **Methods:** A quasi-experimental study recruiting 35 young (18 - 25 years) overweight (body mass index [BMI] ≥ 23kg/m^2 for Asia-Pacific region) adults were equally assigned to two groups; males (n=18), and females (n = 17). Both groups engaged in SIT (4x30 seconds of all-out effort sprinting interspersed with 4 minutes of recovery) thrice weekly for 6 weeks on an electronic braked cycle ergometer. Primary endpoints were body weight (BW), BMI, waist circumference (WC), body fat percentage (BFP), visceral fat (VF), skeletal muscle mass (SMM), and three skinfolds measurements, assessed at baseline and at end of 6-weeks of SIT. **Results:** Paired t-test demonstrated a significant improvement ($p<0.05$) in all anthropometric measures, however, independent t-test (females vs males) did not demonstrate significant difference in percentages of BW (2.00 ± 1.11 vs 1.39 ± 1.73, p = 0.225), BMI (0.79 ± 0.40 vs 0.50 ± 0.59, p= 0.100), WC (1.77±1.10 vs 2.15 ± 1.44, p = 0.389) BFP (1.07 ± 0.75 vs 1.00 ± 0.83, p = 0.794), VF (0.24 ± 0.44 vs 0.56 ± 0.86, p = 0.176), SMM (0.67 ± 0.50 vs 0.46 ± 0.52 p = 0.224), triceps skinfold (0.22 ± 0.17 vs 0.39 ± 0.45, p = 0.147), thigh skinfold (0.13 ± 0.97 vs 0.28 ± 0.32, p = 0.77), and a significant difference in suprailiac skinfold (0.38 ± 0.27 vs 0.72 ± 0.58, p = 0.037). **Conclusions:** The findings of this study showed that SIT is able to lower BW, BMI, WC, BFP, and increase SMM in both genders. Women lost more BM, BMI, and BFP than men, while men showed more reduction in WC, VS, and subcutaneous skin folds after 6 weeks of SIT.

PB07: The Association of Body Composition With Performance of Adolescent Athletes in Training Centers During Pandemic

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Introduction: The COVID-19 pandemic affected various aspects of life, include implementation of a training center program for adolescent athletes. Due to restrictions on social activities, athletes tend to change exercise patterns and eating patterns which have implications for changes in performance and body composition. **Objective:** This cross-sectional study was aimed to determine the association between body composition and performance of adolescent athletes during the training center in the COVID-19 pandemic. **Methods:** Body composition of athlete include total fat percentage, subcutaneous fat percentage (whole body, trunk, arm, and leg), and the muscle mass percentage (whole body, trunk, arm, and leg) were measured. The body composition was assessed using bioelectrical impedance analysis (BIA). Maximum rate of oxygen consumption (VO_2max) was measured using a Multistage Fitness Test. **Results:** A total of 101 adolescent athletes (male = 38, female = 63) in invasion sport (basketball, futsal, and hockey), concentration sport (bridge, chess, and archery), and net sport (badminton, court tennis, table tennis, and volleyball) were participated in this study. Body composition was significantly associated with gender ($p < 0.001$) but not significantly associated with sport type ($p > 0.05$). VO_2max was significantly associated with gender ($p < 0.001$), VO_2max in net sports was significantly higher compared to concentration ($p < 0.001$) and invasion sport ($p < 0.005$). There was a significant association between VO_2max and total fat ($r = -0.623$, $p < 0.001$), whole body ($r = -0.597$, $p < 0.001$), trunk ($r = -0.572$, $p<0.001$), arm ($r= -0.650$, $p < 0.001$) and leg percentage ($r = -0.645$, $p < 0.001$). There was a significant association between VO_2max with muscle mass on whole body ($r = 0.425$, $p < 0.001$), trunk ($r = 0.627$, $p < 0.001$), arm ($r = 0.576$, $p<0.001$), and leg percentage ($r = 0.583$, $p < 0.001$). **Conclusion:** There was a significant association between body composition and VO_2Max. Gender and sport types of differences affected the VO_2max levels. Thus, it was proved that the importance of body composition could have implications for the performance of teenage athletes. It was also necessary to pay more attention to gender and sports differences in adolescent athletes' performance.

PB09: The Association of Body Mass Index on Physical Activity, Cardiorespiratory Endurance and Skinfold Thickness Among School Children in Rural Area

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Introduction: Physical fitness is partially determined genetically, but it can be influenced by environmental factors. Children from rural areas live in an unstable socio-economic environment and are susceptible to various negative factors that affect their health. This environmental exposure can affect lifestyle, cardiovascular risk, body composition and physical activity. **Objective:** This study aimed to determine the body mass index of children from rural areas and explored its association with physical activity, cardiorespiratory endurance and skinfold thickness. **Methods:** This study was conducted at selected primary schools in Teluk Intan, Perak. The height and weight of each student were measured. They were also required to complete 1,600 meters run or walk for a cardiorespiratory endurance test and complete the Children's Leisure Activities Study Survey (CLASS). **Results:** A total of 141 children aged 10 to 12 years old participated in this study. These children were classified based on bodyweight category: 6 children were underweight, 68 with normal BMI, 31 were overweight and 36 were obese. This descriptive data showed that (47.5%) were overweight and obese. There was no significant correlation on physical activity ($r = 0.019$, $p > 0.05$) between body mass index meanwhile, there was a significant correlation between cardiovascular endurance ($r = -0.84$, $p < 0.001$) and skinfold thickness ($r = 0.691$, $p < 0.001$) between body mass index of the school children. **Conclusion:** In conclusion, educating children on the benefits of engaging actively in physical activities, as well as healthy food intake need to come to a major concern to both teachers and parents. Children need to be less involved in sedentary activities such as watching television and play e-games. Children need to have this awareness to increase their daily physical activity engagement which leads them to become healthier and live a healthy lifestyle.

PB10: The Association of Age, Gender and Body Mass Index on Heart Rate Recovery After Exercise Among Recreational

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Introduction: Physical activity is a movement produced by skeletal muscles which require energy expenditure. It is imperative in having a healthy lifestyle since it can reduce the risk of non-communicable diseases (NCD) such as coronary artery disease and stroke. However, to determine a person's cardiovascular health, the important indicators need to be focused on include heart rate recovery (HRR), age, gender, and body mass index (BMI). **Objective:** The purpose of this study was to investigate the relationship between HRR towards age, gender and BMI after exercise among recreational participants in Pekan, Pahang. **Methods:** A total of seventy participants (n = 70) voluntarily participated in this study, aged between 20 and 49 years old. This study used YMCA 3-Minutes Step Test or physical activity. Resting heart rate (RHR) was taken before the test, while HRR was taken after the test. During the recovery phase, heart rate was taken every two minutes until the 10th minute after the test. **Results:** Pearson correlation was used to analyse the association of age, gender and BMI on HRR after exercise. The result showed that there is no significant correlation between gender and HRR after exercise ($r = 0.133$, $p > 0.05$) meanwhile, in contrast there are significant correlation on age ($r = -0.305$, $p < 0.01$), and BMI ($r = 0.283$, $p < 0.01$) with HRR after exercise. **Conclusion:** In conclusion, the findings of this study indicated that age and BMI can affect the HRR after exercise. Therefore, the finding of this study may assist for those with low HRR to alert on importance of HRR as it reflects to risk of mortality. Future study may compare between gender since no relationship had been found between gender and HRR after exercise in this study.

PB12: The "Fat but Fit" Paradigm: A Cluster Analysis Among School-Aged Children

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Introduction: The "fat but fit" paradigm addresses that moderate to high levels of cardiorespiratory fitness may counteract the negative impacts of obesity on cardiometabolic risk. **Objective:** This cross-sectional study aimed to determine whether the "fat but fit" paradigm exists among the school-aged children. **Methods:** A total of 409 school-aged children (male: 71.9%; female: 28.1%) were recruited, with a mean age of 9.69 ± 1.49 years, were recruited. Their anthropometry and body composition were measured as BMI-for-age (BAZ) and body fat percentage (BF%), respectively. The cardiorespiratory fitness of the children was assessed through 3-min Kasch Pulse Recovery Test and was express as maximum oxygen consumption (VO2 max) estimate. Cluster analysis was then conducted between BF% and VO2 max estimate. **Results:** The BAZ, BF%, and VO2 max estimate of the children were -0.022 ± 1.61, 21.58 ± 9.74%, 33.96 ± 5.93 ml/kg/min, respectively. The cluster analysis of body fat percentage and VO2 max estimate z-scores shown that there were four cluster groups of "fat but fit" paradigm, namely fat fit (FF), fat unfit (FU), unfat fit (UF), and unfat unfit (UU). Almost half of the children (n = 202) were UF, whereas 21.8%, 17.8%, and 11.0% of them were categorized as UU, FF, and FU, respectively. Analysis of Variance (ANOVA) also showed an increasing trend by cluster category (FU < UU < FF < UF) in terms of VO2 max estimate, as well as a decreasing trend (FU > FF > UU > UF) in terms of adiposity. **Conclusion:** The present study suggested that "fat but fit" paradigm could exist among school-aged children in Malaysia. Future studies should be conducted to investigate the mediation effect of cardiorespiratory fitness in the relationship between childhood obesity and cardiometabolic risk.

Clinical Applications of Body Composition Measurement

PC01: Associations of Body Compositions with Sleep Quality Among Haemodialysis Patients

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Introduction: There is increasing evidence that poor sleep quality among haemodialysis (HD) patients is prevalent, at which determinants of poor sleep quality are often under-studied. **Objective:** This study aimed to determine the prevalence of sleep quality and its associated factors among HD patients. **Methods:** This was a cross-sectional study involved 100 eligible HD patients in the central region of Malaysia. Socio-demographic background of patients was obtained through self-administered questionnaire while anthropometric and biochemical parameters were obtained via dialysis record books as secondary data. Handgrip strength as measured using hand dynamometer was used as the proxy measure of lean body mass. Pittsburgh Sleep Quality Index (PSQI) was used to assess sleep quality. **Results:** A majority of the patients were within 55 – 64 years old with unsatisfactory financial status, had hypoalbuminemia, hyperkalemia and hyperphosphatemia. Approximately 70% of patients were poor sleepers with a total of 60% of them slept less than 6 hours per day. A majority of patients had sleep disturbances, longer sleep latency and daytime dysfunction. Double burden malnutrition exists in this study cohort, with approximately 30% and 20% of them were malnourished and obese, respectively. Despite HD patients who were slightly overweight tend to have higher survival rate due to reverse epidemiology, the extremely high prevalence of central obesity (69%) as represented by the excessive waist circumference (WC) and the high prevalence of low lean mass (84%) as presented by low grip strength deserves closer monitoring. Body Mass Index was associated significantly with both WC and lean mass, whereas WC was correlated with lean mass. Patients with low WC had poor sleep quality. **Conclusions:** Undesirable muscle wasting, and excessive fat accumulation signify the need for appropriate intervention. Future research is recommended to delineate effect of body compositions on sleep quality among HD patients.

PC02: Investigating the Relationship Between Vitamin D Status and Metabolic Traits Using a Genetic Approach in a Brazilian Population

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Introduction: Several studies have shown a link between vitamin D status and metabolic diseases. However, the findings have been inconsistent. **Objective:** In this study, we have used a genetic approach to examine this relationship in a Brazilian population, given that genetic associations are less prone to confounding. **Methods:** A total of 187 healthy young adults (aged 19–24 years) from the Federal University of Goiás, Brazil underwent anthropometric, biochemical, dietary intake analysis and genetic tests. Genetic risk scores (GRS) based on six vitamin D associated single nucleotide polymorphisms (SNPs) (vitamin D-GRS) and ten metabolic disease associated SNPs (metabolic-GRS) were constructed. **Results:** After adjusting for potential confounders including body mass index (BMI), the high vitamin D-GRS was significantly associated with low vitamin D status (p = 0.001) and the high metabolic-GRS was significantly associated with increased fasting insulin (p = 0.045). **Conclusion:** In summary, the associations between vitamin D-related GRS and vitamin D status and metabolic-related GRS and fasting insulin levels are independent of BMI suggesting that BMI might not play a significant role in mediating these associations in these Brazilian young adults. Further investigation using other body composition markers in a larger cohort are required to confirm our findings.

PC03: Association of Picky Eating Behaviour with Socio-Demography, Anthropometry, Maternal Factor and Home Environment Among Public Pre-school Children in Tampin, Negeri Sembilan

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Introduction: Child picky eating behaviour is often associated with less nutrition variety and a higher risk of being underweight. **Objective:** The study aimed to identify the association between socio-demography, anthropometry, maternal characteristics and home environment and picky eating behaviour among pre-school children. **Methods:** Mothers of the pre-school-aged children (n=228) answered an online questionnaire. Socio-demography, anthropometry measurement and all questionnaires were self-reported. Family meal routine and feeding practice were measured using Family Ritual Questionnaire and Child Feeding Questionnaire. Picky eating behaviour was assessed using two subscales from the Oregon Research Institute Child Eating Behavior Inventory. SPSS version 25 with significance level set at $p<0.05$ and Pearson's correlation were used to analyze the data. **Results:** The majority of the children were Malays (82%) and girls (51.3%). Most of the children had a normal BMI-for-age z-score (89.5%), while a small percentage was wasted (0.4%). The mean maternal age and income were 33.21 ± 4.37 years and RM1080.30 ± 101.00. The percentages of the mothers' BMI underweight, normal, overweight and obese were 1.8%, 38.6%, 34.2% and 24.1% respectively. The means of family meal routine and television during mealtime were 11.93 ± 3.78 and 2.07 ± 1.08, respectively. The highest score of feeding practice domains was restriction (22.39 ± 5.78), followed by pressure to eat (11.82 ± 3.28) and responsibility (9.43 ± 2.29). The pickiness and refusal subscales of picky eating behaviour had means of 11.79 ± 4.70 and 6.48 ± 6.02, respectively. Household income ($r = 0.145$, $p = 0.029$) was significantly associated with the refusal subscale of picky eating behaviour. Maternal age ($r = -0.138$, $p = 0.037$), parent perceived weight ($r = 0.180$, $p = 0.006$) and monitoring ($r = 0.153$, $p = 0.020$) factors of feeding practice was significantly associated with the pickiness subscale of picky eating behaviour. **Conclusion:** Household income, maternal age, parent's perceived weight and monitoring are important in developing picky eating behaviour among preschool-aged children. Healthcare professionals should emphasize the modifiable factors during the consultation with the family.

PC04: Beyond Body Mass Index – Preoperative Body Composition and Muscle Strength of Breast and Colorectal Cancer Patients

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Introduction: Cancer is a catabolic disease and surgery provides the best hope of cure. Despite predominantly being overweight or obese, colorectal and breast cancer patients could be present with sarcopenia before surgery and subsequent surgery stress could exacerbate muscle depletion, leading to poor recovery and frailty. **Objective:** This cross-sectional study aimed to determine the muscle and fat mass, handgrip strength (HGS) and prevalence of sarcopenia of breast and colorectal cancer patients undergoing elective surgery. **Methods:** A total of 91 patients were recruited from 2 tertiary government hospitals. HGS was measured using hand dynamometer. Low HGS was defined as <26kg for men and <18kg for women according to Asian Working Group on Sarcopenia (AWGS). Body composition was determined using multifrequency bioelectrical impedance analysis. Low muscle mass was defined by height-adjusted appendicular skeletal muscle index (ASMI) below 7.0 kg/m^2 for men and 5.7 kg/m^2 for women according to AWGS. Sarcopenia was defined by low muscle mass accompanied with low muscle strength. **Results:** The patients were assessed between 7 and 15 days before their elective surgery. About 51% of patients were overweight or obese based on body mass index. There were no gender differences in terms of fat, fat-free and skeletal muscle mass. The median (Q1-Q3) HGS was 34 (30-38) kgF in men and 24 (20-28) kgF in women with men being significantly stronger than women. About 8% were having low HGS. The mean ASMI was 4.7 (± 0.8) kg/m^2 for men and 3.7 (± 0.8) kg/m^2 for women with no significant gender difference. About 90% had low ASMI. Overall, about 8% were sarcopenic. **Conclusion:** Preoperatively, these patients were having low muscle mass and at risk of sarcopenia despite the high BMI. Recent guideline suggested the use of perioperative oral nutritional supplements in preserving muscle protein turnover and improving surgical outcomes.

PC05: The Associations Between Weight Status, Perceived Weight Stigma, and Eating Disturbances with the Consideration of Gender Effects Among Young Adults

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Introduction: Perceived weight stigma (PWS) refers to a stigmatized individual has experienced stereotypes, prejudice, and discrimination because of his/her weight. The evidence presented that overweight was associated with PWS and eating disturbances among university students. However, more information regarding the relationships between them is needed for Asian populations, especially taking gender into the consideration. **Objective**: The current study aimed to investigate the associations between PWS, weight status, and eating disturbances among Hong Kong and Taiwan young adults. We proposed that there was a relationship between PWS, weight status, and eating disturbances with the consideration of gender differences in the two Asian regions while PWS was a mediator in the association between weight status and eating disturbances. **Methods**: This is a cross-sectional study that involved 705 participants (379 females and 326 males) recruited through convenient sampling in the universities in Hong Kong and Taiwan (400 Hong Kong and 307 Taiwan participants). All participants completed a demographic information sheet, The Three-Factor Eating Questionnaire-18 (TFEQ-R18), and a PWS questionnaire. PROCESS macro model was used to test the mediation role of PWS. **Results**: Our results indicated that the associations between weight status, PWS, and eating disturbances revealed some degrees of gender differences. We found that overweight in both genders was highly associated with PWS. The relationship between weight status and eating disturbances was mediated by PWS (coefficient of indirect effect = 0.03; 95% bootstrapping confidence interval = 0.01, 0.05). Males with overweight and females with normal weight were highly associated with eating disturbances (2.43 ± 0.39 and 2.33 ± 0.39). **Conclusion**: PWS reduction should be a consideration for healthcare providers to reduce eating disturbances among Asian young adults. In sum, our result may guide and emphasize the importance of PWS, eating disturbances and its negative health results, which developing effective interventions to improve health wellbeing.

PC06: Handgrip Strength and Its Correlation With Anthropometric Measures, Body Composition and Biochemical Profile of Gynaecologic Cancer Patients Admitted for Elective Surgery

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Introduction: Handgrip strength (HGS) is reported to be associated with nutritional status and overall body strength. Low preoperative HGS might cause prolonged hospitalisation and increased post-surgery morbidity or mortality. The current study aimed to determine HGS and its correlation with anthropometric measures, body composition and biochemical profile of Gynaecologic Cancer (GC) patients admitted for elective surgery. **Methods**: A cross-sectional study was conducted in GC patients who were admitted for elective surgery. Socio-demographic, clinical, nutritional status, and functional status (HGS) were assessed during admission. HGS was assessed by calibrated Jammar dynamometer. **Results**: Study recruited 124 participants and 69.3% (n = 86) had low preoperative HGS (HGS < 18kg). Mean for age and weight changes past 1-month were 49.9 ± 12.5 years, and -4.9±7.2%. Pearson correlation test revealed that the BMI ($r = 0.19$, $p < 0.05$), weight ($r = 0.30$, $p < 0.01$), muscle mass ($r = 0.29$, $p < 0.01$), fat mass ($r = 0.30$, $p < 0.01$), fat percentage ($r = 0.32$, $p < 0.001$), fat free mass ($r = 0.28$, $p < 0.01$), MUAC ($r = 0.37$, $p < 0.001$), serum albumin ($r = 0.35$, $p < 0.001$), haemoglobin ($r = 0.19$, $p < 0.05$) and energy intake ($r = 0.23$, $p < 0.05$) have significant positive correlation with HGS while percentage weight loss past 1-month ($r = -0.22$, $p < 0.05$), C-reactive protein-albumin ratio ($r = -0.20$, $p < 0.05$) and C-reactive protein ($r = -0.23$, $p < 0.05$) showed negative significant correlation with HGS. Multilinear regression model showed that MUAC and serum albumin were the significant predictors of HGS. **Conclusion**: Low HGS is associated with inadequate total daily energy intake, inflammation, and might delayed post-surgery recovery. The early nutrition assessment and individual management of low preoperative HGS should be conducted in GC patients to optimise nutrition status before surgery.

PC08: Evaluation of Lifestyle Practices Among the Kuala Lumpur Community to Assess the Risk of Cardiovascular Disease

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Introduction: Cardiovascular disease is the leading cause of death among the Malaysian population. Lifestyle practices such as sedentariness, dietary habits, smoking, and alcohol consumption are the established risk factors for cardiovascular disease. **Objective**: This study aimed to determine the lifestyle practices of the Kuala Lumpur community that enhance cardiovascular disease risk. **Methods:** A cross-sectional survey was performed, and data was collected from 278 participants from Kuala Lumpur, aged 18 and above, through a directly administered questionnaire. The information included height and weight measurements to calculate body mass index, physical activity, dietary habits, alcohol consumption, and smoking history. **Results:** Out of 278 respondents 114 (41%) were identified as smokers, 130 (46.8%) were found consuming alcohol, and high BMI was found in 108 (38.8%). There were significant differences among different ethnic groups for alcohol consumption ($p < 0.005$; $\chi^2 = 12.8$) and smoking ($p < 0.0001$;$\chi^2 = 26.63$). Malays were found to be least involved in smoking and alcohol consumption as compared to Chinese and Indian groups. Increased BMI was found in males in comparison to females, and older adults were more affected by overweight and obesity than younger age groups. Of the 278 respondents, only 71(25%) had a high intention for healthy dietary practices, and 82 (29%) showed a high intention to perform an exercise. **Conclusion**: Smoking, alcohol consumption, and increased BMI are significantly pervasive among the Kuala Lumpur community, and these are strong determinants of cardiovascular disease risk. Lifestyle modifications are obligatory to improve the outcome of cardiovascular disease among the Kuala Lumpur community.

PC09: Influence of Body Mass Index on Balance and Mobility Performance Among Community-Dwelling Older Adults

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Introduction: The degradation of postural balance is thought to be a major reason for most types of falls especially among older adults. **Objective:** This cross-sectional study aimed to investigate the relationship between body composition and balance performance among community dwelling older adults. **Methods:** Computerized Postural Balance Performance tests were undertaken using Neurocom® Balance Master force balance platform which computes forces from force transducers under the plate on which the participant stands or moves. Five test protocols of balance performance were assessed on the Balance Master long force plate as follows; i) Modified Clinical Test of Sensory Integration of Balance (mCTSIB), (ii) Limits of stability (LOS), (iii) Sit to Stand (STS), (iv) Walk Across (WA) and (v) Step quick turn (SQT).
All test was repeated three times and the average was used for data analysis. Height (SECA Bodymeter), weight and body composition (BF-418, TANITA, Japan) were measured by trained assessor. BMI was calculated and classified into four categories as proposed by World Health Organisation. **Results:** A total 156 older adults aged 50 years and above were assessed. Majority respondents were classified as having abnormal BMI with the mean BMI was 27.7 ± 4.6kg/m^2. The result of four CDP assessment showed significant correlation with BMI. Walking, sit to stand, static and dynamic balance were significantly correlated with BMI. The overweight group were identified to have more sway distance during turning and slower gait performance. The logistic regression analysis of our study indicated that body mass index is one of the significant risk factors for falls in studied population. The older adult with abnormal BMI exhibits poor balance and mobility. An impaired postural stability could increase risk of falls among older adults. **Conclusion:** The finding suggested it is important to keep normal weight for better postural control and remains good mobility performance for older adults.

PC10: Comparison of Nutritional Status and Factors Associated with Low Handgrip Strength Between Elderly and Non-elderly Malaysian Stroke Survivors

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Introduction: As the incidence of stroke increases with age, stroke-related impairments and their impact on nutritional and functional status remained a great concern for the healthcare providers. **Objective:** This cross-sectional study aimed to compare the nutritional status and factors associated with low handgrip strength (HGS) between elderly and non-elderly stroke survivors who attended the neurology and rehabilitation departments in three public hospitals. **Methods:** Information on socio-demographic characteristics, clinical profiles, risk of malnutrition, dietary intake, nutritional status, and physical activity (PA) levels were acquired. Descriptive analysis and binary logistic regression were performed. **Results:** From a total of 398 respondents, most of them were male (56%), non-elderly (65%), and of ischaemic stroke (71%). More than half of the stroke survivors had low HGS, low PA levels and were presented with abdominal obesity (high waist circumference or waist-to-hip ratio). The elderly group was less active (71% vs 61%) and suffered from poorer nutritional status: low HGS (66% vs 42%), muscle wasting at mid-upper arm circumference (9% vs 2%) and calf circumference (21% vs 8%), low body mass index (41% vs 9%) and inadequate energy intake (44% vs 29%), than their counterparts. High malnutrition risk and wheelchair-bound status were significant factors associated with low HGS in both groups. Meanwhile, male elderly (AOR 2.80, 95% CI: 1.24, 6.33), non-elderly with speech impairment (AOR 2.35, 95% CI: 1.34, 4.12) and a higher number of comorbidities (AOR 1.34, 95% CI: 1.03, 1.76) were at higher odds of having low HGS. **Conclusion:** Many stroke survivors have abnormal body composition, which predisposes them to poor functional recovery and a higher risk of recurrent cerebrovascular events. Patients at high malnutrition risk, wheelchair-bound, male elderly and non-elderly with more comorbidities and speech impairments deserve more attention in stroke rehabilitation therapy as they are at higher risk of having low HGS.