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PSYCHOLOGICAL FACTORS ASSOCIATED WITH BODY WEIGHT STATUS AMONG OVERWEIGHT AND OBESE CHILDREN IN KEDAH, MALAYSIA

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Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in Fulfilment of the Requirements of the Degree of Master of Science

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Childhood obesity was a growing global phenomenon. In Malaysia, 29.8% children and adolescents aged between five to seventeen, were OW or obese (National Health and Morbidity Survey, 2019). Obesity was a multifactorial disorder, associated with biological, environmental and psychological factors which were the prominent variables that plays roles in its pathogenesis. Many studies have been conducted in Malaysia to identify the causes of the childhood obesity. However, there was lack of studies that based on psychological, beliefs or perceived factors that caused the obesity among children. Thus, the cross-sectional study was carried out to determine the association of socio demographic factors, psychological factors towards weight reduction and body weight status (BWS) among overweight (OW) and obese children in Kedah, Malaysia.

The list of OW and obese children from standard 4 and 5 were provided by respective school teachers taken from the National Physical Fitness Standard (SEGAK) test. A total of 398 children aged 10 to 11 years participated in this study, consisting of 221 boys and 117 girls. The proportion of children recruited from the urban and rural school was 61.6% and 38.4% respectively. Based on body mass index (BMI) classification, 24% of participants were identified as OW and 76% obese. Majority of participants (64.6%) were classified under B40 category where 70% of their parents had at least secondary education.

The children were measured for weight, height, waist circumference, hip circumference. They also required to complete the self-administered questionnaire in group guided by researcher, covering socio-demographic profiles and psychological factors of perceived body image, perceived benefits of weight reduction, perceived barriers to weight reduction, perceived self-

efficacy in dietary practice and exercise. The body image perception was adapted from 'The seven male and female child figure rating scale' and the psychological factors scale instrument from the Health Belief Model (HBM).

Overall, 5.8% of the respondents perceived their BWS as underweight and 41% of obese respondents perceived they were not in the obese category. As for socio-demographic factors showed that school locality and father's education level were associated with BMI ($x^2 = 8.49$, $p = 0.004$, $x^2 = 6.61$, $p = 0.037$), WC ($x^2 = 11.05$, $p = 0.001$, $x^2 = 10.04$, $p = 0.007$) and WHtR ($x^2 = 4.97$, $p = 0.026$, $x^2 = 15.31$, $p < 0.001$). Meanwhile, psychology factors such as self-efficacy in exercise (BMI: $x^2 = 8.768$, $p = 0.012$) and perceived BWS (BMI: $x^2 = 15.71$, $p < 0.001$) showed association with children BWS. The study also revealed that household income ($x^2 = 15.70$, $p < 0.001$), parent's education level (mother: $x^2 = 11.59$, $p = 0.003$, father: $x^2 = 12.14$, $p = 0.002$) and parent's occupation level (mother: $x^2 = 19.36$, $p < 0.001$, father: $x^2 = 9.97$, $p = 0.041$) were associated with school locality. Children perceived self-efficacy in exercise was significantly higher in boys ($t = 3.202$, $p = 0.001$) and among urban ($t = - 0.423$, $p = 0.001$) school children. In addition, there was no significant difference between body image and sex.

Logistic regression analysis reported that sex was moderately associated with obesity (BMI) and AO (WHtR), where girls were less likely to be obese than boys and children where the fathers had secondary education level were less likely (BMI (aOR) 0.34: 95% CI 0.10, 1.16) to be obese or AO compared to father with tertiary education level. There were associations between perceived self efficacy in exercise, perceived BWS and BMI. For WC classification, the association was found between perceived BWS and WC ($p = 0.02$, aOR 0.54: 95% CI (0.32,0.91). The results of multiple linear regression analysis showed perceived benefits of weight reduction (BMI: $F (3, 394) = 30.89$, $p = 0.01$), perceived body image (BMI: $F (2, 395) = 42.36$, $p < 0.001$), (WC: $F (2, 395) = 31.03$, $p < 0.001$), (WHtR: $F (2, 395) = 4.93$, $p = 0.008$) as well as body size discrepancy score (BMI : $F (1, 396) = 39.33$, $p < 0.001$), (WC: $F (1, 396) = 39.98$, $p < 0.001$), (WHtR: $F (1, 396) = 5.66$, $p = 0.018$) and perceived self-efficacy in exercise (WC: $F (3, 394) = 25.58$, $p < 0.001$) were the strongest psychological factors contributor towards children BWS. Meanwhile, household income and household size were the most socio-demographic factors contributor towards children BWS. There was association between psychological factor with children BWS (BMI, WC and WHtR). However, from the study, either one of the classifications was recommended to be used to avoid confusion of main contributing factor. Which BWS classifications is more accurate was not studied. According to the literature review, the most widely used measure of weight status is BMI. BMI as dependent variable to ease the comparison between countries. However, alternative health screening methods such as WHtR showed their privilege which easier to conduct and can apply for all ages, sex and locality. Further studies were needed to confirm these findings among the OW and obese children. Effort to design health promotion programs to achieve ideal BWS for OW and obese children should be taken integrating with identified factors.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
Sebagai memenuhi keperluan untuk ijazah Master Sains

FAKTOR PSIKOLOGI YANG BERKAIT DENGAN STATUS BERAT BADAN DALAM KALANGAN KANAK-KANAK YANG BERLEBIHAN BERAT BADAN DAN OBES DI NEGERI KEDAH, MALAYSIA

Oleh

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Obesiti kanak-kanak merupakan fenomena global yang semakin meningkat. Di Malaysia, 29.8% kanak-kanak dan remaja berusia 5-17 tahun mengalami berlebihan berat badan atau obes (Kajian Kesihatan dan Morbiditi Kebangsaan, 2019). Banyak faktor yang mempengaruhi obesiti seperti faktor biologi, persekitaran dan psikologi merupakan pemboleh ubah utama yang berperanan dalam patogenesisnya. Banyak kajian telah dilakukan di Malaysia untuk mengenal pasti penyebab kegemukan dalam kalangan kanak-kanak. Walau bagaimanapun, kajian berdasarkan faktor psikologi atau kepercayaan yang menyebabkan kegemukan adalah kurang. Oleh itu, kajian keratan rentas dijalankan untuk mengetahui hubungan antara faktor sosio-demografi, faktor psikologi dan status berat badan dalam kalangan kanak-kanak yang berlebihan berat badan dan obes di Negeri Kedah, Malaysia.

Senarai kanak-kanak yang mempunyai berat badan berlebihan dan obes dalam tahun 4 dan 5 diberikan oleh guru sekolah berdasarkan ujian Standard Kecergasan Fizikal Nasional (SEGAK). Seramai 398 kanak-kanak berumur 10 hingga 11 tahun, 221 lelaki dan 177 perempuan daripada sebelas sekolah rendah yang dipilih secara rawak di Kedah terlibat dalam kajian ini. Peratusan responden dari bandar (61.6%) dan luar bandar (38.4%). Berdasarkan klasifikasi index jisim tubuh, 24% kanak-kanak dikategorikan sebagai berlebihan berat badan dan 76% obes. Majoriti peserta (64.6%) diklasifikasikan dalam kategori B40 sementara 70% ibu bapa telah mencapai sekurang-kurang pendidikan menengah.

Pengukuran antropometri seperti berat badan, tinggi serta ukur lilit pinggang dan pinggul responden diambil. Responden juga diminta untuk melengkapkan soal selidik secara berkumpulan dan dibantu oleh penyelidik. Borang soal selidik

merangkumi persoalan berkaitan sosio-demografi dan faktor psikologi seperti persepsi imej tubuh badan, persepsi manfaat turun berat badan, persepsi halangan turun berat badan, persepsi keyakinan dalam amalan diet dan senaman. Soal selidik mengenai persepsi imej badan diadaptasi daripada 'skala penilaian angka tujuh lelaki dan wanita' dan instrumen skala faktor psikologi pula diadaptasi daripada Model Kepercayaan Kesihatan.

Keputusan kajian menunjukkan 5.8% responden mempunyai persepsi status berat badan mereka adalah kurang berat badan dan 41% obes responden mempunyau persepsi yang mereka tidak obes. Hasil dari kajian ini menunjukkan terdapat hubungan yang signifikan antara faktor sosio-demografi seperti lokasi sekolah dan tahap pendidikan bapa dengan index jisim tubuh (BMI) ($x^2 = 8.49$, $p = 0.004$, $x^2 = 6.61$, $p = 0.037$), ukur lilit pinggang (WC) ($x^2 = 11.05$, $p = 0.001$, $x^2 = 10.04$, $p = 0.007$) dan nisbah ukur lilit pinggang kepada tinggi (WHtR) ($x^2 = 4.97$, $p = 0.026$, $x^2 = 15.31$, $p < 0.001$). Manakala bagi faktor psikologi pula, terdapat hubungan yang signifikan antara persepsi keyakinan dalam melakukan senaman (BMI: $x^2 = 8.768$, $p = 0.012$), persepsi status berat badan (BMI: $x^2 = 15.71$, $p < 0.001$) dan status berat badan kanak-kanak. Penemuan lain ialah pendapatan isi rumah ($x^2 = 15.70$, $p < 0.001$), tahap pendidikan ibu bapa (ibu: $x^2 = 11.59$, $p < 0.05$, bapa: $x^2 = 12.14$, $p < 0.05$) dan tahap pekerjaan ibu bapa (ibu: $x^2 = 19.36$, $p < 0.001$, bapa: $x^2 = 9.97$, $p < 0.05$) mempunyai hubungan yang signifikan terhadap lokasi sekolah. Persepsi keyakinan kanak-kanak dalam melakukan senaman secara signifikannya lebih tinggi dalam kalangan kanak-kanak lelaki ($t = 3.202$, $p = 0.001$) yang bersekolah di bandar ($t = - 0.423$, $p = 0.001$). Dapatan lain ialah tidak terdapat hubungan yang signifikan di antara persepsi imej tubuh badan dan jantina.

Analisa logistik regrasi menunjukkan jantina mempunyai hubungan yang sederhana dengan obesiti (BMI) and kegemukan (WHtR) di mana kanak-kanak perempuan kurang berisiko menjadi obes dan bapa yang berpendidikan menengah menunjukkan anaknya kurang berisiko untuk menjadi obes (BMI (aOR) 0.34: 95% CI 0.10, 1.16) berbanding bapa yang berpendidikan tinggi. Terdapat hubungan antara persepsi keyakinan dalam melakukan senaman, persepsi status berat badan dan BMI, manakala persepsi status berat badan dan WC ($p = 0.02$, aOR 0.54: 95% CI (0.32,0.91). Keputusan daripada ujian regresi linear menunjukkan persepsi manfaat turun berat badan (BMI: $F (3, 394) = 30.89$, $p = 0.01$), persepsi imej tubuh badan (BMI: $F (2, 395) = 42.36$, $p < 0.001$), (WC: $F (2, 395) = 31.03$, $p < 0.001$), (WHtR: $F (2, 395) = 4.93$, $p = 0.008$) juga skor perbezaan saiz tubuh badan (BMI : $F (1, 396) = 39.33$, $p < 0.001$), (WC: $F (1, 396) = 39.98$, $p < 0.001$), (WHtR: $F (1, 396) = 5.66$, $p = 0.018$) dan persepsi keyakinan dalam melakukan senaman (WC: $F (3, 394) = 25.58$, $p < 0.001$) adalah penyumbang utama kepada status berat badan kanak-kanak. Di samping itu, pendapatan dan saiz isi rumah merupakan penyumbang utama bagi faktor sosio demografi terhadap status berat badan kanak-kanak. Terdapat hubungan di antara faktor penyumbang utama dan status berat badan (BMI, WC, WHtR). Walau bagaimanapun, kajian ini mencadangkan hanya satu klasifikasi status berat badan digunakan bagi mengelakkan kekeliruan untuk mendapatkan faktor penyumbang utama. Kajian ini tidak mengkaji klasifikasi status berat badan mana yang lebih. Berdasarkan kajian literatur, banyak kajian negara-negara lain

menggunakan klasifikasi BMI sebagai variabel bersandar. Ini akan memudahkan untuk melakukan perbandingan hasil kajian antara negara. Walau bagaimanapun, kaedah pengukuran status berat badan lain boleh digunakan sebagai pengukuran alternatif saringan kesihatan seperti WHtR yang lebih mudah dikendalikan dan tidak dipengaruhi oleh peringkat umur, jantina dan lokaliti. Oleh itu, kajian lanjut adalah penting untuk menyesuaikan penemuan ini dan seterusnya diintegrasikan dalam program promosi kesihatan bagi mencapai status berat badan ideal bagi kanak-kanak yang berlebihan berat badan dan obes.

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Contributors

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

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Declaration by Members of Supervisory Committee

This is to conform that:

- the research conducted and the writing of this thesis was under our supervisions
- Supervision responsibilities as stated in the Universiti Putra Malaysia (Graduates Studies) Rules 2003 (Revision 2012-2013) are adhered to.

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LIST OF ABBREVIATIONS

AO	Abdominal obesity
BMI	Body mass index
BWS	Body weigth status
HBM	Health belief model
HC	Hip circumference
Ht	Height
IPH	Institute of Public Health
NHMS	National Health and Morbidity Survey
OW	Overweight
SEGAK	National Physical Fitness Standard test
WC	Waist circumference
WHR	Waist-to-hip ratio
WHtR	Waist-to-height ratio
MREC	Medical Research & Ethics Committee
MOE	Ministry of Education

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