



**UNIVERSITI PUTRA MALAYSIA**

**FACTORS ASSOCIATED WITH BODY WEIGHT STATUS AMONG 15-17 YEAR  
OLD SCHOOL-GOING ADOLESCENTS IN SIBU, MALAYSIA**

**LAW LEH SHII**

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**By**

**LAW LEH SHII**

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

**March 2013  
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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Master of Science

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**LAW LEH SHII**

**March 2013**

**Chair: Mohd Nasir Mohd Taib, DrPH**

**Faculty: Medicine and Health Sciences**

A tremendous increase was observed in the prevalence of childhood overweight and obesity since a decade ago in both developed and developing countries. A study was conducted to determine factors associated with body weight status among school-going adolescents in Sibu, Sarawak, Malaysia.

Sociodemographic, behavioural, psychosocial, and physical environmental factors were assessed by using a self-administered questionnaire. Dietary intake of the students was assessed by 24-hour dietary recall. Weight and height were also measured following standard procedures and body mass index-for-age (BMI-for-age) was determined.

The study was conducted among 375 students 15-17 year old who agreed to participate (male: 32.0%, female: 68.0%; Chinese: 39.5%, Iban: 26.4%, Malay: 17.1%, and Melanau: 17.1%; mean age:  $16.45 \pm 0.53$  years old) out of a total of 665 students at four

public secondary schools in Sibul (Sarawak). Thus, the response rate was calculated to be 56.4%.

Among behavioural factors, two thirds of the students (65.9%) were categorized in low physical activity category (male: 55.8%, female: 70.6%) while only 2.4% (male: 7.5%, female: 0%) were categorized as having a high physical activity level. The mean time spent on sedentary behaviours was  $2678.18 \pm 850.48$  minutes/week (approximately 6.38 hours a day) (male:  $2814.13 \pm 892.53$  minutes/week, female:  $2614.20 \pm 824.01$  minutes/week). For dietary intake, the mean caloric intake was  $1777 \pm 679$  Kcal (male:  $1950 \pm 678$  Kcal, female:  $1695 \pm 665$  Kcal).

With regards to psychosocial factors, one fifth of the students (total: 19.7%, male: 18.3%, female: 20.4%) were found to have disordered eating (EAT-26 score equal to or more than 20). Meanwhile, around 42.9% of the students (male: 36.7%, female: 45.9%) were grouped as having low self-regulatory efficacy for physical activity while only 9.9% (male: 11.7%, female: 9.0%) were found to have high self-regulatory efficacy for physical activity. Almost one fifth of the students (total: 22.1%, male: 25.0%, female: 20.8%) were categorized as having low weight management self-efficacy. Still, majority of the students (total: 63.2%, male: 65.0%, female: 62.4%) were found to have moderate weight management self-efficacy. In addition, around one fifth of the students (total: 18.7%, male: 20.8%, female: 17.6%) had low nutrition self-efficacy but majority of them (total: 65.6%, male: 64.2%, female: 66.3%) were found to have moderate nutrition self-efficacy.

Regarding body image perception, about half of the students (44.0%) wished to have smaller body size, 27.7% wished to have bigger body size, and 28.3% wished to maintain their body size. Moreover, almost one sixth of the students (total: 14.4%, male: 22.5%, female: 10.6%) had low nutrition knowledge but majority of them (total: 73.6%, male: 68.3%, female: 76.1%) was categorized as having moderate nutrition knowledge. Around 31.2% of the students (male: 36.7%, female: 29.4%) were categorized as having a moderate level of perceived sociocultural pressure while another 2.9% (male: 0%, female: 4.3%) were found to have high perceived sociocultural pressure.

For anthropometric measurements, almost 18.6% of the students were found to be overweight and obese (male: 22.5%, female: 16.9%). A low percentage of students (5.0%) were categorized as thin (male: 5.0%, female: 5.1%).

Significant differences in the mean scores between male and female students were found in physical activity level ( $t = 4.241, p = 0.0001$ ), time spent on sedentary behaviours ( $t = 2.134, p = 0.034$ ), self-regulatory efficacy for physical activity ( $t = 2.111, p = 0.035$ ), weight management self-efficacy ( $t = -2.270, p = 0.020$ ), and nutrition knowledge ( $t = -2.003, p = 0.046$ ).

The variables, which were found to have significant relationships with body weight status were eating attitudes ( $r = 0.178, p = 0.001$ ), body discrepancy score ( $r = 0.645, p = 0.0001$ ), land-use mix-diversity ( $r = -0.112, p = 0.030$ ), perceived sociocultural pressure to be thin ( $r = 0.392, p = 0.0001$ ), and breakfast consumption ( $\chi^2 = 6.532, p = 0.038$ ).

Multiple linear regression analysis showed three factors, namely body discrepancy score ( $\beta = 0.576$ ,  $t = 13.360$ ,  $p = 0.0001$ ), perceived sociocultural score to be thin ( $\beta = 0.150$ ,  $t = 3.482$ ,  $p = 0.001$ ), and land-use mix-diversity ( $\beta = -0.097$ ,  $t = -2.490$ ,  $p = 0.012$ ) were found to be the predictors for body weight status.

In conclusion, the present study showed the significant association between body discrepancy score, land-use mix-diversity, and perceived sociocultural pressure to be thin with the body weight status. Future interventions may consider incorporating the identified factors to increase their effectiveness. More studies should be carried out to investigate the interaction between sociodemographic factors, behavioural factors, psychosocial factors, and physical environment factors with body weight status of adolescents.

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

**FAKTOR-FAKTOR BERKAITAN STATUS BERAT BADAN DALAM  
KALANGAN REMAJA BERSEKOLAH, 15-17 TAHUN, DI SIBU, MALAYSIA**

Oleh

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**Mac 2013**

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Peningkatan mendadak dalam prevalens kegemukan dan obesiti di kalangan kanak-kanak telah dikesan sejak satu dekad lalu di negara maju dan negara sedang membangun. Satu penyelidikan telah dijalankan untuk menentukan faktor-faktor yang berkaitan dengan status berat badan remaja bersekolah di Sibu, Sarawak.

Faktor-faktor sosiodemografi, tingkah laku, psikososial, dan persekitaran fizikal telah dinilai dengan menggunakan borang soal selidik yang dijawab sendiri oleh pelajar. Pengambilan diet pelajar ditentukan melalui kaedah ingatan diet 24-jam. Berat dan tinggi telah diukur berpandukan prosedur piawaian dan indeks jisim badan-untuk-umur (BMI-untuk-umur) turut ditentukan.

Penyelidikan telah dijalankan ke atas 375 daripada sejumlah 665 orang pelajar berumur 15-17 tahun (lelaki: 32.0%, perempuan: 68.0%) (Cina: 39.5%, Iban: 26.4%, Melayu:



17.1% dan Melanau: 17.1%) (purata umur:  $16.45 \pm 0.53$  tahun) dari empat buah sekolah menengah awam bertempat di Sibu (Sarawak) yang bersetuju untuk menyertai sesi ujikaji tersebut. Maka, kadar respons yang dikira adalah 56.4%.

Berkenaan dengan faktor-faktor tingkah laku, dua pertiga daripada pelajar (65.9%) tergolong dalam kumpulan yang menjalani aktiviti fizikal rendah (lelaki: 55.8%, perempuan: 70.6%) manakala hanya 2.4% (lelaki: 7.5%, perempuan: 0%) tergolong sebagai golongan yang menjalani aktiviti fizikal tinggi. Min masa digunakan untuk tingkah laku sedentar adalah  $2678.18 \pm 850.48$  minit/minggu (lebih kurang 6.38 jam sehari) (lelaki:  $2814.13 \pm 892.53$  minit/minggu, perempuan:  $2614.20 \pm 824.01$  minit/minggu). Untuk faktor pengambilan diet, min kalori yang diambil adalah  $1777 \pm 679$  Kcal (lelaki:  $1950 \pm 678$  Kcal, perempuan:  $1695 \pm 665$  Kcal).

Berkaitan faktor-faktor psikososial, satu perlima daripada pelajar (keseluruhan: 19.7%, lelaki: 18.3%, perempuan: 20.4%) didapati mengalami pemakanan terganggu. Sementara itu, lebih kurang 42.9% pelajar (lelaki: 36.7%, perempuan: 45.9%) tergolong dalam kumpulan berkeyakinan aktiviti fizikal rendah dan hanya 9.9% (lelaki: 11.7%, perempuan: 9.0%) mempunyai keyakinan aktiviti fizikal tinggi. Lebih kurang satu perlima daripada pelajar (keseluruhan: 22.1%, lelaki: 25.0%, perempuan: 20.8%) tergolong dalam kumpulan berkeyakinan pengurusan berat badan rendah tetapi majoriti daripada mereka (keseluruhan: 63.2%, lelaki: 65.0%, perempuan: 62.4%) didapati mempunyai keyakinan pengurusan berat badan sederhana. Tambahan, satu perlima daripada pelajar (keseluruhan: 18.7%, lelaki: 20.8%, perempuan: 17.6%) didapati rendah dalam keyakinan pemakanan tetapi majoriti daripada mereka (keseluruhan: 65.6%,

lelaki: 64.2%, perempuan: 66.3%) didapati mempunyai keyakinan pemakanan sederhana.

Berkenaan dengan persepsi imej badan, lebih kurang separuh daripada pelajar (44.0%) berhasrat untuk mengurangkan saiz badan, hampir 27.7% berhasrat untuk meningkatkan saiz badan, dan 28.3% berhasrat untuk mengekalkan saiz badan. Di samping itu, satu perenam daripada pelajar (keseluruhan: 14.4%, lelaki: 22.5%, perempuan: 10.6%) tergolong sebagai berpengetahuan pemakanan rendah tetapi majoriti daripada mereka (keseluruhan: 73.6%, lelaki: 68.3%, perempuan: 76.1%) mempunyai pengetahuan pemakanan sederhana. Lebih kurang 31.2% daripada pelajar (lelaki: 36.7%, perempuan: 29.4%) didapati mempunyai tekanan tanggapan sosiobudaya sederhana, dan 2.9% daripada pelajar (lelaki: 0%, perempuan: 4.3%) didapati mempunyai tekanan tanggapan sosiobudaya tinggi.

Untuk ukuran antropometri, lebih kurang 18.6% daripada pelajar didapati mengalami status berat badan berlebihan dan kegemukan (lelaki: 22.5%, perempuan: 16.9%) manakala sekumpulan kecil pelajar (5.0%) tergolong dalam kumpulan kekurusan (lelaki: 5.0%, perempuan: 5.1%).

Perbezaan signifikan dalam min skor antara lelaki dan perempuan dikesan dalam tahap aktiviti fizikal ( $t = 4.241$ ,  $p = 0.0001$ ), masa diluahkan untuk aktiviti sedentar ( $t = 2.134$ ,  $p = 0.034$ ), keyakinan aktiviti fizikal ( $t = 2.111$ ,  $p = 0.035$ ), keyakinan pengurusan berat badan ( $t = -2.270$ ,  $p = 0.020$ ), dan pengetahuan pemakanan ( $t = -2.003$ ,  $p = 0.046$ ).

Pemboleh ubah yang didapati berkadar signifikan dengan status berat badan adalah sikap pemakanan ( $r = 0.178$ ,  $p = 0.001$ ), skor diskrepansi badan ( $r = 0.645$ ,  $p = 0.0001$ ), penggunaan tanah: kepelbagaian ( $r = -0.112$ ,  $p = 0.030$ ), tekanan tanggapan sosiobudaya untuk menjadi kurus ( $r = 0.392$ ,  $p = 0.0001$ ), dan pengambilan sarapan pagi ( $\chi^2 = 6.532$ ,  $p = 0.038$ ).

Analisis regresi linear berganda menunjukkan tiga faktor iaitu skor diskrepansi badan ( $\beta = 0.576$ ,  $t = 13.360$ ,  $p = 0.0001$ ), tekanan tanggapan sosiobudaya untuk menjadi kurus ( $\beta = 0.150$ ,  $t = 3.482$ ,  $p = 0.001$ ), dan penggunaan tanah: kepelbagaian ( $\beta = -0.097$ ,  $t = -2.490$ ,  $p = 0.012$ ) telah dikenalpasti sebagai peramal kepada status berat badan.

Kesimpulan, skor diskrepansi badan, tekanan tanggapan sosiobudaya untuk menjadi kurus, dan penggunaan tanah: kepelbagaian didapati mempunyai sumbangan signifikan ke atas status berat badan di kalangan remaja. Program intervensi pada masa hadapan harus membuat pertimbangan untuk menggabungkan faktor-faktor tersebut dalam perancangannya demi meningkatkan keberkesanan program. Lebih banyak penyelidikan harus dijalankan untuk menyiasat interaksi antara faktor-faktor sosiodemografi, tingkah laku, psikososial, dan persekitaran fizikal dengan status berat badan remaja.

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I certify that a Thesis Examination Committee has met on 14 March 2013 to conduct the final examination of Law Leh Shii on his thesis entitled "Factors Associated with Body Weight Status Among 15-17 Year Old School-Going Adolescents in Sibul, Malaysia" in accordance with the Universities and University Colleges Act in 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The Committee recommends that the student be awarded the Master of Science.

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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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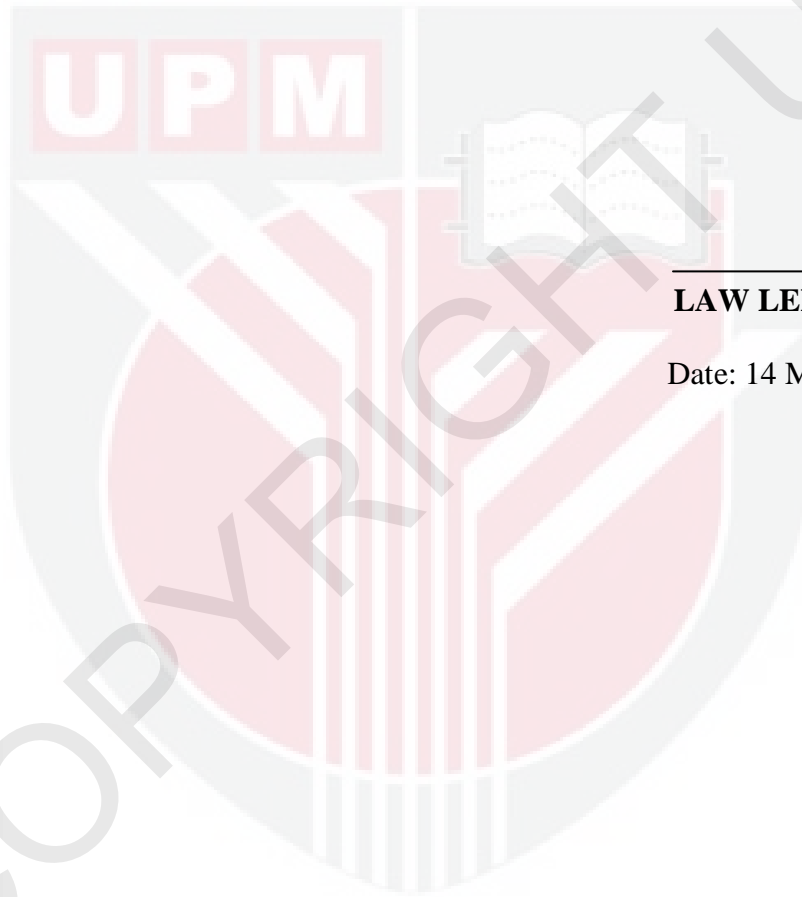
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## **DECLARATION**

I declare that the thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or at any other institution.



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**LAW LEH SHII**

Date: 14 March 2013

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