

# Impaired quality of life in overweight and obese young adults in rural Malaysia

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## ABSTRACT

**Introduction:** The prevalence of overweight and obesity in developing countries is on the rise. It should be taken seriously to decrease the burden on health care and improve the quality of life (QOL). The aim of this cross sectional study was to determine the association of body mass index (BMI) and health-related quality of life (HR-QOL) among young adult in rural area of Malaysia. **Materials and Methods:** The study was conducted among 206 young adults who were randomly sampled from three villages between March and April 2013. All respondents completed a set of questionnaire comprising of socio-demographic data, validated Malay version of WHOQOL-BREF questionnaire to measure HR-QOL and anthropometric measurement. **Results:** The prevalences of overweight and obesity were 32.7% and 18.1% respectively. Univariate analyses showed that employed respondents, age and psychological domain of HR-QOL were significantly associated with BMI category. Linear regression analyses showed that obese young adults have lower mean score for psychological health domain of HR-QOL (adjusted b -5.75, 95%CI: -9.94, -1.55). **Conclusion:** Having ideal body weight can yield important health benefits and may increase the QOL among young adult.

**Keywords:** Body mass index, overweight, obesity, quality of life, young adults

## INTRODUCTION

Progress, globalisation and urbanisation have change the standard of living and lifestyle, including Malaysia. Increase the prevalence of non communicable diseases (NCDs) deterioration in health status of a population are correlated with sedentary lifestyle and poor dietary habit. Obesity is found to be a major determinant to the global burden of disease

such as type II diabetes mellitus, hypertension, cardiovascular disease and certain cancers. <sup>1</sup> Overweight and obesity are defined as an abnormal or excessive state of fat accumulation that may impair someone's health status including health-related quality of life (HR-QOL). <sup>2</sup>

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The National Health and Morbidity Survey (NHMS) conducted by the Malaysia Ministry of Health in 2011 showed an increase in the prevalence of overweight (body mass index 25 to 30 kg/m<sup>2</sup>) and obesity (BMI > 30

kg/m<sup>2</sup>) among Malaysian adult aged 18 years and above (29.4% and 15.1% respectively) compared to previous NHMS conducted in 2006 (28.6% and 14.0% respectively).<sup>3</sup> Obesity was also found to be more prevalent among Malaysian females than males.<sup>4</sup>

Young adults who are obese and overweight might have lower quality of life. HR-QOL is measured in four domains; physical activity, psychological health, social relationship and environment is widely use to assess quality of life. Swallen *et al.*, reported a significant relationship between BMI with general and physical health but not in psychosocial outcomes. Overweight people had significantly worse self-reported health, as well as obese adolescents. Overweight and obese people were also more likely to have low physical health such as functional limitation and illness symptoms.<sup>5</sup>

Therefore, the aim of this study was to determine the association of BMI and the HR-QOL among young adults in rural area of Peninsular Malaysia.

## **MATERIALS AND METHODS**

A cross-sectional survey was conducted among 206 young adult aged between 18 and 35 years-old living in three villages in the Hulu Langat District, Selangor, Malaysia between March and April 2013. The study was approved by the UKM's Research and Ethical Committee (GGPM -2012-091), and written consents were obtained from all respondents. In reference to a study by Chang *et al.*, using a formula by Snedecor and Cochren, and after considering missing data or non-response, 10% were added giving total sample size of 206 respondents with 95% confidence and

and 80% statistical power.<sup>6,7</sup>

The respondents were selected through simple random sampling from a name list obtained from the head of villages. Selected respondents were approached at their houses and respondents were considered unreachable after three attempts of visits. Inclusion criteria include Malaysian citizen and those who were able to understand and read Malay language. Respondents with debilitating disabilities, being bed-ridden and pregnant were excluded from the study. Refusal to participate in the study was considered if any respondents explicitly said that she/he did not want to participate, and refusals were not substituted.

A self-administered questionnaire was given to all respondents. This questionnaire comprised of three sections: (a) Socio-demographic data, (b) Validated Malay version of WHOQOL-BREF questionnaire to measure HR-QOL of the respondents,<sup>8</sup> and (c) Anthropometric measurement. Sociodemographic data included data on age, gender, race, educational level, and employment, marital and smoking status. Validated Malay version of WHOQOL-BREF questionnaire generates scores of four main domains. Domain one was on physical health and contained seven facet items; domain two was on psychological health with six facet items; domain three was on social relationships with three facet items and domain four was on environment contains eight facet items. There were also two items which asked on the overall QOL and general health, and were scored separately. The questions responded in each item were rated on five-point Likert's scale (one to five). Domain scores were scaled in

positive direction (higher scores denoted higher QOL). The mean score of items in each domain was used to calculate the domain score. The mean scores were then multiplied by a factor of four to make the scores comparable to the scores used in WHOQOL-100. These scores were then transformed to a zero to 100 scales using a formula as stated below:

$$\text{Transformed score} = (\text{score} - 4) \times (100/16)$$

The anthropometric measurements were taken by trained data collectors. These measurements were standardised before and during the data collection. Weight was measured using an electronic digital scale with shoes, and heavy clothes removed. Height measurement was performed from heel to the highest point of head. Respondents were asked to off the shoes during the measurement. BMI was calculated by weight in kilograms divided by the square of height in metres ( $\text{kg}/\text{m}^2$ ).

All data were analysed using the SPSS version 20.0. Mean and standard deviation (sd) was used to describe the characteristics of the study population for continuous data, whereas percentage was used for categorical data. Univariate analyses conducted for continuous data were one-way ANOVA with Bonferroni post hoc analysis. Pearson chi square and chi square for trend were performed for categorical data. Simple and multiple linear regression analysis were used to demonstrate the significant predictors associated with HR-QOL. Scattered plot with Pearson correlation coefficient is used to examine the correlation between BMI and HR-QOL domains. The level of significant was set at  $p$

value of less than 0.05.

## RESULTS

The overall prevalence of overweight and obesity among young adults were 35.9% and 19.9% respectively. Among the genders, the prevalence of overweight was 42.0% in male and 31.4% in female while for obesity was 17.0% and 22.0% for male and female, respectively.

The mean age of all the respondents was 26.8 (4.61) years with majority being female (57.3%), Malay (89.3%), unmarried (61.7%) and employed (62.6%). Approximately a quarter (25.7%) of the respondents was smoker and 34.0% was with higher level of education.

Table 1 showed that employed young adults were significantly more overweight and obese. Age was significantly associated with BMI category as overweight young being older compared to young adults with normal BMI adults. The psychological health domain of HR-QOL was the only domain significantly associated with BMI. There was a significantly weak and negative correlation ( $r=-0.14$ ,  $p=0.042$ ) between BMI and psychological health domain of HR-QOL (Figure 1).

Linear regression analyses indicated that obese young adults have lower mean score for psychological health domain of HR-QOL (Table 2).

## DISCUSSION

Our study found that there were more overweight respondents (35.9%) compared to obese respondents (19.9%). This similar trend can be seen among young adults in Uganda,

**Table 1: Associations between characteristics and body mass index (BMI).**

Characteristics	BMI			p value
	Normal n=91	Overweight n=74 n (%)	Obese n=41	
Gender				
Male	36 (39.6)	37 (50.0)	15 (36.6)	0.272 <sup>a</sup>
Female	55 (60.4)	37 (50.0)	26 (63.4)	
Ethnic				
Malay	82 (90.1)	63 (85.1)	39 (95.1)	0.239 <sup>a</sup>
Non-Malay	9 (9.9)	11 (14.9)	2 (4.9)	
Employed				
Yes	45 (49.5)	56 (75.5)	28 (68.3)	0.002 <sup>a</sup>
No	46 (50.5)	18 (24.3)	13 (31.7)	
Education				
Lower	58 (63.7)	47 (63.5)	31 (75.6)	0.350 <sup>b</sup>
Higher	33 (36.3)	27 (36.5)	10 (24.4)	
Smoking				
Yes	25 (27.5)	21 (28.4)	7 (17.1)	0.363 <sup>a</sup>
No	66 (72.5)	53 (71.6)	34 (82.9)	
Married				
Yes	28 (30.8)	31 (41.9)	20 (48.8)	0.106 <sup>a</sup>
No	63 (69.2)	43 (58.1)	21 (51.2)	
Age <sup>d</sup>	25.84 (4.66)	27.57 (4.31)	27.41 (4.72)	0.033 <sup>c</sup>
HR-QOL				
Physical	59.26 (11.45)	58.44 (9.69)	55.84 (12.18)	0.254 <sup>c</sup>
Psychological <sup>e</sup>	61.90 (12.93)	61.32 (10.96)	55.89 (12.77)	0.027 <sup>c</sup>
Social	68.77 (16.64)	68.02 (18.35)	68.70 (19.16)	0.960 <sup>c</sup>
Environmental	66.42 (12.99)	64.57 (12.18)	61.36 (14.13)	0.117 <sup>c</sup>

Total n=206, BMI = Body mass index (WHO classification), <sup>a</sup> Pearson chi square, <sup>b</sup> linear by linear, <sup>c</sup> one way ANOVA, HR-QOL = Health-Related Quality of Life, <sup>d</sup> Bonferroni post hoc significant between normal BMI and overweight (mean difference = -1.73, p value = 0.048), <sup>e</sup> Bonferroni post hoc significant between normal BMI and obese (means difference = 6.01, p value = 0.029).

Africa and North India despite experiencing a lower prevalence of overweight and obesity. <sup>9</sup>,

<sup>10</sup> The prevalence of overweight and obesity among young adult in Uganda were 10.4% and 2.3% respectively, <sup>10</sup> while these were 16.3% and 5.1% respectively among young

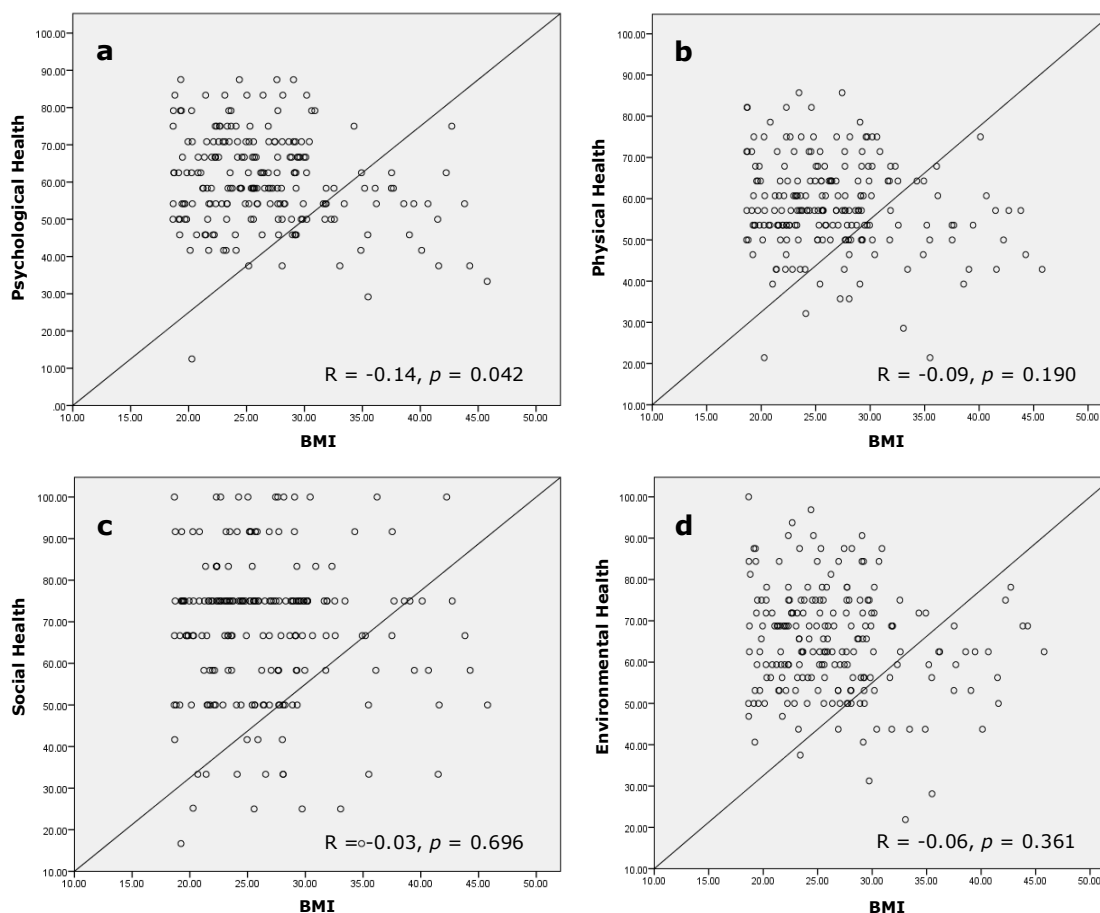
North India. <sup>9</sup>

The trend a bit higher as compared to others rural area as examples rural area in US (23%). <sup>11</sup> Meanwhile gender specific prevalence indicated more overweight male and

**Table 2: Associations between BMI with psychological health domain of HR-QOL.**

BMI	HR-QOL Psychological Health			
	Simple linear regression		Multiple linear regression	
	b (95% CI)	p value	adjusted b (95 % CI)	p value
Normal	2.52 (- 0.89, 5.94)	0.147	-	
Overweight	1.28 (- 2.27, 4.83)	0.478	-	
Obese	- 5.75 (-9.94, -1.55)	0.008	- 5.75 (-9.94, -1.55)	0.008

R<sup>2</sup> = 0.034. The model reasonably fits well with adjusted for demographic factors. Model assumptions are met. There are no interaction and multi-collinearity problem



**Figs. 1: Correlation between BMI and QOL domains, a) psychological health, b) physical health, c) social health and d) environmental health.**

obese female respondents. Similarly, study among university students found that there were more overweight males compared than females (33.7% and 25.3%, respectively). It is because females tend to diet frequently, has self-induced and do some exercises.<sup>12</sup> The finding of female respondents being more obese compared to male was in agreement with a study among Malaysian adults aged 18 years above.<sup>13</sup> Another study among Malaysian aged 15 years above and also suggested the prevalence of obese respondents in female was 13.8% and 9.6% in male.<sup>14</sup>

The World Health Organisation also reported that in 2008, among adults aged 20 years and above, nearly 300 million women and over 200 million men were obese.<sup>2</sup> However, a study among population aged over 15 years in Spain indicated that prevalence of both overweight and obesity was higher in men and increases with age.<sup>15</sup>

Our result showed a significant association between employment status and BMI, whereby there were more employed overweight respondents compared to employed obese respondents. This is consistent with a

study from the United States where 28.0% of employed adults were obese.<sup>16</sup> It is probably due to more homogeneous in dietary intake and physical activity among the unemployed compared to employed adults.<sup>17</sup> In contrast, Martin *et al.*, found that obesity is higher among retired and unemployed people compared to employed people.<sup>15</sup> Another study in United States also showed that the increasing rate of obesity was related with unemployment. It is possibly because of they have difficult assess to nutritious foods, excess caloric consumption and inadequate physical activity.<sup>18</sup>

In this present study, obese respondents had significantly lower mean score in the psychological health domain of HR-QOL, in agreement with previous studies. The possible explanation is that individuals who may be already overweight tended to overeat as they turn to food for comfort or relief which will lead to further increase in weight, especially among socioeconomically deprived individuals.<sup>19</sup> Vasiljevic *et al.* also reported significant inverse association between BMI and score on mental or psychological health.<sup>20</sup>

Obesity is also related with various psychological problems such as lower self-concept, negative evaluation and decreased self-image.<sup>21</sup> Obese individuals also experience psychological distress including dissatisfaction with body image, poor health, depression and social discrimination.<sup>22, 23</sup>

The main finding in the current study was obesity as a significant predictor for psychological health domain of HR-QOL. A study conducted to examine the preference of physical attractiveness, comparing between Brit-

on, Malaysian-born Britons and Malaysian, showed that there was significant differences in preferences along a gradient of socio-economic development. The industrialized (Britain and Kuala Lumpur, Malaysia) participants preferred a significantly lower BMI images of women compared to participants from semi-industrialised (Kota Kinabalu, Sabah, Malaysia) and rural (Kota Kinabalu outskirts) counterparts.<sup>24</sup>

These body image preferences might be preferred by the respondents from the current study which eventually affects their psychological health. This is probably due to, despite these three villages being gazetted as in a rural area, the Hulu Langat district is located at a close proximity to Kuala Lumpur and Putrajaya (federal administrative centre of Malaysia) and experiencing socio-economic booming compared to Kota Kinabalu outskirts.

However, our result was not in agreement with some previous studies. Theodoropoulou *et al.* found that where obesity was not a significant predictor for psychological health.<sup>25</sup> Instead of obesity a study among young Swiss men showed that underweight was the predictor for psychological health.<sup>26</sup> This different outcome might be due to the different population in the present study as compared to the former study which was carried out only among young men. Apart from socio-economic gradient, social and cultural context do play a role in preferences of body sizes. Respondents from Kota Kinabalu (semi-industrial and outskirts area) were less concern about not being curvaceous as fewer curves were regarded being more attractive.<sup>24</sup>

The present study had some limitations. This study was primarily limited by sampling of the rural population, which rendered the non-generalisation of the results to the urban or general population. Furthermore, due to the cross-sectional nature of the study design, causal inference cannot be made. However, the result can be used as baseline data for future research, especially recruitment for interventional study.

In conclusion, young adults with obesity are not only at higher risk of non communicable disease but also at risk of lower HR-QOL especially their psychological health. This may leads to unproductive adults, giving negative impact and increase the mental health burden to not only family, community but the country as a whole. Tailored screening and health programme can be developing to prevent obesity and detect any psychological distress. More large prospective and interventional studies are warranted in the population especially among young generation.

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#### **REFERENCES**

- 1:** World Health Organization. Global status report on non communicable disease. Italy: WHO, 2010. [Cited 2013 February 17]. Available from: URL: [http://www.who.int/nmh/publications/ncd\\_report\\_full\\_en.pdf](http://www.who.int/nmh/publications/ncd_report_full_en.pdf).
- 2:** World Health Organization. Obesity and overweight. Fact sheet n°311. Geneva: WHO, 2012. [Cited 2013 September 2]. Available from: URL: <http://www.who.int/mediacentre/factsheets/fs311/en/>.
- 3:** National Health and Morbidity Survey 2011. The

Institute of Public Health, Ministry of Health Malaysia, 2011. [Cited 2012 May 21]. Available from: URL: [http://www.moh.gov.my/index.php/file\\_manager/dl\\_item/624746305a584e305833426b5a69394f51305176546b684e553138794d44457858305a425131526655306846525651756347526d](http://www.moh.gov.my/index.php/file_manager/dl_item/624746305a584e305833426b5a69394f51305176546b684e553138794d44457858305a425131526655306846525651756347526d).

**4:** Boo NY, Chia GJQ, Wong LC, Chew RM, Chong W, Loo RCN. The prevalence of obesity among clinical students in Malaysian medical school. *Singapore Med J.* 2010; 51: 126-32.

**5:** Swallen KC, Reither EN, Haas SA, Meier AM. Overweight, obesity and Health Related Quality of Life among Adolescents: The National longitudinal study of adolescent health. *Pediatrics.* 2005; 115: 340-47.

**6:** Chang CY, Hung CK, Chang YY, Tai CM, Lin JT, Wang JD. Health-Related Quality of Life in adult patients with morbid obesity coming for Bariatric surgery. *Obes Surg.* 2010; 20:1121-7.

**7:** Snedecor GW, Cochran WG. *Statistical methods.* 8th ed. Ames Iowa, State University Press; 1989.

**8:** Hasanah CI, Naing L, Rahman ARA. World Health Organization Quality of Life Assessment: Brief Version in Bahasa Malaysia. *Med J Malaysia.* 2003; 58:79-88.

**9:** Baalwa J, Byarugaba BB, Kabagambe KE, Otim AM. Prevalence of overweight and obesity in young adults in Uganda. *Afr Health Sci.* 2010; 10:367-73.

**10:** Masoodi SR, Wani AA, Wani AI, Bashir MI, Laway BA, Zargar AH. Prevalence of overweight and obesity in young adults aged 20-40 years in North India( Kashmir Valley). *Diabetes Res Clin Pract.* 2010; 87:4-6.

**11:** Elizabeth J, Mark PD, Anthony FJ, Gary HL. A National Study of Obesity Prevalence and Trends by Type of Rural County. *J Rural Health.* 2005; 21:140-8.

**12:** Kuan PX, Ho HL, Shuhail MS, Siti AA, Gudum HR. Gender differences in body mass index, body weight perception and weight loss strategies among undergraduates in University Malaysia Sarawak. *Mal J Nutr.* 2011; 17:67-75.

**13:** Wan Nazaimoon WM, Kamarul Imran M, Amir Sharifuddin MK, et al. Prevalence of overweight and obesity among adult Malaysians: an update. *Asia*

Pac J Clin Nutr. 2011; 20:35-41.

**14:** Rampal L, Geok LK, Azhar MD, et al. A national study on the prevalence of obesity among 16,127 Malaysians. *Asia Pac J Clin Nutr.* 2007; 16:561-6.

**15:** Martin AR, Nieto JMM, Ruiz JPN, Jimenez LE. Overweight and obesity: The role of education, employment and income in Spanish adults. *Appetite.* 2008; 15:266-72.

**16:** Park S, Pan L, Lankford T. Relationship between employment characteristics and obesity among employed U.S adults. *Am J Health Promot.* 2014; 28:389-96.

**17:** Ruhm CJ. Health living in hard times. *Journal of Health Economic.* 2005; 24:341-63.

**18:** Akil L, Anwar Ahmad H. Effects of socioeconomic factors on obesity rates in four Southern States and Colorado. *Ethn Dis.* 2011; 21:58-62.

**19:** Ul-Haq Z, Mackay DF, Fenwick E, Pell JP. Meta-analysis of the association between body mass index and Health-Related Quality of Life among adults, assessed by the SF-36. *Obesity.* 2013; 21:E322-7.

**20:** Vasiljevic N, Ralevic S, Marinkovic J, et al. The assessment of Health-Related Quality of Life in relation to the body mass index value in the urban population of Belgrade. *Health Quality Life Outcome.* 2008; 6:1-10.

**21:** Faith MS, Natz PE, Allison DB. Psychosocial correlates and consequences of obesity. In Anderson R.E. *Obesity: Etiology Assessment, Treatment and Prevention.* Champaign IL: Human Kinetics, United States of America; 2003.

**22:** Katz DA, McHorney CA, Atkinson RL. Impact of obesity on Health-Related Quality of Life in patients with chronic illness. *J Gen Intern Med.* 2000; 15:789-96.

**23:** Hassan MK, Joshi AV, Madhavan SS, Amonkar MM. Obesity and Health-Related Quality of Life: A cross-sectional analysis of the U.S population. *Int J Obes Relat Metab Disord.* 2003; 27: 1227-32.

**24:** Swami V, Martin JT. Female physical attractiveness in Britain and Malaysia: A cross-cultural study. *Body Image.* 2005; 2:115-28.

**25:** Theodoropoulou E, Karteriologistis K, Koskolou M, Nassis G. The association of total and abdominal obesity with Health-Related Quality of Life in a sample of Greek health adults. *Epidemiology Biostatistic and Public Health.* 2013; 10:1-9.

**26:** Dey M, Gmel G, Mohler-Kuo M. Body mass index and Health-Related Quality of Life among young Swiss men. *BMC Public Health.* 2013; 13:2-9.