ORIGINAL ARTICLE

OBESITY KNOWLEDGE AND ITS ASSOCIATED FACTORS AMONG MEDICAL STUDENTS IN A PRIVATE UNIVERSITY IN SHAH ALAM, SELANGOR

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ABSTRACT

Overweight and obesity are growing health problems both worldwide and in Malaysia due to changes in lifestyle. This study aimed to find out the level of obesity knowledge and its associated factors among Year 1 and Year 5 medical students of Private Medical School in Shah Alam, Selangor. A cross-sectional study was conducted among 178 medical students consisting of year 1 (n=95) and year 5 (n= 83) from a Private University in Shah Alam during May to June 2018. Obesity knowledge was assessed by a 20-questionnaires items, consists of three domains: sociodemographic, level of knowledge of obesity and 8 questions about source of information on the obesity knowledge. The results showed that 121 people (68% of total respondents) have poor obesity knowledge. Only educational level showed significant association with obesity knowledge (p<0.001) while other socio-demographic factors were not significant. As a conclusion, two-thirds of the medical students had poor knowledge regarding obesity. More educational promotion is needed to increase student's knowledge and awareness.

Keywords: Obesity, Knowledge, Private University, Medical students, Shah Alam.

INTRODUCTION

Nutrition especially for young adults is very crucial as they are in transitional phase from adolescent to adulthood. Obesity, a modern-day lifestyle. Simply chooses its victim by the lifestyle lived by the current generation. Obesity is affecting more than 500 million adults worldwide thus, it became one of biggest medical problems in modern society [1]. Nowadays, obesity has become a worldwide or pandemic challenge in medical field in developed and developing countries [2]. Obesity is associated with many comorbidities like hypertension, type II diabetes mellitus, dyslipidemia, obstructive sleep apnea and cardiovascular diseases [3]. Obesity epidemic have an impact on the nation social and economic status. In view of public health effects on obesity, and its rising trends, intervention of obesity remains important [4]. Also, Social and psychological factors are important determinants of eating habits among medical students [5].

A study in 2014 has revealed that the prevalence of obesity has tripled in developing countries over the past 20 years as they rapidly become more urbanized, with increased consumption of high calorie foods and adoption of a more sedentary lifestyle [6]. Studies among university students in developing countries show high prevalence of obesity like in Nigeria: 10%, Egypt: 25.3%–59.4%, South Africa: 10.8%-24%, Asia-Bangladesh: 20.8%, China: 2.9%–14.3%, Malaysia: 20%–30.1%, Thailand: 31%, Pakistan: 13%–52.6%, and India: 11%–37.5% [6].

A previous study done in Malaysia among mothers to assess their knowledge regarding childhood obesity showed that 78%, 55%, 69%, 56% and 37% of the participants knew that childhood obesity means excess body fat, obesity and overweight are two different things, children's BMI can be measured by BMI chart and different from adult's, and measurement of children's BMI is different between boys and girls, respectively.[7]

Another study done in Norway in 2017, to assess the obesity knowledge among final year medical students and to compare it to an expert group and first year medical students. There were 226 medical students in this study and for the comparison purpose, among 226 students there were first year medical students, final year medical students and an expert group. They have used 20 items questionnaire where 18 items were knowledge-based questions and 2 were subjective questions looking at attitudes and self-perceived proficiency. Regarding the knowledge of obesity, 60% of final year students answered correctly compared to first year students, which were only 47.8%. On the other hand, there were 81% of expect group who answered correctly, and this showed that the students in expert group has scored higher than year one and year 5 medical students. Regarding the two additional questions,

there were average final-year student (12.2%) answered compared to first-year students [8].

The aim of current study is to find out the knowledge of obesity and its associated risk factors among Medical students in a private university in Shah Alam, Selangor.

METHODS

A cross-sectional study was conducted among medical students of a private university in Shah Alam, Malaysia between May to June 2018. The inclusion criteria were first and final year medical students as we want to compare their knowledge. The sampling method of this study was non-probability, purposive sampling method.

A 36-item self-administered questionnaire was used in the survey. The questionnaire consists 3 sections. First section of the questionnaire gathered the demographic details from the students, which included age, gender, race, education background, income and family history of obesity. Second section (Part B Q1-Q20) consists of 18 questions which assessed the level of knowledge regarding the obesity and 2 subjective questions, while the third section (Part C Q1-Q8) gathered source of information of obesity knowledge.

In first section of the questionnaire, the height and weight of the students was also obtained then the BMI is calculated. The interpretation of the BMI is according to the Asian's BMI classification where BMI less than 17.5 considered underweight, BMI 17.50-22.99 considered normal weight, 23.00-27.99 considered overweight and BMI 28.00 and above considered obese.[9]

The second section of the questionnaire is adopted from previous studies that had been done in Norway [8]. For **part B Q1-Q18**, each correct answer is scored as 1, while 0 is given for the incorrect answer. The maximum total score was 18. Any score less than 9 are considered poor knowledge and any score higher than 9 considered good knowledge.

The study was approved by the concerned authorities of the private university to conduct the research in the university and consent was also obtained from each of the students before recruitment to the study. All the students had signed the consent form.

Statistical Analysis

The association between education background (first year/final year) and level of knowledge regarding the obesity (good/poor) was examined by Chi square test (for categorical variables). Age, gender, race, family income, BMI were treated as independent variables while obesity knowledge treated as dependent variable.

After collection of data, it was checked for completeness and coding was done accordingly. Coded data was entered into SPSS version 23 and analyzed.[10]

RESULT

In total, 178 people of Year 1 and Year 5 medical students have participated in our research. Table 1 represents the participants' socio-demographic characteristics, female students participated more in the research which account for a total of 68% compared to the male students; which only 32%. Year 1 students being the major participants with 95 people (53.4%) participated as compared to Year 5 students in which only 83 of them (46.6%) participated in the research despite having more number of students. For the race, Malay students account for the highest number of participants (65.2%) and followed by Indian (21.9%), Chinese (4.5%) and other races (8.4%). Among all the participants, there are a total number of 14 people (7.9%) have body mass index (BMI) below 18.5 kg/m^2 which put them in underweight category.

There are a total number of 66 people (37.1%) are overweight as the values of their body mass index (BMI) are between 25.0-29.9 kg/m^2. 15 people (8.45%) are obese as they scored more than 30.0 kg/m^2 in their body mass index (BMI). the minimum age of respondent is 18 years old while the oldest respondent is 31 years old. Hence, the mean is 22.76 and the standard deviation is 2.56. The minimum family income is RM1,000 while RM70,000 is the maximum income. The mean for family income is RM 6593.82 while the standard deviation is RM 7376.72. 1.43 meter is the minimum height of respondent while the maximum height is 1.88 meter. The mean for height is 1.63 and standard deviation is 0.086. 34 kilograms is the minimum weight of respondent and 104 kilograms is the maximum. The mean for weight is 59.51 while for standard deviation, it is 12.51. Lastly for BMI, the minimum BMI obtained is 15.62 kg/m^2 while the maximum is 34.45 kg/m^2. The mean for BMI is 22.56 while the standard deviation is 3.77.

Table 1: Socio-Demographic Frequency of Respondents

VARIABLE				N	(%)
Gender	Male			57	32.0
	Female			121	68.0
Level of Education	Year 1			95	53.4
	Year 5			83	46.6
Race	Malay			116	65.2
	Chinese			8	4.5
	Indian			39	21.9
	Others			15	8.4
BMI	Underweight			14	7.9
	Normal			83	46.6
	Overweight			66	37.1
	Obese			15	8.4
	MIN	**MAX**	**MEAN**	**SD**	
Age (Years)	18	31	22.76	2.56	
Family Income (RM)	1000	70000	6593.82	7376.72	
Height (M)	1.43	1.88	1.63	0.086	
Weight (Kg)	34	104	59.51	12.51	
BMI (Kg/M^2)	15.62	34.45	22.56	3.77	

Detailed knowledge questionnaires and their respective answers shown in table 2. Regarding correct answers, question no. 5 got the highest correct answers with 84.3% while the lowest correct answers was for question no. 1 with 7.9% only. Total of 121 people (68% of total respondents) have poor obesity knowledge as shown in table 3.

Table 4 describes the association between socio-demographic factors and knowledge. Only education showed significant association with obesity knowledge (p<0.001).

Table 5 shows the sources of information used by respondents. Undoubtedly, the social media has become the main source of information among participants. In addition, more than half of the respondents pay attention to the diet and exercise information. However, information obtained from the television has been chosen primarily from the talk show (55.1%) rather than other television's show. While nutrition magazine has becoming the main online magazines or journals used to maintain a healthy diet and/or exercise information in 46.6% respondents, the *'google'* remains as the leading websites used by respondents (39.3%) to search for the healthy diet and/or exercise information.

DISCUSSION

The level of obesity knowledge among private medical students is low. Our study showed that more than two-third of the private medical students have a poor level of obesity knowledge while one-third of students have a good level of knowledge. There were no significant differences between gender and knowledge of obesity. There is also no significant correlation between body-mass-index (BMI) and obesity knowledge. Based on the answers given in the questionnaires, we can conclude that more respondents answered correctly on the questions regarding etiology.

In terms of obesity-related attitudes and knowledge, the Philadelphia adolescents had high levels of self-esteem that did not vary significantly by obesity status, which confirms findings from other studies, particularly for African Americans [11]. Previous study done among university students in Malaysia found that, Level of knowledge and attitude of healthy eating among university students in Malaysia were good, but not on the practice of healthy eating. Further strategies are needed to increase the practice of good healthy eating among university students, especially focusing on students of high and middle family income [12].

Table 2: Obesity Knowledge Among Students

	Questionnaire	Correct Answer (N)	%
1	A higher Total Energy Expenditure (TEE) best characterizes people with obesity (BMI$\geq$ 30 kg/m^2), compared to normal-weight individuals	14	7.9
2	Degree of fat-free mass (FFM) is crucial for RMR	32	18.0
3	Genetic predisposition in addition to inactivity and overabundance of food considered to be the main reasons for an increase in overweight and obesity	123	69.1
4	Weight gain (WG) after a period of weight loss (WL), is one of the most profound challenges in obesity management. the most likely contributor is Increase in hunger sensation and a decrease in satiety due to physiological adaptations to appetite and control systems*	102	57.3
5	BMI (kg/m^2)* diagnostic criterion regarding obesity represents the current standard?	150	84.3
6	When diagnosing obesity in children, the best tool to considered is Iso-BMI curve	28	15.7
7	Which of the patients would you most likely prioritize in terms of treatment for obesity? Male 34 years old, BMI 35 kg/m^2, diabetes type II, obstructive sleep apnea (OSAS)	92	51.7
8	5-10% Weight Loss from baseline weight is considered to give significant improvements in health	69	38.8
9	Combined endurance and resistance exercise is considered to be the most optimal form for exercise in treating obesity	67	37.6
10	Combination of diet, exercise and Cognitive behavioural therapy (CBT) is considered to be the most optimal strategy for lifestyle treatment of obesity	95	53.4
11	When considering long-term weight reduction, Any diet can give the same weight reduction given equal negative energy balance and long term compliance diet is believed to be the most effective one	85	47.8
12	A negative energy deficit of approximately 600 kcal/day is considered to be the most appropriate recommendation when looking at conservative treatment of obesity	70	39.3
13	Approximately 15% of patients experience suboptimal weight loss or significant weight regain long-term outcomes of surgical treatment of obesity (gastric bypass, GBP).	58	32.6
14	Low levels of vitamin B12, vitamin D, calcium and iron represents the most common complication experienced after GBP	95	53.4
15	Osteoporosis is least associated with obesity	74	41.6
16	45-60 min/day moderate intensity level of physical activity is recommended for individuals with obesity in order to maintain weight loss	61	34.3
17	On average, 20% individuals who have lost weight through lifestyle changes are able to maintain a clinically significant WL for at least 1 year?	62	34.8
18	Eating breakfast > 5 days/ week is most associated with long-term WL maintenance?	50	28.1

Table 3: Level of Knowledge Among MSU Medical Students

VARIABLE		N	(%)
KNOWLEDGE	Poor	121	68.0
	Good	57	32.0
	Total	178	100

Overall, only 15.7 % of students knew that using iso-BMI is the optimal tool for diagnosing obesity in children and adolescents (Q6), while majority 35.4% answered as percentiles which has been proven by previous study to underestimate the progression of weight gain and obesity in children [13,14].

Table 4: Association Between Socio-Demographic Factors and Knowledge

VARIABLES		KNOWLEDGE				X2	P VALUE
		Good		Poor			
		N (%)		N (%)			
GENDER	MALE	16	(28.1)	41	(71.9)	0.602	0.438
	FEMALE	41	(33.9)	80	(66.1)		
EDUCATION	YEAR 1	15	(15.8)	80	(84.2)	24.663	<0.001*
	YEAR 5	42	(50.6)	41	(49.4)		
RACE	MALAY	43	(37.1)	73	(62.9)	4.837	0.187
	CHINESE	3	(37.5)	5	(62.5)		
	INDIAN	8	(20.5)	31	(79.5)		
	OTHERS	3	(20.0)	12	(80.0)		
BMI	UNDERWEIGHT	3	(21.4)	11	(78.6)	2.909	0.406
	NORMAL	23	(27.7)	60	(72.3)		
	OVERWEIGHT	25	(37.9)	41	(62.1)		
	OBESE	6	(40.0)	9	(60.0)		

chi square test was performed with level of significance at p <0.05

In a study done in Norway, the results showed as the first-year student scored correctly compared to fifth year students [8] whereas in our study fourth- fifth, year 1 student scored lower marks and regards as to have poor level of knowledge while in year 5 students, the level of good and poor knowledge were almost the same. Other than that, most of the respondents answered correctly on aetiology, physiology, weight loss maintenance, diagnosis and long-term treatment in Norway studies [8]. Whereas, in our study most of the respondent answered correctly on the aetiology of obesity knowledge but there were more answered wrongly on physiology, goals of obesity, consequences of obesity and weight loss maintenance.

Regarding the two subjective questions, most students (30.3%) answered that it is their duty to discuss weight issues with the patient, but long-term follow-up and frequent consultations are beyond my capacity in busy surgery. This may be attributed to lack of confidence and experience.

For Q20, the students choose 2 options equally, I trust my acquired knowledge from university education and I know how to treat this patient and I prefer to refer the patient to tertiary care/ specialist health care services because I suggest that obesity is a self-inflicted condition and it is beyond my reach to treat with 33.1% for each one of them. Again the 2 different answers reflect the lack of experience from students. More practical health education programmes should be organized. It will give more benefits and exposure about the effect of good practice towards prevention [15].

CONCLUSION

As a conclusion, two-thirds of the medical students had poor knowledge regarding obesity. More educational promotion is needed to increase student's knowledge and awareness.

Conflicts of interest
The authors declare no conflicts of interest

Table 5: Source of Information Among Respondents

QUESTIONAIRE	n	%
1. Which one of the following social media do you frequently used the most?		
A. Television	38	21.3
B. Online newspapers	30	16.9
C. Online magazines and journals	13	7.3
D. Other online sources	**97**	**54.5**
2. When watching television/ reading online newspapers/ reading online magazines and journals or other online sources, how often do you see programs that offer diet or exercise information?		
A. Hardly ever	21	11.8
B. Once in a while	**67**	**37.6**
C. Somewhat often	63	35.4
D. Often	22	12.4
E. Every day	5	2.8
3. When watching television / reading online newspapers/ reading online magazines and journals or other online sources, how much attention do you pay to diet or exercise information?		
A. No attention at all	20	11.2
B. Very little attention	33	18.5
C. Some attention	**86**	**48.3**
D. Close attention	30	16.9
E. Very close attention	9	5.1
4. What newspaper sections or what types of websites do you turn to if you need information about how to maintain a healthy diet and/or exercise information?		
A. Science or Health section of the newspaper	**110**	**61.8**
B. Front page cover stories	24	13.5
C. Advertisements	26	14.6
D. Other (please specify)	18	10.1
5. What types of TV programs do you turn to if you need information about how to maintain a healthy diet and/or exercise information?		
A. News programs	38	21.3
B. Talk shows	**98**	**55.1**
C. Commercial advertisements	27	15.2
D. Paid programming	8	4.5
E. Other (Please specify) _____	7	3.9
5. What types of online magazines or journals do you turn to when you need information about how to maintain a healthy diet and/or exercise information?		
A. Men's or women's health magazines	62	34.8
B. Nutrition magazines	**83**	**46.6**
C. Academic journals	19	10.7
D. Other (Please specify) _____	14	7.9
6. What types of websites do you turn to if you need information about how to maintain a healthy diet and/or exercise information?		
A. News sites (CBC, NBC, etc. But not newspapers or magazine	20	11.2
B. Government-sponsored health sites (NIH, CDC, Medline, etc.)	33	18.5
C. Television health sites (droz.com, Rachel Ray, The Doctors, etc.)	46	25.8
D. Google (using search terms)	**70**	**39.3**
E. Other (please specify)	9	5.1

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