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Determinant social factors influencing obesity among Malay people

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Abstract

This study has explored the determinant social factors of obesity among Malay obese people. Multiple regressions analysis (stepwise method) was performed to identify and examine the most influenced factors that contribute to obesity. The analysis determined that eating habits, physical activity barriers, and feelings (low self-esteem) are dominating social factors. However, among these factors eating habits were observed as the most influencing predictor in the model. In conclusion, this pioneering study is providing baseline data of influencing factors of obesity in Malaysia, so future researches may be conducted based on the given results to reduce the obesity trend.

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Keywords: Social factors**,** Influencing factors, Obesity, Malay race.

Factores sociales determinantes que influyen en la obesidad entre los malayos

Resumen

Este estudio ha explorado los factores sociales determinantes de la obesidad entre las personas obesas malayas. Se realizó un análisis de regresiones múltiples (método por pasos) para identificar y examinar los factores más influenciados que contribuyen a la obesidad. El análisis determinó que los hábitos alimenticios, las barreras de actividad física y los sentimientos (baja autoestima) son factores sociales dominantes. Sin embargo, entre estos factores, los hábitos alimenticios se observaron como el predictor más influyente en el modelo. En conclusión, este estudio pionero está proporcionando datos de referencia de los factores que influyen en la obesidad en Malasia, por lo que se pueden realizar investigaciones futuras basadas en los resultados dados para reducir la tendencia a la obesidad.

Palabras clave: Factores sociales, Factores de influencia, Obesidad, Raza malaya.

1. INTRODUCTION

Obesity worldwide considers a health issue, and its prevalence increased in both developed and developing countries. Furthermore, it is also related to physical and mental problems in an individual and community (DJALALINIA, 2015). Obesity develops a substantial adverse impact on health status. The increased ratio of obesity will lead to cardiovascular diseases and poor health. Malaysian ranked higher in both overweight and obese categories, which may lead to a higher mortality rate besides the economic burden of the country.

Globally, 3.4 million people have died due to the problem of weight gain and obesity in 2010.

It was explicitly noted that obesity had significantly increased the death risk, but overweight had a blurred image (FLEGAL, GRAUBARD, WILLIAMSON & GAIL, 2005). A Nationwide survey conducted by Institute of Public Health has revealed that 2.6 million (15.22%) Malaysian adult people have diabetes problem and around 5.8 million (32.7%) have hypertension, and this figure is rising in next national survey where 3.5 million (17.7%) people are diabetics, and 9.6 million (47.7%) of the adult population has hypertension. Further, Tan explained that in Malaysia, three out of five deaths occurred due to obesity-related health problems.

Further, studies have shown the indirect costs due to obesity in terms of absenteeism (CAWLEY, RIZZO & HAAS, 2007) reduce the productivity presenteeism (SCHMIER, JONES & HALPERN, 2006), injuries at the workplace (POLLACK & CHESKIN, 2007), and disability payments (RICCI & CHEE, 2005). In Australia, the estimated monetary value was up to $A8.28 -13824 in 2008 that includes the care costs $1.9billion (23%), loss of productivity $3.6 billion and health system $2.0 billion (24%). Interestingly the facts showed that a 1% reduction in the pervasiveness of BMI would be cost savings of $US 43 million in 2030, and $US 85 million in 2050 (RTVELADZE, MARSH, BARQUERA, ROMERO, LEVY, MELENDEZ & BROWN, 2014). Therefore, the measures would be in need for the interventions towards obesity concerning to reduce the

health care costs (AHMAD & AHMAD, 2019; RTVELADZE ET AL., 2014). Malaysia also suffers the highest cost for obesity as a percentage of the country's healthcare spending, reaching an alarming to 10-20%. Among other ASEAN countries, Indonesia ranks second with costs at 8-16% of healthcare spending, while Singapore comes third, with costs at 3-10%.

Most researchers tend to involved in genetics and nutrients parts for the interventions of obesity, but there is a lack of knowledge regarding social factors associated with obesity in Malaysia especially in Kuala Terengganu. SAUNDERS (2012) determined that social factors have a critical role in human weight gain. Further, Ullah explained the correlation between various social factors. The nominal, ordinal and scale based items were used to gather the data. According to the study, feelings (low self-esteem), body image dissatisfaction, eating habits, physical activity, physical activity barriers, and media influence were significantly associated with obesity. However, this study did not mention the most determinant factors of obesity among the Malay race. There is also a need to identify the most determinant social factors influencing obesity among Malay obese people which will cover in this present study.

2. METHODOLOGY

This cross-sectional sectional was carried out among Malay obese people residing in Kuala Terengganu. 150 obese samples were

decided to include in the study. According to ABDOLLAHI & ABU TALIB (2016), the minimum sample size required for the study is 100 respondents (COHEN, MANION & MORRISON, 2000; AHMAD & AHMAD, 2018). However, While, BABBIE (1990) mentioned that 60% of the response ratio would be necessary for the research specifically in surveys to reduce the level of non-response bias (FINCHAM, 2008; AHMAD & SAHAR, 2019). Among 150 obese Malay people, 80 (53.3%) were males, and 70 (46.7%) were females.

Further, the convenience sampling method was undertaken to recruit the participants. The inclusion criteria were (1) Obese aged 20 to 59 years old (BMI >27.49 Kg/m^2), (2) Respondent who were willing to participate voluntarily, (3) Respondent can read, write and understand English and Bahasa Melayu, (4) Both Male and Female obese individuals and (5) Malay ethnicity. For exclusion criteria, (1) Obese aged below 20 and more than 59 years old (BMI < 27.49 Kg/m^2), (2) Respondent who were not willing to participate, (3) Respondent who cannot read, write and understand questionnaire in Bahasa Melayu and English very well, (4) Pregnant respondent, and (5) Non-Malay ethnicity.

BMI of participants was obtained by given guidelines of Clinical Practice Guidelines on Management of Obesity. All the calculations were recorded in a standard formation, and the BMI was classified according to the weight status of an individual.

Data collection was conducted from June 2017 to November 2017. The information was gathered from UniSZA (Gong Badak Campus and medical campus), Universiti of Malaysia Terengganu, and Sultan Nur Zahirah Hospital. The participants were approached who fulfilled the inclusion criteria and willing to participate voluntarily for this study. The researcher explained the objective of the research to the participants and obtained verbal consent. The response rate was 90.5%. Further, data was entered into SPSS version 23.0 Multiple regressions analysis (stepwise method) was performed to explore the most influenced social factor among the population.

Table 1: Classification of BMI in Asian Adults given by Clinical Practice Guidelines on Management of Obesity

BMI	**Weight Status**
18.5 – 22.9	Normal and Healthy Weight
23.00 - 27.49	Overweight
27.50 - 34.99	Obese I
(35.00 - 39.99)	Obese II
>40 kg/m2	Obese III

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regressions analysis (Stepwise method) was performed to explore the most influenced social factor among the population.

3. RESULTS

Table 2 shows the regression analysis of the model summary of ANOVA and coefficients. It shows that the regression model has been performed at three steps. It means, three most important and significant variables were identified and correspondingly R-Square (coefficient of determination) mentioned in Table 2. R-square showed that at three steps, using three variables, 43.2% variation could explain in the dependent variable.

Table 2: Model Summary of Eating habits, Physical Activity Barriers, & Feelings (low self-esteem) on Obesity

Model	R	R Square	Adjusted R Square	Std. The error of the Estimate
1	0.556[a]	0.309	0.304	3.256
2	0.640[b]	0.410	0.402	3.019
3	0.657[c]	0.432	0.420	2.976
a. Predictors: (Constant), eating habits				
b. Predictors: (Constant), eating habits, physical activity barriers				
c. Predictors: (Constant), eating habits, physical activity barriers, feelings (low self-esteem)				
d. Dependent Variable: Obesity				

The result of ANOVA as per given in Table 3 indicated that F value was significant at F (37.034), p < 0.0.5.

Table 3: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	702.032	1	702.032	66.232	0.000[b]
	Residual	1568.740	148	10.600		
	Total	2270.772	149			
2	Regression	931.439	2	465.719	51.116	0.000[c]
	Residual	1339.333	147	9.111		
	Total	2270.772	149			
3	Regression	981.272	3	327.091	37.034	0.000[d]
	Residual	1289.499	146	8.832		
	Total	2270.772	149			

Eating habits, physical activity barriers, and feelings (low self-esteem) were the most significant factors respectively. All these three variables have p-values < 0.05. Beta coefficients showed the individual impact of variables on the dependent variable. The regression coefficient value, its sign, and corresponding p-value are observed. Except for feelings (low self-esteem), the other two variables have a significantly positive role in increasing obesity of subjects. Feelings (low self-esteem) have an average negative impact on the dependent variable. It explained that a person having low self-esteem would increase the level of obesity and vice versa. Standardised coefficients have shown that eating habits are the most strong predictor in the final model.

Table 4: Test of Hypothesis (Regression Coefficients)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	19.288	2.085		9.252	0.000
	Eating habits	0.451	0.055	0.556	8.138	0.000
2	(Constant)	15.879	2.049		7.751	0.000
	Eating habits	0.344	0.056	0.424	6.186	0.000
	Physical activity barriers	0.216	0.043	0.344	5.018	0.000
3	(Constant)	20.579	2.825		7.284	0.000
	Eating habits	0.324	0.055	0.400	5.861	0.000
	Physical activity barriers	0.229	0.043	0.365	5.362	0.000
	Feelings (low self-esteem)	-0.090	0.038	-0.150	-2.375	0.019

Dependent Variable: Obesity

Table 5 indicates that body image dissatisfaction ($\beta = .127$, $p > 0.05$), physical activity ($\beta = -.045$, $p > 0.05$), and media influence ($\beta = -.141$, $p > 0.05$) were found to be insignificant and were excluded accordingly.

Table 5: Excluded Variables (Stepwise-Based)

Model		Beta In	t	Sig.
1	Feelings (low self-esteem)	-0.106[b]	-1.551	0.123
	Body image dissatisfaction	0.312[b]	4.547	0.000
	Physical activity	-0.105[b]	-1.528	0.129
	Physical activity barriers	0.344[b]	5.018	0.000
	Media influence	-0.095[b]	-0.689	0.492
2	Feelings (low self-esteem)	-0.150[c]	-2.375	0.019
	Body image dissatisfaction	0.123[c]	1.147	0.253
	Physical activity	-0.056[c]	-0.854	0.394
	Media influence	-0.193[c]	-1.510	0.133
3	Body image dissatisfaction	0.127[d]	1.204	0.231
	Physical activity	-0.045[d]	-0.694	0.489
	Media influence	-0.141[d]	-1.096	0.275

4. DISCUSSION

The findings of this study asserted the determinant factors of obesity. The regression analysis (Stepwise method) eliminated the variables such as body image dissatisfaction, physical activity and media influence in the final model, yet these factors cannot be neglected. From the results, it can be determined that eating habits, physical activity barriers, and feelings (low self-esteem) are the most dominant factors which are influencing obesity.

However, eating habits are performing vital their role in order to increase the obesity level. There may be a change of eating outside frequently among Malay people. A study conducted by Lim revealed that people are dining out 13 times per week in Malaysia. Another reason may be explained that Malay people preferred to consume sweet drinks and beverages instead of water during meals. Factors such as working mothers, food varieties (both local and international), sweet drinks and beverages served at many premises encouraged the practice of eating-out. Restaurants, night markets (Pasar Malam), food courts and food stalls were servicing not only those who wanted to eat at meal times but also those who wanted to enjoy food with friends/family members in a festive and relaxed manner. Food caterers were also available to serve at formal functions (meetings, seminars) in offices and home during religious and family occasions.

Income inequalities may actuate differences in lifestyle, for example, exercise, eating habits, and cigarette smoking. National Health and Morbidity Survey determined the lower level of vegetable utilization in men with a low salary than that in men with a high salary. Fruit and meat utilization was lesser in participants with lower income than that in participants with high income among both sexes. Therefore, lack of consideration of nutrient contents, irregular eating time, poor food quality and premises' cleanliness might expose the practitioner to health, social, familial and even safety risks.

Moreover, physical activity barriers described their influence on obesity. It shows how obese Malay people are experiencing physical

activity barriers which are leading to obesity. To decrease the obesity trend, the state government should observe the barriers at the personal and social level when creating interventional programs to promote physical activity. Therefore, understanding physical activity barriers is very important.

Moreover, third variable feelings (low self-esteem) also showed it significant importance affecting obesity which may be due to the mediating role of body image dissatisfaction which compels an individual towards unhealthy dieting or emotional eating. As obesity is a rising issue and distressing the Malay obese people, so eating habits are worth evaluation among several factors to cure obesity problems. The government should come up with interventional programs that will cover these neglected factors to avoid people from obesity. Further, more researches are expected to clarify whether feelings (low self-esteem) and physical activity barriers interact with eating habits or not among Malay obese people.

5. CONCLUSION

This pioneering study has evaluated the strong influence of eating habits on obesity. Other determinant social factors were physical activity barriers and feelings (low self-esteem). There is a need to inculcate good habits of healthy eating and regular physical exercise among Malay obese people. Also, initiatives to promote exercise may also need to focus on physical activity barriers among the

population. This study is providing a baseline data of influencing factors in Malaysia and emphasized researchers to conduct further studies by aligning the given results to decrease the burden of obesity from the country.

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