Factors That Cause Obesity Among Adults in Malaysia

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ABSTRACT

Obesity has become a common problem worldwide which affects both developing and developed countries. Malaysia has the highest rate of adult obesity in Southeast Asia. Obesity has become a long-term medical problem with serious consequences for human health. This study aims to investigate eating habits, physical inactivity, and stress as significant factors causing obesity among adults in Malaysia. This study employs a quantitative method by distributing the questionnaire to 384 adults in Malaysia. This study evaluates the primary data through the SPSS version 26.0. The finding indicates that there is a positive relationship between eating habits, physical inactivity, and stress, and factors that cause obesity among adults in Malaysia. The Pearson Correlation shows eating habits have the highest connection compared to other factors. The relationship established in this study provides a better understanding of the causative factors for obesity among adults in Malaysia and future research may focus on children in different states.

Keywords: obesity, eating habits, physical inactivity, stress, adults.

INTRODUCTION

In this modern era, obesity has become a common problem worldwide. No country is free from obesity issues. Obesity is the leading health problem of Non-Communicable Diseases (NCDs). Obesity is a complicated disease with several causes. Since 1980, the rate of obesity has doubled and over a third of people are declared obese in the world (Chooi et al., 2019).

Besides that, obesity has become a major, long-term medical problem with serious consequences for human health. It will impact people in both physical and physiological health. In the United States, up to a two-thirds population of the obese are adults. Obesity affects approximately 315 million people globally (James, 2004). Throughout the last 30 years, the rates of obesity have increased massively globally, with adult and childhood obesity rates doubling (6–11 years) and adolescent obesity rates tripling (12–19 years) (Upadhyay et al., 2018). Malaysia is Asia's most obese country. Malaysia has the greatest adult prevalence of obesity in Southeast Asia at 15.6 percent in 2019. Followed by Brunei (14.1%), Thailand (10.0%), and Indonesia (6.9%) (Siong & John, 2021). Obesity affects 45 percent of Malaysians, which means that nearly one in every two Malaysians is fat.

This study aims to investigate the significant factors that cause obesity among adults in Malaysia. The factors are eating habits, physical inactivity, and stress. This study consists of three objectives:
1   To investigate eating habits as a significant factor to cause obesity among adults in Malaysia.
2   To examine physical inactivity as a significant factor to cause obesity among adults in Malaysia.

3   To determine stress as a significant factor to cause obesity among adults in Malaysia.

Significance of the Study

Malaysian Adults

The findings of this study will help Malaysian adults maintain a healthy body. As a result of this study, adults will learn about the effects and factors that contribute to obesity. Furthermore, they will be able to avoid some unhealthy behaviours, which will help them avoid obesity. This study may encourage young adults to be health-conscious, allowing us to prevent obesity among young adult .

Obese People

Obese people frequently have low self-esteem which leads to feeling insecure. Obese people may face body shaming from society as well. This research will help them educate people about the factors that contribute to obesity. Through this study, they may gain a better understanding of the importance of healthy eating, physical activity, and stress management. Additionally, this research will assist obese people in learning how to eat healthily, engage in physical activities, and manage their stress.

Parents

This study will motivate parents to spend more time with their children. This study could help parents understand how to prevent childhood obesity. So that they can provide the healthiest lifestyle for their children. They will thus be able to prevent their children from becoming obese. This could help their children live a healthier lifestyle and lower the risk of being obese

The Government

This study will help the government be more concerned about obese people, particularly adults. This is because many obese people struggle with their weight, and the government may help motivate them to lose weight. As a result, the government must address the problem of adult obesity and identify the factors that contribute to obesity to take steps towards a healthier weight with motivation on how to lose weight and keep it off.

LITERATURE REVIEW

Eating Habits

Individuals' eating habits and dietary habits are about the food choices and observances they make in their lifestyles. Age, sex, diet, physical activity, lifestyle, disease, culture, social, economic, religious, environmental, and food information private all possible causes. Adults have maintained these habits for so long that most individuals are unaware of them. Food consumption habits are linked to an individual's health state. Good eating habits are the core to good nutritional status, while bad eating habits contribute to poor health and diseases (Henry-Unaeze & Ngwu, 2020).

Obesity is caused by unhealthy eating habits (Chan et al., 2017). Mostly, people prefer fast foods and sugary foods. In other words, eating habits is related to when and how people consume food , the types of food they consume and with whom do they consume, as well as how they get, acquire, utilize, and discard the food, are all factors to consider. Sometimes, family eating or eating habits in family structure with the lifestyle habits can affect weight and health which could lead to obesity. Some families may eat high-fat, salt, and added sugar food and beverages or consume large quantities of unsound food at family gatherings. Regular

consumption of high-calorie foods, fat, and sugar will result in additional weight gain. Other than that, according to Chen Yun et al (2018), missing breakfast is also linked to weight gain and a higher BMI.

Physical Inactivity

Physical inactivity is defined as a lack of moderate to heavy exercise in one's daily activities. You are deemed physically inactive if you do not move your body or are not actively working for a long period of time. Passive activities include sitting or lounging on the couch while watching TV, as well as sitting at a workstation. Aside from that, inactivity is described as a lack of physical activity or a struggle to satisfy the physical activity standards. Sitting at the house, for study, for vacation, or during free time might also be termed physically inactive since their bodies have received little activity.

Obesity is linked to a lack of physical exercise, which increases the bad health effects of obesity (Kravitz et al., 2016). Besides that, people can maintain or even decrease weight by increasing their overall calorie intake through physical activity. Other that, physical activity helps to reduce weight around the hips and general body fat, which helps to prevent the progress of abdominal obesity. For example, weightlifting, push-ups, and other muscle-reinforcing activities can improve body energy, making the reducing weight process easy even on rest days. Physical activity helps reduce depression and anxiety, and people are more likely to keep to their fitness routines over time as a result of their better mood.

Stress

Stress can affect people's emotions, psychology, and social well-being. The relationship between an individual and the environment that one perceives as taxing or exhausting resources and jeopardizing health is classified as stress. Many different forms of emotional issues might induce stress (e.g., unemployment or illness). Chronic and acute stress are two types of stress. Chronic stress is a long-term reaction to psychological stress (e.g., work stress). While acute stress has been connected to a person's ability to engage the mechanism, it has also been linked to an increase in appetite. This can lead to obesity and overweight in the long term, especially in women (Poulsen et al., 2019).

It requires an overall country analysis to identify the risk factors and consequences of obesity problems due to stress problems. Stress can alter behaviour by causing overeating and high-calorie, high-fat, or high-sugar meals to be consumed, as well as restricting physical activities and sleeping less. According to Van der Valk et al., (2018), show that due to the diverse qualities of glucocorticoids, stress can contribute to body weight increase in a variety of ways. High cortisol levels can stimulate appetite and cause white adipose tissue to be redistributed to the belly, resulting in abdominal obesity. Furthermore, exogenous glucocorticoid treatment boosts cortisone-to-cortisol conversion in the liver, which potentially leads to obesity. Sleep or works shifts are disrupted as a result of glucocorticoids, and this could lead to greater effects causing certain people to be more susceptible to obesity and overweight.

Obesity among adults in Malaysia

One of the worldwide issues is obesity. It is a chronic disease that affects people of all ages. Obesity is common among children and adults. Obesity is a severe metabolic disorder that is linked to cardiovascular disease (CVD), in both developed and developing nations, as well as there is a risk of dying. Malaysia is ranked first in the rate of adult obesity in South East Asia. The obesity rate in 2011 among adults in Malaysia was 15.1 percent (Davey et al., 2013). In

epidemiological studies, the body mass index (BMI) is a method to identify health status (Chooi et al., 2019).

Obesity happens when there is an imbalance of calorie intake and calorie expenditure. The excessive consumption of energy, particularly fat and sugars, must be burned off; otherwise, the excess energy will be stored in the body as fat. According to Bessesen, (2008), obesity is defined as a level of excessive weight that will cause negative health effects. People can determine their health status by calculating their Body Mass Index (BMI) by dividing their weight (kg) to their height (m2). If a person is obese then their body mass index (BMI) is greater than 30.0 kg/m2. Being overweight is when having a BMI between 25.0 and 29.9 kg/m2, whereas BMI around 18.5 to 24.9 kg/m2 shows normal (James et al., 2001) (Table 1).

Table 12: WHO classification of obesity

Classification	BMI (kg/m2)	Risk of comorbidities
Underweight	18.5	Low (but the risk of other clinical problems increased)
Normal range	18.5 to 24.9	
Overweight	≥ 25	Average
Pre-obese	25.0 to 29.9	
Obese class 1	30.0 to 34.9	Increased
Obese class 2	35.0 to 39.9	Moderate
Obese class 3	≥40.0	Severe
		Very severe

Comorbidity risk	WAIST CIRCUMFERENCE (CM)	
	WOMEN	MEN
Above action level 1	≥80	≥94
Above action level 2	≥88	≥102

Source: Journal of the American Medical Association (2001).

People need to know their BMI. It will lead them to see whether their weight is proportionate to their height. Being aware of the BMI can help one to identify any health risks that may be faced if it exceeds the healthy range. Excessive body weight is linked to many health issues such as diabetes, coronary heart disease, and non-alcoholic fatty liver disease, as well as a higher risk of disability.

Research Hypotheses

The study's hypothesis is to see whether there is a significant factor between the dependent and independent variables.

H1   **There is a significant association between eating habits and obesity among adults in Malaysia.**

H2:   There is a significant association between physical inactivity and obesity among adults in Malaysia.

H3   There is a significant association between stress and obesity among adults in Malaysia

Research Framework
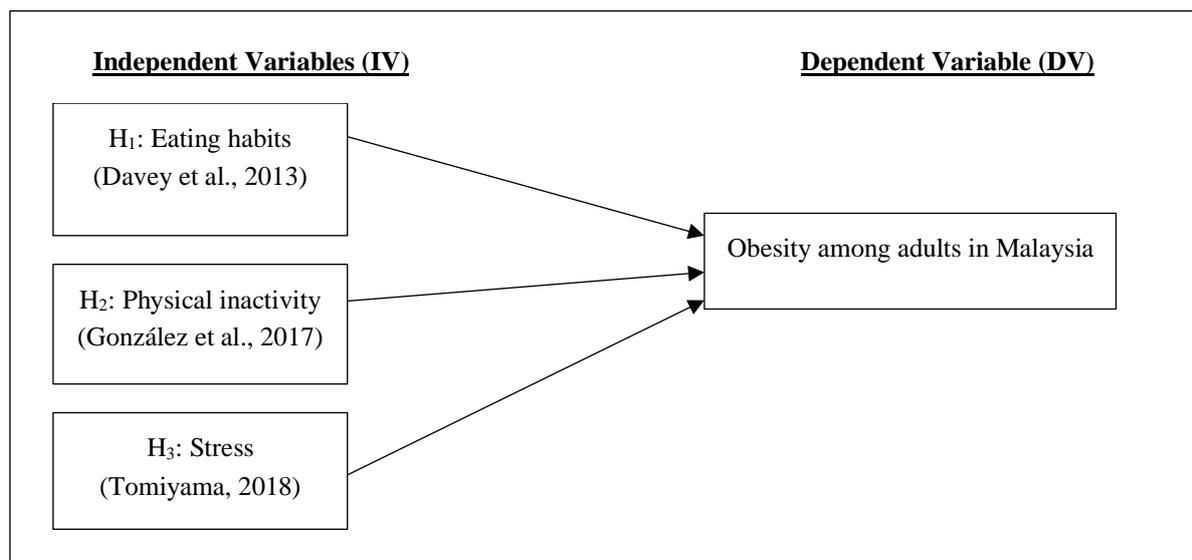
Figure 1 below shows the research framework of this study.

Figure 1: Research Framework

METHODOLOGY

Research Design

This study employed a quantitative approach by using a set of questionnaires to collect the data. The questionnaires were distributed via online platforms such WhatsApp, Instagram and Facebook. The target population was adults in Selangor, Malaysia. The questionnaires is designed to collect all information relevant to this study's objectives. Likert-Scale was used to determine the independent and dependent variables. The options range from 1 to 5, with 1 being firmly disagreed and 5 being strongly agree. The Statistical Package Social Science (SPSS) version 26 was used to interpret all the results. SPSS is a program that evaluates, transforms, and creates a distinctive pattern from a collection of data variables.

Data Collection

In the first stage, this study involved primary data collection using questionnaires via Google Forms, which were distributed to 384 respondents who participated in this study. The questionnaires were constructed using Google Forms and were distributed via online platforms such as WhatsApp, Instagram, and Facebook. This research used Google Forms is chosen because it can reduce the cost and it is easier for people to respond to the questions. The questionnaires were divided into 5 sections which are section A, section B, section C, section D, and section E. Section A discusses socio-demographics (gender, age, ethnicity, marital status, education background, employment status, and monthly income). Section B, section C, and section D are about the factor that causes obesity among adults such as eating habits, physical inactivity, and stress. Finally, section E is about obesity.

Sampling

This research was conducted through a quantitative method, which included the use of an online survey questionnaire and a Google form. The participants in this study were identified using a convenience sampling method. The participants that were involved in this study are adults who live in Selangor. A non-probability convenience sampling method was chosen as the sampling technique. Furthermore, the non-probability sampling approach was used in this study since it

reduced time and money for the researchers when collecting data. To obtain a reliable and valid sample for this study, the researchers used Krejcie & Morgan's (1970) equation to determine the sample size.

Data Analysis

This study evaluated the primary data through the Statistical Programmers for Social Science (SPSS) version 26.0 to show the relationships between the dependent variable and the independent variables. SPSS is a program-based window for data entry and analysis that makes it easy to create tables and pie charts. Researchers were able to reduce the time needed to calculate data and perform quantitative analysis more quickly and. The researcher uses descriptive statistics, reliability statistics, and the Pearson correlation coefficient to analyse the data.

FINDINGS

Results of Frequency Analysis

There were 384 respondents involved in this study are adults in Malaysia. The distribution of the respondents in terms of their background characteristics were analysed using descriptive statistics involving frequency and percentage. The results are shown in Table 2.

Table 2: Frequency Analysis

Characteristics	Frequency	Percentage (%)
Gender		
Male	128	33.3
Female	256	66.7
Age		
18-27 years	226	58.9
28-37 years	79	20.6
38-47 years	50	13.0
Above 48 years	29	7.6
Ethnicity		
Malay	241	62.8
Indian	86	22.4
Chinese	42	10.9
Others	15	3.9
Marital status		
Married	124	32.3
Single	252	65.6
Divorced	8	2.1
Level of education		
Illiterate	1	0.3
Primary school	1	0.3
Secondary school	62	16.1
Diploma	125	32.6
Degree	167	43.5
Others	28	7.3
Employment status		
Student	194	50.5
Self-employed	48	12.5
Employed	137	35.7
Unemployed	5	1.3

Monthly income		
No income	187	48.7
Less than RM1500	68	17.7
RM1500- RM4000	100	26.0
Above RM4000	29	7.6

Table 2 above shows the distribution of respondents' background characteristics which are gender, age, ethnicity, marital status, level of education, employment status, and monthly income. There are 128 male respondents (33.3%) and 256 female respondents (66.7%) among the 384 total respondents. The age distribution of respondents are 226 (58.9 %) between the ages of 18 and 27, 79 (20.6 %) are between 28 and 37, 50 (13.0 %) are between 38 and 47, and 29 are over the age of 48. (7.6%). Besides that, 241 (62.8 %) are Malay, 86 (22.4 %) are Indian, 42 (10.9%) are Chinese, and 15 (3.9 %) are others. According to the marital status of the respondents, 124 (32.2 %) are married, 252 (65.6 %) are single, and 8 (2.1%) are divorced.

In terms of education, 1 (0.3 %) of respondents are illiterate, 1 (0.3 %) only attended primary school, 62 (16.1 %) only attended secondary school, 125 (32.6 %) obtained a diploma, 167 (43.5 %) obtained a degree, and 28 (7.3 %) are other types of educations. According to respondents' backgrounds based on their employment status, 194 (50.5%) are students, 48 (12.5%) are self-employed, 137 (35.7%) are employed, and 5 (1.3%) are unemployed. According to the analysis of respondents' monthly income, 187 (48.7 %) have no income, 68 (17.7 %) have less than RM1500, 100 (26.0 %) have income ranging from RM1500 to RM4000, and 29 (7.6 %) have income exceeding RM4000.

Results of Descriptive Analysis

Table 3 below shows the descriptive analysis of the factors that cause obesity among adults in Malaysia (N=384).

Table 3: Descriptive Analysis

Variables	Items	Mean Score	Standard Deviation
Eating habits	Eat meals regularly daily	4.07	1.055
	Do you eat vegetables on a daily basis?	3.87	1.175
	Do you consume breakfast on a daily?	3.87	1.219
	Do you practice healthy eating every day?	3.75	1.250
	Do you consume fry food regularly?	3.97	1.040
	A snack in between regular meals is a must.	3.97	1.132
	The intake of regular meals is more than 3 meals per day.	3.85	1.143
	Daily water intake is more than 1 litre.	4.07	1.103
	I frequently consume fast food.	3.90	1.161
	Do you agree that eating habits are linked to obesity?	4.68	0.576
Physical inactivity	I am engaging in physical activities daily?	3.55	1.374
	Do you do some light physical activity every week?	3.97	1.127
	Doing physical activities for 30 minutes?	3.79	1.180
	Do you do physical activities at home?	3.90	1.153
	Do you like to do physical activities?	4.01	1.092
	Do you walk around the neighbourhood?	3.65	1.347
	Does exercise cure obesity?	4.49	0.658
	Doing physical activities at home is the best choice?	4.16	0.970

	Do you think physical inactivity causes obesity	4.70	0.586
Stress	Do the weight scales have great power over you? Can they change your mood?	4.26	0.874
	Have you been feeling down, stressed, depressed, or hopeless in the last two weeks?	3.89	1.130
	Is it difficult for you to stop eating sweet things, especially chocolate?	3.89	1.121
	Do you crave specific foods when you're stressed?	4.07	1.006
	Do you eat more of your favourite food and with less control when you are alone?	3.94	1.122
	Do you eat a lot when you're stressed?	4.03	1.069
	Do you engage in physical activities when you are stressed?	3.51	1.384
	Are you stressed about your body size and physical appearance?	4.16	1.002
	Are you feel stressed when someone teases your body size?	4.29	0.878
	Do you agree that stress can contribute to obesity?	4.60	0.690
Obesity among adults in Malaysia	What is your Body Mass Index (BMI) category? - Underweight - Normal - Overweight - Obesity	2.66	0.888
	Obese people are as happy as non-obese people. Do you agree?	3.46	1.454
	Most obese people feel that they are not as good as other people.	4.20	0.935
	Obesity is a problem for many adults in Malaysia nowadays. Do you agree?	4.57	0.614
	Obese people are just as healthy as non-obese people.		
	One of the worse things that could happen to a person would be for him to become obese.	3.28	1.555
	Very few obese people are ashamed of their weight.	4.29	0.780

Table 3 shows the mean and standard deviation for twenty-nine statements under three independent variables and seven statements under the dependent variable based on the survey involving 384 respondents. The highest mean value for the eating habits factor was obtained by Question 10 with 4.68, where the respondents agreed that eating habits are linked to obesity. The lowest mean value belonged to Question 4 with 3.75, where the respondents agreed that practice healthy eating every day. As for the factor of physical inactivity, the highest mean value was obtained by Question 9 with 4.70, where the respondents agreed that physical inactivity causes obesity. The lowest mean value belongs to Question 1 with 3.55, where the respondents agreed that they engage in physical activities daily. Meanwhile, the highest mean value for the factor of stress was obtained by Question 10 with 4.60, where the respondents agreed that stress can contribute to obesity. The lowest mean value belonged to Question 7 with 3.51, where the respondents agreed that engage in physical activities when they are stressed. Besides that, the highest mean value for the dependent variable of obesity among adults in Malaysia was obtained by Question 4 with 4.57, where the respondents agreed that obesity is a problem for many adults in Malaysia nowadays. The lowest mean value belonged to question 1 with 2.66, where the question is about respondents' Body Mass Index (BMI) categories which are underweight, normal, overweight, and obesity.

Results of Reliability Analysis

Table 4 below shows the reliability of the analysis. When the alpha value is less than 0.70, it suggests insufficient internal consistency reliability. However, when the alpha value is greater than 0.70, it shows appropriate internal consistency reliability.

Table 4: Reliability Analysis

Variables	Number of Items	Cronbach Alpha
Eating habits	10	0.839
Physical inactivity	9	0.874
Stress	10	0.855
Obesity among adults in Malaysia	7	0.703

Table 4 shows the results of reliability statistics for the independent variables and dependent variables. In order to measure the eating habits variable that influences eating habits among adults in Malaysia, 10 questions were constructed. It is shown that the Cronbach's Alpha result for this question was 0.839 which was acceptable and very good. Thus, the coefficient obtained for the questions in the eating habits variable was reliable.

In order to measure of physical inactivity variable that influenced physical inactivity among adults in Malaysia, 9 questions were constructed. It was shown that the Cronbach's Alpha result for this question was 0.874 which was acceptable and very good. Thus, the coefficient obtained for the questions in the physical inactivity variable was reliable.

To measure the stress variable that influenced stress among adults in Malaysia, there were 10 questions constructed for this section. It was shown that the Cronbach's Alpha result for this question was 0.855 which was acceptable and very good. Thus, the coefficient obtained for the questions in the stress variable was reliable.

In order to measure obesity among adults in Malaysia, 7 questions were constructed for this section. 0.703 were shown for the Cronbach's Alpha result for this question which was acceptable and good. The coefficient obtained for the questions was reliable and the research can be continued.

Results of Pearson Correlation

Table 5 below shows the Pearson Correlation. According to table 5, the Pearson Correlation association between eating habits, physical inactivity, stress, and obesity among adults in Malaysia.

Table 5: Pearson Correlation

Hypothesis	p-Value	Result (Supported/ Not supported)
H1: There is a significant association between eating habits and obesity among adults in Malaysia.	0.625	H1 is supported
H2: There is a significant association between physical inactivity and obesity among adults in Malaysia.	0.559	H2 is supported

H3: There is a significant association between stress and obesity among adults in Malaysia.	0.620	H3 is supported

H1: There is a significant association between eating habits and obesity among adults in Malaysia.

Eating habits and obesity among adults are independent and dependent variables, respectively. Eating habits have been determined as obesity problems. It shows that there is a significant relationship between eating habits and factors that influence obesity among adults in Malaysia. The Pearson's correlation value was 0.625 which stipulated the intensity of the moderate positive relationship between eating habits and obesity among adults in Malaysia.

H2: There is a significant association between physical inactivity and obesity among adults in Malaysia.

There is a significant relationship between physical inactivity factors that influence obesity among adults in Malaysia. The Pearson's correlation value was 0.559 which showed the intensity of the moderate positive relationship between physical inactivity and obesity among adults in Malaysia.

H3: There is a significant association between stress and obesity among adults in Malaysia.

In this hypothesis, stress and obesity among adults are independent and dependent variables. Stress has been determined as mental health. The result indicated that there is a significant relationship between stress factors and obesity among adults in Malaysia. The Pearson's correlation value was 0.620 which showed the intensity of the moderate positive relationship between stress and obesity among adults in Malaysia.

DISCUSSION AND RECOMMENDATIONS

The discussion objective of the research study is to determine the relationship between eating habits, physical inactivity, and stress that influence obesity among adults in Malaysia. The result of the data shows that there is a moderate relationship between the independent variables which are eating habits, physical inactivity, and stress, and the dependent variable which is obesity among adults in Malaysia. In addition, eating habits have the highest correlation compared to physical inactivity and stress based on the values of Pearson Correlation which is represented by the correlation $(0.625 > 0.559 < 0.620)$. All the hypotheses stated are supported.

There are several recommendations to this study. This study only focused on one state which is Selangor. Therefore, there are several areas in which future research should undertake. Moreover, obesity prevention will require a better understanding of the causative factors for obesity which influence behaviour and the social and cultural environment (Ramachandran & Snehalatha, 2010). Other than that, this study also suggests that future studies may focus on children of school age to predict the risk of persisting obesity (James, 2004).

CONCLUSION

In conclusion, this study is completed to determine the factors that cause obesity among adults in Malaysia. This study mainly focused on adults in Selangor, Malaysia. There were 384 respondents who participated in this study. This study focused on three factors to investigate the significant factors that cause obesity among adults in Malaysia which are eating habits, physical inactivity, and stress. This study uses descriptive statistics, reliability statistics, and Pearson correlation coefficient to analyse the data by using SPSS Version 26. Other than that,

this study employs a quantitative method by distributing questionnaires in google form through social media such as WhatsApp, Instagram, and Facebook. Based on the finding, eating habits have the highest correlation compared to physical inactivity and stress based on the values of Pearson Correlation which is represented by the correlation ($0.625 > 0.559 < 0.620$). The study concluded that eating habits, physical inactivity, and stress have a moderate positive relationship to causing obesity among adults in Malaysia.

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