

The Relationship between Millennial Lifestyle and the Incidence of Obesity in Adolescents in Medan City

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ABSTRACT

The prevalence of overweight and obesity is increasing worldwide and becomes a global health problem because it is not only increasing in developed countries but also in developing countries. Excessive use of gadgets has an effect on the lack of physical activity due to changes in lifestyle towards a sedentary lifestyle. The purpose of this study was to determine the relationship between millennial lifestyle and the incidence of obesity in adolescents in Medan city. This type of research is a survey, conducted at Public High Schools in Medan City from October 2019 to completion. The population was all students of class X and XI from State Senior High Schools in Medan, totaling 5,719 students. The sample size is based on the number of population and the error rate is 5%, so the sample in this study was 329 teenagers. Data collection was done through questionnaires and observations. The data analysis method used multiple linear regression. The results of the F statistical test show that there is a positive and significant influence given by lifestyle simultaneously on the incidence of obesity. Partially there is a positive and significant influence given by the variable length of time using gadgets, diet and social environment on the incidence of obesity. It is better if the family, especially parents, exercise good control over the use of gadgets for teenagers by providing a time limit for playing gadgets per day. Furthermore, adolescents should increase physical activity such as exercising, especially in the era of the COVID-19 pandemic to increase the immunity system of adolescents in avoiding various sources of disease and maintaining a balance of energy in and out of the body.

Keywords: Lifestyle, Length of Time Using Gadgets, Diet, Social Environment, Incidence of Obesity

INTRODUCTION

The prevalence of overweight and obesity is increasing worldwide and becomes a global health problem because it is not only increasing in developed countries but also in developing countries. Quoted from the World Health Organization (2018) states that the high price of healthy food and food scarcity in poor countries are contributing factors to obesity due to the tendency to consume cheap foods with higher calorie dense. Obesity data is evaluated as a major risk factor in increasing morbidity and mortality from degenerative diseases such as hypertension, coronary heart disease, type 2 diabetes mellitus, stroke, cancer, sleep apnea and osteoarthritis (Nishida *et al.*, 2015). Obesity analysis conducted by Yatsuya *et al.* (2014) through the collection of secondary data covering every country in the six World Health Organization regions in the world (Africa, America, East Mediterranean, Southeast Asia, Western Pacific and Europe) showed that around 12 percent of the global adult population was obese in 2008. America (26.7 percent), Europe (21.9 percent), and the Eastern Mediterranean (18.7 percent) are the top three countries with the highest disease burden.

Obesity has reached epidemic proportions globally, in the last 40 years the

prevalence of obesity in the world has almost tripled. In 2016 more than 1.9 billion (39 percent) of adults in the world aged 18 years and over were overweight and more than 650 million of them (13 percent of the world's adult population) were obese (World Health Organization, 2018).

The increase in the prevalence of obesity does not only occur in adulthood, but in all age groups. Weight gain in childhood has been linked to higher obesity in adulthood and tends to lead to degenerative diseases at younger ages. The prevalence of obesity in children and adolescents aged 5-19 years has also increased from 4 percent in 1975 to more than 18 percent in 2016, namely more than 340 million children and adolescents aged 5-19 years are obese in 2016. This increase did not represent a difference between boys and girls: 18 percent of girls and 19 percent of boys were obese in 2016 (World Health Organization, 2018).

Obesity is expected to continue to increase among adolescents, especially in urban areas. This is supported by changes in people's lifestyles that continue to consume energy-dense foods without doing physical activities such as sports. The United Nations International Children's Emergency Fund (2019) reports that 42 percent of adolescents who attend school in low- and middle-income countries consume sugary soft drinks at least twice a day and 46 percent consume fast food at least once a week. As a result, rates of overweight and obesity in childhood and adolescence are increasing worldwide. The development of an increasingly modern industry encourages teenagers to have a contemporary lifestyle or also known as the millennial generation, where technology, especially gadgets, is considered a primary need.

Research conducted on adolescents at SMK Ma'arif NU 04 Pakis showed that adolescents with obesity conditions (48.3%) had less social relationships. This in turn causes a decrease in self-confidence and motivation for adolescents. Obese adolescents perceive to be treated

differently by groups or peers. So that it causes feelings of hopelessness and in the end can have an impact on adolescent psychology, namely the level of stress experienced by these adolescents (Imelda *et al.*, 2016).

Adolescent access to gadgets is no longer limited, based on a survey conducted by a survey agency in the United States states that the biggest use of gadgets is among adolescents aged 13-17 years, where 95 percent of teens have gadgets or access to gadgets and 45 percent say they are online almost constantly (Aderson and Jiang, 2018). Gadgets are becoming a new world for the millennial generation, which causes daily activities to focus solely on the use of gadgets. In addition, gadgets affect adolescents in determining social attitudes, namely consumptive behavior or following trends in society that tend to hold meetings in cafes to just sit and buy food, especially fast food. This supports adolescents to have an unhealthy diet that is associated with an increase in body mass index (BMI). This picture of modern life encourages adolescents to tend to be consumptive and lack of physical activity, resulting in obesity in modern adolescents (Pratiwi *et al.*, 2017).

Excessive use of gadgets has an effect on the lack of physical activity due to changes in lifestyle towards a sedentary lifestyle (Rusmini, 2016). The negative influence on the length of playing gadgets such as addiction to playing gadgets has an impact on the development of children and adolescents (Asif and Rahmadi, 2017). This addiction results in teenagers being immersed in themselves and not caring about other things, such as time spent playing gadgets. The American Academy of Pediatrics, recommends that the use of gadgets is not more than the limit of two hours a day and an increase in the excessive duration of playing gadgets has a risk to health (Kenney and Gortmaker, 2017).

Research conducted on US adolescents showed 41.3 percent spent more than 2 hours a day on gadgets and was associated with increased energy through

sugary drinks, less physical activity, lack of sleep and a double risk of obesity (Kenney and Gortmaker, 2017). In Indonesia, 72.1 percent of children have a duration of gadget use over 2 hours a day through cross-sectional studies and it is associated with obesity in adolescents (Kumala et al., 2019).

Sedentary lifestyle is associated with minimal body movement activity or it can be said that the absence or lack of physical activity. Sedentary lifestyle is related to activity at resting physical activity level or is one of the light activities with energy expenditure equivalent to 1-1.5 metabolic equivalent (METs) (Mandriyarini et al., 2017). Low physical activity is an important predictor of being overweight because it reduces energy expenditure (Wu et al., 2015). The decrease in physical activity also occurs due to lifestyle changes that lead to increasingly advanced technological developments. The use of modern technology such as gadgets for a long duration results in activities with light activities in spare time such as sitting back while playing gadgets or lying down. This causes an imbalance of energy that enters from food and energy that comes out due to decreased physical activity so that the accumulation of fat tissue in the body is at risk for obesity (Suryadinata and Sukarno, 2019).

Based on the results of the initial survey regarding physical activity, as many as 82.2 percent of adolescents did activities in the light or inactive category. Apart from inactive physical activity, diet is also very important in increasing adolescent weight. The dietary pattern of adolescents based on the initial survey was eating more sweet and calorie dense foods such as sausages, nuggets, donuts, bread, fried noodles, meatballs, packaged drinks and others. In addition, the consumption of vegetables and fruit in adolescents is in the low category. Consumption patterns also increase as a result of disturbed emotional feelings such as feeling depressed, angry, or stressed.

The COVID-19 pandemic, which is currently breaking out in the midst of

people's lives, has a great potential to make teenagers behave sedentary. Schools that have been closed and the policy of self-study at home make students spend a lot of time at home. Of course, if teenagers are not properly supervised, they tend to behave in sedentary ways. Teens are more busy with their own gadgets, watching television and other sedentary behaviors. In addition, to eliminate boredom, teenagers usually consume foods such as junk food and other instant foods that can be obtained easily through online ordering applications that are available today.

The purpose of this study was to determine the relationship between millennial lifestyle and the incidence of obesity in adolescents in Medan city.

RESEARCH METHODS

This type of research is a quantitative observational study using a cross-sectional design, which aims to describe or find out the relationship between the independent variable and the dependent variable. This type of research is a survey, conducted at Public High Schools in Medan City from October 2019 to completion.

The population was all students of class X and XI from State Senior High Schools in Medan, totaling 5,719 students. The sample size is based on the number of population and the error rate is 5%, so the sample in this study was 329 teenagers. Data collection through questionnaires and observations.

The data analysis method used multiple linear regression. The multiple linear regression test consists of the F test statistic and the statistical t test.

RESULT

Research Location Overview

The general condition of Medan City in terms of economic interests provides a competitive advantage, because it is relatively flat over a very wide stretch and is a port city in the Malacca Strait. This can be seen from the development and economic growth of Medan City, which is always

above the provincial and national economic growth average.

Demographically, because Medan City is an alluvial plain, it is an ideal area for intensive agriculture and high-value industrial crops such as tobacco. So that the city of Medan in the past has become a dense residential area because it is an agricultural center located in a port city. This means that problems that arise due to population density have been attached to Medan City from time to time.

Geographically, Medan City is located between coordinates 2027 'to 2047' north latitude and 98035 'to 98044' east longitude. Administratively, almost the entire area of Medan City is bordered by the Deli Serdang Regency, namely the West, East and South. Along its northern territory, it is directly adjacent to the Strait of Malacca, which is one of the busiest traffic lanes in the world. As for the administrative boundaries of Medan City, it can be described as follows: The North is bordered by the Malacca Strait, the South is bordered by Deli Tua and Pancur Batu Districts, Deli Serdang Regency, West Side is bordered by Sunggal District, Deli Serdang Regency, and Next The east is bordered by Percut District, Deli Serdang Regency.

The administrative area of Medan City is 26,510 hectares, consisting of 21 (twenty one) Districts with 151 sub-districts divided into 2,000 neighborhoods. Medan Labuhan sub-district has the largest area of 3,667 hectares (13.83% of the total area of Medan City). Medan Belawan sub-district is an area that has the second largest area, which is around 2,625 hectares. Meanwhile, Medan Maimun sub-district has the smallest area of 298 Ha (1.12% of the total area).

The total population of Medan City is 2,083,156 people. The sub-districts that have the largest population are Medan Deli District and Medan Helvetia District, with 147,403 and 142,777 people, respectively. The area that has the smallest population is Medan Baru District, which is 43,419 people. Comparison of the population with the area of Medan City will obtain the

population density per hectare. Based on this, it is known that the population density of the Perjuangan District is very high, namely 254 people/ha. Meanwhile, the lowest population density was Medan Labuhan Subdistrict, amounting to 29 people/ha.

Medan City is a city of services, trade, finance and industry on a national and regional scale, including around 60.8% of the banking industry in North Sumatra Province is in Medan City, 84.8% of bank credit is absorbed by the city's economic activities. developing, where until now there have been 5,596 businesses, both large, medium and small scale businesses, the availability of industrial areas, the development of shopping centers, shops, offices, new cities, hotels, hawker centers, and so on. Other, as well as the city's economic structure that has been formed to date which tends to be fundamentally stronger.

The role or contribution of the urban economic sector shows the magnitude of the ability of each economic sector to create added value and illustrates the regional dependence on the ability to produce goods and services from each economic sector. The economic structure of Medan City can be seen from the contribution of each sector in the formation of GRDP according to business fields based on current prices. Based on the table below, the trade, hotel and restaurant sector is the sector with the largest role in the formation of Medan City GRDP, followed by the transportation and telecommunications sector.

Furthermore, the manufacturing sector and the financial sector, leasing and corporate services as well as the services sector and the building sector (construction). Meanwhile, the economic sector that has a low contribution is the mining and quarrying sector, followed by the electricity, gas and drinking water sector and the agricultural sector.

F Statistics Test

Table 1: F Statistics Test

ANOVA ^a						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	3181.407	4	795.352	230.142	.000 ^b
	Residual	1119.717	324	3.456		
	Total	4301.123	328			

a. Dependent Variable: Incidence of Obesity

b. Predictors: (Constant), Physical Activity, Social Environment, Length of Time Using Gadgets, Diet

Source: Processed Data (2021)

Simultaneous testing aims to see the effect of the independent variables on the dependent variable.

The test results above obtained the Fcount value of 230.142 and a significance value of 0.000. Based on the F table for 329 respondents, 5% accuracy level and 4 independent variables, the Ftable value is 8.5349. So that $F_{count} (230.142) > F_{table} (8.5349)$ and the significance value $(0.000) < \text{level of accuracy} (0.05)$. Thus,

there is a positive and significant influence given by lifestyle simultaneously on the dependent variable (incidence of obesity).

t Statistics Test

Partial testing aims to see the effect of the independent variables partially (respectively) on the dependent variable of the study. The comparative value of t-table with 329 respondents and 5% accuracy level was 1.967.

Table 2: t Statistics Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.635	.941		7.054	.000
	Length of Time Using Gadgets	1.780	.148	.444	12.055	.000
	Diet	.079	.006	.468	12.513	.000
	Social Environment	.079	.017	.134	4.593	.000
	Physical Activity	-.149	.378	-.011	-0.395	.693

a. Dependent Variable: Incidence of Obesity

Source: Processed Data (2021)

The test results above show that:

- There is a positive and significant influence given by length of time using gadgets variable on the incidence of obesity with a t_{count} of $12.055 > 1.967$ and a significance of $0.00 < 0.05$.
- There is a positive and significant effect given by the diet variable on the incidence of obesity with a t_{count} value of $12.513 > 1.967$ and a significance of $0.00 < 0.05$.
- There is a positive and significant influence given by the social environment variable on the incidence of obesity with a t_{count} of $4.593 > 1.967$ and a significance of $0.00 < 0.05$.
- There is no positive and significant effect given by the physical activity variable on the incidence of obesity with a t_{count} of $-0.395 < 1.967$ and a significance of $0.693 > 0.05$.

CONCLUSION AND SUGGESTION

The results of the F statistical test show that there is a positive and significant influence given by lifestyle simultaneously on the incidence of obesity. Partially there is a positive and significant influence given by the variable length of time using gadgets, diet and social environment on the incidence of obesity.

It is better if the family, especially parents, exercise good control over the use of gadgets for teenagers by providing a time limit for playing gadgets per day. Furthermore, adolescents should increase physical activity such as exercising, especially in the era of the COVID-19 pandemic to increase the immunity system of adolescents in avoiding various sources of disease and maintaining a balance of energy in and out of the body.

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