

## **ANALYSIS OF FACTORS ASSOCIATED WITH THE INCIDENT OF CENTRAL OBESITY IN ADOLESCENTS IN JAMBI CITY**

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### **ABSTRACT**

*Obesity is a condition where a person has a body weight that exceeds the normal limit, causing excessive or abnormal fat accumulation in the body. Obesity can be classified based on measurements of Body Mass Index (BMI) and abdominal circumference. The aim of this study was to determine the factors associated with the incidence of central obesity in adolescents in Jambi City. This quantitative descriptive research uses a cross-sectional study. In this research, the Solvin formula was used to calculate the sample size, which consisted of 96 teenagers living in the working area of the Putri Ayu Community Health Center in 2024. Data collection uses a questionnaire. Data processing takes the form of univariate and bivariate analysis. The analysis used is chi-square, with Confidence Interval (CI <95%) with a significance limit ( $\alpha <0.05$ ). The research was carried out from April to May 2024. The results of the univariate analysis showed that from 96 respondents, 42 people (43.8%) of respondents will be male and 54 people (56.2%) will be female. As many as 59 people (61.5%) of respondents had a poor level of knowledge and 37 people (38.5%) of respondents had a good level of knowledge. A total of 46 people (47.9%) had a light physical activity level, 35 people (36.5%) had a moderate physical activity level and 15 people (15.6%) had a heavy physical activity level. Those with central obesity were 33 people (34.4%) and those with central obesity were 63 people (65.6%). Bivariate analysis showed a significant relationship between gender ( $p=0.028$ ), knowledge ( $p= 0.006$ ), physical activity ( $p= 0.028$ ) and incidence of central obesity in adolescents in Jambi City. Factors that can cause obesity in teenagers include unhealthy eating habits, so it is important to maintain a balanced diet, rich in fiber, and consume fruit and vegetables frequently.*

**Keywords:** Teenager; Central Obesity; Knowledge

### **INTRODUCTION**

The World Health Organisation (WHO) 2018 states that obesity is a condition in which a person has a body weight that exceeds normal limits, leading to excessive or abnormal accumulation of fat in their body. Measurements of body mass index (BMI) and abdominal circumference are ways to classify obese people (World Health

Organization (WHO). The World Health Organization (WHO) has set a target of 2025 to return the number of obese people to 2010 levels. However, to date, the number of obese people is still quite high (Hamzah & B, 2020).

Obesity is a condition in which the body has excessive body weight as measured by several measurements. The accumulation of fat in the body's subcutaneous tissue

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(under the skin) and around organs, sometimes even in the organ tissue itself, is a sign of obesity. To find out whether someone is obese, you can use the body mass index (BMI), then body weight and height were measured. The body produces more energy through consuming foods that contain energy sources and fat, while the body does not do physical activity or lead a healthy lifestyle which can reduce energy expenditure (Kemenkes RI, 2012).

In Indonesia, there are two nutritional crises: undernutrition and overnutrition. Unbalanced eating habits cause an imbalance between the body's energy that comes in and out every day, which causes overweight obesity. When energy intake is unbalanced, fat accumulates in adipose tissue. Fat accumulation is very dangerous because it can increase the risk of type 2 diabetes mellitus, high blood pressure, dyslipidemia, heart attack and cancer. Obesity can cause many health problems and emotional and social problems if ignored (Qatrunnada & Direct, 2022).

The results of the 2015–2019 RPJMN index show that 13.5% of adults in Indonesia aged 18 years and over are obese, 28.7% have a BMI of 25 or more, and 15.4% have a BMI of 27 or more. Children aged 5–12 years who were 10.8% obese and 18.8% overweight increased to 20.7%, and adults with a BMI of 25 or more increased to 33.5% (Kementerian Kesehatan RI, 2018).

As the prevalence of obesity continues to increase, obesity remains a health problem for children and adults. High levels of obesity can cause various diseases, especially hypertension, cardiovascular disease and cancer. Obesity disease in Indonesia is very worrying. Obesity in adulthood increases the risk of type 2 diabetes, cancer, and other cardiovascular diseases, which have negative impacts on health and death at an early age (Safitri & Rahayu, 2020).

Internal factors consist of gender, infectious diseases, age, and physical condition, and external factors such as nutritional knowledge, social and cultural environment, food consumption, and physical activity. Low physical activity has a major influence on obesity, while external factors only account for 10% of all causes of obesity (Setiawati et al., 2019).

One of the factors that cause obesity is physical activity. People who are sedentary tend to become obese because lack of activity causes a lot of energy to be stored as fat. This is in accordance with research conducted by Himayatul (2018) and Imelda et al. (2020), which showed that there is a relationship between obesity and physical activity (Imelda et al., 2020, Argi et al., 2022).

To prevent obesity in adolescents from increasing, it is important to know a very big trigger with obesity. One of the many factors that can cause obesity in adolescents is very high sugar and fat consumption. Then, bad lifestyle, such as haphazard eating patterns, lack of exercise, and high economic development. Apart from that, knowledge about nutrition can also be a factor causing obesity, due to poor food choices and lack of knowledge about nutrition which has an impact on nutritional problems which then have an impact on a person's nutritional status. A person's diet can determine a person's nutritional status. A healthy diet relies on balanced, natural and wholesome foods (Jufri et al., 2022).

A person's food intake is one of the causes of obesity apart from the other factors mentioned above. One of them is energy and carbohydrate intake. Because the energy consumed by the body is not used effectively, the body's fat tissue accumulates. The body will store more calories in the form of fat, but storing calories continuously causes obesity. Because carbohydrates are very important to meet the body's energy needs, excessive carbohydrate intake can cause obesity.

Researchers, based on the above description and supported by previous studies, are interested in conducting research on factors that contribute to the prevalence of central obesity in adolescents.

## RESEARCH METHODS

This research is quantitative research with a cross-sectional design. This research aims to determine what factors result in central obesity in today's adolescents. in Jambi City (Notoatmodjo.S, 2012). The population in this study were all teenagers Putri Ayu Community Health Center working area in 2024 by using a formula Solvin was used to calculate the sample size, which consisted of 96 teenagers living in the working area of Putri Ayu Health Center in 2024. Using a cross-sectional method of data

collection. Data collection using a questionnaire. Using univariate and bivariate analysis methods using the chi-square method. Data collection in April to May 2024 (Arikunto S, 2006).

This study was approved by the Ethics Committee of the Health Polytechnic of the Jambi Ministry of Health, Ministry of Health of the Republic of Indonesia with protocol code No. LB.02.06/2/268/2024 dated 7 mai 2024. At the time of data collection, each participant was informed about the research procedures and signed an informed consent as a sign of agreement to participate in the study.

## RESULTS AND DISCUSSION

### Univariate Analysis

**Table 1. Frequency Distribution Based on Variables Gender, Knowledge, and Physical Activity, Central Obesity in Adolescents in Jambi City**

Variable	f	%
<b>Gender</b>		
Man	42	43.8
Woman	54	56.2
<b>Knowledge</b>		
Not good	59	61.5
Good	37	38.5
<b>Physical activity</b>		
Light	46	47.9
Currently	35	36.5
Heavy	15	15.6
<b>Adolescent Central Obesity</b>		
Central Obesity	33	34.4
Not Central Obesity	63	65.6
Total	96	96

Table 1 shows that from 96 respondents At the Putri Ayu Health Center, District 2024, 42 people (43.8%) of respondents will be male and 54 people (56.2%) will be female. So, there are more female respondents than male respondents. As many as 59 people (61.5%) of respondents had a

poor level of knowledge and 37 people (38.5%) of respondents had a good level of knowledge. It can be concluded that those who have less knowledge are very high than respondents who have good knowledge. A total of 46 people (47.9%) had a light physical activity level, 35 people (36.5%) had

a moderate physical activity level and 15 people (15.6%) had a heavy physical activity level. So, there are more respondents who do less, and moderate levels of very heavy activity is inversely proportional to less heavy activity. Those with central obesity were 33 people (34.4%) and those with central obesity were 63 people (65.6%).

In this study, the author used the chi-square test. to determine whether the

independent variable is related to the dependent variable. The dependent variable used in this research is obesity, which is based on the consumption of young women in the last three months and every day during menstruation. The complete results are as in Table 2.

### Bivariate Analysis

**Table 2. Relationship between Gender, Knowledge, and Physical Activity with the Incidence of Central Obesity in Adolescents in Jambi City**

Variable	Incidence of Central Obesity in Adolescents				Total (N = 100)	P-Value
	Central Obesity	n	%	Not Central Obesity		
<b>Gender</b>						
Man	20	47.6		22	52.4	42 100
Woman	13	24.1		41	75.9	54 100
<b>Knowledge</b>						
Less Good	27	45.8		32	54.2	59 100 0.006
Good	6	16.2		31	83.8	37 100
<b>Physical Activity</b>						
Light	22	47.8		24	52.2	46 100
Currently	8	22.9		27	77.1	35 100
Heavy	3	20.0		12	80.0	15 100

Table 2 shows that of the 42 male respondents, there were 20 (47.6%) respondents with central obesity in adolescents. Of the 45 female respondents, 41 (75.9%) respondents were not centrally obese. The results of the chi square statistical test obtained a p value = 0.028 ( $p < 0.05$ ), it can be concluded that there is an influence between gender and the incidence of central stroke. obesity in adolescents in Jambi City.

This research is This is like research conducted by Shinta (2020) which showed that there was no significant relationship between gender and obesity. It is estimated that there is a difference between the need and activity of fat between women and men, where women are higher due to the hormonal system that occurs in the body (Maharani & Hernanda, 2020).

Gender can be one of the causes of obesity. Women usually have the potential to go on a diet to maintain their body shape, but women have a risk of obesity due to hormonal factors. The influence of hormones on a woman's body is not limited to the menstrual cycle. This can be caused by women naturally storing more body fat than men, especially in the stomach area. In men the food that comes in is converted into ready-to-use energy, while in women much of the food is converted into fat. So women have less opportunity to burn fat because muscles help burn fat more efficiently than other cells (Nugroho et al., 2020).

**Intervention** This obesity problem can be prevented by health promotion, reducing the consumption of foods containing excess sugar which will eventually lead to obesity,

and promoting and educating that exercise is important. then make policies on the use of public facilities for physical activities. Self-awareness must also be raised in teenagers so that teenagers can work on their health independently without depending on other people.

Knowledge variables showed that of the 59 respondents with poor knowledge, there were 27 (45.8%) respondents. The emergence of obesity has a huge impact on health. and of the 37 respondents with good knowledge, there were 31 (83.8%) respondents who were not centrally obese. The results of the chi-square statistical test obtained a value of  $p = 0.006$  ( $p < 0.05$ ). There are events that have a relationship between knowledge and events central obesity in adolescents.

The results of this study are in line with Maria Nova's (2017) research on adults the same as research which is closely related to knowledge and events obesity in adults. This is caused by a lack of obesity information provided by health workers so that respondents do not know about obesity and some respondents violate the obesity diet (Nova & Yanti, 2017).

In addition, this study is in line with research conducted by Jufri et al. (2019), which found an association between knowledge and the incidence of obesity. This is related to the theory that obesity is a condition in which the body accumulates excessive fat. This occurs due to a lack of balance between incoming and outgoing energy intake. For growth and development, adolescents and adults need adequate nutrient intake. However, many adolescents do not know about the ideal nutritional intake, so they consume excessive and inappropriate food (Sineke et al., 2019).

Health promotion efforts can use technology, namely by using audio-visual video media which influences increasing knowledge between teenagers and adults regarding obesity. Intervention using five

senses of seeing and hearing, so it will be more effective in increasing knowledge in adolescents and adults. Audio visual media can be used by health workers from community health centers whenever there are activities related to obesity (Qatrunnada & Direct, 2022).

The physical activity variable of the 46 respondents who did light activities, there were 22 (47.8%) who were centrally obese and 24 (52.2%) who were not centrally obese, 8 (22.9%) of respondents who did moderate activities were obese. central and 27 (77.1%) were not centrally obese, and 3 (20.0%) of respondents who did heavy activities were centrally obese and 12 (80.0%) were not centrally obese, so the  $p$ -value = 0.028 was obtained, which means Physical activity has a relationship with the incidence of central obesity in adolescents.

As done by Riskawati et al. (2020) on medical faculty students at Brawijaya University which stated Based on the research, there is no significant relationship between physical activity level and BMI with ( $p$  value  $> 0.05$ ) because students did more moderate physical activity. because academic activities are too busy, and students spend more time in front of screens. 53 The same thing was said by Enrico et al (2021) Based on the research, there is no significant relationship between physical activity and nutritional status ( $p$  value = 0.35). This is because there are factors Apart from physical activity that can influence obesity, such as age, gender, stress level and food intake (Riskawati et al., 2020).

Winarto et al (2023) stated Based on the research, there is no significant relationship between physical activity and the incidence of overnutrition in Jember State Polytechnic students. This is because the factors that cause obesity are very diverse and are not always associated with a Lack of physical activity, why does overweight occur because the energy input is greater than the

energy output (Winarto & Werdiharini, 2023).

If you want to see the level of health at a productive age, you can check physical activity incorrectly. Good physical health is also an important factor to support productivity and quality of life. Physical activity can be one of the causal factors why obesity is widely studied. Physical activity is any bodily movement that increases energy expenditure and energy expenditure, resulting in the burning of energy required for varied physical activities. Lack of exercise also causes the body to expend less than optimal energy, which can increase the risk of obesity.

Physical activity has a big influence on maintaining the capacity of the body's organs, maintaining the body's organs can facilitate the systems in the body, carrying out regular physical activity can help the body's metabolic processes so that it can reduce the risk of obesity (Ritan et al., 2018).

## CONCLUSION

1. The study concluded that the proportion of central obesity incidents among teenagers in Jambi City is 34.4% of the total respondents. There is a relationship between the genders  $p$  value = 0.028 ( $p < 0.05$ ); Knowledge value  $p$  = 0.006 ( $p < 0.05$ ); physical activity  $p$ -value = 0.028 with the incidence of central obesity in adolescents.
2. For community health centers, it is recommended to increase health promotion efforts regarding nutritional knowledge, such as detecting cases of obesity as early as possible so that it will be easier to carry out appropriate interventions. Efforts to find this case were carried out through Posbindu (Integrated Development Post) activities to detect obesity early in the community or through independent health check efforts by individuals by measuring BMI at least

once a month regarding obesity, its impacts, causes and methods of prevention. Implement a level of physical activity, and reduce fat with body weight movements, walking together and exercising together.

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