



The Influence of Diet on Overweight Status in Adolescent Students of SMK Muhammadiyah 3 Purwokerto

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ABSTRACT

According to SIRKESNAS 2022, in Indonesia, 13.5% of individuals aged 18 years experience excess weight, with 28.7% being overweight with a BMI of 25 and around 15.4% being overweight with a BMI of 27. Being overweight is a condition where body weight exceeds normal levels and can be caused by excessive eating patterns, such as fast food and junk food. The study aims to determine the effect of eating patterns on adolescents' overweight status. This quantitative study used an analytical observational method with a cross-sectional design. The sample consisted of 225 Vocational High School (SMK) Muhammadiyah 3 Purwokerto students, selected through cluster random sampling. The data used in this study included questionnaires on eating patterns and measurements of weight, height, mid-upper arm circumference, and waist circumference to assess overweight status. The eating pattern questionnaire comprised 20 items, of which 17 were valid. Validity results showed a minimum correlation coefficient (r) of 0.339 and a maximum of 0.550, with a critical value for $n = 35$ being 0.334. Reliability analysis using Cronbach's alpha yielded a value of 0.534. Data analysis was performed using the chi-square test. In the overweight group, eating patterns were categorized as high risk. In the non-overweight group, eating patterns were categorized as low risk. The chi-square test result showed a p -value of 0.0001 ($p < 0.05$), indicating a significant effect of eating patterns on overweight status. Eating patterns significantly affect overweight status in adolescents at SMK Muhammadiyah 3 Purwokerto.

Keywords: Student Eating Patterns, Overweight Status

1. INTRODUCTION

Adolescence is a transition period from child to adult characterized by physical and mental changes. Adolescent age ranges from 8 to 18 years for girls and 8 to 13 years for boys. Late adolescence age is 13 to 18 years for girls and 10 to 15 years for boys (Arbie et al., 2018).

The stage of human development of adolescence is an age of change or transition from childhood to adulthood which involves biological, psychological, and social changes in children. The changes mentioned above will have an impact on the daily lives of young people, such as the way they choose

food in people's daily lives, how they choose the food they eat. Teenagers should not choose excessive food or follow trends by following fast food without paying attention to the nutritional adequacy they need because these conditions have a risk of experiencing overweight (Wahyuningsih & Ningrat, 2019).

Overweight is a condition when more weight can be caused by excessive dietary factors such as consuming fast food, junk food can lead to obesity. A person can be declared overweight and obese if the person has a Body Mass Index (BMI) between 25-29 (Sumarni & Bangkele, 2023). Overweight is a common metabolic disease that involves a pathological state of excessive accumulation

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of adipose tissue, which can damage human health. In recent decades, the number of overweight individuals has increased worldwide and obesity has become an epidemic. Worldwide, there are more than 190 million people who are overweight. Compared to 1980, the number of overweight people has doubled. There are nine million adolescents in the United States who are overweight. (Xie et al., 2019).

Factors that influence overweight in adolescents certainly increase the risk of degenerative diseases in adulthood. In addition, the absence of clear treatment for obesity at a young age will also become a serious health problem in the future (Mu & Hanum, 2023).

Globally in 2020, it is estimated that 150 million children aged 5-19 years are overweight. This number is expected to reach 254 million by 2030. The highest prevalence of overweight in young people is in upper-middle income countries. However, overweight is increasing almost across the country with a large increase in prevalence in low-middle income countries (Syifa & Djuwita, 2023).

According to SIRKESNAS in 2022 in Indonesia 13.5% of people aged 18 years were overweight, while 28.7% were overweight with a BMI of 25 and around 15.4% were overweight with a BMI of 27 (Rohmah et al., 2023).

The Semarang City Health Office found 148 overweight children from screening results from community health centers in the region during January-February of 2023. Data in 2021 and 2022 recorded 1120 cases of overweight children in Semarang (Meirina, 2023). The prevalence of overweight Puskesmas Banyumas was 11.35% of the total overweight cases in 2020. With the highest case in Kalisube Village, Banyumas District, Banyumas Regency (Fatimah, 2022).

Research by Sifa and Djuwita focused on adolescent high school students with obese nutritional status. (Syifa & Djuwita, 2023). However, research that examines the overweight status associated with diet in

vocational students has never been done. This research is urgent to do, because it can identify the influence of diet with overweight status in SMK students.

The purpose or contribution in this study is that researchers want to prove the influence of Diet on Overweight in Adolescents at SMK Muhammadiyah 3 Purwokerto in Banyumas Regency.

2. MATERIALS AND METHODS

Quantitative observational anaralytic study with a cross-sectional approach, the number of samples was 225 taken by cluster random sampling. The cluster consisted of nursing (32 students), pharmacy (33 students), computer and network engineering (44 students), motorcycle engineering and business (35 students), automotive light vehicle engineering (35 students). The inclusion criteria of the respondents are willing to be respondents, Subjects willing to be measured TB, BW, abdominal circumference, arm circumference. Exclusion criteria are Being sick Absent. The research instruments used are dietary pattern questionnaires and stadiometer stepping scales to measure Overweight status. for dietary pattern questionnaires have validity (r) = 0.339-0.550 and reliability is 0.334. The analysis of this study uses statistical analysis of chi square test to prove the relationship between risky eating patterns and the incidence of overweight status of high school students.

3. RESULT AND DISCUSSION

RESULT

Table 1. Percentage Distribution of Diet

Diet	Frequency	%
At risk	119	52.9
Not at risk	106	47.1
Total	225	100.0

Based on table 1. the percentage of risky eating patterns was 119 (52.9%), while those who were not at risk were 106 (47.1%).

Table 2. Percentage Distribution of Overweight Status

Status <i>Overweight</i>	Frekuensi	%
<i>Overweight</i>	124	51.1
<i>Non overweight</i>	101	44.9
Total	225	100.0

Based on table 2. the percentage of overweight status of overweight data is 124 (55.1%), while nonoverweight is 101 (44.9%)

Table 3. Bivariate Analysis of Numerical Variables

Diet	Bound Variable: <i>Overweight Status</i>		
	<i>Overweight</i>	<i>Non Overweight</i>	<i>p Value</i>
At risk	111	8	0,001
Not at risk	13	93	
Total	225		

Based on table 3. in the group of respondents who have a risky diet the majority have overweight weight, while respondents who have a diet that is not at risk the majority of non-overweight weight with the results of chi square test analysis obtained 0.001 (<0.05) which means there is an influence between dietary status on overweight status in adolescents of SMK Muhammadiyah 3 Purwokerto.

DISCUSSION

a. Characteristics of Respondents

Based on the research results, respondents aged 17 years have the highest number (44.9%) of the age range of adolescents who have overweight BB. The causes of overweight include: increased consumption of fast food, lack of activity, psychological, and intellectual activity, but the most dominant factor causing overweight is diet (Lestari et al., 2022). Overweight is a condition in which a person has a greater body weight, which can be caused by excessive dietary factors such as consuming fast food, junk food. A person can be declared overweight if the person has a Body Mass

Index (BMI) between 25-29 states that they are already overweight and obese (Sumarni & Bangkele, 2023).

Overweight is known to have metabolic effects, and causes serious health complications by causing metabolic syndrome, risk of cardiovascular disease, type 2 diabetes, and even cancer. In addition to its metabolic effects, overweight can affect skeletal muscle function and thus reduce an individual's mobility. There are two opposing trends. On the one hand, skeletal muscles in overweight individuals have to work harder to move a larger body mass, which can result in positive training effects. On the other hand, overweight can also lead to decreased muscle mass and lower muscle quality. Overall, overweight tends to lead to a reduced ability of skeletal muscles to maintain locomotor performance, leading to lower mobility in overweight individuals. Movement is important for maintaining a healthy body composition. Therefore, the effects of overweight on skeletal muscle contractile performance can lead to a negative cycle: reduced mobility tends to lead to lower activity levels and energy use, leading to further weight gain and consequently lower quality of life (Tallis et al., 2018).

People who are overweight have reduced brain tissue capacity, leading to decreased cognitive abilities. Reduced brain tissue capacity as a result of overweight, can lead to the risk of Alzheimer's disease and various diseases that affect the brain. The risk of developing Alzheimer's can be reduced by practicing a healthy diet and keeping body weight under control. Overweight people are depleted of brain tissue in the frontal and temporal lobes, brain zones that are crucial for memory and planning. Not only that, other zones that falter are the anterior cingulate gyrus, which plays a role in focusing the attention of the hippocampus (longterm memory), and the basal ganglia for movement). Conversely, people listed as obese face depletion of brain tissue in the basal ganglia zone, corona radiata, and parietal lobe acting as sensory) (Wediodiningrat, 2020).

Of the 225 students, most were male, namely 120 students (53.3%), while 105 students (46.7%) were female. Based on Basic Health Research Data in 2013, there was an increase in the prevalence of overweight in terms of gender in women by 32.9% while men were 19.7% (Nugroho, 2020).

b. Dietary Pattern

Diet is a procedure or application based on the amount and type of food with a data graph that supports the improvement of health, nutritional status, and the prevention or reduction of disease. There are nutrients for health and fitness, and to increase work productivity and brain development includes 3 components that affect food is a source of energy building substances, and sources of regulatory substances. In order to achieve and maintain maximum health and fitness it is very useful to consume food and maintain adequate nutrition and a healthy lifestyle (Muchlisin, 2019).

Obesity is largely caused by changes in the Indonesian diet, such as the trend of "fast food", which is a type of cuisine that is high in energy and low in fat and is generally highly favored by the general public due to its practicality and ease of preparation and consumption. Apart from the foregoing, we can highlight some fast food restaurants that are increasingly in demand in cities and towns throughout Indonesia, influencing the eating habits of not only the general public but also individuals and the working class because of the delicious taste of the food (Isnaini & Hikmawati, 2018).

The life of adolescents who have the habit of consuming foods high in carbohydrates, fat, sugar and the habit of consuming fast food and the imbalance between nutrient consumption and the nutritional adequacy needed. Teenagers often consume foods that contain high carbohydrates such as rice and tubers and fat from fried foods, accumulating body fat because the number of calories contained in fast food in one meal exceeds the daily amount of calories or fat (Ester, 2020).

c. Incidence of Overweight

The incidence of overweight is a condition where the ratio of body weight and height exceeds the specified standard. Based on data collection from May - July 2024 on 225 respondents, namely students of SMK Muhammadiyah 3 Purwokerto aged 16-19 years, the results showed that 124 students (55.1%) were overweight and 101 students (44.9%) were non-overweight. These results show that students who are obese are still found and can last long enough due to the storage of calories in fat tissue. This occurs due to an energy imbalance over a long period of time, namely energy expenditure that is smaller than the amount of energy consumed. Excessive energy intake, low energy expenditure in the form of physical activity, or a combination of both factors causes the energy balance to move in a positive direction (Ester, 2020).

Overweight is closely related to risky food consumption behavior because it is a person's reaction or response to an external stimulus. The problem of unhealthy food consumption behavior occurs as well as the wrong diet, thus becoming a factor that results in excess energy input and can lead to obesity and even overnutrition. The increasing incidence of obesity in this digital age is a health problem as well as the risks that arise if you are obese, namely the occurrence of various metabolic and degenerative diseases such as diabetes militus, cancer, heart disease, hypertension etc. then regular physical activity is needed and carried out both in work and leisure time such as walking, washing, cooking and cleaning the house. In addition, physical activities that are carried out must be routine and structured to provide physical fitness, as well as the importance of maintaining a diet by limiting calorie intake, reducing sugary drinks, fatty foods, salty foods, baked goods, preserved foods etc. then improving the quality of food such as fruit, vegetables and foods that contain lots of fiber and limiting foods high in sugar, salty, and fatty foods, burnt foods, preservatives, seasonings and instant foods (Derang et al, 2023).

d. Effect of Diet and Overweight

Diet on overweight status in adolescents in the overweight group is at risk while the non-overweight group is not at risk at all. Chi Square results 0.001 which means there is an influence of diet on overweight status in adolescents of SMK Muhammadiyah 3 Purwokerto.

Overweight is a condition when more weight can be caused by excessive dietary factors such as consuming fast food, junk food can lead to obesity. A person can be declared overweight if the person has a Body Mass Index (BMI) between 25-29 states that they are already overweight and obese.

Overweight has the potential to disrupt the physical and cognitive development of adolescents and reduce the immune system (Syadzali et al., 2023). Health problems associated with overweight include obesity, cardiovascular disorders such as hypertension, stroke, and coronary heart disease, several types of cancer, conditions associated with insulin resistance such as type 2 diabetes mellitus, abnormal reproductive hormones, polycystic ovary syndrome, gout and gout, varicose veins, prostate, kidney, gallbladder disease, fatty liver, and asthma (Romlah, 2023).

Eating habits acquired in childhood and adolescence tend to form in adulthood. Therefore, maintaining a healthy diet from an early age is a definite factor to avoid obesity and chronic diseases (García et al., 2023). The Health Promotion model is an effort to empower the ability of individuals or families to improve their health status and quality of life. Health Promotion helps nurses help patients identify risk factors for health and healthy behaviors that have been carried out in order to form new behaviors that can achieve optimal health status after being given health education (Utami et al, 2020).

This study has limitations in the data collection process because some students have obtained information related to the prevention of overweight from other sources or experiences so that the questionnaire data of most students correctly answer the

questions that have been prepared by researchers.

CONCLUSION

Sourced from study data information or research that has been carried out by researchers on the influence of diet on overweight status in adolescent students of SMK Muhammadiyah 3 Purwokerto:

1. Most of them are male, as many as 120 students (53.3%). Age characteristics show that most respondents are at the age of 17 years, the majority of student height is between 156-162 cm, while student weight is between 61- 69 kg is more dominant, for most arm circumference of 27 cm, the majority of abdominal circumference is between 66-70 cm as many as 96 students (42.6%).
2. Based on the percentage of risky eating patterns as many as 119 (52.9%), while those who are not at risk are 106 (47.1%).
3. The percentage of overweight status data that is overweight is 124 (55.1%), while the nonoverweight is 101 (44.9%).
4. There is an influence between dietary status and overweight status in adolescents at SMK Muhammadiyah 3 Purwokerto with a P-value of 0.001 (< 0.05).

Suggestion

This study can get dedication about the influence of diet on overweight in adolescents. For nurses of South Purwokerto health center in order to provide educational services or health education within the scope of health promotion in SMK schools about the appropriate diet and how to prevent the occurrence of overweight

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