

The Relationship between Diet and Physical Activity Patterns with the Incidence of Overweight in Adolescents at SMK Minhajut Thulab Al Amin

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ABSTRACT

Introduction: Excess weight can cause digestive disorders, fatigue, limited mobility, psychological stress, joint pain or inflammation especially in the knees. In addition, excess weight can also increase the risk of degenerative diseases, which can reduce productivity, endanger the economy, and increase pain levels. **Objective :** to identify dietary patterns and low physical activity, which contribute to the incidence of **overweight** in adolescents at SMK Minhajut. Thulab Al Amin in Mesuji Regency. **Method:** Quantitative research with a *cross-sectional approach*. The research sample was 127 students with *random sampling technique*. Data analysis using univariate and bivariate with chi-square test. **Results :** Diet and physical activity independently and synergistically increase the risk of *obesity*. The combination of the two has a stronger influence than each factor separately. **Conclusion:** There is a relationship between diet (*p-value* 0.01) and physical activity (*p-value* 0.001) with the incidence of overweight in adolescents at SMK Minhajut. Thulab Al Amin. It is expected that adolescents will do physical activity more routinely and the importance of integrated intervention to overcome the problem of overweight is by improving diet and increasing physical activity simultaneously.

Introduction

Currently, Indonesia is faced with three burdens, namely the lack of healthy nutrition that hinders and wastes abundant nutrition, obesity and micronutrient deficiencies such as iron deficiency (Diskominfo Kaltim, 2021). Obesity can be one of the risk factors associated with undereating. Weight gain occurs more in productive-age adults and is caused by poor eating habits, unhealthy food intake, and lack of physical activity. Based on sources obtained from the Indonesian Health Service, 39 out of 18-year-old adults are obese (Agustina et al., 2023).

The younger generation is an age group that is very vulnerable to nutritional problems (Ida Niara et al., 2022) In mid-adolescence, bone mass growth, body weight, physical activity levels and body composition all involve accelerated growth (Amrynia Prameswari, 2022) The most important physical changes occur in the middle of adolescence such as the development of muscle shape and internal organs, because physical development and progress occur in the middle of the transition from childhood to adolescence so that puberty requires more nutritional intake. Health problems that often occur in adolescents aged 15 to 19 years are many who are overweight and obese. In 2018 1 in 7 adolescents 148 or 33 million in Indonesia were overweight and obese (UNICEF, 2022).

Changes in adolescents' diet and lifestyle have an impact on their health needs and utilization (Hafiza, 2021). Adolescents' diet is closely related to food choices. Food choices are an important component in determining quality of life. Adolescents' eating habits are influenced by the proliferation of cafes, restaurants, and attractive shops that provide processed foods made from



fat and sugar, which leads to visits to fast food restaurants or even increased consumption of junk food. (Azwalika, 2020). Today's young people are fond of or fascinated by foods that have unique and challenging flavors, such as instant noodles seasoned without using spices and then served with flying chopsticks or food with varying levels of spiciness (Mailian et al., 2022).

Excess weight can cause digestive disorders, fatigue, limited mobility, mental disorders, pain or swelling of the joints, especially in the knees. In addition, excess weight can also increase the risk of degenerative diseases that can reduce performance, endanger the economy, and increase pain levels (Ministry of Health of the Republic of Indonesia, 2022). Therefore, it is important to avoid and monitor the factors that cause degenerative diseases. The rise of high-calorie and sugar snacks that are trending in society also contributes greatly to the increasing prevalence of excess weight in adolescents. The increasing frequency of weight gain in adolescents is caused by changes in today's diet which tends to be fatty, high in salt and low in fiber in junk food. Foods that are high in sugar are found in soft drinks and processed foods such as sausages, corned beef, and solid foods that are high in salt and fat.

Based on information from the World Health Organization (WHO) details that the prevalence of obesity increased rapidly from 1980-2014. In 2014 more than 19 billion young people aged 18 years were obese or around 600 million people were obese. Around 13 of the world's adult population consists of 11 men and 15 women (WHO, 2014).

The prevalence of overweight according to the Basic Health Research Riskesdas 2018 in Indonesia has increased every year. The prevalence of overweight in the 15-year-old age group was 8.8% in 2007, while in 2013 it was 10.8% and in 2018 it again experienced a fairly high increase of 11.2% (Suha, 2022).

The area is one of the areas with an obesity prevalence above the national prevalence at the age of 1618 years specifically obesity of 11.5% according to Riskesdas in 2018. Meanwhile, Mesuji Regency has an obesity prevalence of 1033 higher when compared to several other regencies such as Pesawaran Regency, North Lampung, East Lampung and Pringsewu Regency. This fairly high increase in obesity rates is very concerning because obesity in particular can endanger a person's health and pose a risk of a number of infectious diseases such as Diabetes Mellitus, Stroke and Hypertension (Mailiani et al., 2022).

Previous research according to (Wilujeng, 2023) on the relationship between thinness and physical activity with recurrence of adolescent weight gain in SMA Yadika Bandar Lampung students, there is a relationship between undereating and recurrence of weight gain in adolescents and there is a relationship between physical activity and the rate of weight gain in adolescents and there is a relationship between the number of calories and physical activity with the rate of weight gain in adolescents. The results of the study showed that most individuals have poor eating habits.

Research (Lamria, 2020) conducted at Bandung City High School on the relationship between nutrition and physical activity with the prevalence of obesity in adolescents. The results of the study for the dietary pattern variable showed that there was a relationship between body weight and the results of statistical tests showed that for the physical activity variable there was no significant relationship where.

Based on the description of the preparation that has been done, 30% of adolescents are overweight and as many as 10% are overweight. From this description, the author is interested in conducting a study entitled The Relationship between Diet and Physical Activity with the Incidence of Obesity in Adolescents at SMK Minhajut. Thulab Al Amin Mesuji District, Mesuji Regency, Lampung. The purpose of this study was to determine the diet and low physical activity that contributed to the incidence of obesity in adolescents at SMK Minhajut.

Method

This research is a quantitative research with a cross-sectional approach. This research was conducted at SMK Minhajut. Thulab, Mesuji Regency in November 2024. The population in this study were all students of SMK Minhajut Thulab Al Amin Kec. Mesuji Regency, Mesuji, Lampung, totaling 185 students. The research sample consisted of 127 respondents obtained by calculation using the Slovin formula, respondents were selected by *simple random sampling*. Sampling was carried out in three classes by drawing using a lottery system where samples were taken from students in each class with the Inclusion Criteria of SMK Minhajut. Thulab Al Amin Kec. Mesuji, willing to be research subjects and not on a diet and Exclusion Criteria namely undergoing a certain disease diet and not present at the time of the study. Data analysis using univariate analysis and bivariate analysis (*chi-Square*). Univariate analysis to describe the frequency distribution of eating patterns, physical activity and *obesity events* and characteristics of respondents. While bivariate analysis to see the relationship between eating patterns and physical activity with *obesity events*.

The measuring instrument used is a selected instrument in the form of a *Food form*. *Frequency Questionnaire* (FFQ) and physical activity questionnaire (GPAQ). FFQ is used to measure food consumption habits or patterns for 1 week. The FFQ form contains a list of food types. The answer categories consist of never, 2x/month, 1-2x/week, 3-6x/week, 1x/day and >3x/day. (Sirajuddin et al., 2018). While in the physical activity questionnaire (GPAQ) there are 16 questions. The anthropometry used on study This For measure heavy body And tall body. Measurement heavy body measured use scales digital brand footstep Omron Model: HN-289. Weight accuracy: 5-150 kg with an increase of 0.1 kg. Height is measured with a *One Med* brand *Microtoise* with an accuracy of 0.1 cm.

Results and Discussion

Table 1. Frequency Distribution of Respondent Characteristics

Respondent Characteristics	Frequency	Percentage (%)
Gender		
Man	61	48
Woman	66	52
Age		
12-15 years	34	26.8
16-18 years	92	72.4
19-21 years	1	0.8
Parent Education		
Elementary School/Equivalent	28	22
Junior High School/Equivalent	32	25.2
High School/Equivalent	47	37
Campus	20	15.7
Total	127	100.0

Based on the table above, it can be seen that most of the respondents are female, namely 66 people (52%). For age characteristics, most of the respondents are in their mid-teens, namely between 16 - 18 years old, namely 92 people (72.4%). The majority of parents' education at SMK Minhajut Thulab Al Amin is high school/equivalent, as many as 47 people (37%).

Table 2. Frequency Distribution Based on Diet, Physical Activity and Excess Weight Incidence

Variables	Frequency	Percentage (%)
Overweight incidents		



Obesity	29	22.8
Not overweight	98	77.2
Dietary habit		
Often	63	49.6
Seldom	64	50.4
Physical activity		
Tall	number 0	number 0
At the moment	61	48.0
Low	66	52.0
Total	127	100.0

Based on table 4.2. it was found that the incidence of overweight in adolescents at SMK Minhajut Thulab Al Amin was 29 years old (22.8%). The eating patterns of SMK Minhajut Siswa Thullab Al Amin students in 2024 mostly had a low eating pattern with a rare frequency of 64 (50.4%) students. Meanwhile, for adolescent physical activity, 66 students were found with low physical activity.

Table 3. Relationship between Diet Patterns and the Incidence of Overweight

Dietary habit	Obesity		Not overweight		Amount		P Value
	N	%	N	%	N	%	
Often	21	33.3	42	66.7	63	100.0	0.01
Seldom	8	12.5	56	87.5	64	100.0	
Total	29	22.8	98	77.2	127	100.0	

Based on the results of the analysis of the relationship between eating patterns and the incidence of obesity in adolescents it was found that 21 (33.3%) students were overweight with frequent eating patterns. The results of the *Chi-Square test* obtained a *p value* = 0.01 (*p* < 0.05) meaning that there is a relationship between eating patterns and the incidence of obesity in adolescents at SMK Minhajut Thullab Al Amin in 2024.

Table 4 Relationship between physical activity and the incidence of overweight

Physical Activity Variables	Obesity		Not overweight		Amount		P Value
	N	%	N	%	N	%	
Tall	number	number	number	number	number	number	0.001
At the moment	0	0	0	0	0	0	
Low	3	6.1	46	93.9	49	100.0	
Total	29	22.8	98	77.2	127	100.0	

Based on the results of the analysis of the relationship between physical activity and the incidence of obesity in adolescents at SMK Minhajut Thullab Al Amin in 2024, it was found that 3 students who were overweight (6.1%) had moderate physical activity, while 26 students who were overweight but had low physical activity (33.3%). The results of the *Chi Square test* obtained a *p value* = 0.001 (*p* < 0.05) which means that there is a relationship between physical movement and the frequency of obesity in adolescents at SMK Minhajut Thullab Al Amin in 2024.

Discussion

Adolescent Diet at Minhajut Thullab Al Amin Vocational School in 2024



Eating patterns in this study are categorized into two, namely frequent and rare. Eating patterns can be said to be frequent if the score is above the median. Based on the results of the study, there were 64 (50.4%) students with rare eating patterns and 63 (49.6%) students with frequent eating patterns. This means that most of the eating patterns of SMK Minhajut Siswa Siswa Thullab Al Amin students are included in the group who rarely have breakfast. This is because most teenagers have the habit of rarely having breakfast and the types of food consumed are less varied.

This study is in line with research (Nushrotun, 2019) which found that adolescents whose eating patterns are rare are 24 respondents (54.9%). This is usually because adolescents only consume foods they like with types that are not diverse. While adolescents whose eating patterns are rare are 13 respondents (15.9%). This is due to the many types and amounts of food consumed and the eating habits of adolescents.

Physical Activity of Adolescents at SMK Minhajut Thulab Al Amin in 2024

The results of the study showed that students who did moderate physical activity were 49 students (38.6%) and respondents who did low physical activity were 78 students (61.4%). The physical activity of students at SMK Minhajut Thulab Al Amin was mostly in the low category. Based on the results of the study regarding physical activities that are often done by teenagers are sports such as running, fast walking, gymnastics, playing badminton, volleyball and also soccer.

This study is in line with the results of research (Lamria, 2020) which shows that students spend more time relaxing at home while watching TV and most students prefer to play *gadgets* to fill their free time at home.

The incidence of obesity in adolescents at Minhajut SMK Thulab Al Amin

The incidence of *overweight* in this study can be categorized based on the BMI indicator according to age with 2 categories, namely *overweight* and not *overweight*. The results showed that out of 127 students, 29 students (22.8%) were *overweight*, while 98 students (77.2%) were not *overweight*. This means that the incidence of *overweight* at SMK Minhajut Thullab Al Amin, most students are included in *the category of not being overweight*. However, *obesity* in adolescents is important to note because adolescents who are *overweight* tend to be obese as adults (Mutia, 2021)

The Relationship Between Diet Patterns and the Incidence of *Overweight* in Adolescents at SMK Minhajut Thulab Al Amin

Based on the results of the study, adolescents who are *overweight* with frequent eating patterns are 21 people (33.3%) people (33.3%), while adolescents who are not *overweight* with rare eating patterns are 56 people (87.5%). This means that adolescents who are not *overweight* mostly have rare eating patterns compared to adolescents who are *overweight*. The results of the study on the relationship between eating patterns and the incidence of pre-adult *overweight* in the bivariate test using the chi square test showed that there was a relationship between eating patterns and the incidence of adolescent *overweight* in students at SMK Minhajut. Thulab, Mesuji Regency in 2024.

Research conducted by (Andrini, 2023) showed a relationship between undereating and obesity levels in 34 respondents (79.1%). From the results of the chi square test, a p value of 0.000 $p < 0.005$ was obtained, which indicates that there is a significant relationship between undereating and obesity levels in respondents at SMAN 8 Jambi City in 2023.

The Relationship between Physical Activity and the Incidence of Obesity in Adolescents in Minhajut District, Students of Thulab Al Amin Vocational School, Mesuji Regency

obesity mostly have low activity compared to adolescents with good nutritional status. There are 33.3% of adolescents who are overweight have less physical activity while adolescents who are not overweight as many as 667 have less physical activity. However, the results of research on the relationship between physical activity and the level of overweight in adolescents in bivariate research using the ChiSquare test showed that there was a relationship between physical activity and the frequency of pre-adult overweight in students at SMK Minhajut Thulab Al Amin, Mesuji Regency in 2024.

The results of this study are in accordance with research conducted by (Mellena, 2023) which shows that there is a relationship between physical activity and the incidence of obesity in adolescents at SMA N 1 Singkawang ($p = 0.028 < 0.05$) from research conducted by Mahesa there are several things that can cause low physical activity of students, namely many students choose to use their own motorized vehicles to school, or are dropped off by their parents rather than walking.

Conclusion

Based on the results of the study, it is known that there are 64 (50.4%) students with a rare eating pattern and 63 (49.6%) students with a frequent eating pattern . Respondents who do moderate physical activity are 49 students (38.6%) and respondents who do low physical activity are 78 students (61.4%) . Those who are overweight are 29 people (22.8%) and those who are not *overweight* are 98 people (77.2%) and there is a relationship between eating patterns (p value). 0.01) and physical activity (p value 0.001) with the incidence of overweight in adolescents at SMK Minhajut Thulab Al Amin. It is expected that adolescents will do physical activity more routinely and the importance of integrated intervention to overcome the problem of overweight is by improving diet and increasing physical activity simultaneously.

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