

A Descriptive Study on Breakfast Habits and Sleep Duration in Over-Nutrition Adolescents at SMP Muhammadiyah Limbung Gowa District

Gambaran Kebiasaan Sarapan dan Durasi Tidur pada Remaja Status Gizi Lebih di SMP Muhammadiyah Limbung Kabupaten Gowa

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Abstract: *One of the nutritional problems that often occurs in the adolescent environment is the phenomenon of overweight and obesity. One of the factors that can cause overnutrition in adolescents is the habit of skipping breakfast and sleep duration. This study aims to determine the description of breakfast habits and sleep duration in adolescents with overweight status at SMP Muhammadiyah Limbung, Gowa Regency. This study used a descriptive design. The research sample was adolescents aged 13-15 years in classes VII and VIII who were overweight. The sample determination used total sampling with a total sample of 79 people. Breakfast habits and breakfast quality were obtained through an interview questionnaire and 24-hour recall, and sleep duration was obtained through the Sleep Timing Questionnaire (STQ). Most respondents had a habit of rarely having breakfast <4 times/week (64.5%) and still had poor breakfast quality which was <15% of the RDA (50.6%). Sleep duration of most adolescents was <8 hours/day both weekdays (58.2) and weekends (51.9%). Most of the overnourished adolescents at SMP Muhammadiyah Limbung have a habit of rarely eating breakfast and the quality of breakfast is still lacking. The duration of sleep of most adolescents is still lacking, namely <8 hours / day both weekdays and weekends.*

Key word: adolescents, breakfast habits, over-nutrition, sleep duration

1. INTRODUCTION

Nutritional status is a condition determined by the degree of physical demand for energy and nutrients obtained from food intake whose physical impact can be measured. One of the nutritional problems that often occurs in the adolescent environment is the phenomenon of overweight and obesity(1). Globally, the prevalence of overweight and obesity in children and adolescents aged 5-19 years increased from only 4% in 1975 to more than 18% in 2016(2). Meanwhile, according to the 2018 Riskesdas data, the prevalence of overweight and obesity in adolescents aged 13-15 years in Indonesia increased to 11.2% and 4.8%. Specifically in South Sulawesi, the prevalence of overweight and obesity in 2018 reached 10.5% and 4.1%(3).

Breakfast habits among adolescents and adults are still relatively lacking. A global survey among adolescents conducted in Brazil revealed that as many as 68.7% of 36,956 adolescents aged 12-17 years skipped breakfast (4). In Indonesia, it was found that 40% of Indonesian children did not eat breakfast before going to school (5).

Skipping breakfast is a behavior commonly found in overnourished children and tends to be associated with low physical activity and poor diet. Going through the morning without breakfast results in changes to eating rhythms, patterns and cycles. People who skip breakfast feel hungrier during the day and night than those who eat breakfast, so they will consume more food during the day and night (6).

In addition to the habit of skipping breakfast, another factor that affects nutritional status is sleep duration. Sleep duration is very influential in adolescents, if the quality of sleep is not fulfilled or disturbed, it can affect other adolescent needs. Some adolescents in Indonesia still have insufficient sleep duration. As many as 40% of adolescents in Indonesia have insufficient sleep duration (<8 hours per night). Poor sleep quality will affect hormone levels, such as decreased leptin and increased ghrelin production which are appetite suppressants and stimulants and cause body balance disorders that will have an impact on food intake (7).

Adolescents are an age group at risk for sleep deprivation due to increased exposure to technology such as cellphones and computers, as well as television, resulting in delayed sleep and sleep disturbances (8). Low sleep duration will affect metabolic rate and may also increase food intake due to more time available for eating (9). In addition, people who are sleep deprived will get tired easily and thus physical activity will be reduced. Thus, excess calories can easily be converted into fat accumulation in the body after meals, which also increases weight gain for children and adolescents (10).

It is important to conduct research on overnutrition status in adolescents because it is useful for the prevention of nutrition and health problems, especially obesity, so that it does not continue in the adult stage. Starting from these problems, the author wants to examine the description of breakfast habits and sleep duration at Muhammadiyah Limbung Junior High School, especially in the group of adolescents who are overweight.

2. METHODS

This research was conducted at SMP Muhammadiyah Limbung, Gowa Regency, South Sulawesi and was conducted in April-May 2023. This research design is descriptive research. The affordable population in this study were all students in grades VII and VIII of SMP Muhammadiyah Limbung aged 13-15 years who had the potential to experience overnutrition obtained from student attendance and the results of anthropometric measurements that had been carried out by researchers. The sample determination used total sampling with a total sample size of 79 students. Researchers did not take 9th grade students because the research was conducted when approaching the School Examination for 9th grade and researchers took the age range of 13-15 years based on the adolescent category in the Basic Health Research of the Ministry of Health of the Republic of Indonesia. The inclusion criteria in this study were students who were able to communicate well. Exclusion criteria in this study were students who were on a fast and students were on a certain diet.

The tools used for anthropometric measurements (BW and TB) are a height measuring instrument stadiometer and digital scales. While the materials used in this study were breakfast habit questionnaires to determine adolescents' breakfast habits, Sleep Timing Questionnaire (STQ) questionnaires to measure sleep duration,

breakfast food recall forms to determine the amount of intake obtained from the breakfast menu, and food book photos as a tool in food recall interviews.

Primary data in this study were obtained through direct observation by filling out a questionnaire consisting of demographic data, questions about breakfast habits, and questions about sleep duration. The results of the questionnaire were processed through the IBM SPSS 24 application, while the quality of breakfast was obtained through 24-hour recall for 3 days, namely two days on school days and one day on holidays. The determination of nutritional status was obtained from IMT/U anthropometric data with the help of the WHO Anthro Plus application. Meanwhile, secondary data in this study were obtained from schools related to the general description of the school, geographical conditions, and the number of students in class VII and class VIII of SMP Muhammadiyah Limbung based on the student master book (student name and nim).

3. RESULTS

Characteristics of Respondents

Based on Table 1, it can be seen that the dominance of the highest number of respondents was found in class VIII at 72.2%, with an age category of 13 years at 69.6%, and female gender at 51.9%. Most of the respondents' fathers worked as day laborers by 24.1%, while the mother's job was dominated as a housewife by 69.6%.

Table 1. Distribution of Respondents Based on General Characteristics at SMP Muhammadiyah Limbung in 2023

Characteristics	Frequency	
	N=79	%
Class		
VII	22	27,8
VIII	57	72,2
Age		
13 years	55	69,6
14 years	23	29,1
15 years	1	1,3
Gender		
Male	38	48,1
Female	41	51,9
Father's Occupation		
Not working	4	5,1
Daily laborer	19	24,1
Farmer	15	19,0
Service (Ojek/Driver)	1	1,3
Civil servants/military	15	19,0
Private employee	7	8,9
Self-employed	14	17,7
Others	4	5,1
Pekerjaan Ibu		
Housewife	55	69,6
Daily laborer	1	1,3
Civil servants/military	12	15,2
Private employee	2	2,5
Self-employed	4	5,1
Others	5	6,3

Table 2. Distribution of Nutritional Status of Adolescents at SMP Muhammadiyah Limbung in 2023

Nutritional Status	Frequency	
	N = 79	%
Overweight	47	59,5
Obesity	32	40,5

Based on Table 2, it is known that the number of adolescents who experience more nutrition is found in the overweight category at 59.5% compared to obesity which is only 40.5%.

Breakfast habits

Table 3. Distribution of Nutritional Status of Adolescents at SMP Muhammadiyah Limbung in 2023

Category	Frequency	
	N = 79	%
Breakfast Frequency		
1 time/week	8	10,1
2 time/week	19	24,1
3 time/week	24	30,4
4 time/week	10	12,7
5 time/week	18	22,8
Breakfast Time		
06.00-07.00	28	35,4
07.00-08.00	24	30,4
08.00-09.00	27	34,2
Breakfast Location		
At home	41	51,9
At school/on the way to school	38	48,1
Reason for not having breakfast		
Don't have time	37	46,8
No appetite	26	32,9
No food available	3	3,8
Lazy	11	13,9
Not feeling hungry	2	2,5
Type of Breakfast		
Fried food	5	6,3
Cake	7	8,9
Instant noodles	4	5,1
Rice and side dish	17	21,5
Rice and vegetable	3	3,8
Rice, vegetable, and side dish	31	39,2
Bread	5	6,3
Bread and milk	1	1,3
Milk	6	7,6

Based on Table 5, it can be seen that most adolescents have breakfast habits 3 times / week by 30.4% and the least is 1 time / week by 10.1%. While the breakfast time of most adolescents is at 06.00 - 07.00 am by 35.4%. Most adolescents had breakfast at home by 51.9%. In addition, it is known that most adolescents by 46.8% sometimes skip breakfast because they do not have time to eat their breakfast food. The most common type of breakfast consumed by adolescents is rice, vegetables, and side dishes by 39.2%.

Table 4. Distribution of Breakfast Habits and Breakfast Quality of Adolescents Based on Nutritional Status at SMP Muhammadiyah Limbung Year 2023

Characteristics	Overweight		Obesity		Total	
	n	%	n	%	n	%
Breakfast Habits						
Rarely (<4 times/week)	32	62,7	19	37,3	51	64,5
Often (≥4 times/week)	15	53,6	13	46,4	28	35,4
Beakfast Quality						
Less (<15% RAD)	24	60,0	16	40,0	40	50,6
Moderate (15%-25% RAD)	22	59,5	15	40,5	37	46,8
Over (>25% RAD)	1	50,0	1	50,0	2	2,5
Total	47	59,5	32	40,5	79	100

Based on Table 4, it is known that most adolescents have a habit of rarely having breakfast (<4 times/week) and most are found in adolescents who are overweight at 62.7%. Most adolescents have poor breakfast quality (<15% of RDA) and most are found in adolescents who are overweight by 60%.

Sleep Duration

Table 5. Distribution of Adolescent Sleep Duration at SMP Muhammadiyah Limbung Year 2023

Durasi Tidur	Weekdays		Weekend	
	n	%	n	%
Less (<8 hours/day)	46	58,2	41	51,9
Moderate (8-9 hours/day)	26	32,9	21	26,6
Over (>9 hours/day)	7	8,9	17	21,5
Total	79	100	79	100

Based on Table 5, it can be seen that the sleep duration of adolescent during weekdays and weekends is mostly in the category of less (<8 hours/day) at 58.2% and 51.9%.

Table 6. Distribution of Weekdays and Weekend Sleep Duration Based on Adolescent Nutrition Status at SMP Muhammadiyah Limbung in 2023

Durasi Tidur	Overweight		Obesitas		Total	
	N = 79	%	N = 79	%	N = 79	%
Sleep Duration Weekdays						
Less (<8 hours/day)	31	67,4	15	32,6	46	100
Moderate (8-9 hours/day)	12	46,2	14	53,8	26	100
Over (>9 hours/day)	4	57,1	3	42,9	7	100
Sleep Duration Weekend						
Less (<8 hours/day)	24	58,5	17	41,5	41	100
Moderate (8-9 hours/day)	13	61,9	8	38,1	21	100

Over (>9 hours/day)	10	58,8	7	41,2	17	100
Total	47	59,5	32	40,5	79	100

Based on Table 6, it can be seen that the sleep duration in overweight adolescents is more found to have insufficient sleep duration during weekdays by 67.4 and more have sufficient sleep duration on weekends by 61.9%. For obese adolescents, more were found to have sufficient sleep duration on weekdays by 53.8% and more had insufficient sleep duration on weekends by 41.5%.

4. DISCUSSION

Characteristics of Respondents

In this study, the percentage of overweight incidence was higher than the incidence of obesity, this is in line with data on the incidence of overweight and obesity nationally and regionally in South Sulawesi which shows that the incidence of overweight is higher than obesity(3). Gender is one of the factors that determine the nutritional needs of adolescents. Boys are more likely to be obese than girls. Girls are more concerned about diet and weight than boys(11). In this study, the findings of overnutrition were mostly found in female adolescents compared to male adolescents. In addition to gender, age is an important factor in determining nutritional status. In this study, adolescents from classes VII and VIII aged 13-15 years were found to have the highest percentage of overnutrition in adolescents aged 13 years. Adolescents with younger groups have a risk of obesity because respondents who tend to be younger still do not pay attention to their body appearance, this happens naturally that the older a person's age, a person will try to maintain a body image to attract the opposite sex (12).

The role of parents is very important for the growth and development of children by paying attention to parenting and nutritional intake given to children. Family characteristics are external factors that can affect a person's nutritional status, including education, employment, and family income(13). In this study, most of the sample fathers worked as day laborers, while the mothers' jobs were predominantly as housewives. The type of work of the head of the household affects the level of family income used to meet the needs of life. The better the job, the higher the family income. The high and low socioeconomic status of parents determines in choosing foods that have balanced nutrition, encouraging their children to get enough exercise, and teaching healthy living so as not to contract obesity which will endanger health in adulthood(14).

Breakfast Habits

Breakfast is the most important thing for everyone, especially teenagers, which is done in the morning before learning activities at school. For adolescents and adults, adequate breakfast is proven to prevent obesity. Not skipping breakfast also means getting used to the discipline of getting up early and doing morning activities and preventing overeating at lunchtime. Breakfast can help in weight control. This happens when the stomach is filled in the morning, it can suppress appetite during the day so as not to overeat during the day. Children who have a habit of skipping breakfast are associated with increased consumption of snacks and difficulty controlling appetite, resulting in the incidence of obesity(6)(15).

Breakfast frequency contributes to appetite regulation and obesity prevention. The frequency of breakfast in this study is the number of days in a week where respondents habitually eat breakfast. From the results of the study, there were no adolescents who never had breakfast at all, most adolescents had a habit of rarely having breakfast with a frequency of 1-3 times / week. Some adolescents said they used to eat during school breaks at 09.55 WITA, which is not included in breakfast time. Overweight adolescents were more likely to rarely eat breakfast and obese adolescents were more likely to eat breakfast frequently. One of the causes of obesity can occur due to excess daily food intake(16). Skipping breakfast in the morning will cause blood glucose levels to decrease. If blood glucose levels decrease, the body will send impulses to the brain so that hunger appears. The stimulation will cause the desire to eat in large quantities so that they will consume excess food during the day and night. Excessive intake will increase insulin secretion and inhibit the enzyme lipase. As a result, more fat is deposited in the body, if this continues to happen it will cause an increase in body weight(16).

Breakfast is an eating and drinking activity carried out from waking up in the morning until 09.00 which aims to meet the needs of nutrients in the morning with the fulfillment of nutrient intake of 15%-25% of daily needs(17). In this study, most adolescents usually consume breakfast before 7:00 am. This is because adolescents are junior high school students whose learning starts at 07.15 WITA. In this study, most adolescents had breakfast at home. Some students who had breakfast at school, obtained breakfast from lunch brought from home or bought food to be consumed before the lesson began. The results of this study are also in line with one of the studies that showed the location of breakfast in most junior high school adolescents was that adolescents had breakfast at home and the rest had breakfast at school and on the way(18).

The two most common reasons for not having breakfast expressed by adolescents in this study were not having time and no appetite as much as due to some adolescents rushing to school due to waking up late. The results of this study are in line with other studies that revealed the most common reasons for not eating breakfast among junior high school adolescents were lack of appetite and lack of time(18).

The type of food consumed at breakfast determines the quality of breakfast and the energy generated from breakfast itself. Breakfast should fulfill 15%-25% of daily nutrient intake(17). In this study, it was found that the most common types of breakfast consumed by adolescents were rice, vegetables, and side dishes. Most adolescents obtained breakfast energy intake in the deficient category. Overweight adolescents were more likely to have less energy intake, while obese adolescents were more likely to have more energy intake. Obesity can be caused by the behavior and attitudes of adolescents who like to consume foods that contain high calories and snacks in excess. Generally, obese adolescents like to consume excessive energy to meet the body's energy needs by eating large portions of food, especially foods that are sources of carbohydrates (19).

Sleep Duration

Sleep is a basic need that absolutely everyone must fulfill. Sleep is an activity required by humans for the formation of new body cells, repairing damaged body cells, and giving the body's organs time to rest and maintain the body's metabolism

and biochemistry. Sleep is an important modulator of hormone release, cardiovascular activity, and glucose regulation(20). In this study, the sleep duration of adolescents was obtained using the Sleep Timing Questionnaire (STQ) and it was found that on weekdays most adolescents had insufficient sleep duration both on weekdays and weekends. During weekdays, adolescents with poor sleep duration were mostly found in female adolescents, while during weekends adolescents with poor sleep duration were mostly found in male adolescents.

Sleep duration in overweight adolescents was found to be more likely to have insufficient sleep duration on weekdays and more likely to have sufficient sleep duration on weekends. For obese adolescents, more were found to have sufficient sleep duration on weekdays and more had insufficient sleep duration on weekends. This could be due to the fact that overnutrition is influenced by internal and external factors such as age, genetics, and environmental factors such as excessive food intake, low physical activity, and unhealthy lifestyles. So it can be concluded that sleep duration is not the only factor that can affect the nutritional status of adolescents (21).

In this study, most adolescents on weekdays started sleeping at 21.00 - 22.00 WITA and woke up around 05.00 - 06.00 WITA while the length of sleep at night was most often >4 hours and the length of sleep during the day was most often ≤30 minutes. Whereas on weekends most adolescents start sleeping at 23.00 - 00.00 WITA and wake up around 05.00 - 06.00 WITA, while the length of sleep at night is most often >4 hours and the length of sleep during the day is mostly ≤30 minutes. In addition to sleeping hours, other causes of insufficient sleep duration in adolescents can be caused by sleep that is not deep or waking up frequently at night for some reason. In this study, adolescents often woke up at night with the fastest waking time being about 5 minutes and the longest waking time being about 2 hours. Other studies in line with this study revealed that most respondents had less sleep duration than adequate sleep duration (22).

Another study analyzing the description of sleep duration in overnourished adolescents stated that most respondents had a sleep duration of 5-7 hours / day (23). Poor sleep quality will affect hormone levels, such as decreased leptin and increased ghrelin production which are appetite suppressants and stimulants and cause body balance disorders that will have an impact on food intake. Sleep-deprived adolescents will get tired easily so physical activity will be reduced. Thus, excess calories can easily be converted into fat accumulation in the body after meals, which also adds weight to children and adolescents (7),(10).

5. CONCLUSION

Most of the overnourished adolescents at SMP Muhammadiyah Limbung have a habit of rarely having breakfast, namely <4 times / day and the quality of breakfast is still lacking, which is still below <15% of the AKG. The duration of sleep of most adolescents is still lacking, namely <8 hours / day both weekdays and weekends. It is expected that adolescents pay more attention to diet such as not skipping breakfast, and getting enough sleep according to the recommendations of the Ministry of Health of the Republic of Indonesia, and also the school needs efforts to understand adolescents about nutritional status such as the dissemination of information about normal weight and height, so that students can pay more attention to their nutritional status.

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