



FOOD CHOICE BEHAVIOR WITH THE INCIDENCE OF OBESITY IN ADOLESCENTS SCHOOL

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ABSTRACT

Indonesia is in an epidemiological transition. On the one hand, there is still a problem of malnutrition, but on the other hand, obesity occurs. Increased prevalence of obesity from 15.3% in 2013 to 21.8% in 2018. This situation occurs due to a lack of physical activity and an unbalanced diet. This study aims to see the relationship of Food Choice behavior to the incidence of obesity. The population in the study is students in State Junior High School (SMPN) and State High School (SMAN) in Lembang Village in June 2023. The type of study used cross-sectional with a population of 1,398 adolescents. The purposive sampling technique was used with a sample of 94 adolescents. Data collection used the Food Choice Questionnaire (FCQ). The results showed that the most important reasons for food choice in adolescents with obese nutritional status were mood (4.00 ± 0.00), comfort (4.00 ± 0.00), and habits (4.00 ± 0.00). They had a significant relationship with each p -value = 0.00. The nutritional status of obesity is significantly related to the reasons for Food Choice on mood, comfort, and habits. Therefore, it is expected that related parties provide an understanding of the importance of choosing foods that can support health.

ABSTRAK

Indonesia berada dalam transisi epidemiologi. Di satu sisi masih mengalami masalah kekurangan gizi, namun di sisi lain justru terjadi kegemukan. Peningkatan prevalensi obesitas dari 15,3% pada tahun 2013 menjadi 21,8% pada tahun 2018. Keadaan ini terjadi karena disebabkan kurangnya aktifitas fisik dan pola makan yang tidak seimbang. Penelitian ini bertujuan untuk melihat hubungan perilaku pemilihan makanan terhadap kejadian Obesitas. Populasi dalam penelitian adalah siswa-siswi di Sekolah Menengah Pertama Negeri (SMPN) dan Sekolah Menengah Atas Negeri (SMAN) di Kelurahan Lembang pada bulan Juni 2023. Jenis penelitian yang digunakan *Cross Sectional* dengan jumlah populasi sebanyak 1.398 Remaja. Adapun teknik pengambilan sampel *purposive sampling* dengan jumlah sampel 94 remaja. Pengumpulan data yang digunakan *Food Choice Questionnaire* (FCQ). Hasil penelitian menunjukkan bahwa alasan yang paling utama dalam pemilihan makanan (*Food Choice*) pada remaja dengan status gizi obesitas adalah suasana hati ($4,00 \pm 0,00$), kenyamanan ($4,00 \pm 0,00$), kebiasaan ($4,00 \pm 0,00$), dan memiliki hubungan yang signifikan dengan masing-masing nilai p value = 0,00. Status gizi obesitas memiliki hubungan yang signifikan terhadap alasan pemilihan makanan pada suasana hati, kenyamanan, dan kebiasaan. Oleh karena itu, diharapkan agar pihak terkait memberi pemahaman tentang pentingnya memilih makanan yang dapat menunjang Kesehatan.

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INTRODUCTION

Indonesia is facing the possibility of an explosion of obese people. Obesity is excessive fat accumulation due to an imbalance of energy intake with energy expenditure for a long time (Padwal et al., 2011). Obesity and overweight, commonly known as overweight, is a problem that is quite troubling among adolescents (Gupta et al., 2012). Overweight and obesity are the most significant risk causes of global death because it is a worldwide pandemic and is declared by the World Health Organization as the biggest chronic health problem (Pramono & Sulchan, 2014). According to the World Health Organization states, the obesity rate in the world is 11.9% and more than 1.4 billion adolescents aged

20 years or older suffer from being Overweight and obese people. As many as 200 million are adolescent boys, and 300 million are teenage girls (WHO, 2021). One of the factors that causes many cases of obesity is nutritional education knowledge, causing errors in Food Choice, so nutritional counseling is needed to intervene in weight loss and provide more in-depth education to reduce obesity. The prevalence of malnutrition (BB/TB) in children of primary school age (5 – 12 years) is still high (>10%) at 11.2% (2013). However, on the other hand, school-age children suffering from obesity tend to increase, namely by 18.8% (2013), doubling compared to 2010 (9.2%) (Pramono & Sulchan, 2014).

Adolescents are one of the age groups that are vulnerable to nutritional problems because, in this phase, there is a transformation in several things in humans. Based on the Basic Health Research report (Riskesdas), the prevalence of nutritional problems is still found in the adolescent age group. In 2018, adolescents aged 13-15 years had short and very short postures, as much as 25.7 percent. Meanwhile, the prevalence of undernutrition in this age group in 2018 was 8.7 percent. In addition, as many as 16 percent of adolescents aged 13-15 years are also obese and overweight (Riskesdas, 2018). The prevalence of obesity in adolescent girls in the West Sulawesi region is the age category of 13-15 years, which is 11.77%, and obesity in teenage girls aged 13-15 years in the West Sulawesi region is 2.49%. Meanwhile, obesity in adolescents for the age category of 16-18 years is 11.8%, and obesity in adolescents aged 16-18 years is 2.35%. The prevalence of obesity in adolescents in Majene Regency aged 13-15 years is 6.27%, and obesity in adolescents aged 13-15 years is 2.18%, while the prevalence of obesity in adolescents aged 16-18 years is 9.76% and obesity in adolescents aged 16-18 years is 3.0% (Riskesdas, 2018). Meanwhile, the obesity rate of adolescent girls in Majene Regency is at a percentage of 16.4%, consisting of Overweight as much as 14.2% and obesity 2.2% (Umami Kalsum Nurais et al., 2023). This problem occurs because adolescents misunderstand the habit of consuming junk food and excessive eating habits (Septiana et al., 2018). Changes in lifestyle and eating habits of adolescents also influence more or less their intake and nutritional needs.

In 2014, in 40 European countries and territories, only 36% of adolescents consumed fruits and vegetables regularly daily. In Armenia, it was found that as many as 53% of adolescents chose to consume sweet foods with very fra persistent (Inchley et al., 2017). In research conducted in several regions, it can be concluded that the Food Choice of Indonesian adolescents is still not good which is 89.9% of them do not like vegetables (Hendra et al., 2019). In addition, Susanti (2012) conducted a study where it was found that Indonesian people aged 15-34 years mostly still choose unhealthy foods, such as fast food (Suswanti, 2012). In a 2018 study, it was found that 88% of adolescent girls in Malang City still choose unhealthy food, namely low fiber consumption and high or prevalent junk food (Septiana et al., 2018).

Research (Pramono & Sulchan, 2014) shows that the contribution of snacks to adolescent energy intake is quite significant, nasignificant291.7 kcal in obese adolescents and 462.4 kcal in obese adolescents. Unfortunately, the types of snacks available can be categorized as unhealthy because they are usually high in energy, sugar, and fat. According to (Rohmah, 2019), as many as 76.8 percent of teenagers buy unhealthy snacks. It is supported by (Pramono & Sulchan, 2014), which shows a significant relationship between snacking habits and adolescent obesity. Fast food consumption was also found to be high in adolescents. As many as 83.2 percent of teenagers in Semarang consume fast food one to two times a week (Imtihani & Noer, 2013). Research conducted by (Umami Kalsum Nurais et al., 2023) on Young women in Majene Regency stated that the consumption pattern of adolescent girls was not good (69.6%), which showed a significant relationship with the incidence of obesity in Majene Regency. Food choice is the subject of research in nutrition, food science, psychology, anthropology, sociology, and other branches of the natural and social sciences. It is also of great practical importance to the food industry, especially marketing efforts (Adenengsi et al., 2019).

This study aimed to determine the relationship between Food Choice behavior and the incidence of obesity in adolescent Schools in Lembang, Majene Regency.

METHOD

Research Types

The type of research used is analytical with a cross-sectional design.

Research Location

This research will be carried out in State Junior High Schools (SMPN) and State High Schools (SMAN) in Lembang Village, namely SMAN 2, SMAN 3, and SMPN 4. This research will be conducted in June 2023. These three schools are located in the district capital, Majene, given that adolescents living in urban areas generally have higher levels of energy, fat, and sugar consumption than adolescents living in rural areas (Buanasita et al., 2015).

Sample and Populations

This study's population is students from the three schools in the Lembang sub-district, namely SMPN 4, SMAN 3, and SMAN 2, with as many as 1,398 adolescents. The sample size was determined based on a theory developed by Isaac and Michael (Sugiyono, 2021) and obtained a total sample of 94 adolescents.

Data Collection

The type of data taken from primary data includes the characteristics of the subjects (gender, allowance, nutritional status (weight/body weight and height/TB), reasons for Food Choice, and healthy eating habits. The information is obtained through questionnaires filled out by the subjects themselves with prior assistance and explanation. Nutritional status data (BB and TB) are obtained through direct measurement using digital weight scales and height-measuring devices.

There are 36 statements identifying aspects of reasons for Food Choice using the FCQ (Food Choice Questionnaire) developed by Steptoe and Pollard (1995) and adjusted by Sun (2008) collected using interview techniques. The answer choices for the statement are in the form of seven Likert scales, namely not important (TP), little unnecessary), quite important (CP), and very important (SP2) to assess subjects in decision-making related to Food Choice.

Analysis and Data Processing

Subjects the age of ≤ 19 years were measured for nutritional status using body mass index based on age (BMI / U), and adolescents over the age of 19 years using body mass index (BMI). Categorization of nutritional status based on BMI/U according to (Permenkes RI, 2020), namely undernutrition (-3 SD < -2 SD), good nutrition (-2 SD $SD + 1$ SD), more nutfood1 SD $+ 2$ SD) and obesity ($> + 2$ SD).

FCQ processing to identify the reasons for Food Choice by summing the values in each statement according to categories in aspects of Food Choice reasons, namely health, mood, comfort, sensory, natural ingredients in food, price, weight control, familiarity, and ethical issues. The score results for each reason will be sorted from highest to lowest. The three reasons for choosing the highest-scoring food are imporessentialons for the subject in making Food Choices. The analysis used is a difference test to see the difference in variables in the category of normal nutritional status and more. The Spearman correlation test was conducted on the reason for Food Choice variables.

RESULTS

This study was conducted to look at Food Choice Behavior with the Incidence of Obesity in Adolescents Schools. Data was collected using questionnaires, which were then processed and analyzed through the SPSS program and narrated. After analysis, the following results were obtained:

1. Characteristics of Respondents

The respondents in this study were students of State Junior High School (SMPN) and State High School (SMAN) in Lembang. Characteristics observed include Gender, Parental Occupation, and Nutritional Status. Responden has a population of 94 people.

Table 1. Data Characteristics of Respondents

Characteristics Respondent	n	%
Level of School		
SMP	45	47,8
SMA	49	52,2
Gender		
Female	83	88,3
Male	11	11,7
Age		
11 – 15 years	31	33,0
16 – 20 years	63	67,0
Parents Job		
PNS	21	22,3
Wiraswasta	32	34,0
Farmer	19	20,2
Other	22	23,4
Nutritional Status		
Normal	39	41,5
Obesity	55	58,5

Source: Primary Data 2023

Based on Table 1. It showed that the number of samples in this study was 94 adolescents, where the sample model that the female sex was more significant (88.3%) than the male sample Models. Examples aged 16-18 years were more common (67%) compared to those aged 11-15 years (Pieces Samples with parental occupations were more common in self-employed (34%) compared to parents' jobs as farmers (20.2%), civil servants (22.3%), and other occupations (23.4%). Nutritional status in adolescents is more common in the nutritional status of obesity (58.5%) than adolescents with normal nutritional status (41.5%).

2. Food Choice

The Food Choice Questionnaire (FCQ) is the reason for Food Choice. The highest average of the main reasons for Food Choice can be seen in the following Table 2:

Table 2. Age to Food Choice Score

Kategori	Skor Usia		P
	10-15 tahun	16-20 tahun	
Kesehatan	3,43 ± 0,47	3,25 ± 0,61	0.06
Suasana hati	3,63 ± 0,57	3,52 ± 0,68	0.34
Kenyamanan	3,58 ± 0,63	3,54 ± 0,66	0.19
Daya Tarik Sensorik	3,43 ± 0,62	3,25 ± 0,59	0.03*
Kandungan Alami	3,01 ± 0,69	2,94 ± 0,65	0.10
Harga	3,03 ± 0,68	2,87 ± 0,71	0.72
Pengendalian Berat	2,99 ± 0,85	2,89 ± 0,68	0.02*
Kebiasaan	3,54 ± 0,70	3,55 ± 0,67	0.13
Masalah Etika	2,82 ± 0,86	2,82 ± 0,74	0.49

*signifikan pada $p < 0.05$

Source: Primary Data 2023

Table 2 shows that the main reasons for food choice in adolescents aged 13-15 years are mood (3.63 ± 0.57) and comfort (3.58 ± 0.63), and the lowest reasons for food choice are ethical issues (2.82 ± 0.86), and weight control (2.99 ± 0.85).

The most important reasons for food choice in adolescents aged 16-18 years are habit (3.55 ± 0.67), and comfort (3.54 ± 0.66), and the lowest reasons for Food Choice are ethical issues (2.82 ± 0.74) and price (2.87 ± 0.71).

Table 3. Nutritional Status of Food Choice Reasons

Kategori	Status Gizi		p
	Normal	Obesitas	
	Mean ± SD	Mean ± SD	
Kesehatan	3,34 ± 0,43	3,29 ± 0,66	0,68
Suasana hati	2,94 ± 0,60	4,00 ± 0,00	0,00*
Kenyamanan	2,93 ± 0,59	4,00 ± 0,00	0,00*
Daya Tarik Sensorik	3,25 ± 0,58	3,35 ± 0,62	0,33
Kandungan Alami	2,96 ± 0,67	2,97 ± 0,66	0,80
Harga	2,79 ± 0,76	3,02 ± 0,64	0,17
Pengendalian Berat	2,95 ± 0,78	2,90 ± 0,71	0,58
Kebiasaan	2,92 ± 0,65	4,00 ± 0,00	0,00*
Masalah Etika	2,76 ± 0,73	2,86 ± 0,82	0,48

*signifikan pada $p < 0.05$

Source: Primary Data 2023

Table 3 shows that the most important reasons for food choice in adolescents with normal nutritional status are health (3.34 ± 0.43), sensory attractiveness (3.25 ± 0.58), weight control (2.95 ± 0.78), and the lowest reasons for Food Choice are ethical issues (2.76 ± 0.73) and price (2.79 ± 0.76).

While the most important reasons for food choice in adolescents with obese nutritional status are mood (4.00 ± 0.00), comfort (4.00 ± 0.00), habits (4.00 ± 0.00), and the lowest reasons for Food Choice are ethical issues (2.86 ± 0.82) and weight control (2.90 ± 0.71). The table shows that the nutritional status of obesity has a significant relationship to the reasons for Food Choice on mood, comfort, and habits with a p-value = 0.00.

DISCUSSION

Characteristics of Respondents

The subjects in this study were students of State Junior High School (SMPN) and State High School (SMAN) in Lembang Village. These two phases of school were chosen. They are considered to have characters quite different from other age categories because they are in the transition period of children, so the mindset formed is not mature enough (Edi Sudrajat, 2015). Observed characteristics include Gender, Age, Occupation of Parents, and Nutritional Status. Most subjects were female at 88.3% and male at 11.7%. Food intake and dietary factors can affect cases of obesity. Positive influences (related to excessive food intake) can cause or aggravate obesity, and negative consequences (adequate food intake) can reduce the possibility of obesity (Herze, 2014).

Gender influences eating behavior both in adolescents and in adults. Women maintain eating patterns and conduct more than men related to body image; women tend to limit food consumption, and many women experience lousy eating behavior. Many teenage girls judge that their bodies are not adolescent boys. On the other hand, they have their problems looking at their bodies. Adolescent teenage boys crave masculine bodies that show muscles. This gap between expectation and reality is what gives rise to eating behavior problems among adolescents (Prastiwi, 2012).

The results of research by Sjoberg et al. (2003) in (Rekyan Hanung Puspawati & Dodik Briawan, 2018) show that most teenagers consume three main meals daily. Adolescent boys and girls tend to make high-energy food choices on their interl. Teenage Adolescent girls who skip breakfast and lunch tend to have less healthy and less diverse food choices, so they are poor in nutritional content. Adolescents also tend to lack the Food Choice of dairy products (especially low-fat milk), meat, fruit, vegetables, and nuts.

The age of subjects was in early adolescence at 11-15 years at 33.0% and those aged 16-18 by 67%. The age range of adolescents according to WHO is the population aged 10-19 years, while according to the Regulation of the Minister of Health of the Republic of Indonesia, 25 of 2014 adolescents are residents aged 10-18 years (Adenengsi et al., 2019). Adolescents are a group that is vulnerable to physical changes, so it can impact adolescent behavior, one of which is eating behavior (Rae & Brigitte Sarah Renyoet, 2022).

Food Choice

Age to the Reason for Food Choice

Adolescence is a critical period of child development into adulthood. Not infrequently, a teenager wants to try risky things, including consuming excessive and unhealthy foods that can cause obesity or obesity (Adenengsi et al., 2019). Eating behavior in adolescents is influenced by various factors, including peers, parents, food availability, preference for food, cost, comfort, individual and cultural influences, mass media exposure, and self-image (Prastiwi, 2012).

The results showed that there are several main reasons leading to food choice in adolescents aged 10-15 years: mood, comfort, and habits, and the lowest reasons for Food Choice are ethical issues and weight control. The essential reasons for food choice (Food Choice) in adolescents aged 16-20 are habits, comfort, mood, and ethical and price issues. Factors of eating habits include adolescent growth, increased participation in social life, and adolescent activities. These three things can have an impact on what the teenager eats. In the age category of 13-15 (junior high school), the teenagers have relatively high and uncontrolled emotional levels, while in the age category of 16-18 (high school), the teenagers have an emotional level that is relative but can be controlled. This results in mood scores in junior Adolescent schools having a higher influence on Food Choice because they consume foods based on mood and have not paid too much attention to other aspects (Edi Sudrajat, 2015). Unlike high school teenagers, they are starting to be able to buy and prepare food for themselves. Teenagers usually choose

instant food from outside the home, such as fast food, which generally contains dense energy but minimal nutrients (Prastiwi, 2012). When viewed from the age group, adolescents make more food choices for health reasons, but some studies also say that sensory, price, and health reasons are the main reasons for Food Choice in adolescents (R. H. Puspadewi & Briawan, 2014).

Changes in eating behavior in adolescents can result in an imbalance of nutrients that enter the body. Nutritional imbalances in the body include dietary problems in adolescents such as obesity, malnutrition, and certain nutritional deficiencies such as Chronic Energy Deficiency (SEZ), anemia, Disorders Due to Iodine Deficiency (GAKI), Vitamin A Deficiency (KVA), and so on (Rae & Brigitte Sarah Renyoet, 2022).

In Indonesia, adolescents aged 10-19 years constitute almost one-fifth of the total population. In the future, they will become the main drivers of economic and social change, so they need to be the focus of attention and strategic intervention points for human resource development in the future (Mubasyiroh, Putri, & Tjandrarini, 2015 (Adenengsi et al., 2019).

Nutritional Status of Food Choice Reasons

Nutritional status is the state of the body as a result of eating food and using nutrients. Nutritional status is differentiated between poor, deficient goods, and over-nutritional status (Almatsier, 2005 (Prastiwi, 2012). Multiple factors, including genetic and behavioral components, cause obesity. Eating habits and physical activity are part of the behavioral component, both of which are influenced by environmental, socioeconomic, and cultural factors (Pramono & Sulchan, 2014).

The results of this study showed that in the category of normal nutritional status, the main reason for Food Choices made by adolescents is due to health factors, sensory attractiveness, and weight control. Still, the lowest reason is ethical issues in Food Choice. The essential aspects of food choice in adolescents with obese nutritional status are mood, comfort, and habits, and the weakest reasons are moral issues and weight control. There is a difference between the selection of foods that have good nutritional status (average) and obesity, namely in standard dietary quality; adolescents choose food because of the physical appearance of food (attractiveness); this is motivated by curiosity to try new things, while in obese people, they choose food based on the experience they have previously consumed and addictive properties appear.

The results showed that the nutritional status of obesity had a significant relationship to the reasons for Food Choice related to mood, comfort, and habits with p-value = 0.00. This is in line with what Philipou et al. (2020) (Rae & Brigitte Sarah Renyoet, 2022), which explains that stress triggers excessive consumption of food, especially comfort foods such as foods with high sugar content. Food choice that occurs due to this can affect health in adolescents, and sugar consumption means consuming complex carbohydrates that can cause the risk of obesity and cardiovascular disease.

This research is also in line with that conducted by (Prastiwi, 2012), which suggests that there is an association between the reasons for mood-related Food Choices and the occurrence of obesity. This happens seen from the busyness of teenagers, both academic and non-academic, which makes teenagers spend more time with their friends so that eating is done outside the home by buying food outside.

This is in line with research conducted by (Dilla Ratih et al., 2022), Which states that one of the factors of Food Choice is influenced by convenience, which includes the purchase and preparation of ingredients such as ease of preparing food, availability of food at the nearest store, time needed to prepare food. The ease of Food Choice also influences most people to avoid disease risk (Sela Ovina Santoso et al., n.d. 2018).

This is in line with Henningsen (2011), Purnamati (2016) (Konna et al., 2017) which state that there is a relationship between habits and the occurrence of obesity because currently, the practice of consuming healthy foods has changed due to rapid economic development. It is characterized by more

accessible access to unhealthy foods and lower prices compared to healthy foods, in line with research conducted on the adolescent population in the United States, where fast food has a direct relationship with juvenile nutritional status and has become part of adolescent daily life, replacing healthy foods whose presentation is certainly not fast (Prastiwi, 2012).

This is not in line with what is done by (R. H. Puspadewi & Briawan, 2014), which shows no relationship between perceptions of healthy food and aspects of reason in Food Choice in the form of convenience and sensory. This is because the perception of healthy food in the subject tends to be neutral to positive, so the main focus for Food Choice is not on comfort and sensory but on aspects of the grounds outside the context of healthy and safe food. This is not in line with what is done by (Rae & Brigitte Sarah Renyoet, 2022), which states that precisely the factor of affordable prices, advertising media on social media, the reach of limited food, and awareness of a healthy lifestyle influence Food Choice in adolescents. This is seen in the average teenager who does not have a stable economy. There are also differences in research conducted by Sun (2008) and Profound (R. H. Puspadewi & Briawan, 2014), which shows that there is a significant relationship between reasons in the form of health, price, ethics, and weight control to the incidence of obesity. Research by Ree et al. (2008) (R. Puspadewi & Briawan, 2014) shows that about 70% of adolescents do not pay attention to health issues in Food Choice, citing weight control as a significant concern.

In this study, the sample selected is quite capable of representing the entire population because the location of this school is in an urban area (district capital), where in this city, there are many food vendors, both small and large scale, which opens opportunities for anyone including teenagers to choose the food they want.

CONCLUSION

Food choice in adolescents aged 10-15 years is mood, comfort, and habits, and the lowest reason for Food Choice is ethical issues and weight control. The most essential explanations for food choice (Food Choice) in adolescents aged 16-20 years are habits, comfort, and mood, and the last are ethical and price issues.

Based on normal nutritional status, the main reasons for Food Choice by adolescents are health, sensory appeal, and weight control, but the lowest reason is ethical issues in Food Choice. The most important reasons for food choice in adolescents with obese nutritional status are mood, comfort, and habits, and the lowest reasons are ethical issues and weight control. It was also found that the nutritional status of obesity has a significant relationship with the reasons for Food Choices on mood, comfort, and habits

It is recommended that the parties involved actively educate adolescents on the importance of healthy food and the impact of irregular and excessive food consumption. Adolescents can also be directly involved in beneficial nutrition campaigns by making them counselors in each of their respective schools who, of course, have been equipped with knowledge related to balanced nutrition and all things related to it, including the selection of healthy foods, healthy eating patterns, and adverse effects of obesity of course through cooperation and assistance from universities and practitioners.

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