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Original Research

Association of Diet Diversity and Pocket Money with Nutritional Status of High School Students

Hubungan Keragaman Pangan dan Uang Saku dengan Status Gizi Siswa Sekolah Menengah

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Abstract: *Adolescence could be a move between childhood and grown-up stages. The predominance of overweight adolescents remains high in Bekasi, a megapolitan city in Indonesia. Adolescents' overweight can be caused by undesirable ways of life such as destitute eating propensities. Moreover, young people receive money from their guardians to purchase high-calorie snacks. This considers points to dissect the relationship of diet diversity and pocket money with the wholesome status of students at SMA Patriot Bekasi. The study is categorized as a cross-sectional study. The inquiry about the test was comprised of 145 students from a private school in Bekasi named SMA Patriot. Data were gathered using a structured questionnaire, the Semi-Quantitative Food Frequency Questionnaire (SQ-FFQ), and Individual Dietary Diversity Score (IDDS). The measurable examination utilized was the chi-square test. According to the findings, two-thirds of those students had high pocket money and were overweight. With a substantial p-value of 0.001, the amount of pocket money and nutritional status were associated. However, there was no significant association between dietary diversity and nutritional status. In conclusion, there is an association between dietary diversity and pocket money with adolescents' nutritional status, and there is no significant association between diet diversity and nutritional status at SMA Patriot Bekasi. This study recommends holding health promotions about adolescent nutrition so the students can use their pocket money wisely to buy snacks during school.*

Key word: dietary diversity, nutritional status, pocket money

1. INTRODUCTION

Overnutrition is one of the nutritional problems currently being faced by adolescents in Indonesia. Data shows that the national proportion of overweight among adolescents 16-18 years old based on the Body Mass Index for Age (BMI/U) in 2018 was 13.5% (4% very fat and 9.5% obese) (1). In West Java, one of the provinces with the most dense population in Indonesia, 15.4% of teenagers are overnourished (4.5% are very fat and 10.9% are obese). One of the megapolitan cities in West Java, namely Bekasi, shows a prevalence that is not much different, 17.3% experience overnutrition (6.13% are very fat, and 11.2% are obese) (2).

Adolescents aged 16-18 years are teenagers who are in middle school. The research results show that adolescent nutritional status is correlated with pocket money. Adolescents with a lot of pocket money correlate with an increase in BMI for age z-score. The more pocket money there is the greater the opportunity to buy snacks, especially food that does not support balanced nutrition at school (3). Research in China shows that pocket money and the ease of buying food in the school environment can increase the risk of obesity in adolescents (4). Adolescents with large pocket money can choose

food choices and have a varied diet. The results of research in Iran show that adolescent eating diversity is associated with obesity and abdominal obesity. Some diet components show an increase in energy when there is an increase in the diversity of consumption of certain food groups (5).

This research aims to look at the association between diet diversity and pocket money with nutritional status in adolescents, especially high school adolescents. The research chose the location, Patriot Bekasi High School, a school in an urban area strategically located so that there is a variety of food and is close to shopping centers. These characteristics are expected to represent schools in urban areas in Indonesia, which tend to have adolescents with a greater prevalence of overnutrition than other (non-urban) areas.

2. METHODS

The study design is an analytical study with a cross-sectional approach. Ethical approval was received from the Health Research Ethics Commission of Prof. Dr. Muhammadiyah University. Hamka with Research Ethics Approval number: 03/24.02/03093. Data collection for the study was conducted at SMA Patriot Bekasi. Students involved in the study are already informed of the study protocol and give consent to join the study. In this case, the school teacher signed the permission since the students are still below 17 years). The total number of students who joined the study was 145 subjects taken from consecutive sampling. The inclusion criteria in this study were all active students aged 16-18 years at SMA Patriot Bekasi. The exclusion criteria in this study were those who were unwilling to be respondents, students who were sick during the study, and students who were on a diet, such as reducing the frequency and type of food groups. Data were obtained from questionnaires. The data include age, gender, amount of pocket money, diet diversity, and nutritional status.

Pocket money uses a questionnaire filled out by respondents with assessment categories, namely high if pocket money ≥ median, and low if pocket money < median(6). Diet diversity is measured using the Semi Quantitative Food Frequency Questionnaire (SQ-FFQ) questionnaire, which can assess dietary patterns in adolescents. The food consumption score is calculated by adding up all the subjects' food consumption scores based on the total consumption column results for each food consumed. After obtaining the daily intake, it is compared with the Individual Dietary Diversity (IDDS) score, namely with a minimum consumption of 10 gr/day. The diet diversity assessment category is a poor diet if <3 food groups and a good diet if ≥3 food groups (7).

The nutritional status variable was assessed by assesing the weight (kg) and height (m) of students and then counting the z-score body mass index (BMI) for age. Enumerators used calibrated digital weight scales and microtoise as anthropometry instruments. Category of nutritional status is overweight (z-score >1 standard deviation), not overweight (z-score ≤1 standard deviation)(8).

The association between variables was tested using computer statistical software with the chi-square test. Variables were concluded as significantly associated if p-value <0.05. Data is also shown as percentages to see the distribution and proportion.

3. RESULTS

4. Table 1. Characteristic of respondents

Variable	Total	
	n	%
Age		
16 years	71	49.0
17 years	55	37.9
18 years	19	13.1
Sex		
Boys	45	31.0
Girls	100	69.0
Pocket money		
High	86	59.3
Low	59	40.7
Diet diversity		
Poor diet	14	9.7
Good diet	131	90.3
Nutritional status		
Overweight	47	32.4
Not overweight	98	67.6

N = 145

In Table 1, it is known that the largest percentage of respondents is teenagers aged 16 years. In addition, it is known from pocket money that teenagers who have large pocket money have almost the same proportion but still show a more significant proportion in large pocket money. In terms of food consumption diversity, most adolescents show diverse food consumption. Meanwhile, based on nutritional status, it is known that teenagers who experience excess nutrition are around one-third of all research respondents.

Table 2. Association of diet diversity and nutritional status

	Nutritional status				
Diet diversity	Overweight n (%)	Not overweight n (%)	Total	OR	p-value
Poor	5 (35.7)	9 (64.3)	14	1.177 (0.372-3.730)	0.781
Good	42 (32.1)	89 (67.9)	131		

N= 145, chi-square test, significant if p<0.05

Table 2 indicates no significant association between diet diversity and nutritional status among high school students. Meanwhile, Table 3 concludes that there is an association between pocket money and nutritional status among high school students. Adolescents

with a high amount of pocket money have an 8.048 times greater chance of having a higher nutritional status than those with low pocket money.

Table 3. Association of pocket money and nutritional status

	Nutritional status				
Pocket money	Overweight n (%)	Not overweight n (%)	Total	OR	p-value
High	41 (47.7)	45 (52.3)	86	8.048 (3.130-20.693)	0.001
Low	6 (10.2)	53 (89.9)	59		

N= 145, chi-square test, significant if p<0.05

5. DISCUSSION

The study results showed no significant association between diet diversity and nutritional status, which means that diet does not cause overnutrition in adolescents(9). Also, most students may be classified as a good diet group. The data collection site is in the middle of the city. Adolescents may come from high-income families. The distribution of students with high pocket money also supports this result. Adolescents already meet the diversity of food groups, even if they have a high portion of each consumption. Therefore, they tend to have high energy intake and become overweight. Further analysis conducted by researchers shows that diet diversity is not associated with nutritional status, possibly because the portion or amount consumed also affects the total energy intake. The results showed a significant association between energy intake and nutritional status (p= 0.012), so it can be concluded that there is a relationship between energy intake and nutritional status in students at SMA Patriot Bekasi. From the results of this analysis, the OR value (95% CI) = 4.498 was obtained. Students with poor diets are 4.498 times more likely to get adequate diets than those with good diets. Another possible factor that influences overweight/obesity is physical activity. Physical inactivity and screen time among adolescents is associated with obesity(10). Students might consume various food groups and have high energy intake. Still, they show high physical activity, so they are not categorized as overweight or obese, which can happen oppositely.

In terms of pocket money, the researcher found an association between pocket money and nutritional status. This study is in line with previous studies (6,11). Adolescents who have more pocket money are at risk of becoming overweight. Telisa et al. (2020) found that students with high pocket money usually choose the types of food they buy and what they want. On the other hand, adolescents with little pocket money cannot choose much about the kinds of food they eat, and tend to choose cheap and filling foods such as fried foods and fast food without worrying about the nutritional balance(12). Another study that supports this result was conducted by Sartika et al. (2022), which stated that pocket money can affect adolescents' nutritional status. Children with overnutrition have more pocket money than children with normal nutritional status. Adolescents often consume school foods such as fried foods, instant noodles, and other carbohydrate-containing foods(13).

This study has limitations in capturing the portion sizes of snacks consumed by the students. The Food Frequency Questionnaire (FFQ) did not account for the quantity consumed per instance; individuals may eat frequently in small portions or infrequently but in large quantities. Additionally, the study did not measure other factors such as the students' physical activity levels, which could influence their overall energy balance.

6. CONCLUSION

Based on the study result, it can be ended with the conclusion as follows:

1. Diet diversity is not associated with the nutritional status of students at SMA Patriot Bekasi, with a significance value of p-value > α (0.05), which is 0.781.
2. Pocket money is significantly associated with the nutritional status of students at SMA Patriot Bekasi with a significance value of p-value < α (0.05), which is 0.001, and an OR value (95% CI) = 8.048.

Suggestions for further research are expected to continue by developing variables and paying attention to other factors related to the variables studied so that it can be appropriate to find out the actual daily eating patterns of adolescents, for example, by the food record method. Also, suggestions for schools to provide an appeal for wise use of the pocket. Parental funds should be allocated toward the purchase of healthier snack options, such as those containing fruit, low in sugar, not prepared using deep-frying methods, or enriched with animal protein sources. Additionally, the frequency and portion size of snack consumption should be carefully considered

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