



## Knowledge of Balanced Nutrition among High School Students in Makassar City South Sulawesi

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### Abstract

Fulfillment of balanced nutrition plays an important role in influencing a person's health. One of the factors that can affect a person's nutritional state is nutritional knowledge and its application in everyday life. Adolescence is a transition period from children to adulthood. At this time there is an increase in the need for growth and development so that optimal nutritional intake is needed. However, until now there are still many adolescents who have nutritional problems. One of the causes of undernutrition is the lack of knowledge of adolescents about balanced nutrition. The purpose of the study was to determine knowledge about balanced nutrition in adolescents. This research was conducted in a senior high school. This research method is an observational quantitative research with a cross sectional study design. Data collection was done online by sending a google form link. The results showed that most respondents still had insufficient knowledge of balanced nutrition, which amounted to 53.5%. It is concluded that the school is expected to conduct education about balanced nutrition regularly so that students' knowledge of balanced nutrition increases.

**Keywords:** Knowledge, Balanced Nutrition, Makassar City, South Sulawesi

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## 1. Introduction





The prevalence of nutritional problems in the adolescent age group is still high. The prevalence of underweight in DKI Jakarta among adolescents aged 16-18 years is 8.9%. This figure is higher than the national figure (8.1%). In addition, the prevalence of obesity at the age of >18 years was 29.8%. This figure is higher than the national figure of 21.8%. In addition to underweight and overnutrition, DKI Jakarta also has a prevalence of central obesity in the population aged  $\geq 15$  years of 41.9%. This figure is higher than the national prevalence of 31.0%.

One of the causes of nutrition problems mentioned earlier is the low knowledge of balanced nutrition. Based on the results of the study, 92.6% of adolescents in Gorontalo Regency have never received information about balanced nutrition guidelines. The study also found that 63% of adolescents had poor nutritional knowledge.

Fulfillment of balanced nutrition plays an important role in influencing a person's health. One of the factors that can affect a person's nutritional state is nutritional knowledge and its application in everyday life. Knowledge and application of a healthy lifestyle in adolescents through the fulfillment of balanced nutrition are efforts that can be made to prevent nutrition-related problems and can improve optimal nutritional status in adolescents. Knowledge is based on several factors including social, economic, cultural, health conditions and so on.

## 2. Research Methods

This research used a cross-sectional study design conducted on high school students. The calculation of respondents used sample size 2.0 software with a two-proportion hypothesis test formula. The results of the calculation obtained 115 students and to avoid dropouts added 10% of the total sample so that the total sample was at least 127 students.

Respondents in this study were students in Makassar city high schools with inclusion criteria (registered as active students and willing to become respondents) and exclusion criteria (absent / sick at the time of data collection). The sample selection used stratified random sampling technique by taking all classes, namely classes X, XI, and XII.





The variable studied was students' knowledge about balanced nutrition. The data collected was primary data in the form of a structured questionnaire by providing a google form link. The questionnaire is a knowledge questionnaire consisting of 14 true or false statements with a maximum score of 14. The validity and reliability test of the knowledge questionnaire was conducted on 30 high school students. The validity results showed that all 14 questions were valid ( $R \text{ count} > R \text{ table } 0.3610$ ) with good reliability (Cronbach's Alpha value  $> 0.6$ ).

### 3. Results and Discussion

#### a. Results

In this study, it was found that the knowledge score data was not normally distributed based on the Kolmogorov Smirnov test results (P value 0.000) so that the median cut off point was used, namely 11. The knowledge variable is then categorized based on the median value, namely the good category if  $>$  median (11.00) and less good if  $\leq$  median (11.00). The lowest knowledge score was 6 and the highest was 14 (table 1).

**Table 1.**  
Statistical Value of Total Score of Balanced Nutrition  
Knowledge in High School Students

mean	med	Min	max	P value Kolmogorov Smirnov
11,24	11,00	6	14	0,000

Table 2 shows that most students (53.5%) have poor knowledge. Table 3 shows that most students answered correctly on the statement "Fish, meat, tempeh, tofu, and beans are sources of protein that functions as a building substance" and the statement "To achieve ideal body weight can be done by eating foods with good quality and in moderation". Meanwhile, the fewest students answered correctly to the statement "Adolescents are recommended to do physical activity for at least 60 minutes every day", which was 85%.

**Table 2.**  
Distribution of Respondents Based on Knowledge Category  
of Balanced Nutrition in High School Students





Knowledge	n	%
Good	59	46,5
Less Good	68	53,5

**Table 3.**

Distribution of Respondents Based on Correct Answer Scoring  
Each Knowledge Item in High School Students

No	Knowledge Items	Answer Correct	
		n	%
1	Consumption of vegetables and fruits can prevent constipation	101	79,5
2	Mangoes and oranges are major sources of vitamin A	73	57,5
3	Fish, meat, tempeh, tofu, and beans are sources of protein that function as building blocks.	125	98,4
4	Here is a balanced meal menu: nasi uduk + vermicelli + egg balado + crackers	82	64,6
5	Drink water when thirst only	113	89,0
6	Wash hands before eating Using soap and running water can prevent infectious diseases	116	91,3
7	No need to cover your nose and mouth when sneezing	124	97,6





8	Organizing your diet and Doing exercise can prevent overnutrition	109	85,8
9	Adolescents are encouraged to get at least 60 minutes of physical activity every day.	19	15,0
10	To achieve the ideal body weight can be done by eating food with good quality and quantity not excessive	125	98,4
11	Doing physical activity is one of the pillars of balanced nutrition	118	92,9
12	Getting used to clean living behavior is one of the pillars of balanced nutrition	111	87,4
13	Eating a diverse diet is one of the pillars of balanced nutrition	87	68,5
14	Maintaining and monitoring normal body weight is one of the pillars of balanced nutrition.	122	96,1

### b. Discussion

Adolescence is a transitional period from childhood to adulthood where there is an increase in muscle mass, body fat tissue, and hormonal changes. In addition, during adolescence there are also rapid changes not only in physical growth but also cognitive, and psychosocial. The age limit of adolescence according to WHO is 12-24 years, while the age limit of adolescence according to the National Population and Family Planning Agency is 10-24 years and not married.

Adolescents are one of the nutritionally vulnerable groups. Therefore, adolescence requires a greater amount of nutrients than at other ages because





adolescence is in a cycle of growth and development.

The nutritional adequacy rate that needs to be met by adolescents can be done by eating the right portion to meet nutritional needs through guidelines from the Ministry of Health of the Republic of Indonesia (2019), namely "My Plate". There are several guidelines from "Isi Piringku" including consumption of staple foods, consumption of a variety of side dishes, vegetables and fruits, drinking 8 glasses of water every day and doing 30 minutes of physical activity a day.

The General Guidelines for Balanced Nutrition in 2014 created 10 balanced nutrition messages that are covered in 4 (four) pillars of balanced nutrition. Basically, this principle is an effort to achieve a balance between nutrients that enter through food intake and nutrients that are excreted by the body, which can be monitored regularly through body weight. The four pillars of balanced nutrition consist of consuming a variety of foods, practicing clean and healthy living behaviors, doing regular physical activity, monitoring and maintaining a normal body weight. The existence of the General Guidelines for Balanced Nutrition aims to provide guidelines to the community on a diet with balanced nutrition and healthy living behavior.

In the Balanced Nutrition Tumpeng there are four layers in order from bottom to top and the higher the layer will be smaller. The more the top layer, the smaller the size of the tumpeng, this means that in the top layer there are sugar, salt and fat that need to be limited in consumption.

Knowledge is the result of knowing which is obtained by involving the five senses whether realized or not. In this study, students' knowledge was measured using a knowledge questionnaire consisting of 14 true/false statements and obtained that most students (53.5%) had knowledge in the poor category. This is in line with the research of Ghosh et al (2020) which shows that the majority of students (54.4%) have poor knowledge of balanced nutrition. Another study showed that only 24% of students with balanced nutrition knowledge were in the good category. The results of Sari's research also showed that 78.2% of SMAN 1 Pontianak students had poor knowledge of Balanced Nutrition Guidelines. Other studies found different results that many students





have good nutritional knowledge such as in Veronika's research (2021) of 81% and Amilia's research (2018) of 86.1%.

#### 4. Conclusion

In this study, it was found that there were still many respondents who had low knowledge about balanced nutrition.

#### 5. Compliance with ethical standards

##### Acknowledgments

The researcher would like to thank the Director of the Hospital and his staff who have helped carry out this research and hope that it will be useful for the academic community and health workers.

##### Disclosure of conflict of interest

This research collaboration is a positive thing for all researchers so that conflicts, problems and others are absolutely no problem for all writers.

##### Statement of informed consent

Every action we take as authors is a mutual agreement or consent.

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