Journal of Health and Nutrition Research

Volume 3 No 1 (2024): 91-98
E-ISSN: 2829-9760 (Online)
Published by Media Publikasi Cendekia Indonesia
Journal homepage: https://www.journalmpci.com/index.php/jhnr
DOI: https://doi.org/10.56303/jhnresearch.v3i1.203

The Relationship of Balanced Nutrition Knowledge with the Attitudes and Behaviors of Young Women

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ABSTRACT

This study aims to determine the relationship between balanced nutrition knowledge with the attitudes and behaviors of adolescent girls. An analytical survey with a cross-sectional design was conducted in July – August 2023 at the Paqusata Youth Integrated Healthcare Center working area of the Teluk Lingga Health Center, East Kalimantan, Indonesia. A total of 51 adolescents were included as a sample using total sampling and setting inclusion and exclusion criteria. Data analysis using the Chi-Square test. Univariate tests showed respondents' age (31.4%), grade 10 (41.2%), mothers with high school education (43.1%), and parents' occupation was IRT (78.4%). Knowledge of balanced nutrition is mostly a good criterion (62.7%), attitudes are mostly good criteria (66.7%), and behaviour is mostly a good criterion (51%). The bivariate test showed knowledge of balanced nutrition with attitudes in adolescent girls with a value of p = 0.000. And knowledge of balanced nutrition with behaviour in adolescent girls with a value of p = 0.025. There is a relationship between knowledge of balanced nutrition and attitudes in adolescent girls. There is a relationship between knowledge of balanced nutrition and behaviour in adolescent girls. It is hoped that the management of the Puskesmas can provide regular nutrition socialization and education at the Adolescent Integrated Healthcare Center and in schools regarding balanced nutrition.

ARTICLE INFO

ORIGINAL RESEARCH

Submitted: 22 October 2023
Accepted: 02 April 2024

Keywords:
Knowledge, Attitude, Behavior, Young Women, Balanced Nutrition

Access this article online

Quick Response Code

Key Messages:

- Knowledge of balanced nutrition linked to positive attitudes and behaviors
- The research highlights the importance of ongoing nutrition education for adolescent girls

Introduction

Adolescence is a period of rapid growth and development, physical, psychological, and intellectual development(1). The World Health Organization (WHO) defines adolescence as the age of 10–19 years(2). This period is the transition from puberty to adulthood which always wants to try new things which can lead to rapid psychological and physiological changes(3). Adolescence is very important in the course/cycle of life because it has implications for the health of adulthood, the socio-economic well-being of a country, and even the health of children in the future/next generation(2).

Health problems that often occur in adolescents today are anemia, overweight, underweight and stunting (5). This period is very important for the optimization of good nutrition, because during this time nutritional needs increase, and malnutrition is a form of malnutrition(6). Globally, in 2019 WHO reported that around 144 million children under five (21.3%) were stunted. Of the world's 144 million children under five who are stunted, more than half come from low- and middle-income countries and only a quarter come from low-income countries(7). Indonesia is a developing country with health emergencies including stunting (8). WHO reports that Indonesia is among the countries with the fifth largest contributor to stunting worldwide (9).

According to the World Health Organization (WHO), children are defined as stunted if the results of height measurement according to age are below <-2 standard deviation (SD) and severe stunting if they are in <-3 SD (10). The Basic Health Research Data Report (Riskesdas) in 2018 shows that 25.7% of adolescents aged 13-15 years and 26.9% of adolescents aged 16-18 years with short and very short nutritional status(11). The Indonesian Nutritional Status Survey (2022) shows a national stunting prevalence of 21.6%. Meanwhile, East Kalimantan data shows stunting at 23.9% stunting, a difference of 2.3% higher than the national figure. East Kutai as one of the districts in East Kalimantan shows a

stunting prevalence of 24.7% (12). Higher when compared to national and provincial figures. The report shows that until now Indonesia is still a health emergency including stunting, this is an alarm marker of chronic malnutrition that will affect millions of children worldwide and pose a major risk to their health and future(13).

Previous research has proven the adverse effects of stunting. The impact is divided into 2, namely short-term impacts including increased morbidity and mortality, low cognitive, motor and language development, and economic such as the cost of pain. While long-term impacts such as stunting, increased obesity in adulthood and noncommunicable disease (NCD), decreased reproductive health, poor performance, decreased learning capacity, decreased work capacity and work productivity (16)(17)(10). This will affect all aspects of children's lives, the effect of which is not only limited to physical well-being but reaches out to mental, social, and spiritual well-being (18). The Indonesian government aims to reduce stunting by 14% by 2024 under the National Medium-Term Development Plan (RPJMN). Research on stunting has been encouraged in the last few years. The incidence of stunting in children is considered multisectoral (10).

Various factors cause stunting in Indonesian children. Recent studies suggest that maternal height, exclusive breastfeeding, sanitation, clean and healthy living practices, diet, infectious diseases, and maternal knowledge have been proven as risk factors for stunting in toddlers and schoolchildren (20)(7)(17)(21). The latest study by Abri (2022) in Enrekang Regency shows a significant relationship between knowledge and the incidence of stunting (22).

The preliminary study was conducted on July 17, 2023, through interviews with 10 young women living in the working area of the Paqusata Youth Integrated Healthcare Center, Teluk Lingga Health Center. This study aims to determine the relationship between knowledge of balanced nutrition and the dietary attitudes and behaviors of young women attending the Paqusata Youth Integrated Healthcare Center in the Teluk Lingga Health Center working area.

Methods

The type of research used in this study is an analytical survey with a cross-sectional design. This is a design that analyzes variable data collected at a particular point in time by looking for relationships between independent variables and dependent variables. This research was conducted in July – August 2023 at the Paqusata Youth Integrated Healthcare Center, Teluk Lingga Health Center working area, East Kalimantan, Indonesia. The population of this study was adolescent girls who were active in the Paqusata Youth Integrated Healthcare Center, the working area of the Teluk Lingga Health Center, totalling 51 people with the same total sample, which was 51 people. All populations are included as samples. The sampling technique in this study was total sampling. Total sampling is a sampling technique where the number of samples equals the population. The reason for taking the total sampling is because the population numbers are less than 100 and establishes inclusion and exclusion criteria. The inclusion criterion is willing to follow the research to the end while the exclusion criterion is that respondents are sick and cannot read.

The independent variable in this study is knowledge of balanced nutrition, while the dependent variable is the attitude and behaviour of adolescent girls. Knowledge is everything that young women know related to balanced nutrition. The scoring result is said to be good: if the score is≥ 76-100% (≥8-10), enough: if the score is 56-75% (6-7), and less: if the score is < 56 (0-5). The attitude is assessed based on the tendency to behave positively or negatively concerning balanced nutrition. The cut-off is good: if the score is ≥ 76-100% (24-32), enough: if the score is 51-75% (16-23), and less: if the score is 25-50% (8-15). Behaviour is a set of behaviours related to balanced nutrition that is practised based on awareness as a result of learning. The cut-off is good: if the score is 76-100% (21-28), good enough: if the score is 40-75% (11-20), and less good: if the score is 0-39% (7-10).

Data analysis is carried out with the help of computer software using the SPSS 25 program. The data analysis used was univariate and bivariate. Univariate analysis was conducted to look at the frequency and percentage distribution of each adolescent characteristic based on age, education, maternal education, and maternal occupation. Bivariate analysis is carried out to determine the relationship between the dependent variable and the independent variable. This study used the Chi-Square test by setting the confidence interval (CI) to 95% and value (alpha) = 5%. If the p-value < 0.05 then Ho is rejected and Ha is accepted.

Ethical Clearance

Health Polytechnic Research Ethics Commission, Ministry of Health, East Kalimantan with number: PP.08.02/3.4/15556/2023

Results

Table 1 of respondents' characteristics shows that of the 51 young women in the Paqusata Youth Integrated Healthcare Center, the working area of the Teluk Lingga Health Center, judging from the class of young women in schools, almost half of the grade 10 respondents amounted to 21 people (41.2%), the age of young women almost half of the 15-year-old respondents amounted to 21 people (41.2%), maternal education almost half of the respondents graduated from high school totalled 22 people (43.1%) and maternal employment was almost entirely from IRT respondents amounting to 40 people (78.4%).

Table 1 Characteristics of Respondents

Characteristics of Respondents	n	%
Young Women		
15 years old	21	41,2
16 years old	13	25,5
17 years old	16	31,4
18 years old	1	2
Education (classroom)		
10	21	41,2
11	13	25,5
12	17	33,3
Mother's Education		
Did not finish elementary school	1	2
Elementary School	12	23,5
Junior High School	12	23,5
Senior High School	22	43,1
University	4	7,8
Mother's Work		
Housewife	40	78,4
Civil servants	5	9,8
Private Employees	1	2
Trader/Entrepreneur	5	9,8

Table 2 shows knowledge of balanced nutrition in adolescent girls in the Paqusata Youth Integrated Healthcare Center, Teluk Lingga Health Center work area, most of the respondents of good criteria amounted to 32 people (62.7%), while almost half of the respondents of the criteria were enough to number 15 people (29.4%) and a small part of the respondents of the criteria were less than 4 people (7.8%). The attitude of balanced nutrition attitude in adolescent girls in the good category amounted to 34 people (66.7%), while almost half of the respondents of the criteria were enough to number 12 people (23.5%) and a small part of the respondents of the criteria were less than 5 people (9.8%). While balanced nutrition behaviour in adolescent girls with good criteria amounted to 26 people (51%), while almost half of the respondents of the criteria were sufficient amounted to 21 people (41.2%) and a small part of the respondents of the criteria amounted to less than 4 people (7.8%).

Table 2 Variable Distribution

Variable	n	%
Knowledge		
Good	31	62,7
Enough	15	29,4
Less	4	7,8
Attitude		
Good	34	66,7
Enough	12	23,5
Less	5	9,8
Behaviour		
Good	26	51
Enough	21	41,2
Less	4	7,8
Total	**51**	**100**

Table 3 shows that of the 32 respondents who had good knowledge, as many as 29 respondents (90.6%) had attitudes in the good category, as many as 2 respondents (6.3%) had attitudes in the sufficient category and 1 respondent (3.1%) had attitudes in the less category. Based on the results of statistical tests, p-value results were obtained < 0.000 α: 0.05 meaning that H a was accepted and H_0 was rejected, namely there was a relationship between balanced nutrition knowledge and attitudes in adolescent girls at the Paqusata Youth Integrated Healthcare Center, Teluk Lingga Health Center work area.

Table 3 The Relationship of Balanced Nutrition Knowledge to Young Women's Attitudes

Knowledge	Attitude						Total	%	*p*
	Good		Enough		Less				
	n	%	n	%	n	%			
Good	29	90,6	2	6,3	1	3,1	32	100	*0,000
Enough	4	26,7	9	60	2	13,3	15	100	
Less	1	25	1	25	2	50	4	100	
Sum	**34**	**66,7**	**12**	**23,5**	**5**	**9,8**	**51**	**100**	

Table 4 shows that of the 32 respondents who had good knowledge, as many as 18 respondents (56.3%) had behaviour in the good category, as many as 13 respondents (40.6%) had behaviour in the sufficient category and 1 respondent (3.1%) had behaviour in the less category. Based on the results of statistical tests, p-value results were obtained < 0.025 α: 0.05 meaning that Ha was accepted and H_0 was rejected, namely there is a relationship between balanced nutrition knowledge and behaviour in adolescent girls at the Paqusata Youth Integrated Healthcare Center, Teluk Lingga Health Center work area.

Table 4 The Relationship of Balanced Nutrition Knowledge with Young Women's Behavior

Knowledge	Behaviour						Total	%	*p*
	Good		Enough		Less				
	n	%	n	%	n	%			
Good	18	56,3	13	40,6	1	3,1	32	100	*0,025
Enough	7	46,7	7	46,7	1	6,7	15	100	
Less	1	25	1	25	2	50	4	100	
Sum	**26**	**51**	**21**	**41,2**	**4**	**7,8**	**51**	**100**	

Discussion

The Relationship of Balanced Nutrition Knowledge with Young Women's Attitudes

Knowledge is the result of knowing a person after they have sensed a particular object(23). Adolescent knowledge includes general knowledge about balanced nutrition. The results of the statistical test obtained a p-value of 0.000, meaning that Ha was accepted and H_0 was rejected, namely, there was a relationship between balanced nutrition knowledge and attitudes in adolescent girls at the Paqusata Youth Integrated Healthcare Center, the Teluk Lingga Health Center work area. The results of this study are in line with the study of Abu-Baker, Eyadat, and Khamaiseh (2021) in Jordan which suggests knowledge influences the attitudes of young women(24).

This finding is corroborated by the description of variables that show knowledge of balanced nutrition in adolescent girls at the Paqusata Youth Integrated Healthcare Center from 32 respondents who have good knowledge, as many as 29 respondents (90.6%) have attitudes in the good category, as many as 2 respondents (6.3%) have attitudes in the sufficient category and 1 respondent (3.1%) have attitudes in the less category. Of the 15 respondents who have sufficient knowledge, as many as 9 respondents (60%) have attitudes in the sufficient category, as many as 4 respondents (26.7%) have attitudes in the good category and 2 respondents (13.3%) have attitudes in the less category. Of the 4 respondents who have less knowledge, as many as 2 respondents (50%) have attitudes in the less category and 1 respondent (25%) each has attitudes in the good and sufficient categories.

A person's attitude towards an object is a feeling of support or partiality or a feeling of not supporting or taking sides in that object. Individuals are ambivalent towards a particular object, event, person, or idea. Attitudes represent relatively sedentary feelings, beliefs, and behavioural tendencies(25). Attitude is a reaction or response of someone who is still close to a stimulus or object, where this attitude occurs from accepting, responding, appreciating, and being responsible. The attitude will be formed with more positive having good knowledge. This finding is a reinforcement because the majority of respondents with good knowledge and a good attitude are 90.6%.

The level of nutritional knowledge affects one's attitude in food selection and will ultimately affect one's nutritional status(26). Our study proves that overall the number of well-informed respondents is more than that of moderately knowledgeable and under-informed respondents. A person will have good knowledge because the person has used his five senses to the maximum(27). Most teenagers aged 15-18 years are more able to receive input or advice from people around them because brain development has begun to mature so adolescents aged 15-18 years have a very good grasp to understand what good nutrition is for the body.

We also revealed the maternal majority of respondents with upper middle school education. Maternal education is an important aspect of educating children to develop and think independently. So the high and low level of education of mothers will affect the quality of education that will be inherited by their children. This maternal education can be a support for the health of the adolescent because it will affect the family's understanding of health. Education contributes greatly to a person's attitude (28).

Health promotion and disease prevention are several activities designed and aimed at improving health individually and in groups through a combination of several strategies, including behaviour change implementation strategies, health education, health risk detection and health improvement and maintenance, while curative and rehabilitative are generally carried out against individual targets (29). Based on this explanation, researchers assume that there is a relationship between balanced nutrition knowledge and attitudes in adolescent girls at the Paqusata Youth Integrated Healthcare Center in the Teluk Lingga Health Center work area because young women who have well-balanced nutrition knowledge will develop the application of well-balanced nutrition.

The Relationship of Balanced Nutrition Knowledge with Young Women's Behavior

The results of the statistical test obtained a p-value of 0.025, meaning that H a was accepted and H_0 was rejected, namely there was a relationship between knowledge about balanced nutrition and behaviour in adolescent girls at the Paqusata Youth Integrated Healthcare Center, Teluk Lingga Health Center work area. The results of this study are in line with the study of Damayanti, Diah Herawati, and Syahri (2021) in Bandung which suggests that nutrition education affects a person's behaviour [30](30). Nutrition education is an effort to change knowledge, attitudes skills or practices in terms of food consumption. Someone with good knowledge will provide good behaviour as well, especially in the selection of food ingredients for nutritional health needs (31).

This finding was corroborated in the analysis of variables obtained from 32 respondents who had good knowledge, as many as 18 respondents (56.3%) had behaviour in the good category, as many as 13 respondents (40.6%) had behaviour in the sufficient category and 1 respondent (3.1%) had behaviour in the less category. Of the 15 respondents who had sufficient knowledge, 7 respondents (46.7%) each had behaviour in the good and sufficient category, then as many as 1 respondent (6.7%) had behaviour in the less category. Of the 4 respondents who have less knowledge, as many as 2 respondents (50%) have behaviour in the less category and 1 respondent (25%) each has behaviour in the good and sufficient category. Without knowledge, a person has no basis for making decisions and determining actions on the problems faced. The level of nutritional knowledge influences behavior in food selection which ultimately affects a person's nutritional status

One factor that can influence adolescent eating behaviour is knowledge. Nutrition knowledge has been shown to have a positive impact on healthy food selection. Several studies have proven the relationship between knowledge and behaviour(32). In addition, the theory of knowledge, attitude, and behaviour explains that in the formation of a person's behaviour related to health, there are 2 stages before the formation or change of behaviour, namely the acquisition of knowledge and the formation of trust, so in this case, proper nutrition education is needed so that the resulting behaviour is positive. Education is a process that has a broad dimension to change behaviour so that a person can apply good eating habits in everyday life. According to WHO, in general, nutrition education aims to encourage positive behaviour changes related to food and nutrition(33).

If the acceptance of behaviour is based on knowledge, awareness and a positive attitude, then the behaviour will last a long time. Therefore, if you have good nutritional knowledge, you are expected to have good nutritional status as well. The environment is also the acquisition of knowledge and all conditions that exist around humans, the influence of which can be influenced by the development and behaviour of a person or group. The socio-culture that exists in the adolescent environment can influence attitudes in receiving information(34). Based on this explanation, researchers assume that there is a relationship between knowledge of balanced nutrition and behaviour in adolescent girls at the Paqusata Youth Integrated Healthcare Center in the Teluk Lingga Health Center work area because young women who have well-balanced nutrition knowledge will have a positive attitude. This attitude will encourage to application of good balanced nutrition behaviour, and vice versa, if a person's negative

attitude in the application of balanced nutrition can cause behavior to apply balanced nutrition that is lacking.

There is evidence that the use of theory in developing health education with effective study skills effectively improves knowledge, attitudes and practice, thereby possibly reducing risk factors associated with malnutrition in adolescents and adolescents(35). The selection of learning methods and media in providing education is very important, especially for children because it can support the success of the education provided. Good and effective learning methods and educational media will have a positive impact on children, namely in the form of changes in children's knowledge, attitudes and behaviour in a positive direction(29). Reducing the burden of stunting requires a paradigm shift from interventions that focus solely on children and infants to interventions that reach mothers and families and improve their living environment and nutrition(5). This study is not in line with studies that found no relationship between knowledge and balanced nutrition behaviour in students in Gorontalo (36).

The findings support a positive relationship between knowledge and both attitudes and behaviors. These results suggest that interventions focused on improving young women's knowledge of balanced nutrition can be a valuable tool for promoting healthy eating habits. 1) Develop Educational Programs (Design educational programs specifically for young women that address balanced nutrition in a clear and engaging way), 2) Interactive Learning (Incorporate interactive activities and demonstrations to enhance knowledge retention and make learning enjoyable). 3) Positive Reinforcement (Emphasize the positive aspects of healthy eating and the benefits for overall health and well-being).

Further research could explore the most effective methods for delivering nutrition education to young women. This might involve comparing different teaching styles, learning materials, and program formats. Additionally, research could investigate the long-term impact of nutrition education programs on dietary behaviors and health outcomes.

Conclusion

There is a relationship between knowledge of balanced nutrition and attitudes in adolescent girls. There is a relationship between knowledge of balanced nutrition and behaviour in adolescent girls at the Paqusata Youth Integrated Healthcare Center, the working area of the Teluk Lingga Health Center. This finding is empirical evidence that knowledge about balanced nutrition is good among adolescent girls in the Teluk Lingga Health Centre work area. Their knowledge, attitudes, and practices regarding balanced nutrition still need to be improved, and educational interventions are an effective method. More efforts are needed to raise awareness of adolescents on this subject to improve their current health and future nutritional status. It is hoped that the management of the Puskesmas can provide socialization and nutrition education that is routinely carried out at the Adolescent Integrated Healthcare Center and school regarding balanced nutrition.

Funding: This research received no external funding

Acknowledgments: We would like to thank the East Kutai Health Office for granting permission for this research. We would like to thank the Teluk Lingga Health Center for granting permission and supporting our research.

Conflicts of Interest: The authors declare no conflict of interest.

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