



## Research Article

# Relationship between Balanced Nutrition Knowledge with Nutrition Status among School-Age Children in Orphanages of Makassar City

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**Abstract:** The better a person's nutrition knowledge, the more he will pay attention to the quality and quantity of food he consumes. This study aims to determine the relationship of balanced nutrition knowledge with the nutritional status of orphanage children. The study design was a cross-sectional study. A total of 60 samples originating from 2 orphanages in the Makassar City area. Data collected; subject characteristics, nutritional status, and level of knowledge about balanced nutrition. Statistical analysis using the chi-square test. The results showed that the majority (75%) of the subjects' nutritional status was dominated by normal nutritional status (-2 SD to +1 SD). For the level of knowledge, most of the subjects had well-balanced nutrition knowledge in 36 samples (60%), while the subjects in the less category were 24 samples (40%). From the chi-square, test results showed that the p-value was not significant ( $p > 0.05$ ), which is  $p = 0.164$ , which means there was no relationship between knowledge of balanced nutrition with the nutritional status of the subject. It was concluded that there was no relationship between balanced nutrition knowledge and the nutritional status of orphanages in Makassar City ( $p = 0.164$ ). Nutrition education programs need to be developed and implemented for groups of orphanage children because nutrition education can be an easily accessible and effective tool for increasing knowledge about food in supporting the nutritional status of children.

**Keywords:** knowledge of balanced nutrition, nutritional status, orphanage children.

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## INTRODUCTION

In Indonesia, there is a Guidelines for Balanced Nutrition (PGS) as a guide to eating in the community. This guideline is based on the characteristics of the population including habits, socio-culture, and development of science and technology. The purpose of making eating guidelines to improve public health and prevent nutritional problems.

In South Sulawesi, based on the 2013 Riskeddas data, the prevalence of lean (BMI/U) school-age children (5-12 years) is higher than the national figure, whereas the prevalence of thin and very thin (BMI/U) school-age children (13-15 years) ) is higher than the national average (Health Research and Development Agency Ministry of Health Republic of Indonesia, 2013). The Riskeddas data above shows that serious attention needs to be paid to the school-age group because children are in a period of rapid growth. In periods of rapid growth, disruption of the function of nutritional intake can inhibit the growth process.

Poor nutrition is still a serious problem in school-age children and teenagers in all parts of the world, especially in developing countries like Indonesia. According to Hurlock (1978), adolescent boundaries are between the ages of 13-21 years. The boundary is divided into two limits; ages 13-18 years and 18-21 years are called late teens.

In the early teen period is a period where the physical and psychological development of the body tends to change very quickly. Indirectly, it certainly requires adequate nutrition for teenagers to support puberty.

The lack of implementation in the community causes the application of balanced nutrition is not optimal. This is inseparable from the factor of the level of public knowledge about balanced nutrition. Hanifah's research (2015) shows the level of nutritional knowledge prior to balanced nutrition counseling in adolescents in SMP Negeri 2 Kartasura as many as 33.3% who are well-informed and 66.7% are not well-informed. Another study by Jafar *et al.*, (2018) showed that respondents' knowledge about balanced nutrition before peer educator training was carried out on 17.5% students at Makassar 16 Public High Schools which were categorized as good, 45% categorized as sufficient, and 37.5 % categorized as less. Both studies illustrate that knowledge of balanced nutrition among school children is inadequate as an initial step in changing nutritional practices.

One of the main targets of PGS is social institutions such as orphanages. School-age children who live in orphanages are a vulnerable group and tend to be neglected in the community and more vulnerable to nutritional problems. Research Mwaniki *et al.*, (2014) in Kenya showed that significantly more orphanage children experienced stunting, wasting, and a higher level of morbidity ( $p < 0.005$ ).

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To prevent the emergence of nutritional problems, it is necessary to socialize balanced nutrition guidelines which are used as standard eating guidelines based on 4 pillars of balanced nutrition. This effort is in line with Minister of Social Regulations No. 30 of 2011 concerning National Standards of Care for Child Social Welfare Institutions which states in one of its points regarding food that requires children to consume food with nutritional quality and nutrition that is maintained according to the needs in terms of age and growth and development while living in the Child Social Welfare Institution.

To prevent the emergence of nutritional problems, balanced nutrition guidelines need to be socialized as eating guidelines based on the 4 pillars of balanced nutrition. Therefore, to find out the extent of the socialization of balanced nutrition guidelines in social institutions such as orphanages, it is important to know the relationship of balanced nutrition knowledge with the nutritional status of school-age children in orphanages which are the objectives of this study.

## METHODOLOGY

### Research Design

This research was conducted in two orphanages in the Makassar City area, namely orphanage and Resky Ananda orphanage. This research uses quantitative methods with cross-sectional study design.

### Population and Sample

The population in this study are all foster children who live in noble orphanages and resky orphanages in the city of Makassar. A total of 60 samples were selected positively with inclusion criteria for children aged 13-18 years and approved informed consent. This study was approved by the Ethics Committee of the Faculty of Public Health, Hasanuddin University, Makassar.

### Data Collection

Data on subjects' characteristics including gender, age group, grade level, level of education, and status of fostered children were obtained from orphanage records, interviews with caregivers and characteristics questionnaires filled directly with the subjects. Nutrition status data based on body mass index according to age (BMI/U) were obtained by anthropometric measurements through weight weighing using digital weight scales and height measurements using stature meters. Data on the level of knowledge was obtained through a balanced nutrition knowledge questionnaire.

## Data Analysis

Data on subject characteristics and nutritional status (BMI/U) were analyzed using the Windows version of the SPSS 24 program. To relate the two variables in this study using the chi-square test.

## RESULTS

### Sample Characteristics

Table 1. Characteristics of subjects

Characteristics of subjects	Total (n=60)	
	n	%
Sex		
Male	20	33,3
Female	40	66,7
Age (Year)		
13 - 14	29	48,3
15 - 16	17	28,3
17 - 18	14	23,3
Class		
VII	17	28,3
VIII	9	15,0
IX	6	10,0
X	4	6,7
XI	15	25,0
XII	9	15,0
Education		
Junior School	32	53,3
High School	28	46,7
Fostered Child Status		
Not capable	48	80
Fatherless	2	3,3
Strays	2	3,3
Orphaned	7	11,7
Displaced	1	1,7

The age of the subjects ranged from 13-18 years. Most subjects were female (66.7%) and the majority of subjects were 13-14 years old (48.3%) (table 1). In general, the proportion of subject-level education is almost the same between junior high school (53.3%) and high school (46.7%). In this study most of the subjects were orphans from poor families (80%), only a few of them were orphans, orphans, orphans, and displaced (table 1).

## Nutritional Status

Table 2. Subject's nutritional status

Nutritional Status (BMI/U)	Total (n=60)	
	n	%
Thin (-3SD s/d <-2SD)	2	3,3
Normal (-2SD s/d +1SD)	45	75,
Fat (>1SD s/d +2SD)	13	21,7

Table 2 shows that the majority (75%) of the subject's nutritional status was dominated by normal nutritional status (-2 SD to +1 SD) based on BMI by age. The nutritional status of fat (21.7%) the proportion is more than the nutritional status of thin (3.3%). Of the 45 subjects categorized as normal nutritional status, the majority were women (71.1%) and had a junior high school education (55.6%).

The mean z-score of BMI / U subjects followed the median line of  $0.21 \pm 1.06$ . This means that most subjects with normal nutritional status have z-scores that are not far from the median line, but the standard deviation shows a large enough

number meaning that the subject's BMI / U z-scores vary greatly so that it is possible to move away from the median line.

## Knowledge of Balanced Nutrition

Table 3. Level of balanced nutritional knowledge of subjects

Balanced nutritional knowledge level	Total (n=60)	
	n	%
Less ( $\leq$ mean)	25	41,7
Good ( $>$ mean)	35	58,3

Table 3 shows that most subjects had good balanced nutrition knowledge in 36 samples (60%), while subjects with fewer categories were 24 samples (40%). The subjects who had good knowledge were mostly women (77.8%) and the majority had a high school education (55.6%). While the subjects with the knowledge category lacked the proportion between women (50%) and men (50%) the same and the majority had a junior high school education (66.7%).

The average score of the subject's level of knowledge was  $58.42 \pm 9.85$ . From the average score, it shows that the total number of correct and wrong subjects' answers is almost the same, where the standard deviation indicates that the subject's answers are quite varied because they have a large enough standard deviation.

#### Relationship of balanced nutrition knowledge with nutritional status

**Table 4. Relationship of balanced nutrition knowledge with subject nutritional status**

Nutrient Intake	Kelompok			Total n (%)	P-value
	Kurus n=3 (%)	Normal n=45 (%)	Gemuk n=12 (%)		
Less	1 (4,2)	21 (87,5)	2 (8,3)	24 (100)	0,164
Good	2 (5,6)	24 (66,7)	10 (27,8)	36 (100)	

Table 4 shows subjects with a balanced nutritional level of knowledge that most of the categories have normal nutritional status (87.5%), as well as subjects with a balanced level of knowledge of the good category most have normal nutritional status (66.7%). Therefore, the chi-square test results showed that the p-value was not significant ( $p > 0.05$ ), which was  $p = 0.164$ . This means that there is no relationship between knowledge of balanced nutrition with the nutritional status of the subject.

## DISCUSSION

The main objective of this study was to determine the relationship between knowledge of balanced nutrition with the nutritional status of school-age children living in orphanages in the City of Makassar. The level of subject knowledge is divided into 2 categories (poor and good) measured by the subject's ability to answer questions (30 questions) in the form of multiple-choice related to balanced nutrition. There are 5 groups of material questions given to the subject including general guidelines on balanced nutrition, application of balanced nutrition, clean and healthy living behavior, my dinner plates, and nutrients. Of the five material groups, the highest frequency of subjects' correct answers after the intervention were questions about general balanced nutrition guidelines and the application of balanced nutrition.

In general, balanced nutrition knowledge of children living in orphanages is not sufficient to be applied in everyday life. Even though most of the subjects are categorized as good, but if you look at the average subject score which shows  $58.42 \pm 9.85$ , it means that only a portion of the total 30 questions given by the subject is of true value.

Research by El-Mowafy *et al.*, (2014) in young women in orphanages shows that there is a very statistically significant difference in the total score of knowledge and practice regarding menstrual hygiene in samples after the implementation of educational programs. The study concluded that adolescents lacked proper knowledge and practices about menstruation in the pre-program phase. After the implementation of the program, considerable improvement was seen in the knowledge and practice of adolescent girls. Because of this, the education program succeeded in achieving its goal of positively changing menstrual hygiene knowledge and practices.

School-age children living in social institutions such as orphanages face a high risk of early malnutrition, low intellectual maturity and loss of closeness to the family (bin Shaziman *et al.*, 2017). Subjects in this study were school-age orphanage children who are in junior and senior high school education. This age is a teenager who is very easily influenced in determining lifestyle and eating behavior. However, the problem faced by orphanage children is the general lack of access to information and limited facilities to support child development.

Data distribution of nutritional status of the subjects in this study showed that most subjects had normal nutritional status. These results are consistent with previous studies related to studies of nutritional behavior of orphanages in Malaysia that most respondents were in the range of normal BMI (bin Shaziman *et al.*, 2017). For orphaned children who are outside the normal range or abnormal BMI values, the percentage of nutritional children is higher than children who are malnourished.

A good nutritional status will produce quality human resources that are healthy, intelligent, and physically strong and productive people (Heath and Panaretto 2005). Lack of calories and certain nutrients are known to cause growth retardation in children and adolescents (Roy *et al.*, 2019). Improved nutritional status is needed throughout the entire life cycle, from birth to old age. According to Almatier *et al.*, (2011), the nutritional needs of individuals continue to change based on age groups following the process of growth and development. The fulfillment of individual nutrients can be met from a variety of and adequate food intake.

Most of the subjects in this study were women (66.7%). Girls experience accelerated growth faster than boys because their bodies require preparation before reproductive age (Setyawati & Setyawati, 2015). Therefore, young women need adequate nutritional support.

According to Ekundayo *et al.*, (2019) that orphans or children living in orphanages are faced with problems of survival. In an effort to resolve this problem, they continued by searching for information, but one gap that had not been fully covered in meeting the basic needs of orphanages by various stakeholders was the provision of adequate health information to empower and enable children to manage their lives better. Access to information is a human right and the most basic of all human needs (Ekundayo *et al.*, 2019).

Nutrition education is an effective strategy to encourage healthy eating behavior and improve children's health. Properly implemented nutrition education can reduce or increase a child's BMI and body weight, increase fruit and vegetable consumption (Silveira *et al.*, 2011), cause a positive attitude toward children towards fruits and vegetables and allow an increase in academic results (Wall *et al.*, 2012). According to Febuhartantho (2005), nutrition education carried out in school-age children is effective in changing knowledge and attitudes towards food. For orphanage children who have limited access to information, nutrition education is felt to be very beneficial considering that orphanages do not have as many opportunities as other children in general.

In this research, it is known that there is no relationship between knowledge of balanced nutrition with the nutritional status of orphanage children. This is because many factors affect nutritional status.

Nutritional status is influenced by 2 factors, namely direct and indirect. The direct factor is infectious diseases, the type of food consumed both in quality and quantity. Indirect factors include: socioeconomic, birth spacing that is too tight, education, knowledge, ignorance about the relationship between food and health, prejudice towards certain foods, excessive preference for certain types of food, income, inadequate parenting, sanitation unfavorable environment, low household-level food security and behavior towards health services (Irianti, 2016).

Thus, the orphanage children who are the subjects in this study do not yet have adequate balanced nutrition knowledge in underlying all their activities to support their growth and development which is a reflection of the nutritional status of the orphanage children.

## CONCLUSION

There is no relationship between balanced nutrition knowledge and the nutritional status of orphanages in Makassar City ( $p = 0.164$ ). Nutrition education programs need to be developed and implemented for groups of orphanage children because nutrition education can be an easily accessible and effective tool for increasing knowledge about food in supporting the nutritional status of children.

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