

# Effectiveness of Health Education about Stunting Toward Improvement of Community Knowledge

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## ABSTRACT

**Background:** Stunting is chronic malnutrition associated with the risk of irreversible loss of cognitive function and stunting-related morbidity. Parental knowledge is essential in preventing stunting as it affects parenting patterns, child feeding practices, and the selection of food ingredients. Therefore, we aimed to analyze the improvement of public knowledge before and after given education about stunting. **Methods:** This descriptive study involved the community in the work area of the Driyorejo Public Health Center as the participants. We carried out community service in the form of health education about stunting and its prevention. Participants filled out a questionnaire before and after the intervention to evaluate the participants' knowledge level. The demographic data, including gender, age, educational background, and occupation, are obtained using a self-reported questionnaire. **Results:** This study involved 85 participants consisting of 91.75% women with educational backgrounds, mostly having completed university (75.29%). The average score obtained before the intervention was 77.94, which increased to 87.35 after the intervention. The number of participants classified as having good knowledge increased from 58.82% to 83.53%, and the number of participants having poor knowledge decreased from 41.18% to 16.47% after the intervention. **Conclusions:** Health education done by health workers can significantly improve public understanding and increase public awareness about stunting. This emphasizes the important role of health workers as the spearhead in stunting prevention strategies.

**Keywords:** health education; stunting; community knowledge

## INTRODUCTION

Stunting is short stature caused by chronic malnutrition that affects more than 162 million children worldwide [1,2]. Stunting is still a big problem for most countries, including Indonesia. The Sustainable Development Goals (SDGs) report that the prevalence of stunting in Indonesia is still high, ranging from 30-40% [3]. In 2013, the prevalence of stunting in Indonesia was 37.2 percent, consisting of a short prevalence of 18.0 percent and a very short prevalence of 19.2 percent. This prevalence shows that Indonesia is experiencing a severe public health problem in the case of stunting under five [4]. Stunting is a process that can affect child development from early conception to the 3rd to 4th year of life. A multi-country cohort study by Alam et al. in 2019 stated that stunting was associated with lower cognitive development than normal children. Another survey by Soliman et al. also found that stunting increases the risk of irreversible loss of cognitive function and stunting-related mortality morbidity [5,6].

Parental knowledge about children's nutritional needs, especially mothers', is essential to their growth and development as it greatly influences behavior and efforts to fulfill their nutritional needs. Good parental knowledge is associated with better growth of children [7].

Mothers' level of knowledge affects parenting patterns and child feeding practices which will affect the child's nutritional status [8]. The level of knowledge will also affect food consumption through the selection of food ingredients [9]. Therefore, health education about children's nutritional needs is crucial to increase parental knowledge and optimize child feeding practices. The alternating solution to prevent and overcome stunting problems in Indonesia is by utilizing public health centers to empower health workers and the community as the spearhead of service and the closest because it is in the midst of the community. Therefore, we carried out health education to increase public awareness about stunting so that it can be detected and treated early. Early detection of stunting can minimize its effects on children's growth and development.

## METHODS

This study was conducted using a pre-posttest design to evaluate the effectiveness of health education in improving public knowledge about stunting. The intervention was provided by giving education about stunting through online meetings with experts from Dr. Soetomo General Hospital Surabaya, and a handbook with the topic focused on general information about stunting was given to participants.

Health education was delivered in Bahasa Indonesia in the form of seminars and discussions through online meeting platforms. Before the intervention, participants received a pre-test regarding their basic understanding of stunting and children’s nutritional needs. Participants filled out the pre-test through a google form. We shared the pre-test link in the zoom meeting chat column. The questionnaire consists of 16 statements which are divided into two main topics, eight statements about general knowledge of stunting and eight statements about children’s nutritional needs. The content of the material on stunting includes the definition of stunting, causes of stunting, prevention of stunting, and the impact of stunting. Meanwhile, to measure the mother’s knowledge about breastfeeding and the nutritional needs of children, the material provided includes the definition, benefits, ideal age in breastfeeding, food composition, and good nutrition settings for children’s growth and development. Participants were asked to determine whether the statement was true or false. The level of knowledge was measured using the Guttman Scale, with the correct answer to the statement valued at 1, while the wrong answer is valued at 0. The questionnaire used refers to a previous study in Indonesia by Putri et al., 2021, with a validity test of  $r = 0.632$  and a reliability test of  $r = 0.896$ , indicating that the questionnaire is valid [10]. After the intervention, participants filled out the same questionnaire for 10 minutes as the post-test.

The samples included in this study were communities in the work area of Driyorejo Public Health Center, Gresik, East Java. Inclusion criteria were as follows: age over 18 years old, ability to communicate, and willingness to be a respondent. Participants were collected using consecutive sampling, and informed consent was obtained.

The affiliated university approved this study with ethical clearance number 138/EC/KEPK/FKUA/2022. In this study, participants filled out an online self-reported questionnaire to record their demographic characteristics, including age, gender, job, and educational background. Demographic characteristics data and the distribution of participants’ answers are presented descriptively using tables. The data of pre-test and post-test scores was tested for normality with the Kolmogorov-Smirnov test, then a comparative test was performed using the Wilcoxon test.

**RESULT**

This study involved 85 participants consisting of 91.75% women with educational backgrounds, mostly having completed university (75.29%). Most participants work (64,71%), while the other 35,29% stay at home.

The demographic characteristics of the subjects are shown in Table 1.

**TABLE 1:** Demographic characteristics of samples

Variables	n (%) (N = 85)
<b>Gender</b>	
Male	7 (8,23%)
Female	78 (91,76%)
<b>Age</b>	38,72±9,10
<b>Educational background</b>	
Completed junior high school	3 (3,53%)
Completed senior high school	18 (21,18%)
Completed university	64 (75,29%)
<b>Occupation</b>	
Not working	30 (35,29%)
Working	55 (64,71%)

The average score before the intervention was 77.94, consisting of 41.18% of participants classified as having poor knowledge about stunting and children’s nutritional needs. After the intervention, the average score increased to 87.35. The number of participants who had good knowledge increased to 83.53%, and those who had poor knowledge decreased to 16.47%, much lower than before. There is a significant difference in public knowledge between before and after the intervention ( $p = 0.000$ ). The pre-test and post-test scores are shown in Tables 2 and 3.

**TABLE 2:** Average of pre-test and post-test scores

	Pre-test	Post-test	p value
<b>Average score</b>	77.94	87.35	0.000*
<b>Interpretation</b>			
Good (80 – 100)	50 (58.82%)	71 (83.53%)	
Poor (<80)	35 (41.18%)	14 (16.47%)	

\*Wilcoxon test, significant with  $p < 0.05$

Based on 16 questions asked to participants before the intervention, consisting of eight questions regarding general knowledge of stunting and eight questions regarding children’s nutritional needs, there are two questions that have a high error rate, which is above 50%. First, 50.59% of participants considered that the success of the child’s growth and development only depends on what has been eaten since birth. Second, 89.41% of participants believe that children under five years should get a large portion of vegetables at every meal. The distributions of participants’ answers are shown in Table 4.

**TABLE 4:** Distributions of some participants’ answers

No.	Statements	Pre-test		Post-test	
		Correct	False	Correct	False
1	The success of a child’s growth and development only depends on what has been eaten since birth.	42 (49.41%)	43 (50.59%)	69 (81.18%)	16 (18.82%)
2	Short is a condition of failure to thrive in children which can be caused by malnutrition for a long time.	83 (97.65%)	2 (2.35%)	82 (96.47%)	3 (3.53%)
3	Short is caused by a small amount of food intake so that the child is not full.	44 (51.76%)	41 (48.24%)	42 (49.41%)	43 (50.59%)
4	Genetics is the main reason children are short.	52 (61.18%)	33 (38.82%)	74 (87.06%)	11 (12.94%)
5	Short and malnourished children are not likely to be obese when they grow up.	64 (75.29%)	21 (24.71%)	73 (85.88%)	12 (14.12%)
6	Child growth monitoring should be done monthly to prevent children’s growth failure which is characterized by weight loss in the growth curve.	82 (96.47%)	3 (3.53%)	85 (100.00%)	0

No.	Statements	Pre-test		Post-test	
		Correct	False	Correct	False
7	Mothers who have poor knowledge about nutritional needs for children can cause children to be short.	73 (85.88%)	12 (14.12%)	79 (92.94%)	6 (7.06%)
8	Keeping the home environment clean can prevent nutritional diseases in children.	73 (85.88%)	12 (14.12%)	81 (95.29%)	4 (4.71%)
9	Exclusive breastfeeding is giving only breast milk to babies, without milk or other foods.	83 (97.65%)	2 (2.35%)	84 (98.82%)	1 (1.18%)
10	Exclusive breastfeeding is given until the child is 6 months old.	77 (90.59%)	8 (9.41%)	82 (96.47%)	3 (3.53%)
11	Exclusive breastfeeding can prevent children to be short.	72 (84.71%)	13 (15.29%)	66 (77.65%)	19 (22.35%)
12	In children over 12 months, breast milk no longer needs to be given.	53 (62.35%)	32 (37.65%)	78 (91.76%)	7 (8.24%)
13	In addition to eating 3 times a day, children less than five years and over the age of 9 months need to be given snacks.	85 (100.00%)	0	85 (100.00%)	0
14	Fruits can also be given to children less than five years old as a snack.	85 (100.00%)	0	85 (100.00%)	0
15	The cause of malnourished children under five is because they don't drink formula milk.	79 (92.94%)	6 (7.06%)	82 (96.47%)	3 (3.53%)
16	Children less than five years of age should get most vegetables at each meal.	9 (10.59%)	76 (89.41%)	41 (48.24%)	44 (51.76%)

## DISCUSSION

The average score obtained before the intervention was 77.94, with the number of participants who had good knowledge was 58.82%. Although the participants' knowledge is mostly good, two statements have a high error rate. First, 50.59% of participants considered that the success of the child's growth and development only depends on what has been eaten since birth. This data shows the lack of public awareness to pay more attention to the nutritional status of children before birth, which is related to the mother's nutritional status during pregnancy. Second, 89.41% of participants believe that children under five should get a large portion of vegetables at every meal. This result shows that most participants do not understand the nutritional needs of children and the composition of foods needed by children.

The average score obtained after the intervention increased to 87.35, with the number of participants who had good knowledge was 83.53%, and those who had poor knowledge decreased to 16.47%, much lower than before. Based on the study's results in Table 3, there was an improvement trend in answering questionnaires by respondents after being given education. At the point of question number one about general knowledge of stunting and number eight about children's nutritional needs, before being given counseling the error rate in answering was 50.59% and 89.41%, respectively. After being given counseling the error rate in answering dropped to 18.82% and 51.76%, respectively. Interventions in the form of lecture methods successfully increase respondents' knowledge, where respondents see and listen when the explanation is carried out. This study's results follow the theory that knowledge results from knowing, which occurs after people have sensed a particular object, mainly obtained through the eyes and ears [12]. Audio-visual facilities are believed to be effective in health promotion or health education [11].

The post-test results explain an increase in the percentage of errors in answering number two and three about general knowledge of stunting and in number three

about general understanding of breastfeeding and nutrition for toddlers (Table 3). This result may explain the respondent's less focus on filling out the post-test questionnaire. May they want to finish fast so they can continue their work, thus making respondents less focused and less concentrated in answering it will indirectly affect critical thinking skills when filling out questionnaires [12].

Previous studies have shown that the level of knowledge of parents, especially mothers, is related to the ability to meet the nutritional needs of toddlers [13,14]. Parental knowledge also has a significant relationship with stunting prevention efforts as it is related to child feeding practices optimization and food selection. The level of knowledge is also related to the ability to find solutions to nutritional problems in children. A previous study in Indonesia showed that from the entire sample of children with severe malnutrition, 96.87% of parents had a poor level of knowledge regarding child nutrition [15]. Another study stated that there was an increased risk of malnutrition by 14.7 times in children with parents who had poor knowledge about children's nutritional needs (OR = 14.7; 95% CI 2.31 - 93.44) [16]. In this study, the average score obtained before the intervention was 77.94, which increased to 87.35 after the intervention. The number of participants classified as having good knowledge increased from 58.82% to 83.53%, and the number of participants having poor knowledge decreased from 41.18% to 16.47% after the intervention. These results emphasize that health education about stunting provided by health workers can significantly improve public understanding.

This study involved 85 participants consisting of 91.76% females and 8.23% males. Ramli et al. stated that females play a more significant role in parenting at home than males as fathers work more so that time with their children will be less [10]. Family dynamics of a child play a role in the risk of stunting. Studies suggest familial influence can impact stunting incidence much or even more than national and territorial factors [8].

Knowledge of the nutritional needs of children is influenced by age, educational background, occupation, and income. A low level of knowledge about the nutritional needs of children can lead to non-optimal feeding practices and affect children's nutritional status [9]. Most of the respondents were aged 26-45 years, which is the adult age, and the average is already married. Age is an essential factor that underlies changes in a person's behavior and attitudes [17].

The educational backgrounds of respondents in this study were mainly university graduates (75.29%), senior high school (21.18%), and junior high school (3.53%). Notoatmojoyo (2007) states that education is one factor that influences one's knowledge as it affects receiving information [18]. People with better levels of education will receive information easier than people with lower education levels [14]. A person's education level is essential to health in society. Parents with higher education tend to choose foods with balanced nutrition and pay attention to the nutritional needs of children [12]. Most participants work (64,71%), while the other 35,29% stay at home. The family's socio-economic status, such as family income, prenatal education, knowledge about the mother's nutrition, and family members, can indirectly relate to the incidence of stunting. Riskesdas's (2013) results show that the incidence of stunting in toddlers under five is influenced by low income and parental education [4].

## CONCLUSIONS

From the interventions we have carried out, we conclude that health education by health workers can improve public knowledge and increase public awareness regarding the importance of stunting prevention. It shows the important role of health workers as the spearhead in stunting prevention strategies. Some of the limitations of this study limited to single center, so the data obtained may not describe the entire population. In addition, there is no data on the nutritional status of children from participants, so the relationship between the level of knowledge and the nutritional status of children cannot be evaluated. Further research on a larger scale is needed to provide more accurate data for the entire population. The interventions carried out are also expected to improve cognitive performance and participants' psychomotor skills, such as by doing simulations.

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