



The Effect of Providing Early Childhood Education Program Integration to Prevent Stunting (PAUD-Incasting) Through Audiovisual Media for Improving Preschool Child Nutrition Status

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Abstract. Introduction - Indonesia is the third country with the highest prevalence of stunting toddlers in Southeast Asia or South-East Asia Regional (SEAR). Efforts that can be made to prevent stunting in preschool-age children include providing early stimulation. This stimulation can be carried out through early childhood education programs (PAUD). Preschool children can receive a stimulus using audiovisual media. Audiovisual media plays a somewhat important role in providing stimulation because this media can facilitate understanding and strengthen the memory of preschool children. After all, it is fascinating. Purpose - This study aims to determine the effect of providing early childhood education programs to prevent stunting (PAUD-INCASTING) through audiovisual media on improving nutritional status in preschool children. Method - This research used quantitative methods with a quasi-experiment design. The respondents included 39 preschool-aged children divided into intervention and control groups using purposive sampling techniques. The nutritional status was measured using microtoise measuring instruments. The data analysis in this study used a dependent sample t-test and an independent sample t-test. Results - This study found an increase in nutritional status in preschool children after being given intervention in audiovisual media through the PAUD-INCASTING program. The Pearson chi-square showed an influence between the two variables with a value of Z score $p = 0.020$ and nutritional status $p = 0.034$. Conclusion: Through audiovisual media, early childhood education program integration prevented stunting (PAUD-INCASTING) and could improve nutritional status in preschool children.

Keywords: Stunting · PAUD INCASTING · Audiovisual · Nutritional Status · Preschooler

1 Introduction

One of Indonesia's health problems is the low nutritional status of toddlers. Nutritional status measures success in fulfilling nutrients indicated by a child's weight and height [1]. If the nutrients needed are not fulfilled, the nutritional status will be less, and if the intake of nutrients is excessive, the children may become overweight or obese [2]. Nutritional status categories, according to the World Health Organization (2017), are underweight, short (stunting), skinny (wasting), and more weight (overweight) [3]. One of the nutritional problems that often occur in preschool children is stunting.

Stunting or dwarfism is a chronic nutritional problem that causes toddlers to have a length or height that is less when compared to age [4]. Stunting is caused by a lack of nutritional intake and lousy parenting, especially in the first 1000 days of life. Stunting can also occur when the fetus is still in the womb and is only seen when the child is two years old [5]. One of the national development priorities listed in the main targets of the medium-term development plan for 2020–2024 is to reduce stunting in toddlers. The World Health Organization (2017) stated that the prevalence of stunting toddlers in Indonesia is the third in Southeast Asia or South-East Asia Regional (SEAR) [3]. The average prevalence of stunting in Indonesia from 2005 to 2017 was 36.4% (6). The majority in the Yogyakarta region in 2018 was short by 6.3% and short by 15.1% [4]. The 2018 Yogyakarta City Health Center (PSG) Nutrition Status Monitoring Report found that the percentage of stunting toddlers in Yogyakarta was 10.51% short and 2.32% relatively short.

Stunting is one of the sustainable development goals (SDGs) to eliminate hunger and all forms of malnutrition by 2030 [6]. The target is to reduce stunting rates by 40% in 2025 [6]. The Minister of Health Number lessens the prevalence of stunting in preschool children by monitoring growth, organizing Additional Feeding activities (PMT), providing optimal health services, and managing early stimulation of child development [7].

Preventing stunting in preschool-age children includes providing early stimulation [8]. Stimulation has a critical role in improving the growth and development of children, primarily cognitive, affective and psychomotor functions. Stimulation could be carried out through early childhood education programs (PAUD). Stimulation is influential in improving children's growth and intelligence to avoid stunting preschool-age children.

Stimulation that can be given to preschool children is through audiovisual media. Audiovisual media plays a somewhat important role in providing stimulation because this media can facilitate understanding and strengthen the memory of preschool children. After all, it is exciting [9]. Previous research in early childhood (PAUD) showed a difference between children who were given audiovisual stimulation and those who were not given kinesthetic intelligence.

The preschool age is the golden age where at this time, physical and psychological development is rapid; therefore, it must have good and balanced nutrition [10]. Good nutrition is undoubtedly obtained by choosing halal food; the verse is contained in QS Al-Baqarah: 168 [11] below.

“O people, eat what is lawful and good from what is on the earth, and do not follow the footsteps of Satan, for he is a clear enemy to you.”

This surah explains that humans are ordered to eat halal food because eating halal and good food will positively impact the health of the human body itself.

Based on a preliminary survey (Luthfansa 2020) in November 2019 in Jetis District, the prevalence of stunting toddlers in 2018 (until February 2019) in Jetis District was 9.6% of the total 739 toddlers. The leading causes of stunting in Jetis Subdistrict included parenting, Infant, and Child Feeding consumption patterns that were not yet appropriate or not up to standard, exclusive breast milk coverage was 77.5%, and short birth baby coverage was 7.59%. Therefore, running a program to prevent widespread stunting by reducing stunting rates in Indonesia is required.

Based on this background, the researchers are interested in finding out the influence of early childhood education programs for stunting prevention integration (PAUD-INCASTING) through audiovisual media on improving nutritional status in preschool children.

2 Method

The research design used in this study was a quasi-experimental research method. This study was tested for improved nutritional status before the intervention (pretest) and after the intervention (post-test). The population was 1,345 preschoolers in Bantul Regency. The number of samples in this study was 39 preschoolers using purposive sampling techniques. The sample size was determined using the large formula of the experiment research sample, which is the formula for estimating the sample size to test the hypothesis of two independent group averages. This sample was divided into two groups a giving intervention group and a control group.

The research was conducted on two PAUDs in Bantul Regency, KB 'Aisyiyah Surya Melati and Fullday Aika in Yogyakarta Province. The data for the intervention group were collected in Brajan, Tamantirto, Kasihan, Bantul, and the control group conducted at PAUD Integrated Fullday Aika located in Padokan Kidul, Tirtominolo, Kasihan, Bantul. The research time was conducted from March to April 2021.

The instruments in this study used a 24-h food recall questionnaire tested by experts so that the tool was valid, Nutrisurvey software 2007, and audiovisual media. Data in this study was obtained by providing interventions with videos about child nutrition.

3 Result

Table 1 shows that in the gender characteristics of respondents, there is a difference between the intervention group and the control, wherein the intervention group, most of the men and the control group, are primarily women. Parental education in the intervention group is high school; in the control group, most are college.

Table 2 shows the results of normality using Shapiro-Wilk's test. There is an abnormal data distribution except in the pre-Z score variable.

Based on Table 3 in the intervention group, there is an increase in the Z score and nutritional status after being given the PAUD INCASTING program.

Based on Table 4 in the control group, there is no increase in the Z score or nutritional status.

Table 1. Distribution of respondent frequency based on the child's gender and parental education (n = 39)

Characteristics of respondents	Intervention group (n = 20)		Control group (n = 19)	
	F	%	F	%
Gender of the child				
– Male	11	55	7	36,8
– Female	9	45	1	63,2
Parental education				
– Elementary school and junior high school	1	5	2	10,5
– Senior high school	10	50	5	26,3
– College	9	45	12	63,2

Table 2. Overview of the results of the tb/U Z score normality test and nutritional status

Research variables	P-Value	Information
– Pre Z score	0.835	Normal data distribution
– Pre nutritional status	0.000	Abnormal data distribution
– Post Z score	0.006	Abnormal data distribution
– Post nutritional status	0.000	Abnormal data distribution

* P-value based on Shapiro-Wilk test

Table 3. Overview of Z score and nutritional status in preschool-age children in the PAUD Incasting intervention group (n = 20)

Research variables	Before the intervention (n = 20)	After the intervention (n = 20)	P
Z Score			
– Min-Max	–3,49–1,56	–1,83–3,77	0,020*
– Mean±SD	–0,619 ± 1,39	0,015 ± 1,64	
Nutritional Status (F,%)			
– Very short			0,034**
– Short	1 (5%)		
– Normal	3 (15%)	19 (95%)	
– Tall	16 (80%)	1 (5%)	

Note * p < 0.05 based on dependent t-test dan

** Wilcoxon test

Table 4. Overview of Z scores and nutritional status in preschool-age children in the control group (n = 19)

Research variables	Before the intervention (n = 19)	After the intervention (n = 19)	P
Z Score			
- Min-Max	-2,29-1,50	-1,94-1,26	0,275*
- Mean±SD	-0,617 ± 0,9	-0,379 ± 0	
Nutritional Status (F,%)			
- Very short			0,157**
- Short			
- Normal	2 (10,5%)	19 (100%)	
- Tall	17 (89,5%)		

Ket: *p < 0.05 based on dependent t-test dan **Wilcoxon test

Table 5. Effect of PAUD Incasting on Z Score and Nutritional Status

Research variables	Intervention group (n = 20)	Control group (n = 19)	P
Z Score			
- Min-Max	-1,83-3,77	-1,94-1,26	0,354*
- Mean±SD	-0,015 ± 1,64	-0,379 ± 0,84	
Nutritional Status (F,%)			
- Very short			0,330**
- Short	19 (95%)		
- Normal	1 (5%)	19 (100%)	
- Tall			

Ket *p < 0.05 based on independent t-test dan **Mann Whitney test

Based on Table 5, PAUD-INCASTING does not affect improving the Z score and nutritional status of preschool-age children.

4 Discussion

The results showed that the average tb/U z score in the intervention group was -0.619, with a minimum value of -3.49 and a maximum of 1.56. The average z score of TB/U in the intervention group was very short, 5% and short at 15% and standard at 80%, while the nutritional status in the control group was very short, 10.5% and short at 89.5%. The results showed that stunting was still high in preschool-age children.

The number of stunting incidents in children in Indonesia still showed a concerning figure. The Millennium Development Goals (MDGs) report for Indonesia in 2010

indicates that the prevalence of stunting in Indonesia was still very high, between 30 and 40% [12]. Riskesdas data in 2018 showed that the stunting rate was still at 30.7%. The 2018 Riskesdas data also showed a tendency to reduce the prevalence of stunting from 1992 to 2018, from 45 to 30.7% [13]. This study aims to find out whether or not the effect of PAUD INCASTING on PHBS in preschool-aged children in PAUD KB' Aisyiyah Surya Melati. Tables 4 and 5 shows the value of $p = 0.042$ or $p < 0.05$, meaning a significant difference in post-test handwashing behavior in the intervention and control groups. This finding showed the influence of PAUD INCASTING on improving PHBS handwashing behavior in preschool-aged children. The prevalence of stunting in Indonesia was also still high when compared to neighboring countries such as Malaysia (8.4%), Thailand (4.1–8.4%), Vietnam (14–15%) and Pilipina (30%) [14, 15].

Soekarti's study (2020) revealed that stunting in children aged 3–6 years occurred more in men both in urban and rural areas [16]. Stunting in children aged 3–6 years is more prevalent in rural areas than in urban areas. However, some other studies showed different results, such as studies in China and Bangladesh showing the prevalence of stunting more in girls than in boys [17]. The results of one literature review in Indonesia indicated that children living in rural areas were more at risk of stunting than children living in urban areas [18, 19].

Stunting is a consequence of a chronic lack of energy and protein. Other factors that are the leading cause of stunting in children are diseases and infections. In tropical countries such as Indonesia, control against infectious diseases such as malaria, dengue hemorrhagic fever or illnesses caused by parasites plays a significant role in stunting prevention [16, 20].

The results in the intervention group showed an influence of PAUD INCASTING on the improvement of Z score and nutritional status. Interventions provided through video using online media have proven effective for stunting prevention. The development of technological media is transforming the access, dissemination of information and health information management (Silva et al., 2015). The information provided online can provide services at any time and at any time without worrying about the organization's geographical, time, and limitations. One of the adequate health information provided is health information related to stunting prevention [9].

Preschool-age children are a critical period in growth and development. Growth and development at this time is a crisis phase for successful growth and development in adulthood. Problems that often occur at this time are lack of food intake and infectious diseases. In addition, the knowledge factor is also a factor that contributes to the increasing incidence of stunting in toddlers [21].

Haryadi and Ikeu (2012) reported a significant influence of household nutrition-conscious family behavior on the nutritional status of toddlers in the TB/U index ($\rho < 0.05$) [22]. Households with poor nutrition awareness behaviors of poor nutrition-conscious families had the opportunity to increase the risk of stunting events in children under five 1.21 times greater than households with good nutrition-conscious family behavior.

The study results in the intervention and control groups showed no improvement in Z score and nutritional status. This condition may be another more influential factor. Huriyah and Nurjannah's research (2020) revealed three factors that affect stunting in

toddlers: parental factors, child factors, and environmental factors [23]. Media factors also affect where stunting-related media can be seen online and offline; this issue can affect nutritional behavior in the control group.

5 Conclusion

Based on the results, there was an increase in nutritional status in preschool children after being given interventions in the form of audiovisual media through the PAUD-INCASTING program.

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