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Clean and Healthy Living Behavior with The Stunting Events in Children in Central Java, Indonesia

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ABSTRACT

Stunting is a serious nutritional problem in Indonesia that can increase morbidity and mortality due to infection. This study aims to determine the relationship between clean and healthy living behavior with stunting. This research is a cross-sectional study. The study was conducted from October to November 2018. The study population was all elementary school students in Tambakrejo Pemalang, Central Java, Indonesia. The research sample of 85 children. The sampling technique is simple random sampling. The independent variable of the research is clean and healthy living behavior (PHBS) which is assessed based on three aspects including cognitive, affective and psychomotor. Data were analyzed by the chi-square test. The results showed that the effective PHBS influenced the incidence of stunting. However, cognitive PHBS and psychomotor PHBS showed no influence on the relationship with the incidence of stunting.

Keywords: elementary school children, clean and healthy living behavior, stunting

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INTRODUCTION

Stunting is a condition of growth failure in children under five (babies under five years old) due to chronic malnutrition so that the child is too short for his age. Malnutrition occurs since the baby is in the womb and the early period after the baby is born but, the condition of stunting only appears after the baby is 2 years old. Toddlers short (stunted) and very short (severely stunted) is a toddler with a body length (PB / U) or height (H / A) by age compared with basic standard WHO-MGRS (Multicenter Growth Reference Study, 2006.)

Globally, around 151 million children under five are expected to be stunted in 2013. In 2017, around half of all stunted children live in Asia and more than one third in Africa (United Nations Children's Fund, World Health Organization, and (World Bank Group, 2018). In Indonesia according to the results of Riskesdas 2007, 2013 and 2018 still showed stunting rates in toddlers above 30%. This means that there are 3 stunting toddlers out of 10 toddlers born in Indonesia (Kemenkes RI, 2019). This shows that stunting is a public health problem in Indonesia until now.

The high prevalence of stunting certainly requires serious treatment. Serious impacts will threaten the quality of human resources in the ongoing life chain. Stunting toddlers will grow into adult stunting with various impacts that will be caused (Da Rocha Neves et al., 2016). Besides giving birth to babies with the same nutritional problems, for example, the birth of stunting or low birth weight babies, this growth failure is also closely related to the long-term impact of increasing the prevalence of non-communicable diseases in the future (Bates, Gjonça and Leone, 2017; Graham, Hochfeld and Stuart, 2018).

In Indonesia, around 37% (nearly 9 million) of children under five experience stunting Indonesia is the country with the prevalence of stunting fifth highest. Toddler / baduta (babies under the age of two years) who experience stunting will have a level of intelligence that is not optimal, making children more vulnerable to disease and in the future can be at risk of decreasing levels of productivity. In the end, stunting will be able to hinder economic growth, increase poverty, and widen inequality. (Basic Health Research/ Riskesdas 2013).

Stunting that has occurred if not balanced with catch-up growth (chasing growth) results in decreased growth. Problems stunting is a public health problem that is associated with an increased risk of morbidity, mortality, and resistance at both motor and mental growth. Stunting is inadequate formed by growth faltering and catch up growth that reflects the inability to achieve optimal growth. This revealed that the group of toddlers born with normal weight could be stunted if the subsequent fulfillment of needs was not met properly (Kemenkes 2013).

The problem of stunting is related to clean and healthy living behavior (PHBS). PHBS is all health behaviors carried out on the awareness of each individual or group. Family members can help themselves in the health sector and can play an active role in activities in the surrounding community to help other communities (MOH RI, 2009). The purpose of PHBS is an effort to provide learning experiences for individuals, families, groups and communities by opening channels of communication, providing information and education in order to increase knowledge, attitudes, and behaviors through advocacy approaches, community development and movements, so that they can apply ways of living healthy in order to maintain, maintain and improve public health (MOH, 2006).

Clean and healthy behavior that is not implemented properly can lead to nutritional problems. Nutritional problems can occur related to the presence of energy or nutrition experts. Factors of poverty and malnutrition affect the incidence of stunting in Indonesia (Table 1).

Table 1. Prevalence of Stunting and Factors Associated with

Variables	N	Minimum	Maximum	Average	Std. Deviation
Stunting Prevalence	34	13.60%	30.40%	21.55%	4.40%
Percentage of Poor Population	34	4.00%	28.00%	10.95%	5.79%
Puskesmas Ratio / 100 thousand Population	34	1	5	1, 82	0.968
Nutrition Worker Ratio / 100 thousand Population	34	1	26	9.65	7.515
Midwife Labor Ratio / per 100 thousand Population	34	18	175	74.65	34,972

Source: Laksono, 2019.

Nutrition-related problems are a serious problem in Indonesia. This is because problems related to nutrition can have an impact on decreasing the productivity of human resources. A serious nutritional problem that occurs in Indonesia is stunting in children. Stunting in children has occurred in Indonesia reaching a high value, exceeding the minimum limit set by WHO.

Stunting is a very short body condition seen by the standard WHO-MGRS or Multicenter growth reference study (Buku_Saku_Stunting, 2017). Stunting occurs when heights that are more than two standard deviations are below the median average of the World Child Health (WHO) growth standards. The incidence of stunting is expressed as a result of inadequate nutrition and repeated attacks of infection during the first 1000 days of a child's life. The same stunting is also caused by a deficiency in the intrauterine environment of the fetus as well as the health and nutrition of the child during early postnatal life (Geberselassie, 2018).

The results of Basic Health Research, the prevalence of stunting in Indonesia in 2013 reached 37.2%. The data exceeds the limit set by WHO, with a prevalence of less than 20% and the data shows a prevalence of close to 40% where stunting is considered a severe public health problem in the community when its prevalence in children is greater than 40% (Geberselassie, 2018; Riskesdas, 2013).

Stunting can increase morbidity and mortality due to infection. In addition, stunting also affects the cognitive component, education, and behavior of children. Stunting children are more apathetic, show less exploratory behavior and have changed physiological arousal (Prendergast a Humphrey, 2014). More broadly, stunting is stated to have an impact on the level of intelligence, vulnerability to disease, decreasing productivity and then inhibiting economic growth, increasing poverty and inequality (MOF RI, 2018).

Stunting is caused by various risk factors including the number of children, family income, parents 'work, parents' education, gender, age of the child, and PHBS (Prendergast a Humphrey, 2014; Torlesse, et al, 2016). The common cause of stunting is due to malnutrition or insufficient food intake and is followed by an infection. Adequate food intake and the occurrence of infections are basically related to clean and healthy living behaviors (Keller, 1988).

The influence of clean and healthy living behavior (PHBS) with the incidence of stunting has been reported by several studies. Torlesse et al. in his research in 3 different districts in Indonesia in 2011 with a sample of 1366 children showed that clean and healthy living behavior significantly affected the incidence of stunting, especially in sanitation and clean water use.7 Uliyanti et al. in his research stated that PHBS indirect effect on the incidence of stunting through a history of infection in children aged 24 to 59 months in the Coastal Region of Ketapang Regency (Uliyanti, et al, 2017).

Research related to the influence of clean and healthy life behavior with stunting has never been done in Pemalang, Central Java. Therefore, this study aims to determine the relationship of clean and healthy living behavior with the incidence of stunting in children in SD Negeri 01 Tambakrejo and SD Negeri 02 Tambakrejo Pemalang, Central Java.

LITERATURE REVIEW

In accordance with the topic studied, there are several results of previous studies. First, Laksono and Kusrini (2019) analyzed the Prevalence of Toddler Stunting and Related Factors in Indonesia. The results showed that the high percentage of poor population (> 14.43%) was dominated by the high prevalence of stunting toddlers (22.51% - 30.0%). In the category of Puskesmas ratio per 100 thousand high populations (≥ 4) seen dominated by the prevalence of stunting toddlers in the high category (22.51% - 30.0%). In the category of nutritional power ratio per 100 thousand high populations (> 12), it appears to be dominated by the prevalence of stunting under five in the high category (22.51% - 30.0%). In the category of midwife labor ratio per 100 thousand high population (> 97) is dominated by the prevalence of stunting under five in the high category (22.51% - 30.0%). It was concluded that the percentage of the poor population was positively related to the prevalence of stunting under five. While health service input factors (Puskesmas, nutrition workers, and midwives) are not related to the prevalence of stunting toddlers. It is recommended that the government focus more on policy targets on the poor.

Secondly, Cahyani (2017) examines Household Clean and Healthy Lifestyle (PHBS) with Stunting and Non-Stunting Incidence in Adolescent Girls in SMP Negeri 1 Nguter, Sukoharjo Regency. This research is a quantitative study with cross sectional design. The sample was selected by simple random sampling that met the inclusion criteria with a total sample of 80 students. PHBS data were obtained through direct interviews with the respondent's mother using the PHBS questionnaire by visiting the respondent's house, the respondent's height was measured using microtome and analyzed using WHO Anthro Plus. Hypothesis testing of this study uses the Independent T-test. Based on the results of research processed with SPSS V.17 there were no significant differences between PHBS (p = 0.204) with the incidence of stunting and non-stunting. The conclusion is that there is no

significant difference between PHBS in stunting and non-stunting adolescent girls in SMP Negeri 1 Nguter, Sukoharjo Regency.

Third, Pratama (2019) examines the problem of implementing the Gasing (Anti-Stunting Movement) through PHBS and Worm Checking. This study is motivated that the infection of earthworm accompanied by an imbalance in nutrient intake contributed to the stunting prevalence rate of 37.2%. This service program aims to implement the PHBS indicators in stunting prevention through counseling, demonstrations, and examinations. The program target can demonstrate the 5 Step CTPS as one of the PHBS indicators. Increased knowledge scores (grades 3 to 7) were obtained through pre-posttests. Short nutritional status was obtained at 3.03% based on the TB / U index. The results of examination of worm eggs on feces 18 students were negative. Community service activities can increase short-term knowledge of targets in the implementation of PHBS related to handling stunting.

Fourth, Sinatrya, et al. (2019) examined the Relationship between Water, Sanitation, and Hygiene (WASH) Factors with Stunting in the Tamsulon Community Health Center Area, Bondowoso District as the third-highest contributor in East Java, amounting to 38.3% stunting toddlers. One indirect cause of stunting is water, sanitation, and hygiene (WASH) factors. This study aims to analyze the relationship of WASH with stunting in children aged 24 - 59 months in the Tamsulon Community Health Center, Bondowoso Regency. This type of research is analytic observational with a case-control design. The sample size was 66 toddlers aged 24 - 59 months in the area of the Pusulan Health Center, Bondowoso Regency. This case-control study consisted of a sample of 33 toddlers who experienced stunting and a control sample of 33 toddlers who did not experience stunting. The dependent variable is the occurrence of stunting. The independent variable is WASH, including drinking water sources, physical quality of drinking water, latrine ownership, and mother's handwashing habits. Data were analyzed using the chi-square test. The results showed that handwashing habits ($p < 0.001$; OR = 0.12) was a risk factor for stunting in children under five with a 0.12 times higher risk for mothers who had poor hand washing habits, while drinking water sources ($p = 0.415$), physical quality of drinking water ($p = 0.58$), latrine ownership ($p = 0.22$) are not risk factors for stunting. Poor handwashing habits among mothers contribute to the incidence of stunting in the work area of the Kotakulon Health Center in the Bondowoso Regency.

Some of the results of the above studies have not yet discussed the relationship of clean and healthy living behavior with the incidence of stunting in elementary school children. However, the four results of these studies are valuable references for conducting this study.

RESEARCH METHOD

Method

This research is an observational analytic study with approach cross sectional. The study was conducted at SD Negeri 01 Tambakrejo and SD Negeri 02 Tambakrejo Pemalang, Central Java. The study was conducted in October 2018 - November 2018.

Population and sample

The population of this study was elementary school children grade 1 through grade 6 of SD Negeri 01 Tambakrejo and SD Negeri 02 Tambakrejo. The sample used was 85 respondents. Sampling is done by simple random sampling technique. Inclusion criteria are not disabled; parents are not disabled and are willing to follow the research. Exclusion criteria were disability, illness, and unwillingness to take part in the study.

Data collection and analysis techniques

The independent variable is the Clean and Healthy Life Behavior (PHBS) which is divided into 3 dimensions, namely cognitive, affective and psychomotor. The dependent variable is the incidence of stunting. PHBS data collection was carried out by survey using a questionnaire. Data collection on stunting events is done by measuring height. Data were analyzed by chi-square analysis.

RESULTS AND DISCUSSION

Characteristics of Respondents

Respondents used in this study were students of SD Negeri 01 Tambakrejo and SD Negeri 02 Tambakrejo from grade 1 to grade 6. The frequency distribution results of the characteristics of respondents are presented in Table 2.

Respondents used in this study have almost the number same Among the male sex (49.4%) and the female sex (50.6%). Respondents were mostly 9 years old followed by 10 years and 11 years old. Most respondents are the first child (43.5%).

Most respondents claimed to have received information about PHBS (71.8%), and as many as 28.2% claimed never to get information about PHBS. Most respondents had low birth weight (LBW) (69.4%), and as many as 30.6% had normal birth weight.

Judging from the history of infection, 87.1% of respondents had no history of infection, and 12.9% of respondents had a history of infection. In addition, most respondents did not experience stunting (80%) and only 20% had a history of stunting.

In the characteristics of respondents also seen three aspects of Clean and Healthy Behavior (PHBS), namely knowledge (cognitive), attitude (affective) and actions (psychomotor) of respondents towards PHBS. Most respondents (67.1%) had good knowledge about PHBS, and 32.9% had poor knowledge about PHBS. In terms of attitude (affective), 54.1% have a positive (good) attitude about PHBS, and as many as 45.9% have a bad attitude about PHBS.

Furthermore, in terms of actions (psychomotor), as many as 49.4% of respondents have good actions about PHBS 50.6% of respondents have bad actions about PHBS. Overall, more than half of the respondents had good PHBS (52.9%), and as many as 47.1% had bad PHBS.

Bivariate analysis Bivariate

Analysis was used to analyze the effect of PHBS on the incidence of stunting in elementary school children. PHBS in

this study was divided into 3 aspects namely cognitive (knowledge), affective (perception) and psychomotor (action) aspects. Cognitive includes mental activities (brain). The purpose of cognitive aspects is oriented to the ability to think that includes more simple intellectual abilities, namely remembering, to the ability to solve problems that require students to connect and combine several ideas, ideas, methods or procedures learned to solve the problem.

Table 2. Respondents

Characteristics	f	%
Type of Sexuality		
- Male	42	49.4
- Female	43	50.6
Age (years)		
- 6	10	11.8
- 7 - 8 - 9 - 10 - 11 - 12 - 13	7 12 17 16 15 6 2	8.2 14, 1 20.0 18.8 17.6 7.1 2.4
Children		
- 1	37	43.5
- 2 - 3 - 4 - 5 - 6	20 15 12 0 1	23.5 17.6 14.1 0, 1.2 1.2
PHBS Info		
- Ever	61	71.8
- Never	24	28.2
Birth Weight		
LBW	59	69.4
Normal	26	30.6
Infection History		
- There are	11	12.9
- None	74	87.1
Stunting		
- No	68	80.0
- Yes	17	20.0
Cognitive PHBS		
- Good	57	67.1
- Bad	28	32.9
Affective PHBS		
- Good	46	54.1
- Bad	39	45.9
Psychomotor PHBS		
- Good	42	49.4
- Bad	43	50.6
PHBS		
- Good	45	52.9
- Poor	40	47.1

Source: processed by the author, 2019

Thus, the cognitive aspect is the sub taxonomy that reveals mental activities that often start from the level of knowledge to the highest level, namely evaluation. Affective relates to attitudes and values, including behavioral traits such as feelings, interests, attitudes, emotions, and values. A person's attitude can be predicted changes if someone already has a high level of cognitive power. Psychomotor is related to the skills (ability) or the ability to act after someone receives a certain learning experience. The results of learning skills (psychomotor) can be measured through: (1) direct observation and assessment of student behavior during the practical learning process, (2) after participating in learning, that is by giving tests to students to measure knowledge, skills, and attitudes, (3) sometime after learning is finished and later in the work environment (Daryanto, 2009). Bivariate analysis in this study was in the form of chi-square test. Chi-square test results are explained as follows.

Table 3. Cognitive Relationship of PHBS with Stunting Incidence in Tambakrejo 1 Elementary School and Tambakrejo SD 2

Cognitive PHBS	Incidence of stunting				Total		P Value
	No Stunting		Stunting		F	%	
	f	%	F	%			
Good Bad	45 23	66.2 33.8	12 5	70.6 29.4	57 28	67.1 32.9	0.954
Total	71	100	17	100	85		

Source: processed by the author, 2019

Table 4. Affective Relations of PHBS with Stunting Events in Tambakrejo Elementary School 1 and Tambakrejo Elementary Schools 2

Affective PHBS	stunting events				Total		P Value
	Not Stunting		Stunting		F	%	
	F	%	F	%			
Good Bad	41 27	60.3 39.7	5 12	29.4 70.6	46 39	54.1 45.9	0.044
Total	68	100	17	100	85	100	

Source: processed by the author, 2019

Table 5. Psychomotor Relationship of PHBS with Stunting Occurrence at Tambakrejo 1 Elementary School and Tambakrejo Elementary School 2

Psychomotor PHBS	**Stunting Occurrence**				Total		P Value
	No Stunting		**Stunting**		**F**	**%**	
	F	**%**	**F**	**%**			
Good Bad	34 34	50.0 50.0	8 9	47.1 52, 9	42 43	49.4 50.6	1,000
Total	68	100	17	100	85	100	

Source: processed by the author, 2019

The results of the chi-square analysis obtained a p value of 0.954. The p-value is greater than the level significance (α) = 5% (0,05). These results indicate that there is no significant relationship between cognitive

PHBS with the incidence of stunting in elementary school children. The level of knowledge of children about PHBS is not significantly related to the incidence of stunting.

Chi-square analysis results obtained p-value of 0.044. The p-value is greater than the level significance (α) = 5% (0.05). These results indicate that there is a significant relationship between the effective PHBS with the incidence of stunting in elementary school children. The level of children's perception of PHBS is significantly related to the incidence of stunting.

Chi-square analysis results obtained a p value of 1,000. The p-value is greater than the level significance (α) = 5% (0.05). These results indicate that there is no significant relationship between PHBS psychomotor and the incidence of stunting in elementary school children. Children's actions about PHBS are not significantly related to stunting.

Table 6. Relationship PHBs with Genesis Stunting in Tambakrejo SD 1 and SD 2Tambakrejo

PHBs	Genesis Stunting				Total		P Value
	No Stunting		Stunting			F%	
		F%		F%			
Good Poor				38 30 55.9 44.1 7 10 41.2 58.8	40	52.9 47.1	0.415
Total	68	100	17	100	85	100	

Source: processed by the author, 2019

Chi-square analysis results obtained a p-value of 0.415. The p-value is greater than the level significance (α) = 5% (0.05). These results indicate that there is no significant relationship between PHBS with the incidence of stunting in elementary school children. PHBS level was not significantly related to the incidence of stunting in elementary school children.

DISCUSSION

The results of the study showed that there was no significant relationship between cognitive PHBS with the incidence of stunting in elementary school children with a p of 0.954. This means that the level of children's knowledge about PHBS is not significantly related to the incidence of stunting.

Respondents who had a good cognitive level about PHBS experienced stunting by 12 children (70.6%) while respondents who had a bad cognitive level about PHBS experienced stunting by 5 children (29.4%). Most stunting children have good knowledge of PHBS.

Based on the affective aspects, the results show that there is a significant relationship between the effective PHBS with the incidence of stunting in elementary school children. This means that children's perceptions of PHBS are significantly related to stunting. Respondents who have a good affective level about PHBS experienced stunting of 5 children (29.4%) and respondents who had a bad affective level about PHBS experienced stunting of 12 children (70.6%). Most stunting children have a bad perception of PHBS.

Based on psychomotor aspects, the results show that there is no significant relationship between PHBS psychomotor and the incidence of stunting in elementary school children. This means that the child's actions in doing PHBS are not significantly related to stunting. Respondents who had a good psychomotor level in doing PHBS experienced stunting of 8 children (47.1%) while respondents who had a bad psychomotor level in doing PHBS experienced stunting as many as 9 children (52.9%). This shows that stunting children have almost the same bad and good PHBS actions.

The results of all aspects of PHBS indicate that PHBS is not significantly related to the incidence of stunting of elementary school children with p of 0.415. Respondents who have a good PHBS level, stunting as many as 7 children (41.2%) and respondents who have a bad PHBS level, stunting as many as 10 children (58.8%). Most stunting children have bad PHBS.

Stunting can occur due to direct or indirect factors. The direct factors of stunting are maternal nutrition during pregnancy, infectious diseases, and toddler's own nutrition, while for indirect factors it can occur from various aspects, including poor PHBS factors. One of the factors of bad PHBS is hygiene, namely handwashing habits. Poor hand washing habits in mothers contribute to stunting in toddlers (Sinatrya, et al. (2019).

In addition, stunting is a condition that is determined in the first 1000 days, because failure of linear growth begins antenatal and continues for the first 24 months. Factors after the first 1000 days as well as PHBS in elementary school children are only a factor driving the emergence of stunting. This is as stated by the (World Health Organization World Health Organization) that stunting starts from the nutritional condition of pregnant women, even before pregnancy will determine fetal growth. Pregnant women who are malnourished will risk having a baby with a low birth weight, and this is a major cause of stunting. After birth, babies who are not breastfed properly will be at risk of suffering from various infectious diseases due to inadequate and unhygienic dietary intake (Keller W, 1988). The incidence of stunting is directly influenced by variables of nutrient intake, history of infection, maternal nutritional knowledge and levels of nutrition, whereas PHBS influences the incidence of stunting indirectly through a history of infectious diseases (Uliyanti, et al. 2017).

These results are in line with research conducted by Tumrap that there is no significant difference between PHBS and the incidence of stunting and non-stunting in adolescent girls in SMP Negeri 1 Nguter (Tumrap et al. 2017). Similar results were stated by Uswati et al. that PHBS in the form of latrines and drinking water sources is not significantly related to the incidence of stunting of elementary school children in the Greater Aceh Tsunami region (Uswati, 2016).

CONCLUSION

Based on the results of research and discussion, it can be concluded that there is no significant relationship between cognitive PHBS with the incidence of stunting in elementary school children. There is a significant relationship between the effective PHBS with the incidence of stunting in elementary school children. There is no significant relationship between PHBS psychomotor and the incidence of stunting in elementary school children. Overall, there was no significant correlation between the incidences of stunting PHBs with elementary school children.

ADVICE

Most stunting children have poor PHBS. For this reason, intensive education for elementary school parents regarding the PHBS effective is still urgent to anticipate stunting in the community.

FINDINGS

Although overall, there is no significant relationship between PHBS and the incidence of stunting in elementary school children, this study also revealed that most stunting children have poor PHBS. PHBS in elementary school children is a factor driving the emergence of stunting.

Authors' Contribution: The authors coordinate with each other and contribute to the completion of this paper L.A & T.S designs and establishes research problems, titles, identifies the interrelationship of variable models, and prepares the research framework. Contributions from W.K & M.S oversee and validate results and are involved in the discussion of results. All authors have read and agreed to the text.

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