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Original Research Article

The Relationship of 5 Pillars Community-Based Sanitation Implementation with Children Stunting at Tambora Health Center

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ABSTRACT

Introduction: Stunting is a condition of growth and development disease in children due to chronic malnutrition and recurrent infections, which characterized by children length or height that below the standard. In Bima District, the prevalence of stunting in 2020 was 22.48%. The number of stunting cases in Tambora Health Center based on the measurement results in February 2022 was 12.5%. This research aims to analyse the relationship between the implementation of 5 pillars of STBM in community with children stunting in Tambora Public Health Center. **Methods:** This type of research is an observational analytical study using a cross-sectional approach to see the relationship between the 5 pillars of STBM and children stunting in Tambora Public Health Center. The sample in this research consisted of 88 mothers of children under five years old. The analysis was conducted using SPSS application through bivariate analysis with chi-squared test. **Results and Analysis :** The results of this research show that eating and drinking management behaviours and household waste management are related to stunting. This is known from the P value < 0.05. Meanwhile, there are 3 variables researched that are not related to stunting, it consist of open defecation handwashing with soap, and household liquid waste management (with P value > 0.05). **Discussion:** One way to prevent stunting is through good sanitation. It is necessary to increase the implementation of proper sanitation, education, and cooperation between parents, the community, health workers, and the government until the establishment of adequate community-based total sanitation.

Keywords: Stunting, Tambora Public Health Center, Sanitation, 5 Pillars of STBM

INTRODUCTION

Stunting is a condition of children disease in their growth and development due to chronic malnutrition and repeated infections, which is characterized by length or height that is below the standard. It can also mean that stunting are children who have shorter height or body length than another child in their age (kemenkes, 2018). Based on World Health Organization (WHO), a child is classified as stunting when their length or height are minus 2 from the height or length standard deviation (-2 SD) of the child for his or her age.

Stunting will have an impact on children's growth and development, especially for those in 1 under 2 years old.

In general, children who experience stunting will have an obstacles in their cognitive and motoric development that will affect their productivity as adults. In addition, stunting children also have a greater risk of suffering from non-communicable diseases such as diabetes, obesity, and heart disease when they become adults.

Based on the Sustainable Development Goals (SDGs), Indonesia is in the process of realizing the sustainable development goals or SDGs by end the hunger, achieving food security and better nutrition, along with supporting the sustainable agriculture. It includes the prevention of stunting, which will be predicted to decrease by 2025. The second objective is closely related to the third goal through ensuring a healthy life and supporting welfare for all ages (Nirmalasari, 2020).

Based on World Health Organization (WHO) Globally in 2016, 22.9% or 154.8 million children aged < 5 years are suffered from stunting. In Asia, there are 87 million stunted children, 59 million in Africa and 6 million in Latin America and the Caribbean (WHO, 2018).

From the data of Indonesia Nutrition Case Study (SSGI) 2021, it is known that from the 95,111 sampled toddlers whose length/height was measured, there were 23,262 toddlers (stunting/short) or about 24.4% of toddlers are diagnosed with stunting. The total of 24.4% compared to 2021 results of 21.1% shows that the indicator for stunting percentage in 2021 is not achieved. According to the results of Integrated Toddler Nutrition Status Survey (SSGBI) by Balitbangkes Ministry of Health Republic Indonesia in 2019, it is known that the highest proportion of stunting is found in East NusaI, West Sulawesi, and West Nusa Tenggara (Kemenkes, 2017).

In 2020, there are many of stunting toddlers in NTB Province. Based on the data from 2020 weighing week, it was found that there were 77,037 stunting toddlers in NTB Province with the highest case in Central Lombok Regency that has 20,513 stunting toddlers and the lowest was found in Bima City with 870 stunting toddlers (NTB Health Office, 2021). In Bima, the prevalence of stunting in the first year of 2020 was 22.48% and decreased by 18.20% in 2021. The number of stunting cases in Tambota District, according to measurement results in February 2022 was 88 people or 12.5% (Bima District Health Office, 2022).

Stuting is the result of growth disorder due to lack of nutritional in pre and post natal periods. The UNICEF framework explains the two direct factors that cause malnutrition, called disease factors and nutrient intake. These two

direct causal factors are directly related to parenting, type and food access, along with sanitation and health services (Rahayu, 2018).

The causes of stunting in children according to WHO 2013 are divided into 4 major categories such as family factor, inadequate supplementary food, breastfeeding, and infection. While other factors are maternal and environmental, the maternal factors in the form of poor nutrition during preconception, pregnancy, breastfeeding, short-mother, pregnancy infection, adolescence pregnancy, maternal mental health, Intrauterine Growth Restriction (IUGR) and preterm birth, short spacing of pregancy, and hypertension in mother. Then, the environmental factors such as house, inadequate stimulation and children activities, lack of care, lack of available access to food, low knowledge of caregivers, and inadequate sanitation (Rahayu, 2018). This research aims to determine the 5 pillars of STBM with the incidence of toddler stunting in Tambora Public Health Center, Bima Regency.

METHOD AND ANALYSIS

This study used an observational analytic research with a cross-sectional approach to determine the correlation between the implementation of 5 pillars of STBM and the stunting in Tambora Public Health Center, Bima Regency. This research took a sample of 88 mothers of children under five years old. This research was conducted from March-May 2022. The data were collected using primary and secondary data from public health center and quistionnare based on Indonesian Ministry of Health through multiple choices. The data analysis are using SPSS program through the chi square test which is presented in the table form.

RESULTS

Based on the research result in Table 1 of mothers' education degree who have children with stunting nutritional status are 17 people who graduated from junior high school (19.3%), and only 1 person graduated from bachelor degree (2.1%). The mothers' education degree who have non-stunting children are graduated from high school and D3 (12.5%), and 6 people (6.8%) are graduated from bachelor degree.

Table 1. The Distribution of respondents by mother's education

Mothers' Education	Non-stunting Children	Stunting Children
D3	11 (12.5 %)	2 (2.3 %)
Bachelor Degree	6 (6.8 %)	1 (2.1 %)
Elementary School	8 (9.1 %)	14 (15.9%)
High School	11 (12.5 %)	10 (11.4%)
Junior High School	8 (9.1 %)	17 (19.3%)
Total	44 (50.0 %)	44 (50.0 %)

Table 2. The Distribution of Respondents according to Mother's Age

Mothers' Age	Non-stunting Children	Stunting Children
15-25	13 (14.8 %)	12 (13.6 %)
26-35	21 (23.9 %)	26 (29.5%)
36-45	10 (11.4 %)	6 (6.8%)
Total	44 (50.0 %)	44 (50.0%)

In table 2, it shows that there are 26 mothers who have child with stunting nutritional status at the age of 26-35 years as many as 26 people (29.5%). Likewise, the mothers' age who have children with non-stunting nutritional status is mostly at the age of 26-35 years with 21 people (23.9%).Table 3 shows the distribution of respondents according to mother's occupation on children with stunting nutritional status was mostly housewives with 42 people (47.7%), while others 29 mothers (33.0%) with non-stunted nutritional status did not work.

Table 3. The Distribution of respondents by mother's occupation

Mothers' Occupation	Non-stunting Children	Stunting Children
Midwife	2 (2.3 %)	1 (1.1%)
Teacher	2(2.3 %)	1 (1.1%)
Housewife	29(33.0%)	42 (47.7%)
Employee	1 (1.1 %)	-
Honorary Employee	4 (4.5 %)	-
Nurse	2 (2.3%)	-
Civil servant	4 (4.5%)	-
Total	44 (50.0 %)	44 (50.0 %)

The research results found that the frequency distribution of the 5 STBM pillars implementation is depicted in table 4. From 88 respondents, 79 people (89.8%) have the good behavior on open defecation pillar. The frequency of washing hand with soap was 86 people (97.7%). The good household liquid waste management is 75 people (85.2%), and good household waste management is 47 people (53.4%).

Table 4. The 5 STBM pillars Distribution

Community Based Total Sanitation	**Not Good**	**Good**
Open Defecation	9 (10.2%)	79 (89.8%)
Washing Hands with Soap	2 (2.3%)	86 (97.7%)
Food and Beverage Management	59 (67.0%)	29 (33.0 %)
Household Liquid Waste Management	13 (14.8%)	75 (85.2%)
Household Waste Management	41 (46.6%)	47 (53.4%)

In Table 5, the researchers grouped the variables of children's nutritional status into stunting and not stunting, for the results in the implementation of 5 pillars of STBM variables, such as open defecation, Washing Hands with Soap,

Food and Beverage Management, Household Liquid Waste Management and Household Waste Management are grouped into two, good and bad based on the consideration of ease in processing statistical data.

Table 5. The Relationship of 5 STBM Pillars with Stunting in Children

Community Based Total Sanitation	Stunting Children	Non-Stunting Children	Total	P
Open Defecation				
Good	39	40	79	0.725
Not Good	5	4	9	
Washing Hands with Soap				
Good	44	42	86	0.152
Not Good	0	2	2	
Food and Beverage Management				
Good	2	27	29	0.001
Not Good	42	17	59	
Household Liquid Waste Management				
Good	35	40	75	0.133
Not Good	9	4	13	
Household Waste Management				
Good	11	36	47	0.001
Not Good	33	8	41	

The results of chi-square test show that there are two variables that have a relationship with children stunting in Tambora Public Health Center, namely food management and household waste management. This is known from the p value < 0.05 which means H0 is rejected and H1 is accepted. Meanwhile, there are three variables that are not related to children Stunting, such as open defecation, Handwashing with Soap, and household liquid waste management with a p value > 0.05 which means H0 is accepted and H1 is rejected.

DISCUSSION

1. Open Defecation

According to Ministry of Health, open defecation (BABS) is every individual in a community does not defecate openly and uses sanitary sanitation facilities in the form of healthy latrines. Sanitary is a sanitation facility that meets health requirements and standards and does not cause the spread of harmful materials to humans as a result of the disposal of human waste. It also prevent the vectors from spreading disease in surrounding environment. The healthy latrines can effectively break the chain of disease transmission, and it must be built, owned, and used in places that are easily accessible to house residents (Kemenkes, 2014). The use of latrines and unhealthy disposal can result in one source of infection spreading (Leni, 2019).

Based on the research results in Tambora Public Health Center in 2022, it shows that open defecation is not related to stunting. This same conducted by Kuewa *et al.*, (2021) that the p value = 1.686. The results of data processed by Chi square test showed that there was no relationship between open defecation and stunting. The research conducted by Sinatrya and Muniroh, (2019) also has similar result with P = 0.022 obtained through Chi-square test concluded that

there was no relationship between open defecation and stunting. From the observations results during the research, although there are still those who do not have a latrine in their homes, but when they want to make defecation they will use a neighbor's latrine or public toilet, and almost all respondents have a healthy position that meet the requirements.

2. Washing Hands with Soap

There are five important times to wash hands based on the handwashing guidelines by Ministry of Health, such are before, during and after preparing food, before eating, before holding the baby, after defecating and using the toilet, and after changing the bed/washing hands. Using soap is proven to be effective in preventing disease transmission, and the hygienic hands can reduce the risk of bacteria or viruses that will infect the body. The research results in Tambora Public Health Center in 2022, washing hand with soap had no relationship with children stunting, that are not related with the research conducted by Torlesse, et al. (2016) which stated that the relationship between washng hand with soap and Stunting with P = I0.003. From the results of observing the behavior of washing hands with soap for 20-30 seconds every important time, the parental awareness on hand hygiene is quite good, although there are still those who apply hand washing only with running water, do not use soap and do not perfectly apply the five important times of hand washing. From the results of statistical tests stated that there is no significant relationship between Handwashing with Soap with stunting in Tambora Public Health Center.

3. Food and Beverage Management

Good household drinking water management is water management according to standards, drinking water storage containers, water management for drinking and important points in household food and drinking water management. (PAMM-RT). In accordance with permenkesRII No.32/2017, the physical quality of drinking water must meet health requirements, such as tasteless, not cloudy/clear, odorless, not contaminated with chemicals, and free from various kinds of microorganisms. According to Permenkes RI No. 1096/Menkes/Per/VI/2011, the effective household food management is based on 6 principles of culinary hygiene and sanitation, from food storage, selection of food ingredients for culinary processing, culinary transportation, cooked food storage and food presentation. When the quality of drinking water and 6 principles of food and beverage management are applied at home, it will be able to prevent

the occurrence of infectious diseases that will cause stunting. The research results shows that household food and beverage management has a relationship with stunting, this is found out from statistical tests using chi square, the results are p value of 0.001. It can be concluded that p value < 0.05 means H0 is rejected H1 is accepted which means there is a relationship between food and beverage management and children stunting. This findings is not in line with research conducted by Kuewa *et al.*, (2021) which obtained a p value = 0.841 that has no relationship between drinking water sources and stunting. From the research conducted by Otsuka *et al.*, (2019) it was found that consuming drinking water sourced from tap water was associated with stunting in children compared to those using tank and well water. This can happen when the quality of the tap water used by households does not meet the physical quality conditions compared to tank and well water. Based on the observation, almost all of the respondents do not manage water before it is consumed, the water they consume comes from pipes that are channeled from mountain springs and taken directly from mountain springs, then the water consumed is not processed through cooking or using chemicals, the repeadly use of mossy jerry cans or water storage buckets are one of infection sources.

4. Household Liquid Waste Management

The wastewater sewers that do not meet the requirements can cause a disease since the insects are able to live in dirty places with puddles of water, which result in environmental pollution and become a source of dysentery. The type of waste water reservoir should be absorption wells or public sewers, the waste water reservoirs in yards, gardens, or rice fields can also pollute the soil and attract the flies. The results of this research indicate that the management of household liquid waste has no relationship with stunting. This result is in line with research conducted by Kuewa *et al.*, (2021) with the results of statistical analysis obtained a p value of = 0.006 which there is no relationship between Household Liquid Waste Management and stunting.

5. Household Waste Management

Household waste must be processed in a safe way by transporting it from inside the house to a temporary garbage outside the residence, collecting waste using closed containers, composting organic waste, recycling inorganic waste or disposing of waste materials using in a way that does not endanger the health of local residents. This result indicate that

there is a relationship between household waste management with stunting, the results of statistical tests using chi square show that the p value of 0.001 can be concluded that the p-value <0.05, which means H0 is rejected and H1 is accepted. It means, there is a relationship between management household waste with children stunting. It was found that the results were in line with research conducted by Wulandari (2019) that there was a relationship between environmental sanitation and stunting in Kerkep Health Center, North Bengkulu Regency with a p value = 0.008. This research is also in line with research conducted by Kuewa *et al.*, (2021) with the results of statistical analysis obtained p value = 0.006 that there is a relationship between household waste management and stunting. From the results of observations in household waste management, almost all respondents is in unsafe criteria that the waste is not processed properly, does not separate waste according to type, waste burning, waste disposal in rivers and sea, to there is no household waste disposal site.

CONCLUSION

Based on the research result at Tambora Public Health Center in 2022, it shows that latrine ownership, household wastewater management and washing hands with soap are not associated with stunting. There is a relationship between household food and drink management and Household household waste management with stunting in Tambora Public Health Center in 2022. With this research, it is expected to increase the implementation of proper sanitation, education and work cooperation between parents, the community, health workers, and the government for the establishment of adequate community-based total sanitation.

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