

Home Sanitation and Clean Water Facilities in Stunting Cases at the Lampihong Health Center Area, Balangan

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Abstract:

Stunting is a condition of growth failure in children under five years old (toddlers) due to chronic malnutrition and recurrent infections, especially in the first 1,000 days of life. One of the indirect causes is the availability of clean water and poor sanitation. Lampihong Community Health Center Balangan Regency is one of the areas with the highest stunting cases in South Kalimantan. This study aims to analyze the relationship between home sanitation and clean water facilities with the incidence of stunting in the Lampihong Community Health Center, Balangan Regency. The research method is analytic observational with a case control approach. The research sample consisted of 30 mothers of stunted toddlers as the case group and 30 mothers of non-stunted toddlers as the control group. Data analysis used the chi square test at a 95% confidence level. The research results showed that the majority of stunted toddlers lived in houses with unhealthy water closet, wastewater disposal and waste management that did not meet the requirements. Most of the stunted and non-stunted toddlers use clean water that meets the requirements. The results show that there is a significant relationship between home sanitation that does not meet the requirements and the incidence of stunting in toddlers, but there is no significant relationship between clean water facilities and the incidence of stunting in toddlers in the Lampihong Health Center, Balangan Regency.

Keywords: home sanitation; clean water; stunting; toddler

Introduction

Stunting is a condition of growth failure in children under five years old (toddlers) due to chronic malnutrition so that the child is too short for his age and causes stunted growth characterized by less than optimal brain, mental and cognitive development.^{1,2} Stunting is an ongoing problem in many low- and middle-income countries. UNICEF/WHO and the World Bank in 2018 show that the number of stunted children is around 150.8 million, for 22.2% of children under five worldwide have stunting problems. According to the World Health Organization (WHO) 2020, the prevalence of stunting worldwide is 22% or 149.2 million in 2020. The highest prevalence of stunting on the Asia is occupied by South Asia, followed by Southeast Asia in second place in 2020.³ The prevalence of stunting in Indonesia is quite high compared to other developing countries. Based on the results of the 2021 Indonesian Nutritional Status Study (SSGI), the national prevalence of stunting has decreased by 1.6% per year from 27.7% in 2019 to 24.4% in 2021. South Kalimantan is the province with the 6th highest prevalence of stunting in Indonesia out of 35 provinces in Indonesia. In 2020 the stunting rate in South Kalimantan is at 12.2%, and in 2021 it will be 30%, which means it is still higher than the national prevalence rate.⁴⁻

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Based on SSGI 2021 data, Balangan Regency is among the 5 districts with the highest prevalence in South Kalimantan with a prevalence rate of 32.3%.⁴ Data in August 2021 from the Balangan District Health Office, the health centre with the highest prevalence rate in Balangan Regency is the Lampihong Health Center with a prevalence rate of 28.3% with a total of 296 stunting toddlers.^{4,7,8}

Nutritional problems can be caused by direct causes, for example inadequate food intake and infectious diseases. Indirect causative factors consist of low economic status on food security in the form of availability, affordability and access to nutritious food, low level of education of mothers/caregivers, availability of clean water and poor sanitation.^{1,9}

Sanitation and environmental hygiene factors have an influence on the health of pregnant women and child growth and development, because children under 2 years of age are susceptible to various infections and diseases. According to WHO and UNICEF, sanitation is divided into two criteria, improved and unimproved. It is categorized as improved if the use of sewage disposal facilities is private, the type is a latrine toilet and the final disposal site for feces is in the form of a septic tank or wastewater disposal facility. The United Nations Children's Fund reports that 51 million people commit open defecation. Indonesia is the second highest country in the world to commit open defecation, at 39% of households do not use proper sanitation facilities.²⁹¹⁰ Water and sanitation are closely related to children's height growth. Low sanitary conditions and environmental hygiene will trigger digestive tract disorders, which divert energy for growth towards the body's resistance to infection.¹¹ Based on research results, the more often a child suffers from diarrhea, the greater the threat of stunting. Apart from that, when a child is sick, their appetite usually decreases, resulting in lower nutritional intake.¹²⁻¹⁴

Water plays a very important role in life, especially for drinking and hygiene needs. Toddlers who consume inappropriate drinking

water can increase the risk of the child getting the disease. Infectious diseases are mainly characterized by gastrointestinal disorders so that the toddler's intake does not meet their needs.²⁴¹¹ This condition will have negative implications for children's growth and have serious implications for reducing the quality of a nation's human resources in the future.¹²⁻¹⁴

Research Method

The design of this research is observational analytic with a case-control approach. The population in this study were mothers who had toddlers aged 24-59 months who lived and were registered at the Lampihong Health Center in Balangan District and were divided into two groups. The case group was mothers of toddlers aged 24-59 months who were diagnosed with stunting, and the control group was mothers of toddlers aged 24-59 months who were not diagnosed with stunting. This study used a 1:1 comparison of cases and controls, with the number of cases and controls each being 30 samples selected by simple random sampling technique.

The variables studied included the sanitation condition of the house consisting of toilet ownership, wastewater disposal facilities and household waste management, as well as the condition of clean water in the household. Data collection was done by direct interviews with respondents. Data analysis using univariate and bivariate analysis using the chi square test at a confidence level of 95%.

Results

Research was conducted on 60 mothers consisting of 30 sample in case groups (mothers of stunted toddlers) and 30 sample in control groups (mothers of non-stunting toddlers). Obtained the characteristics of

research subjects based on age and gender as shown in table 1.

Based on Table 1, it is known that based on the age of the majority of respondents aged between 21-35 years both in the case group and the control group with work as housewives and education are classified as low (elementary and junior high school). Age between 21-35 is the age of adulthood that is healthfully safe to get pregnant and have children. Mothers who only work as housewives should have more opportunities to care for and interact with their children but economically, they cannot help the family's economy. It can also be seen that in the majority, especially in the case group, the income of parents of stunted toddlers is low (80%). Parental income is the total salary earned by father and mother in one month. Family income is determined according to the 2021 Balangan Regency minimum wage. It is defined as low if <Rp. 2,877,448.00 and high if >Rp. 2,877,448.00.

Based on Table 2, it can be seen that most of the two groups (cases and controls) already have and use healthy latrines that meet the requirements, but in the control group more people use unhealthy latrines than the control group. The results of statistical tests using the chi square test obtained a p value <0.05, this shows that there is a significant relationship between the type of latrine owned and used and the incidence of stunting in toddlers in the Lampihong Health Center District Balangan Regency. The OR value is 12.42, meaning that toddlers who live in homes with unhealthy toilets are 12.42 times more likely to experience stunting compared to toddlers who live in homes with healthy toilets. The type of healthy latrine that meets the requirements here is a latrine with a septic tank that is used by all family members,

including toddlers, for urination and defecation.

Table 1. The Characteristics of research subjects

Variable	Case (n)	Percentage (%)	Control (n)	Percentage (%)
Mother's Age				
≤ 20 y.o	0	0	1	3,3
21-35 y.o	22	73,3	25	83,4
> 35 y.o	8	26,7	4	13,3
Mother's Job				
Housewives	23	76,7	26	86,7
Civil Servants	3	10,0	1	3,3
Others	4	13,3	3	10,0
Mother's Education				
Low	21	70,0	8	26,7
High	9	30,0	22	73,3
Numbers of Children				
1	17	23,3	10	30,3
2	14	46,7	13	43,3
>2	9	30,0	7	23,3
Toddler's Age				
≥24 - <36 month	15	50,0%	15	50,0%
≥36 - <48 month	8	26,7%	8	26,7%
≥48 - ≤59 month	7	23,3%	7	23,3%
Toddler's Gender				
Boy	15	50,0	15	50,0
Girl	15	50,0	15	50,0
Birth Sequence				
1	9	30,0%	13	43,3%
2	13	43,3%	10	33,3%
>2	8	26,7%	7	23,3%
Parents Income				
Low	24	80,0	17	56,7
High	6	20,0	13	43,3
Total	30	100	30	100

Table 2. The relation between home sanitation and stunting

Home Sanitation	Case Group		Control Group		<i>p-value</i>	OR
	n	%	n	%		
Latrine						
Does not meet requirement	9	30	1	3,33	0,005	12,42
Meet requirement	21	70	29	96,67		
Wastewater Disposal						
Does not meet requirement	28	93,33	13	43,33	0,000	18,30
Meet requirement	2	6,67	17	56,67		
Waste Management						
Does not meet requirement	16	53,33	3	10,0	0,000	10,28
Meet requirement	14	46,67	27	90,0		

Table 3. The relationship between clean water conditions at home and the incidence of stunting among toddlers in the Lampihong Health Center area

Clean Water Condition	Case Group		Control Group		<i>p-value</i>
	n	%	n	%	
Does not meet requirement	9	30	5	16,67	0,229
Meet requirement	21	70	25	83,33	

Based on Table 3, it can be seen that the majority of clean water conditions used by toddlers in the Lampihong Community Health Center area are classified as meeting the requirements, they use drinking water sources from PDAM for daily needs, especially for drinking water sources. However, there are still several groups of cases who use well/river water for cooking and washing food and cutlery, as well as bathing and brushing teeth. From the results of the statistical test analysis, it was found that the p value was > 0.05 , which shows that there is no significant relationship between clean water conditions and the incidence of stunting in toddlers in the Lampihong District Health Center area, Balangan. This is because both the case group and the control group mostly use clean water for their daily needs.

Discussion

Family with high income can fulfill the food supply in the household so that there is sufficient nutrition in the family. On the other hand, if the parents' income is low, food availability in the household, including for pregnant and breastfeeding mothers and their toddlers, tends to be insufficient, which can result in malnutrition in toddlers, including stunting in toddlers. Apart from income, the number of family members also influences the nutritional adequacy of the family.¹⁵

The mother's education level greatly influences whether or not the mother receives information easily. Maternal education is important in relation to nutritional knowledge and nutritional fulfillment for the family, especially for their children.^{16,17}

In this study, toddlers were matched both in terms of age and gender. Based on age, the majority of toddlers are >24 months – 36

months, and the gender is comparable between boy and girl.

Latrine that does not use a septic tank or in other words a “jemplung” latrine where feces and urine are thrown directly into the environment, will cause environmental pollution and become a breeding ground for disease agents which can be transmitted to people around them, including babies/toddlers in the house. Babies/toddlers will easily become sick or experience infections, which can affect their growth and development and are at risk of suffering from stunting. Recurrent infections, especially during the First 1,000 Days of Life (HPK), namely from fetuses to 23-month-old children, are one of the causes of stunting in toddlers.¹⁸

Based on Table 2, it can be seen that the majority of the case group (stunted toddlers) who dispose of wastewater from their homes are classified as not meeting the requirements because they do not have a special waste disposal channel (IPAL) and dispose of their wastewater under the house or into the river near the house. The statistical test showed that the value was $p < 0.05$ and the OR was 18.30, which shows that there is a significant relationship between wastewater disposal that does not meet the requirements and the incidence of stunting in toddlers and toddlers who live in homes with wastewater disposal that does not meet the requirements are at risk 18.3 times to suffer from stunting.

Wastewater that is discharged into the environment around the house and water sources such as rivers results in pollution of the land and water resulting in the surrounding houses and rivers being polluted, the soil and water becoming smelly and becoming a breeding ground for disease agents which can be transmitted to people

around them including babies/toddlers either through direct transmission if using river water or indirect pollution from polluted water and soil.

Table 2 also shows that for waste management, in the case group it was found that more waste management did not meet the requirements, namely that generally they threw rubbish around their house or into the river because there were no landfills around their house. Improper waste management can also cause environmental pollution, both land, water and air which can be a source of infection for the surrounding community, especially babies and toddlers who are still vulnerable and can cause infectious diseases within them.

Recurrent infectious diseases in children are a health problem that is known to affect growth, especially in toddlers. The health status of children under five includes the incidence of chronic diarrhea and acute respiratory tract infections (ARI). The relationship between stunting and infectious diseases is closely related, therefore the body's immune system plays a very important role, so that if nutritional consumption, both macronutrients and micronutrients, is inadequate, it can cause toddlers to lack nutrition which can reduce the body's immunity. This can trigger infectious diseases in toddlers such as ARI and diarrhea.¹⁹⁻²¹ Diarrhea is an important health problem in Indonesia because morbidity and mortality are still high. Diarrhea is one of the important causes of stunting in developing countries. In toddlers who experience chronic diarrhea, malabsorption and loss of nutrients that have been consumed will occur. In this condition, if nutrient loss is not immediately followed up and balanced with adequate intake, growth failure will occur. Checkley et al., analyzed

data from various developing countries and found that the higher the incidence of diarrhea before the first 2 years of life, the higher the prevalence of stunting at the age of 2 years. Another study in Aceh stated that children aged 6-24 months with chronic diarrhea had 5 times the risk of becoming stunted compared to healthy children. This infectious disease is a disease that can cause death, 21% of the 15 million people who died from diarrheal disease were toddlers.^{19,20,22}

Environmental sanitation and cleanliness factors have an influence on the health of pregnant women and the growth and development of children, because children under 2 years old are vulnerable to various infections and diseases. According to WHO and UNICEF, sanitation is divided into two criteria, improved and unimproved. It is categorized as improved if the use of sewage disposal facilities is private, a latrine type toilet and the final disposal site for feces is in the form of a septic tank or wastewater disposal facility. The United Nations Children's Fund reports that 51 million people carried out open defecation. Indonesia is the second highest country in the world that does open defecation, 39% of households do not use good sanitation facilities.¹¹ Water and sanitation are closely related to children's height increase. Low sanitation and environmental cleanliness will trigger digestive tract disorders, which divert energy for growth from the body's resistance to infection.²²²¹ Based on research results, the more often a child suffers from diarrhea, the greater the threat of stunting. Apart from that, when a child is sick, their appetite usually decreases, resulting in lower nutritional intake.¹⁹ So one of the strategies to accelerate stunting prevention is to promote community

behavior towards health, nutrition, sanitation and hygiene, as well as care.¹⁸

Water plays a very important role in life, especially for drinking and hygiene needs. Based on global data, it is estimated that 88% of deaths of 1.8 million children due to diarrhea are caused by unsafe water supply, poor sanitation and hygiene. The criteria for drinking water sources according to WHO and UNICEF consist of improved and unimproved drinking water sources. The source of improved drinking water in question is protected drinking water including tap water, public taps, public hydrants, water terminals, rainwater reservoirs (PAH) or springs and protected wells, drilled wells or pumps, which are at least 10 meters from sewage, waste storage and rubbish disposal. Excludes bottled water, water from street sellers, water sold through tanks, unprotected well and spring water.²³

Toddlers who consume inappropriate drinking water can increase the child's risk of contracting disease. Infectious diseases are mainly characterized by gastrointestinal disorders so that the toddler's intake does not meet his needs. Conditions like this will have negative implications for children's growth and have serious implications for reducing the quality of a nation's human resources in the future.²³

Conclusion

Most of the toddlers are stunted in the Lampihong District Health Center area, Balangan, lives in a house with house sanitation conditions (latrine, wastewater disposal and household waste management) that do not meet the requirements. There is a significant relationship between the sanitary conditions of homes that do not meet health requirements and the incidence of stunting

among toddlers in the Lampihong District Health Center Area. Balangan. Meanwhile, most of the toddlers in the Lampihong District Health Center area, Balangan, uses clean water sources that do not meet the requirements. There is no significant relationship between clean water conditions and the incidence of stunting among toddlers in the Lampihong District Health Center Area, Balangan.

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