Analysis of Personal Hygiene Status and Basic Sanitation with the Incidence of Stunting in Toddler (case study of Pantai Labu Sub-District)

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Abstract

The second sustainable development goal, which aims to achieve food security and eradicate hunger and all kinds of malnutrition by 2030, includes stunting as one of its priorities. WASH and personal hygiene are indirect risk factors for stunting, if environmental sanitation and personal hygiene are poor, it can increase the risk of stunting in toddlers. The purpose of this study was to determine the effect of personal hygiene status and basic sanitation on the incidence of stunting in Pantai Labu sub-district. The research was conducted from August to October 2023 in five villages that have been determined to be the locus of stunting in the district, namely Paluh Sibaji, Regemuk, Denai Kuala, Bagan Serdang, and Sei Tuan Villages. This research method uses a case control design population in this study were mothers of toddlers who were stunted in Pantai Labu District, totaling 55 toddlers. Sample taken by total sampling with a total of 55 stunted toddlers and 55 toddlers who were not stunted and a total sample of 110 toddlers. This research uses primary and secondary data, with data collection using questionnaires and observation sheets. Data analysis using logistic regression test presenting with odds ratio (OR) and 95% confidence interval (95% CI) by using SPSS version 25. The results showed that personal hygiene of toddlers (OR = 4.259; 95% CI 1.749-10.372; p = 0.001), personal hygiene of mothers (OR = 4.571; 95% CI 1.752-11.928; p=0.002), and ownership of latrines (OR=2.260; 95% CI 1.051-4.859; p=0.037) influenced the incidence of stunting in Pantai Labu sub-district. Access to drinking water, waste water disposal facilities, and waste disposal facilities had no effect on the incidence of stunting (p>0.05). Mothers are advised to improve personal hygiene for both mothers and toddlers and always fulfill the criteria for latrines to meet the requirements.

Keywords: Stunting, Personal hygiene, Sanitation

INTRODUCTION

Stunting is one of the top goals of the second sustainable development target, which is to attain food security and end hunger and all forms of malnutrition by 2030 (United Nations, 2023). The World Health Organization (WHO) states that stunting is a nutritional status with height for age that is less than the normal toddler growth standard, which is less than -2.0 standard deviations below the child growth standard. In addition to being linked to numerous other factors like socioeconomic level, dietary intake, infections, maternal nutritional status, and environmental factors, stunting can happen during the first 1000 days of life (WHO, 2018).

Based on WHO data in 2018, 22.9 percent or 154.8 million toddlers around the world suffered from stunting, and among them 87 million stunted toddlers lived in Asia (WHO, 2018). Data from the Indonesian Nutrition Status Study (SSGI) the prevalence of stunting in Indonesia in 2022 was 21.6 percent, a decrease compared to the prevalence of stunting in 2021, which was 24.4 percent. The prevalence of stunting in North Sumatra Province

according to SSGI data in 2022 was 15.8 percent. In North Sumatra province there are still districts / cities with red status which marks the prevalence in the district or city is still above 30 percent. Therefore, North Sumatra Province is included in 12 provinces as a priority locus for reducing the incidence of stunting. Pantai Labu is a stunting locus sub-district with a stunting incidence in 2022 of 108 toddlers (Kemenkes RI, 2022, 2023).

Numerous risk factors, including as low food security for families, inadequate hygiene, insufficient food intake, and several socioeconomic variables, can contribute to stunting. Water, Sanitation, and Hygiene (WASH) can be the dominant direct and indirect factors in stunting. Mechanisms that may act as a link between WASH and stunting include the incidence of diarrhea, earthworm infections, and gastrointestinal subclinicals. (Helmyati, et al 2022).

Based on research by Hasan et al (2022) stated that individuals who have access to inadequate drinking water are at risk of 4.62 times being stunted. In addition to drinking water, other risk factors for stunting include access to hygiene and sanitation. Other studies have also found the same thing, namely the incidence of toddler stunting is correlated with water variables, including both inadequate sources of drinking water and drinking water treatment, and sanitation factors, such using latrines and disposing of toddler waste outside of them (Olo et al., 2021). In line with research conducted by Fibrianti et al (2021) that basic sanitation has a relationship with the incidence of stunting caused by regional conditions in Nganjuk Regency as many as 36 houses (73.5%) do not meet the requirements including waste management, water availability, food management and waste management.

Being a coastal area where most people earn a living from fishing, Pantai Labu sub-district is thought to still have poor environmental sanitation and personal hygiene. This is due to the fact that many people still do not have closed trash cans, which allows garbage to accumulate in yards and turn into a breeding ground for disease-carrying vectors. Additionally, there are still disease-carrying vectors found in the condition of latrines, and community drinking water sources are still found to be less than 10 meters from septic tanks, which increases the risk of disease infection in toddlers. Regarding personal hygiene, mothers do not make a habit of hand washing with hand before cooking, before interacting with toddlers and do not wash their toddlers' hands after playing. In conjunction with this, the researcher is motivated to investigate the relationship between the prevalence of stunting in Pantai Labu subdistrict and the state of basic sanitation and personal hygiene.

METHODS

This type of research is an analytic survey with a case control design with a matching method based on the age of toddlers, gender and family income. The research was conducted in five villages in Pantai Labu Sub-district, namely Paluh Sibaji, Bagan Serdang, Regemuk, Denai Kuala, and Sei Tuan villages. The selection of the location was based on data from the Deli Serdang District Health Office which had determined the location to be a priority village for stunting. This research was conducted from August to October 2023 population in this study were mothers of toddlers who were stunted in Pantai Labu District, totaling 55 toddlers. Sample taken by total sampling with a total of 55 stunted toddlers and 55 toddlers who were not stunted and a total sample of 110 toddlers.

The case population in this study were all toddlers who were stunted with a Z score value of height-for-age-z score (HAZ) toddlers <-2 SD who lived in Pantai Labu District, namely 55 toddlers while the control population in this study were all toddlers who were not stunted or normal (HAZ > -2 SD) who lived in Pantai Labu District, namely 4467 toddlers. The inclusion criteria for the case sample were toddlers aged 0-59 months who were stunted and recorded in the Pantai Labu Health Center medical records, while the control sample was toddlers who were not stunted or in normal conditions (HAZ> -2 SD) who resided in Pantai Labu District.

Instruments in this study used observation sheets and questionnaires, observation sheets were used to measure basic sanitation including access to drinking water, latrine ownership, waste water disposal facilities, and waste disposal facilities, while questionnaires were used to measure personal hygiene of toddlers and personal hygiene of mothers

The effect of toddlers personal hygiene, mother's personal hygiene, access of drinking water, latrine ownership, waste water disposal facilities, and waste disposal facilities on the incidence of stunting was analyzed in bivariate using simple logistic regression we used statistical software SPSS version 25. This research has gone through ethical trials from the Health Research Ethics Committee of the Universitas Sumatera Utara by number 1036/KEPK/USU/2023.

RESULTS

Based on the data collection from 55 case subjects and 55 control subjects, the results are described in the following table:

Table 1. Frequency Distribution of Respondents Based on Characteristics

Characteristics	Case		Control	
	n = 55	%	n = 55	%
Mother's age				
Normal (20-35 years)	38	69.1	46	83.6
High risk (>35 years)	17	30.9	9	16.4
Education				
Elementery school	27	49.1	20	36.4
Junior high school	15	27.3	13	23.6
Senior high school	11	20.0	16	29.1
University	2	3.6	6	10.9
Occupation				
Work	20	36.4	19	34.5
Not working	35	63.6	36	65.5
mother's age at marriage				
<21 years	30	55.6	28	50.9
≥21 years	24	44.4	27	49.1

According to Table 1 above, most of the respondents in the case group were aged normal (20-35 years) 38 people (69.1%) and most of the respondents in the control group were aged normal (20-35 years) 46 people (83.6%). Most of the respondents had a elementary school 27 people (44.1%) respectively in the case group and 20 people (36.4%) respectively in the control group. Based on occupation in the case group and control group, there were more respondents who did not work 35 people (63.6%) and 36 people (65.5%) respectively. most of the respondents were married at the age of <21 years 30 people (55.6%) in the case group and 28 people (50.9%) in the control group.

Table 2. Frequency Distribution of personal hygiene, access to drinking water, latrine ownership, waste water disposal facilities, and waste disposal facilities with Stunting on Toddlers in Pantai Labu Sub-district

Variables	Case		Control	
	n = 55	%	n = 55	%
Toddlers Personal Hygiene				
Bad	25	45.5	9	16.4
Good	30	54.5	46	83.6
Mother's Personal Hygiene				
Bad	22	40.0	7	12.7
Good	33	60.0	48	73.6
Access to Drinking Water				
Unimproved	24	43.6	22	40.0
Safely Managed	31	56.4	33	60.0
Latrine Ownership				
Unqualified	35	63.3	24	43.6
Qualified	20	36.4	31	56.4
Waste Water Disposal Facilities				
Unqualified	50	90.9	53	96.4
Qualified	5	9.1	2	3.6
Waste Disposal Facilities				
Unqualified	54	98.2	51	92.7
Qualified	1	1.8	4	7.3

Based on table 2, most case and control toddlers had good personal hygiene 30 people (54.5%) and 46 people (83.6%). Most mother's personal hygiene are good 33 people (60.0%) in the case group and 48 people (73.6%) in the control group. Most respondents have safely managed access to drinking water 31 people (56.4%) in the case group and 33 people (60%) in the control group. According to latrine ownership most respondents in the case group have unqualified latrine 35 people (63.3%) and most respondents in the control group have qualified latrine 31 people (56.4%). Based on waste water disposal facilities in the case group and control group, there were more respondents who have unqualified waste water disposal facilities 50 people (90.9%) and 53 people (96.4%) respectively. Most of the respondents unqualified waste disposal facilities 54 people (98.2%) in the case group and 51 people (92.7%) in the control group.

Table 3. Relationship between personal hygiene, access to drinking water, latrine ownership, waste water disposal facilities, and waste disposal facilities with Stunting on Toddlers in Pantai Labu Sub-district

Variables	*p-value*	OR	95% CI
Toddlers Personal Hygiene	0.001	4.259	1.749 - 10.372
Mother's Personal Hygiene	0.002	4.571	1.752 - 11.928
Access to Drinking Water	0.699	1.161	0.544 - 2.479
Latrine Ownership	0.037	2.260	1.051 - 4.859
Waste Water Disposal Facilities	0.257	0.377	0.070 - 2.034
Waste Disposal Facilities	0.203	4.235	0.458 - 39.171

Based on the results of simple logistic regression, it was found that the variables of personal hygiene of toddlers, personal hygiene of mothers, and ownership of latrines had a relationship with the incidence of stunting by obtaining a p-value <0.05.

Toddlers who have poor personal hygiene have a risk of 4.259 times being stunted compared to toddlers who have good personal hygiene, then mothers who have poor personal hygiene have a risk of 4.571 times giving birth to stunted toddlers compared to mothers who have good personal hygiene. Furthermore, families who have unqualified latrines have a risk of 2.260 times to suffer from stunting compared to families who have qualified latrines.

DISCUSSION

Relationship between toddlers personal hygiene with Stunting on Toddlers in Pantai Labu Sub-district

The results of the data analysis indicate a relationship between toddlers personal hygiene and the incidence of stunting (p-value=0.001; OR=4.259; 95% CI=1.749 - 10.372) . Poor personal hygiene practices can increase the risk of toddlers being stunted. This is due to the emergence of bacteria due to poor personal hygiene of toddlers, then enter the body through food consumed and will have an impact on infectious diseases such as diarrhea, making

toddlers experience a lack of fluids and nutrients for their bodies which, if not treated immediately, can cause children to experience growth failure, and ultimately will make the child stunted (Audiena & Siagian, 2021; Darmawan et al., 2022).

The mother's habits related to personal hygiene of toddlers encountered during the study were that the mother touched the toddler's eyes or mouth with unclean hands. Unclean hands are generally contaminated with disease-causing bacteria and viruses, which can increase the risk of infection. The mother's habit of poor personal hygiene of toddlers is due to the mother's lack of attention to personal hygiene of toddlers in the care, and the mother feels it is not an important thing to do.

This finding aligns with research by Rismawatiningsih et al (2022) in the working area of the Rejosari Pekanbaru Health Center which found that there were toddlers with poor personal hygiene at a risk of 5.183 times to suffer stunting compared to toddlers with good personal hygiene (p-value <0.001; OR = 5.183; 95% CI = 2.362-11.373). Another study conducted by Rohmah and Arini (2023) found that there was a relationship between personal hygiene practices of toddlers and the incidence of stunting in Mlarak District, Ponorogo (p=0.032; p<0.05).

Relationship between Mother's Personal Hygiene with Stunting on Toddlers in Pantai Labu Sub-district

There is a relationship between mother’s personal hygiene and the incidence of stunting (p-value=0.002; OR=4.571; 95% CI=1.752 - 11.928). This finding aligns with research by Pradana et al (2023) which found that mothers with poor personal hygiene could increase the risk of stunting in toddlers by 5.762 times compared to mothers with good personal hygiene (OR = 5.762; p = 0.012; 95% CI = 1.363-24.362). Social groups can influence hygiene practices, parents have a major role in terms of personal hygiene in children during childhood because those who take care of personal hygiene in infants and young children are mothers. Therefore, it is important for mothers or caregivers to have good personal hygiene in order to reduce the risk of stunting in toddlers.

During the interview, it was found that the reason why mothers do not wash their hands using running water and soap is because they are accustomed to washing their hands using water in a container, besides that mothers whose clean water source uses PDAM have on and off hours which result in no running water available at certain hours. the proliferation of bacteria in the home environment will increase if supported by poor personal hygiene practices, these bacteria will flourish and cause infectious diseases in toddlers and eventually become stunted.

The results of this study are in line with Pradana et al (2023) research on children aged 6-59 months in the Singorojo I Health Center work area, Kendal Regency which found that mothers who practice poor personal hygiene are more likely to experience stunting in toddlers by 5.762 times compared to mothers with good personal hygiene (OR = 5.762; p = 0.012; 95% CI = 1.363-24.362), and other research found that mother's personal hygiene is associated with the incidence of stunting in toddlers (Aisah et al., 2019; Rusdi, 2022).

Relationship between Access to Drinking Water with Stunting on Toddlers in Pantai Labu Sub-district

From the data analysis, it can be seen that there is no relationship between access to drink water and the incidence of stunting (p-value=0.699; OR=1.161; 95% CI=0.544 - 2.479). Most respondents in Pantai Labu District have access to safe drinking water, using refill water and boreholes as drinking water sources. There are several boreholes in each village, and these boreholes are used by the community simultaneously as a source of drinking water. Communities that use boreholes as a source of drinking water also carry out processing before consuming it. Findings in Ethiopia found that drinking water source was linked to stunting rates in children under five years (Kwami et al., 2019).

According to studies, there is no correlation between the prevalence of stunting and drinking water. This is because most residents of Pantai Labu Sub-district have access to clean drinking water. Every community in the Pantai Labu Sub district has multiple boreholes, which are used by the locals as a simultaneous source of drinking water. Prior to consumption, those who obtain their drinking water from boreholes also undergo processing.

This finding aligns with research by Parhusip et al (2023) which demonstrated that the incidence of stunting and access to drinking water were unrelated (p-value=0.183). According to another study, households using tank and well water had a 2.26-fold lower risk of drinking water contamination when using tap water (p-value=0.027 OR= 2.26; 95% CI= 1.03-4.93). (Otsuka et al., 2019). This may happen if domestic tap water quality falls short of tank and well water standards in terms of physical quality. Permenkes RI No. 32/2017 states that drinking water must meet certain physical requirements, including being clear and not cloudy, being tasteless or odorless, being free of chemical contamination, and being free of certain germs that might cause stunting in toddlers.

Relationship between Latrine Ownership with Stunting on Toddlers in Pantai Labu Sub-district

From the data analysis, it can be seen that there is a relationship between ownership latrines and the incidence of stunting (p-value=0.037; OR=2.260; 95% CI=1.051 - 4.859). Latrines are one of the important tools in basic sanitation. A healthy latrine is one that disposes of feces in a special fecal container or septic tank, not into the river or sea. A qualified latrine has the principle of not being a place for the development of insects and disease vector animals such as flies, rats, cockroaches and others, does not cause odor and is able to prevent and break the chain of disease (Kemenkes RI, 2022). The way to break the chain of disease transmission is to use healthy latrines. Disease-carrying vectors come when the latrines used do not fulfill the requirements (Fibrianti et al., 2021).

The Pantai Labu community lacks knowledge of healthy latrine requirements, especially regarding the distance between septic tanks and drinking and clean water sources of at least 10m. The reason for the less than 10-meter distance between the septic tank and the drinking water source is land limitation, related to lighting and lack of ventilation, the condition of the latrines owned by the community in their latrines has no ventilation available and lighting requires assistance from artificial lighting from lamps.

The results of this study are in line with Hasan and Kadarusman's (2019) It demonstrates that toddlers without access to healthy latrines are 5.25 times more likely to experience stunting than toddlers with such access (OR = 5.25; 95% CI: 2.98-9.23; p <0.01). In 2022, a case control study on toddlers in the Pangkajene City Public health center working area revealed that stunting was 7.424 times more common in families with unqualified latrines than in families with qualified latrines (p–value=0,001; OR=7,424; 95% CI=1,497-26,822) (Ilahi et al., 2022).

Relationship between Waste Water Disposal Facilities with Stunting on Toddlers in Pantai Labu Sub-district

From the data analysis, it can be seen that there is no relationship between waste water disposal facilities and the incidence of stunting (p-value=0.257; OR=0.377; 95% CI=0.070 - 2.034). There is no influence between wastewater disposal facilities on the incidence of stunting, this is because the majority of the community in Pantai Labu has not had wastewater disposal facilities qualified. The limited funds owned by respondents also affect the type of wastewater disposal facilities owned by respondents, because there are no funds, respondents cannot make wastewater disposal facilities qualified.

Wastewater disposal facilities can be a risk factor for stunting because if wastewater is not disposed of in watertight and qualified channels, it will pollute clean water sources. Clean water pollution has the potential to cause diarrheal disease. Open and clogged wastewater disposal facilities can be a place for disease-causing vectors to grow.

The results of this study are not in line with the research of Mayasari et al (2022) in the work area of Public health center Candipuro, South Lampung Regency in 31 samples of stunting toddlers (cases) and 62 non-stunting toddlers (controls) showing that there are families with unqualified wastewater disposal facilities 5.207 times the risk of suffering from stunting compared to families with qualified wastewater disposal facilities (p-value = 0.006; OR = 5.207; 95% CI = 1.626-16.67).

Relationship between Waste Disposal Facilities with Stunting on Toddlers in Pantai Labu Sub-district

The data analysis shows that there is no correlation between the prevalence of stunting and waste disposal facilities (p-value=0.203; OR=4.235; 95% CI=0.458 - 39.171). Inadequate waste disposal facilities have the potential to provide a breeding ground for disease vectors that spread across families and communities, contributing to the incidence of stunting. Waste has the same negative effects on the environment and human health as other pollutants, but it acts as a condition or medium for illness rather than as the primary source of disease agents because it serves as a breeding ground for bacteria, parasites, and other disease-carrying organisms (Soraya et al., 2022).

Many people in Pantai Labu sub-district still do not have waste disposal facilities that qualified in accordance with Permenkes No. 3 of 2014, namely having a closed and watertight trash can, and not causing odors. The majority of people in Pantai Labu sub-district do not have waste disposal facilities that meet the requirements in accordance with Permenkes No. 3 of 2014, namely having closed and watertight bins, and not causing odors. Waste management in the community in Pantai Labu sub-district is mostly by collecting waste in the front or back yard of each house, so that the place to collect waste can become a breeding ground for vectors characterized by the presence of vectors such as flies around the garbage dump.

The findings of this investigation are consistent with studies carried by Alfirdausyah et al (2021) It discovered that the prevalence of stunting in toddlers in the Patimpeng Health Centre operating area, Bone Regency, was unrelated to waste disposal facilities (p = 0.000; p>0.05). The study's findings, however, conflict with those of a study conducted in the Jayabakti Village, Pagimana Health Centre region, which found a p-value of 0.006 correlation between child stunting incidence and rubbish disposal methods (Kuewa et al., 2021).

CONCLUSIONS

Based on the results of this study involving 55 case and 55 control subjects related to effect toddlers personal hygiene, mothers personal hygiene, and latrine ownership with The Incidence of Stunting in Toddler. There is no effect between access of drinking water, wastewater disposal facilities, and waste disposal facilities with incidence of stunting in toddlers.

Suggestion to health centers and health workers to educate mothers and toddlers about personal hygiene and the importance of meeting the requirements of eligible latrines in order to prevent an increase in cases of stunting. This education should also target family members so that changes in the personal hygiene practices of mothers and toddlers can be supported by the family

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