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The Effect of Unsuitable Drinking Water Sources and Unsuitable Toilets on the Incidence of Stunting in the Sampanahan District of Kotabaru Regency

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ABSTRACT

This study examines the influence of unsuitable drinking water sources and inadequate sanitation facilities on stunting incidence in Sampanahan District, Kotabaru Regency, using a mixed-methods explanatory sequential design. Quantitative data were collected from 201 mothers of children under five through questionnaires, while qualitative insights were obtained via interviews with five key informants. Statistical analysis using logistic regression showed no significant effect of unsuitable drinking water sources ($p = 0.376$) or inadequate latrines ($p = 0.756$) on stunting incidence. The Nagelkerke R Square value of 0.006 indicated that these factors contributed only 0.6% to stunting cases. However, qualitative findings revealed that community perceptions strongly linked both factors to stunting through indirect pathways such as recurrent infections and environmental contamination. Despite statistical insignificance, field observations confirmed limited access to proper water sources and sanitation facilities, particularly in geographically constrained areas like Rampa Manunggul Village. The study concludes that while unsuitable drinking water sources and latrines may not demonstrate direct statistical correlation with stunting in this context, they remain practically relevant for stunting prevention efforts. These findings suggest the need for integrated interventions that address both direct nutritional factors and underlying environmental determinants to effectively reduce stunting prevalence in similar resource-limited settings.

Keywords : Stunting, Families at Risk of Stunting, Sanitation

INTRODUCTION

Stunting is one of the biggest health problems in society as a whole, especially in developing countries. Stunting is a disorder of children's growth and development due to chronic malnutrition and recurrent infections, characterized by their length or height being below the standards set by the minister in charge of government affairs in the health sector (Hasrimy & Mailin, 2025; Kolhe & Bhat, 2024). Stunting causes children to have short stature due to growth disorders, which mostly occur due to nutritional problems—especially in the early days of a child's life, or better known as the First 1000 Days of Life, which begins in the mother's womb until the age of 24 months (Likhar & Patil, 2022; Pietrobelli, Agosti, & Group, 2017). According to the World Health Organization (WHO), stunting is an important indicator in assessing the quality of public health, because stunting not only impacts individuals, but can also affect the social and economic development of a country, even more so in developing countries such as Indonesia.

Efforts to accelerate the reduction of stunting in toddlers are a government priority program as stipulated in the 2020–2024 RPJMN, with a target of reducing stunting by up to 14% by 2024 (Purnomo, 2025; Wardani, Olfah, Bagjo, & Hartanto, 2025). The stunting rate in Indonesia has consistently decreased since 2013, when it was 37.2%, until 2024, when it stands at 19.8% (Indonesian Nutrition Status Survey, 2024). This figure shows that there are as many as 1–2 children out of 10 Indonesian children who are indicated for stunting (Arief et al., 2025; Sukmawati, Hermayanti, Fadlyana, Maulana, & Mediani, 2025). This condition shows that

stunting cases in Indonesia are still quite high, and the predetermined target of 14% has not been achieved. Therefore, the government needs to make efforts to accelerate and reduce stunting in Indonesia to achieve the Golden Indonesia Vision 2045 (Hamka & Ibrahim, 2025; Sumardiyono, Rahmawati, Siswoyo, & Hidayat, 2025).

Through Presidential Regulation Number 72 of 2021, the government seeks to intervene in efforts to handle stunting in Indonesia, namely with Specific Interventions and Sensitive Interventions (Arini, Handoko, & Maruta, 2025; Astuti, Dwiningwarni, & Atmojo, 2025). Specific Interventions are activities carried out to address the direct causes of stunting, such as providing additional food for pregnant women and toddlers, giving blood supplement tablets, promotion and counseling about nutrition, and others. Meanwhile, Sensitive Interventions are activities carried out to address the indirect causes of stunting, such as drinking water and sanitation problems, nutrition and health problems, education counseling behavior changes, and access to nutritious food.

As a follow-up effort to the Presidential Regulation, BKKBN issued Regulation Number 12 of 2021 concerning the National Action Plan for the Acceleration of Reducing Indonesia's Stunting Rate in 2021–2024. In this agency regulation, as mentioned in article 1 paragraph 11, the target for stunting prevention is called Families at Risk of Stunting. Families at Risk of Stunting are families that have one or more stunting risk factors, consisting of families with children of teenagers, daughters/brides-to-be/pregnant women/children aged 0–23 months/children aged 24–59 months from poor families, low parental education, poor environmental sanitation, and inadequate drinking water.

The condition of stunting prevalence in several provinces in Indonesia has experienced different increases and decreases in each region (Hamzah, Sofilda, & Kusairi, 2025; Sukmawati et al., 2025). There are several provinces with a stagnant stunting prevalence between 2023 and 2024 and that do not experience a large rate of decline in prevalence. Even at the national level, it has only decreased by 1.7% and has not reached the target of reducing stunting in 2024 by 14%. South Kalimantan Province experienced a decrease in the prevalence of stunting by 1.8% compared to the previous year. At the Kotabaru Regency level, where Kotabaru Regency in 2022 became the second highest stunting prevalence in South Kalimantan province, which was 31.6%, it then decreased again in 2023 to 20.1%, and finally there was a return increase to 23.2% in 2024.

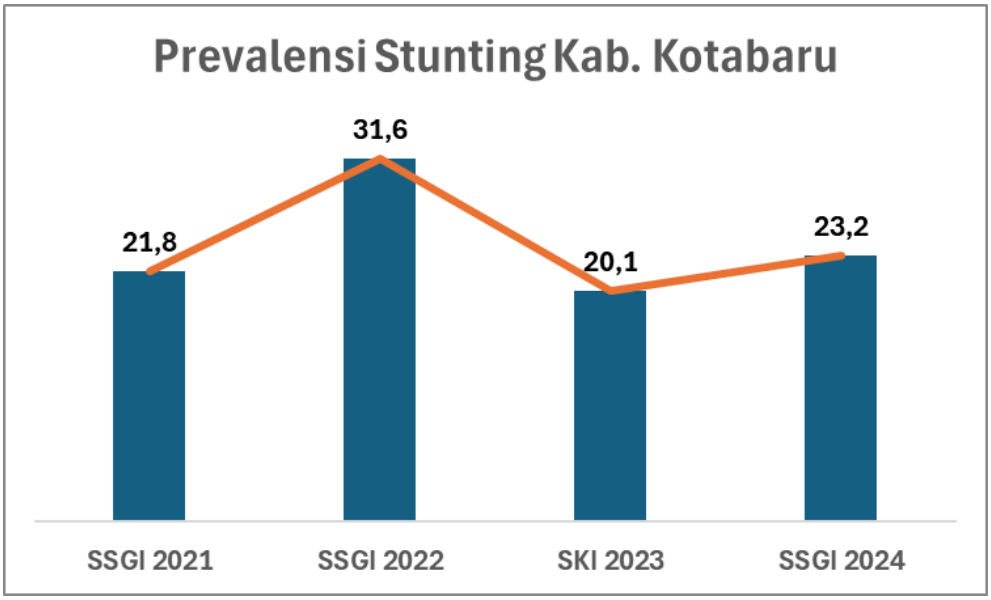

Figure 1. Prevalence of Stunting in Kotabaru Regency for the Period of 2021-2024
Source: SKI 2023 and SSGI 2021, 2022, 2024

Based on the previous explanation, thatFamilies at Risk of Stunting with indicators of Decent Drinking Water, Proper Latrines, PUS 4 Too and the use of modern contraceptives in PUS are closely related to the prevalence rate of Stunting in the region. However, the authors found that there are several areas with a higher level of Families at Risk of Stunting, but the prevalence of stunting is lower. This can result in local governments not being on target in determining the targets to be intervened in next. An example of this case is in Sampanahan District where the prevalence of stunting is only 7.96% (E-PPGBM Ministry of Health, 2024), while families at risk of stunting are 55.04% (Verval KRS BKKBN, 2024). This condition has increased and decreased (fluctuating) from 2021 since Presidential Regulation Number 72 of 2021 was issued.

The occurrence of increases and decreases every year in Sampanahan District is suspected to occur because the strategies and efforts made by the government in intervening in the target of Families at Risk of Stunting are still not optimal (Firdaus & Maulana, 2025; Gemiharto, Samson, & Sukoco, 2025). The factors that cause stunting are poorly improved and handled optimally by the government and related sectors. The government's main focus in preventing stunting is through an approach to families at risk of stunting, one of which is related to family drinking water sources. With unique geographical conditions and a lack of proper drinking water sources in Sampanahan District, the local community has no choice of other drinking water sources. So that people take advantage of the available drinking water sources from ancient times to the present.

According to Prawirohartono (2023), Stunting interventions by simply fixing nutritional problems are often less successful because they only improve a slight increase in height or height. It is estimated that 50% of malnutrition in children is caused by other factors, namely the condition of clean water, sanitation and hygiene of individuals and households (WASH) (Rizaldi, Ali, Rara, & Panjaitan, 2025; van Cooten, Bilal, Gebremedhin, & Spigt, 2019). At the age of 24 months, children from families with poor water sources, water storage, and sanitation have a body length of 1.0 cm shorter than families with good facilities (Checkley, in Prawirohartono, 2023).

Therefore, this study aims to analyze the influence of unsuitable drinking water sources and unsuitable toilets on the incidence of stunting in Sampanahan District, Kotabaru Regency.

The findings are expected to provide empirical evidence to support local governments in designing more precise and effective stunting prevention policies, particularly in regions with similar geographical and socioeconomic conditions.

RESEARCH METHOD

This study used a mixed method, a combination of quantitative and qualitative approaches using an Explanatory Sequential Design with a quantitative approach stage in the first phase which is then continued with a qualitative approach in the second phase. The types used are quantitative correlational and qualitative descriptive. The location and time of the research is in Sampanahan District, Kotabaru Regency in the period between June and August 2025. The data collection technique used was quantitative using Probability Sampling – Proportionate Stratified Random Sampling with a population of all mothers who had toddlers (0-59 months) as many as 402 targets. Then sampling was carried out with the Slovin Margin of Error formula of 0.05, so that a sample of 201 targets was obtained. Data collection was conducted using a research questionnaire with Guttman Scale measurements. Meanwhile, in qualitative using Non Probabilty Sampling – Purposive Sampling with 5 informants using unstructured interviews. Another data collection technique used is to use structured Non-Participant Observation to see the variables studied, such as the source of drinking water used and the type of toilet ownership used by the community. In addition, using literature studies and documentation to the research object. The variables in this study are Stunting Incidence (Y) as a Dependent Variable and Unsuitable Drinking Water Source (X1) and Unsuitable Latrines (X2) as Independent Variables. The Quantitative Data Validity Test uses the Reproducibility and Scalability Coefficient for validity, as well as the Alpha Croanbanch test reliability coefficient for reliability. Meanwhile, Qualitative uses source triangulation and technique triangulation. Data analysis techniques were quantitatively using Descriptive Statistics, Multicollinearity Test (Tolerance > 0.10 / VIF < 10), Overall Model Fit Test (-2LogL Block Number 1 < -2LogL Block Number 0), Nagelkerke's R Square Test (Coefficient of Determination), Model Suitability Test (p-value ≥ 0.05), Classification Matrix, Wald Test (Prob < 0.05) and Logistic Regression Analysis. Meanwhile, Qualitative uses Data Reduction, Data Display, Conclusion Drawing.

RESULTS AND DISCUSSION

Table 1. Characteristics of Respondents by Primary Source of Drinking Water

Types of Drinking Water Sources	Frequency	Percent	Valid Percent	Eligibility Categories
Rainwater	22	10,9	10,9	Not Eligible
Bottled Water/Refillable	83	41,3	41,3	Eligible
Surface Water (Rivers/Lakes/Reservoirs/Ponds/Irrigation)	4	2,0	2,0	Not Eligible
Unprotected Springs	29	14,4	14,4	Not Eligible
Sheltered Springs	11	5,5	5,5	Eligible
Drilled Well/Pump	1	0,5	0,5	Eligible
Unprotected Wells	43	21,4	21,4	Not Eligible
Sheltered Wells	8	4,0	4,0	Eligible
Total	**201**	**100,0**	**100,0**	

Source: Primary data of research results, 2025

Based on table 1 above, it can be seen that the main source of drinking water used the most is Bottled Water/Refillable Water with a total of 83 respondents or 41.3%. Then the next most are Unprotected Wells with a total of 43 respondents or 21.4%. Some communities still use the available drinking water sources in their area. In fact, there are still many people who lack drinking water sources so they use rainwater to drink.

Figure 2. Community Drinking Water Sources in Gunung Batu Besar Village, Sampanahan District
Source: Researcher field documentation, 2025

Table 2. Characteristics of Respondents Based on Source of Unsuitable Drinking Water

Variable	Frequency	Percent	Valid Percent
Decent Drinking Water Sources	103	51,2	51,2
Unsuitable Drinking Water Sources	98	48,8	48,8
Total	**201**	**100,0**	**100,0**

Based on table 2 above, it can be concluded that as many as 98 or 48.8% of the total number of respondents consume drinking water that is not suitable for consumption. The high level of unsuitable drinking water consumption is still due to geographical conditions and limited sources of proper drinking water in the region.

Table 3. Characteristics of Villages Based on Unsuitable Drinking Water Sources

Village	Unsuitable Drinking Water Sources				Total	
	Proper	%	Not Eligible	%		
Banjarsari	11	37,93	18	62,07	29	14,43
Basuang	6	66,67	3	33,33	9	4,48
Gunung Batu Besar	22	44,00	28	56,00	50	24,88
Papa'an	14	87,50	2	12,50	16	7,96
Rampa Manunggul	9	19,57	37	80,43	46	22,89
Sampanahan	5	100,00	0	0,00	5	2,49

Sampanahan Hilir	2	66,67	1	33,33	3	1,49
Sepapah	9	100,00	0	0,00	9	4,48
Sukamaju	20	83,33	4	16,67	24	11,94
Sungai Betung	5	50,00	5	50,00	10	4,98
Total	**103**	**51,24**	**98**	**48,76**	**201**	**100,00**

Source: Primary data of research results, 2025

Based on table 3 above, the percentage of respondents with the highest type of unsuitable drinking water source is in Rampa Manunggul village with a percentage of 80.4% of the total respondents in the village. The geographical condition of Rampa Manunggul Village and its difficult access make the local community lack a source of drinking water that is suitable for daily consumption.

Table 4. Characteristics of Respondents Based on Latrine Ownership

Types of Drinking Water Sources	Frequency	Percent	Valid Percent	Eligibility Categories
Self-Owned Toilet with Goose Neck and Septic Tank/WWTP	72	35,8	35,8	Eligible
Latrines in Communal Toilets with Goose Neck and Septic Tank/WWTP	0	0,0	0,0	Eligible
Other	129	64,2	64,2	Not Eligible
None	0	0,0	0	Not Eligible
Total	**201**	**100,0**	**100,0**	

Source: Primary data of research results, 2025

Based on table 4 above, it can be seen that the ownership of the most used latrines is other types of latrines, or non-standardized latrines such as latrines that do not have septic tanks or latrines that do not have toilets, which is as much as 129 or 64.2%. This is due to the geographical conditions and coastal soil structure that do not support the community to make latrines with septic tanks. In addition, non-standardized latrines are considered more practical and do not require large costs.

Figure 3. Condition of One of the Community Latrines in Sampanahan District
Source: Researcher field documentation, 2025

Table 5. Characteristics of Respondents Based on Unsuitable Latrines

Variable	Frequency	Percent	Valid Percent
Decent Latrines	72	35,8	35,8
Toilets Are Not Suitable	129	64,2	64,2
Total	**201**	**100,0**	**100,0**

Source: Primary data of research results, 2025

Based on table 5 above, it can be concluded that as many as 129 or 64.2% of the total number of respondents use latrines that are not suitable or do not meet the eligibility standards. The high number is still due to unfavorable geographical conditions.

Table 6. Characteristics of Villages Based on Unsuitable Sheep

Village	Unsuitable Drinking Water Sources				Total	
	Proper	%	Not Eligible	%		
Banjarsari	29	100,0	0	0,0	29	14,43
Basuang	2	22,2	7	77,8	9	4,48
Gunung Batu Besar	7	14,0	43	86,0	50	24,88
Papa'an	2	12,5	14	87,5	16	7,96
Rampa Manunggul	0	0,0	46	100,0	46	22,89
Sampanahan	5	100,0	0	0,00	5	2,49
Sampanahan Hilir	3	100,0	0	0,00	3	1,49
Sepapah	1	11,1	8	88,9	9	4,48
Sukamaju	19	79,2	5	20,8	24	11,94
Sungai Betung	4	40,0	6	60,0	10	4,98
Total	**72**	**35,8**	**129**	**64,2**	**201**	**100,00**

Source: Primary data of research results, 2025

Based on table 6 above, the highest percentage of respondents with unsuitable latrines is in Rampa Manunggul village with a percentage of 100% of the total respondents in the village. The geographical condition of Rampa Manunggul Village and its difficult access also make it difficult for the local community to make access to proper latrines. The soil structure is not supportive to make a latrine complete with a septic tank, so that all respondents in the village do not have a proper latrines.

Table 7. Characteristics of Respondents Based on Stunting Incidence

Variable	Frequency	Percent	Valid Percent
Stunting Incidence	60	29,9	29,9
No Stunting Incidence	141	70,1	70,1
Total	**201**	**100,0**	**100,0**

Source: Primary data of research results, 2025

Based on table 7 above, it can be concluded that the incidence *of stunting* is still low, but has not reached the national target of 14%. So this figure is still considered quite high based on the national target that has been set by the government.

Table 8. Characteristics of Villages Based on Stunting Incidence

Village	Stunting Incidence				Total	
	Yes	%	Not	%		
Banjarsari	8	27,6	21	72,4	29	14,43
Basuang	5	55,6	4	44,4	9	4,48
Gunung Batu Besar	16	32,0	34	68,0	50	24,88
Papa'an	2	12,5	14	87,5	16	7,96
Rampa Manunggul	12	26,1	34	73,9	46	22,89
Sampanahan	4	80,0	1	20,0	5	2,49
Sampanahan Hilir	3	100,0	0	0,0	3	1,49
Sepapah	2	22,2	7	77,8	9	4,48
Sukamaju	4	16,7	20	83,3	24	11,94
Sungai Betung	4	40,0	6	60,0	10	4,98
Total	**60**	**29,9**	**141**	**70,1**	**201**	**100,00**

Source: Primary data of research results, 2025

Based on table 8 above, the percentage of respondents with the highest incidence of *stunting* is in Sampanahan Hilir village with a percentage of 100% of the total respondents in the village. Although the distribution of respondents is small in the village, all respondents are included in the respondents who experience *stunting*.

Table 9. Effect of Unsuitable Drinking Water Sources on Stunting Incidence

			Stunting Incidence		Total
			No	Yes	
Unsuitable Drinking Water Sources	**Eligible**	Count	75	28	103
		% of Total	37,3%	13,9%	51,2%
	Uneligible	Count	66	32 %	98
		% of Total	32,8%	15,9%	48,8%

Total	Count	141	60	201
	% of Total	70,1%	29,9%	100,0%

Source: Primary data of research results, 2025

Based on table 6 above, the results were obtained that as many as 75 children (37.3%) from families with decent drinking water did not experience *stunting*. Meanwhile, as many as 28 children (13.9%) from families with drinking water sources are eligible for *stunting*. Then as many as 66 children (32.8%) from families with unsuitable drinking water sources did not experience *stunting*. Meanwhile, as many as 32 children (15.9%) from families with drinking water sources are not eligible to experience *stunting*. It can be seen that children who come from families with unsuitable drinking water tend to experience a higher incidence of *stunting* (15.9%) compared to children who come from families who use proper drinking water sources (13.9%), although the difference between the two is still relatively small and cannot be concluded to be statistically significant.

Table 10. The Effect of Unsuitable Toilets on Stunting Incidence

			Stunting Incidence		Total
			No	Yes	
Toilets Are Not Suitable	**Eligible**	Count	50	22	72
		% of Total	24,9%	10,9%	35,8%
	Uneligible	Count	91	38	129
		% of Total	45,3%	18,9%	64,2%
Total		Count	141	60	201
		% of Total	70,1%	29,9%	100,0%

Source: Primary data of research results, 2025

Based on table 10 above, it was found that as many as 50 children (24.9%) from families with decent latrines did not experience *stunting*. Meanwhile, 22 children (18.9%) from families with latrines are eligible for *stunting*. Then as many as 91 children (45.3%) from families with unsuitable latrines did not experience *stunting*. Meanwhile, 38 children (18.9%) from families with latrines are not eligible for *stunting*. It can be seen that children who come from families with inappropriate latrines tend to experience a higher incidence of stunting (18.9%) compared to children who come from families with proper latrines (10.9%), although the difference between the two is still relatively small and cannot be concluded to be statistically significant.

Multicollinearity Test

Table 11. Multicollinearity Test

Variable	Tolerance	VIF
Unsuitable Drinking Water Sources	0,972	1,029
Toilets Are Not Suitable	0,972	1,029

Source: Primary data of research results, 2025

Provided that the Tolerance value > 0.10 and the VIF value < 10, the results of the multicollinearity test in table 11 above are qualified and there is no multicollinearity between variables.

1. Test Overall Model Fit

Table 12. Test Overall Model Fit

-2LogL (block number = 0)	245,156
-2LogL (block number = 1)	244,243
-2LogL Drop	0,913

Source: Primary data of research results, 2025

With the condition of -2LogL Block Number 1 < -2LogL Block Number 0, the results of the Overall Model Fit test in table 3.12 above show a good regression model or it can be said that the hypothesized model is fit with the data.

2. Nagelkerke's R Square Test

Table 13. Nagelkerke's R Square Test

- 2 Log Likelihood	Cox & Snell R Square	Nagelkerke R Square
244,243	0,004	0,006

Source: Primary data of research results, 2025

Based on table 13 above, it is shown that the variables of unsuitable drinking water sources and unsuitable latrines contribute 0.6% to the variable of *stunting* incidence, and the remaining 99.4% are explained by other factors or variables outside this study model.

3. Model Fit Test

Table 14. Model Fit Test

Chi-Square	Df	Sig.
4,533	2	0,104

Source: Primary data of research results, 2025

Based on table 14 above, it shows that the model hypothesized in this study is feasible or fit with a Chi-Square value of 4.533 with a significance of 0.104 or > 0.05.

4. Classification Matrix

Table 15. Classification Matrix

Classification Table[a]

Observed			Predicted		
			Stunting Incidence (Y)		Percentage Correct
			No	Yes	
Step 1	Stunting Incidence (Y)	No	141	0	100,0
		Yes	60	0	0,0
	Overall Percentage				**70,1**

a. The cut value is, 500
b. Source: Primary data of research results, 2025

Based on table 15 above, it shows that the model's ability to predict the occurrence of *stunting* or not is 70.1%.

5. Wald Test

Table 16. Wald Test

Variable	B	S.E.	Wald	Df	Sig.	Exp(B)

Unsuitable Drinking Water Sources	0,278	0,314	0,784	1	0,376	1,320
Toilets Are Not Suitable	-0,102	0,326	0,097	1	0,756	0,903
Constant	-0,929	0,285	10,590	1	0,001	0,395

Source: Primary data of research results, 2025

Based on table 16 above, it can be seen in the Sig. column for the variable Unsuitable Drinking Water Source (X1) has no effect on the incidence of *Stunting* with a significance level of 0.376 or > 0.05. For the Variable of Unsuitable Toilets (X2), it also had no effect on the incidence *of Stunting* with a significance level of 0.756 or > 0.05. So that all independent variables do not affect the dependent variables in this study.

6. Logistic Regression Analysis

Based on table 3.16 above, the logistic regression equation can be formulated as follows:

$$\mathbf{(y=1) = -0.929 + 0.278\ X1 - 0.102\ X2 + \varepsilon}$$

a. The value of the constant (α) is -0.929, meaning that if the independent variable has a fixed value (cash), then stunting occurs of -0.929
b. The variable of Unsuitable Drinking Water Source (X1) has a positive coefficient value of 0.278, meaning that if the Unsuitable Drinking Water Source increases by one percent assuming the value of other variables remains (constant), it will increase the likelihood of stunting by 0.278 percent. An Exp(B) value of 1.320 indicates that a family with an unsuitable drinking water source is 1.320 times more likely to experience a stunting event compared to a decent drinking water source, assuming other variables are of fixed (constant) value. However, the significance value (p=0.376) > 0.05 which means it is not statistically significant.
c. The variable of Unsuitable Toilets (X2) has a negative coefficient value of -0.102, meaning that if the Unsuitable Toilets experience an increase of one percent, assuming the value of other variables remains (constant), it will reduce the likelihood of stunting by 0.220 percent. An Exp(B) value of 0.903 indicates that families with unsuitable latrines have a lower tendency to experience Stunting compared to families with decent latrines with a chance of Stunting of 0.903 times compared to families with decent latrines, assuming other variables are fixed (constant). However, the significance value (p=0.756(> 0.05 which means that it is not statistically significant.

7. Results of Qualitative Data Analysis

a. In the Variable of Unsuitable Drinking Water Sources for Stunting Incidence, as many as 3 out of 5 Informants stated that unsuitable Drinking Water Sources had an effect on Stunting Incidence. So that the results of data analysis through a qualitative approach can be concluded that most of the Informants stated that Unsuitable Drinking Water Sources have an effect on Stunting Incidence. This is certainly not in line with the results of data analysis through the quantitative approach that has been carried out previously where the quantitative approach states that Unsuitable Drinking Water Sources have no effect on Stunting Incidence.
b. In the Variable of Unsuitable Latrines for Stunting Incidence, as many as 4 out of 5 Informants stated that unsuitable Latrines had an effect on Stunting Incidence. So that the results of data analysis through a qualitative approach can be concluded that most of the Informants stated that the Unsuitable Latrines had an effect on the incidence of Stunting or Ha2 was accepted. This is certainly not in line with the results of data analysis through

a quantitative approach that has been carried out previously where the quantitative approach states that Unsuitable Latrines have no effect on Stunting Incidence.

The Influence of Unsuitable Drinking Water Sources on Stunting Incidence

The results of the study using a quantitative approach showed that there was no significant influence of Unsuitable Drinking Water Sources on Stunting Incidence with a significance level of 0.376 or > 0.05. This ineffectiveness can also be seen from table 3.9 above, where out of a total of 98 respondents who consumed inappropriate drinking water, only 32 children experienced stunting or 15.9% of the total respondents.

However, in the results of the study using a qualitative approach, it was found that as many as 3 out of 5 informants stated that unsuitable drinking water sources had an effect on the incidence of stunting. Most of the informants stated that improper drinking water can affect the growth and development process in children. It's just that the factor of inappropriate drinking water is a factor that affects the incidence of stunting indirectly, namely through several intermediaries, such as the processing method and the child's immunity. With inappropriate drinking water, the child becomes diarrhea and as a result, the child's growth becomes inhibited, resulting in stunting.

Based on the results of observations and findings from the author, most villages in the study area have limitations in drinking water sources. As is the case in Rampa Manunggul Village, which is the highest village with the level of unsuitable drinking water sources based on the results of previous descriptive statistical tests, where in the village the source of drinking water only comes from a drinking water source in the form of a pond or reservoir that is rarely maintained by the Village Government and the surrounding community. The lack of spring water sources that can be used for drinking by the local community is still the main obstacle. Several spring water sources used by the community from ancient times have been polluted by the activities of the local community and the activities of several companies operating around the spring source. The lack of care for the source of the spring, both by the village government and by the surrounding community, is also the cause of the change in the content in the water from feasible to unfeasible. To access proper drinking water, water distillation equipment is needed which requires a fairly high cost and is not fully budgeted by the Village Government. Another option is to use bottled drinking water, but it also requires a fairly high cost if used for daily drinking water by families.

The conclusion of the results of this study both through quantitative and qualitative approaches is that although statistically unsuitable drinking water does not have a significant influence on Stunting Incidence, qualitatively this factor is still considered to have an indirect influence on Stunting Incidence in children. Perception and experience in the field show that there is an important relationship between the two variables, so that this factor is still considered to play a role in the incidence of stunting by stakeholders. This indicates that the drinking water factor remains relevant and still needs to be considered in policy determination for stunting interventions, especially in efforts to prevent new stunting incidents.

The Influence of Unsuitable Toilets on Stunting Incidence

The results of the study using a quantitative approach showed that there was no significant influence of Unsuitable Latrines on Stunting Incidence with a significance level of 0.756 or > 0.05. This ineffectiveness can also be seen from table 3.10 above, where out of a total of 129 respondents who had unsuitable latrines, only 38 respondents or 18.9% of the total respondents experienced Stunting Incidents.

In the results of the study using a qualitative approach, it was found that as many as 4 out of 5 informants stated that inappropriate toilets had an effect on the incidence of stunting,

especially in environmental pollution conditions that interfered with children's growth, resulting in children becoming stunted. Similar to the previous variable of unsuitable drinking water sources, the unsuitable latrine factor is an indirect factor that affects the incidence of stunting, because its influence is through air pollution and pollution of the surrounding environment. Air pollution and environmental pollution have a negative impact on children living in the area, as a result of which children are more susceptible to diseases and infections that can inhibit growth and development, so that there is the potential for stunting in children.

Based on the results of observations and findings from the author, most villages in the study area have limitations in fulfilling proper latrines. As is the case in Rampa Manunggul Village, which is the highest village with an unsuitable level of latrines based on the results of previous descriptive statistical tests, where in the village it is not possible to make latrines complete with septic tanks. Rampa Manunggul Village and most of the villages in the research site are coastal areas of the river with soil that is not supportive for the construction of septic tanks. Unfavorable geographical conditions make people have no choice for making proper latrines. On average, people's toilets are only in the form of toilets without septic tanks, and do not even have toilets. This condition has been going on for a long time in the community. Several Village Governments have tried to meet the needs of proper sanitation by making Public Latrines, but some people do not use them and prefer Latrines available in their respective homes. This condition results in environmental pollution, where germs and bacteria pollute the environment of the surrounding community, including air and drinking water. As a result, many diseases appear that can attack children who have low levels of immunity and can ultimately hinder the growth and development of the child.

The conclusion of the results of this study both through quantitative and qualitative approaches is that although statistically unsuitable toilets do not have a significant influence on Stunting Incidence, qualitatively these factors are still considered to have an indirect influence on Stunting Incidence in children. Perception and experience in the field show that there is an important relationship between the two variables, so that this factor is still considered to play a role in the incidence of stunting by stakeholders. The sanitation aspect, especially the availability of proper toilets, is still considered an important factor that can prevent stunting. The difference in results from the previous quantitative approach was due to the presence of other dominant factors that had a statistically influential influence, such as parenting, exclusive breastfeeding and other factors that were not studied in this study. This indicates that the latrine ownership factor remains relevant and still needs to be considered in policy determination for stunting interventions, especially in efforts to prevent new stunting incidents.

CONCLUSION

Quantitative analysis showed no significant effect of unsuitable drinking water sources (X1) or unsuitable toilets (X2) on stunting incidence (Y), with significance levels of 0.376 and 0.756 respectively, both exceeding the 0.05 threshold. However, qualitative findings indicate that both factors do impact stunting incidence. Despite the discrepancies between quantitative and qualitative results, drinking water quality and toilet ownership remain relevant considerations in shaping policies for stunting interventions, particularly in preventing new cases. Future research could focus on integrating mixed-method approaches with larger, more diverse samples to better capture the complex interactions between environmental factors and stunting, enhancing the evidence base for targeted policy decisions.

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