JOURNAL LA MEDIHEALTICO

VOL. 04, ISSUE 05 (219-226), 2023
DOI: 10.37899/journallamedihealtico.v4i5.849

The Influence of Environmental Sanitation Factors and Healthy Homes on Incident Stunting in the Mamboro Health Center Working Area, Palu City

Ketut Suarayasa[1], Miranti[1]

[1]*Department of Public Health Sciences and Community Medicine, Tadulako University Faculty of Medicine*

**Corresponding Author: Ketut Suarayasa*

Article Info

Article history:
Received 24 October 2023
Received in revised form 13 November 2023
Accepted 25 November 2023

Keywords:
Clean Water Facilities
Latrine Facilities
Waste Disposal Facilities
Healthy Homes
Stunting

Abstract

The stunting rate in Palu City according to the results of the 2022 Indonesian Nutrition Status Survey (SSGI) is 24.7% or an increase of 0.7 digits compared to the 2021 figure of 23.9%. One of the sub-districts in the city of Palu which has a high prevalence of stunting is Taipa Sub-District in the Mamboro Health Center area with 24.7% or 108 cases out of 437 toddlers measured. The aim of the research is to analyze the relationship between healthy house factors and environmental sanitation with the incidence of stunting in the Mamboro Health Center working area. The type of research used is quantitative research with a case control research design. The sample size was 102 stunted toddlers in the case group and 102 normal toddlers in the control group. The results of the study showed that the healthy house factor had a significant relationship with the incidence of stunting with a value of p=0.002 (p<0.05). Respondents who own a house that does not meet the healthy requirements have a 2.82 times greater risk of having a stunted child (OR=2.82). Meanwhile, clean water facilities, latrine facilities, waste disposal facilities and waste disposal facilities have no relationship with the incidence of stunting (p<0.05). There is a relationship between healthy homes and the incidence of stunting in the Mamboro Community Health Center area (p=0.002), where respondents who have unhealthy homes are 2.82 times more likely to have stunted children (OR = 2.82).

Introduction

Stunting is a nutritional problem in society, especially in toddlers. Stunting is measured using the Body Length by Age or Body Height by Age index which can be categorized as stunted (short) or severely stunted (very short). A toddler who is said to be stunted if the Z-score value for height for age is below the normal line, namely less than -2SD and is said to be short or less than -3SD is categorized as very short (WHO (World Health Organization), 2016).

Based on data from the Indonesian Toddler Nutrition Status Survey (SSGBI) in 2019, the prevalence of stunting in Indonesia fell to 27.7%. This means that around one in four children under five, namely more than eight million children in Indonesia, are stunted. This figure is still considered high when compared with the threshold set by WHO, namely 20% and Indonesia's national target, namely 14% in 2024 (Kemenkes, 2023)(Kemenkes RI, 2017) .

Data from the 2021 Indonesian Nutritional Status Study shows that the prevalence of stunting (TB/Age) by province among children under five in Central Sulawesi Province is still quite high. Central Sulawesi is one of the 10 provinces that has the highest stunting prevalence rate in Indonesia, where Central Sulawesi ranks 8th with a stunting prevalence of 29.7%, quite far from the national prevalence of 24.4% (Dinkes Provinsi Sulteng, 2021) . Meanwhile, the

ISSN 2721-1215 (Print), ISSN 2721-1231 (Online)

stunting rate in Palu City according to the results of the 2022 Indonesian Nutrition Status Survey (SSGI) is 24.7% or an increase of 0.7 digits compared to the 2021 figure of 23.9%. One of the sub-districts in the city of Palu which has a high prevalence of stunting is Taipa Sub-District with 24.7% or 108 cases out of 437 toddlers measured. This figure makes the Taipa sub-district in the Mamboro Health Center area the sub-district with the highest stunting cases in Palu City (Dinas Kesehatan Kota Palu, 2021).

According to WHO (2013), the direct causes of stunting in children are household and family factors, inadequate MPASI (complementary foods for breast milk), breastfeeding practices, infection, and factors that cannot be modified (child's age and gender). Indirect factors causing stunting are social and community factors, namely political economy, health and health services, education, social and cultural, agricultural systems and food, water, sanitation and environmental security systems (UNICEF Indonesia, 2022).

The sanitation problem is an ongoing problem in Indonesia. According to WHO (2017), Indonesia is ranked third in countries with the worst or inadequate sanitation. According to the Central Statistics Agency (BPS), only 67.89% of households in Indonesia have adequate sanitation or 45.60 million households (Ministry of Health, 2017). Initial observation results in the research area indicate that there are environmental sanitation problems (Rahayu et al., 2018). The aim of the research is to analyze the relationship between healthy house factors and environmental sanitation with the incidence of stunting in the Mamboro Health Center working area.

Methods

The type of research used is quantitative research with a case control research design. The research begins by measuring the dependent variable, while the independent variable is measured retrospectively (Alexander et al., 2015). Place and time of research in May - July 2023 in the working area of the Mamboro Health Center. The sample size was 102 stunted toddlers in the case group and 102 normal toddlers in the control group. Control toddlers were taken according to the area of toddlers with stunting cases. Data analysis in the form of respondent characteristics in the form of distribution of father's and mother's education, father's and mother's occupation, father's and mother's income, parity and age of respondents. Bivariate analysis looked at the relationship between environmental sanitation factors which include clean water facilities, latrine facilities, waste water disposal facilities and waste disposal facilities and healthy house factors with the incidence of stunting in the Mamboro work area using chi-square.

Results and Discussion

Respondent Characteristics

The respondents of this study were mothers of stunted toddlers (cases) and mothers of non-stunting toddlers (controls).

Table 1. Characteristics of Case and Control Group Respondents in the Mamboro Health Center Working Area in 2023

Charaterisitic		Nutritional Status			
		Stunting (case)		Normal (Control)	
		n	%	n	%
Father's education	Risky (SD-SMP)	50	49.0	49	48.0
	Non Risky (SMA - PT)	52	51.0	53	52.0
	Total	102	100.0	102	100.0
Mother's education	Risky (SD-SMP)	52	51.0	45	44,1
	Non Risky (SMA - PT)	50	49.0	57	55,9

	Total	102	100.0	102	100.0
Father's Job	Doesn't Work	6	5,9	8	7,8
	Work	96	94,1	94	92,2
	Total	102	100	102	100
Mother's Job	Doesn't Work	88	86,3	82	80,4
	Work	14	13,7	20	19,6
	Total	102	100	102	100
Father's Income	Low (< 1.500.000	66	64,7	62	60,8
	Medium (1.500.000 - 3.500.000)	31	30,4	32	31,4
	High (> 3.500.000	5	4,9	8	7,8
	Total	102	100	102	100
Mother's Income	Low (< 1.500.000	96	94,1	95	93,1
	Medium (1.500.000 - 3.500.000)	6	5,9	4	3,9
	High (> 3.500.000	0	0	3	2,9
	Total	102	100	102	100
Age Group	> 20 age	2	2.0	6	5.8
	20 - 35 age	70	68.6	67	65.7
	> 35 age	30	29.4	29	28.5
	Total	102	100.0	102	100.0
Paritas	<= 2 child	32	31.4	58	56.9
	> 2 child	70	68.6	44	43.1
	Total	102	100.0	102	100.0

Source: *Primary Data, 2023*

From the table above, it can be seen that the characteristics of respondents in the case and control groups do not have significant differences. Prominent differences were seen in the characteristics based on maternal education (high school – university) in the case group at 49%, lower than the control group at 55.9%. Another difference is in parity, where in the group of parity cases > 2 children it is 68.6%. Meanwhile, in the control group, the majority of parity <= 2 children (56.9%).

Univariate Analysis

The environmental sanitation factors studied include: clean water facilities, latrine facilities, SPAL facilities and waste disposal facilities. The results are as follows :

Table 2. Description of Environmental Factors and Healthy Homes in Case and Control Groups in the Mamboro Health Center Area in 2023

Variable	**Nutritional Status**			
	Stunting (case)		**Normal (Control)**	
	n	%	n	%
Clean Water Facilities				
Not eligible	29	28,4	26	25,5
Qualify	73	71,6	76	74,5

Total	102	100	102	100
Toilet Facilities				
Not eligible	22	21,6	22	21,6
Qualify	80	78,4	80	78,4
Total	102	100	102	100
Waste water disposal facilities				
Not eligible	72	70,6	71	69,6
Qualify	30	29,4	31	30,4
Total	102	100	102	100
Waste Disposal Facilities				
None	47	46,1	35	34,3
There are	55	53,9	67	65,7
Total	102	100	102	100
Healthy Home				
Not eligible	47	64,0	35	38,7
Qualify	55	36,0	67	61,3
Total	102	100	102	100

Source: *Primary Data, 2023*

The data above shows that more respondents in the case group had sanitation facilities that did not meet the requirements compared to the control group, such as clean water facilities, waste water disposal facilities (SPAL), waste disposal facilities and healthy homes. Meanwhile, for latrine facilities, both the case and control groups had latrine facilities that did not meet the requirements, amounting to 21.6%. The data in table 2 also shows that the majority of sanitation facilities owned by respondents in the case and control groups have met health requirements, except for waste water disposal facilities (SPAL), both case groups and controls have SPALs that do not meet the requirements of 70.6% (group cases) and 69.6% (control group). Another difference is in healthy homes, where most of the case group has homes that do not meet health requirements (64.0%) compared to the control group (38.7%).

Bivariate Analysis

To determine the effect of environmental sanitation on the incidence of stunting in the Mamboro Community Health Center area, a Chi-Square test was carried out with the following results:

Table 3. Effect of Environmental Sanitation on Stunting Incidents in the Mamboro Health Center Area in 2023

Environment sanitation	**Nutritional Status**				***p***	**OR (95% CI Lower - Upper)**
	Stunting (Case)		**Normal (Control)**			
	n	%	n	%		
Clean Water Facilities					***0,636***	*1,161*
Not eligible	29	28,4	26	25,5		*(0,6 – 2,1)*
Qualify	73	71,6	76	74,5		
Total	102	100	102	100		
Toilet Facilities					***1,000***	*1,000*
Not eligible	22	21,6	22	21,6		*(0,5 – 1,9)*

Qualify	80	78,4	80	78,4		
Total	102	100	102	100		
Waste water disposal facilities					***0,878***	*1,048*
Not eligible	72	70,6	71	69,6		*(0,5 – 1,9)*
Qualify	30	29,4	31	30,4		
Total	102	100	102	100		
Waste Disposal Facilities					***0,087***	*1,636*
None	47	46,1	35	34,3		*(0,9 – 2,8)*
There are	55	53,9	67	65,7		
Total	102	100	102	100		
Healthy Home					***0,002***	*2,82*
Not eligible	47	64,0	35	38,7		*(1,45 – 5,46)*
Qualify	55	36,0	67	61,3		
Total	102	100	102	100		

Source: *Primary Data, 2023*

Statistical tests show that the healthy house factor has a significant relationship with the incidence of stunting with a value of p=0.002 (p<0.05). Respondents who own a house that does not meet the healthy requirements have a 2.82 times greater risk of having a stunted child (OR=2.82). Meanwhile, clean water facilities, latrine facilities, waste disposal facilities and waste disposal facilities do not have a significant relationship with the incidence of stunting with a p value <0.05.

The relationship between environmental sanitation factors and the incidence of stunting

The research results show that environmental sanitation has no effect on the incidence of stunting in the Mamboro Health Center Working Area, Palu City with a p value > 0.05. These results are supported by the results of researchers' observations which show that sanitation facilities, including clean water facilities, latrine facilities and waste disposal facilities, are mostly adequate and meet the requirements, for both case and control groups. Except for waste disposal facilities, where the majority of respondents in the case and control groups had waste disposal facilities that did not meet the requirements, such as being open and polluting the environment (Titaley et al., 2013)(Kwami et al., 2019).

Ownership of these basic sanitation facilities shows that the community in the Mamboro Community Health Center area has good awareness of accessing clean water that meets health requirements, defecating in the toilet and having a rubbish dump.

This research is supported by research conducted by (Ayik 2018) which shows that there is no influence of residential environmental sanitation on the incidence of stunting in the Sumberjambe Work Area, Kasiyan Health Center and Sumberbaru Health Center, Jember Regency (Yulianti & Astari, 2020). This research is also in line with Zalukhu's 2021 research which shows that there is no relationship between environmental sanitation and the incidence of stunting in Nagari Balingka, IV Koto District, Agam Regency (Zalukhu et al., 2022).

However, this research is not in line with research conducted by Herawati (2020) where the results of this research show that sanitation facilities are related to the incidence of stunting in toddlers aged 6-24 months in the Harapan Baru Samarinda Health Center Working Area with a p value of 0.000 (Herawati, Anwar, 2020). This research is also supported by research

conducted by Zairinayati (2019) which shows that there is a relationship between the type of latrine, the source of clean water and the incidence of stunting in toddlers (Zairinayati & Purnama, 2019). B, H., & Hamzah, S (Sarwinanti & Andriyani, 2020).

The relationship between a healthy home and the incidence of stunting

The environment greatly influences the occurrence of disease because the environment is a transmission medium for disease transmission. According to Chandra (2006), a healthy house is a house that meets the criteria for a healthy house (Chandra, 2006). One of the criteria for a healthy home is that it can meet the physiological needs or physical environment of the home. According to the Indonesian Ministry of Health (2002), a healthy house is a house that can fulfill physiological needs such as lighting and ventilation, fulfill psychological needs such as healthy communication between house occupants and family members, fulfill requirements for preventing disease transmission such as providing clean water, and fulfill prevention requirements. accidents occur both from outside and inside the house (S. Anne., 2014).

Based on the results of research that has been conducted, it shows that there is a relationship between healthy house factors and the incidence of stunting in the Mamboro Health Center Working Area, Palu City ($p < 0.05$), where respondents who have houses that do not meet the healthy requirements have a 2.82 times greater risk of having children. stunting (OR=2.82). This is reinforced by the results of observations and interviews via questionnaires which show that more respondents in the case group had unhealthy homes (64.0%) compared to the control group at 38.7%.

The results of this research are in line with research conducted by Mira (2021), which shows that the physical condition of the house is a determinant of the incidence of stunting in Sigi area an OR value of 8.83, meaning that toddlers living at home whose physical condition does not meet health requirements 8 .83 times more at risk of experiencing stunting than toddlers who live at home whose physical condition meets health requirements (Miranti et al., 2020).

The physical environment of the house which is an indicator in this research is the presence of the house sky, the type of house walls, the type of floor of the house, the presence of windows in the rooms and living rooms, the presence of house ventilation, lighting and kitchen smoke holes. Even though the results of the analysis show that there are more respondents who have healthy houses than unhealthy houses, however, this condition is not enough to be called a healthy house, because there are still many physical conditions in other people's houses that do not meet the house requirements such as permanent ventilation which is <10% from the floor area, the presence of windows in not all rooms, the presence of smoke holes that are <10% and the type of floor that is still dirt. Conditions like this can cause humidity levels in the house to increase, which will trigger the emergence of disease germs and the proliferation of pathogenic microorganisms (Nirmalasari, 2020).

Conclusion

The conclusions of the research results are as follows; (1) There is no relationship between sanitation factors (clean water facilities, latrine facilities, waste disposal facilities and waste disposal facilities) and the incidence of stunting in the Mamboro Health Center area ($p > 0.005$); (2) There is a significant relationship between a healthy house and the incidence of stunting ($p<0.05$), where families who own a house that does not meet the healthy requirements have a 2.82 times greater risk of having stunted children (OR=2.82).

Suggestion

(1) Mamboro Community Health Center monitors the condition of houses and provides education to increase the number of healthy houses in its working area; (2) Conduct a follow-up study using a qualitative approach, to obtain more in-depth information about the role of

environmental sanitation factors for public health in the Mamboro Community Health Center area, especially regarding the incidence of infections that have an impact on children's nutrition.

Acknowledgment

Thank you to the Palu City Health Service and Mamboro Health Center. Also to the head of the Tadulako University medical faculty for their support

References

Alexander, L. K., Lopes, B., Ricchetti-Masterson, K., & Yeatts, K. B. (2015). Case-Control Studies Second Edition Authors. *Gillings School of Global Public Health*, 6. https://sph.unc.edu/files/2015/07/nciph_ERIC5.pdf

Dinas Kesehatan Kota Palu. (2021). *Profil Dinas Kesehatan Kota Palu*.

Dinkes Provinsi Sulteng. (2021). Profil Kesehatan Provinsi Sulawesi Tengah. *Profil Kesehatan Provinsi Sulawesi Tengah*, 1–222.

Herawati, Anwar, S. (2020). Hubungan Sarana Sanitasi, Perilaku Penghuni, dan Kebiasaan Cuci Tangan Pakai Sabun (CTPS) oleh Ibu dengan Kejadian Pendek (Stunting) pada Batita Usia 6-24 Bulan di Wilayah Kerja Puskesmas Harapan Baru, Samarinda. In *urnal Kesehatan Lingkungan indonesia* (Vol. 19, Issue 1).

Kemenkes RI. (2017). Survey Demografi dan Kesehatan Indonesia. In *Survei Demografi dan Kesehatan Indonesia 2017*. https://doi.org/0910383107 [pii]\r10.1073/pnas.0910383107

Kemenkes. (2023). *Hasil Survei Status Gizi Indonesia (SSGI) 2022*. 1–7.

Kwami, C. S., Godfrey, S., Gavilan, H., Lakhanpaul, M., & Parikh, P. (2019). Water, sanitation, and hygiene: Linkages with stunting in rural Ethiopia. *International Journal of Environmental Research and Public Health*, *16*(20). https://doi.org/10.3390/ijerph16203793

Miranti, Mutiarasari, D., Arsin, A. A., Hadju, V., Mallongi, A., Nur, R., Amri, I., Haruni, H., Wahyuni, R. D., Rahma, & Faris, A. (2020). Determinants of the incidence of stunting in the working area of Kinovaro Sigi Health Center. *Enfermeria Clinica*, *30*(Icnph 2019), 246–252. https://doi.org/10.1016/j.enfcli.2019.10.077

Nirmalasari, N. O. (2020). Stunting Pada Anak : Penyebab dan Faktor Risiko Stunting di Indonesia. *Qawwam: Journal For Gender Mainstreming*, *14*(1), 19–28. https://doi.org/10.20414/Qawwam.v14i1.2372

Rahayu, A., Yulidasari, F., Putri, A. O., & Anggraini, L. (2018). Study Guide - Stunting dan Upaya Pencegahannya. In *Buku stunting dan upaya pencegahannya*.

S. Anne., B. S. (2014). Literature Review. *ANZ J Surg*, *84*, 207–210.

Sarwinanti, & Andriyani, K. (2020). Risk factors for stunting in toddler. *International Journal of Advanced Science and Technology*, *29*(9 Special Issue), 432–440. https://www.scopus.com/inward/record.uri?eid=2-s2.0-85084987169&partnerID=40&md5=f0448d922fe328d3bcb66fd26885b3fa

Titaley, C. R., Ariawan, I., Hapsari, D., & Muasyaroh, A. (2013). Determinants of the Stunting of Children in Indonesia : A Multilevel Analysis of the 2013 Indonesia Basic Health Survey. *Nutrients*, *11*, 1160.

UNICEF Indonesia. (2022). Laporan Tahunan 2021 UNICEF Indonesia. *United Nations Children's Fund World Trade Centre 2*, 16–16.

WHO (World Health Organization). (2016). WHO | Millennium Development Goals (MDGs).

Who.

Yulianti, R., & Astari, R. (2020). Jurnal Kesehatan Jurnal Kesehatan. *Jurnal Kesehatan*, *8*(1), 10–15.

Zalukhu, A., Mariyona, K., & Andriani, L. (2022). Hubungan Sanitasi Lingkungan dengan Kejadian Stunting pada Anak Balita (0-59) bulan di Nagari Balingka Kecamatan IV Kota Kabupaten Agam Tahun 2021. *6*, 52–60.