ASJo: Aceh Sanitation Journal **e-ISSN 2962567X- 2963-895X**
Volume 2 Number 2, Month December
https://journal.poltekkesaceh.ac.id/index.php/asjo

The Relationship Between Basic Household Sanitation And Diarrheal Diseases In Samalanga Subdistrict, Bire1uen Regency, 2024

Nasrullah
Department Of Environmental Health, Poltekkes, Ministry Of Health, Aceh
nasrullah@poltekkesaceh.ac.id
Junaidi
Department Of Environmental Health, Poltekkes, Ministry Of Health, Aceh
Syahrizal
Department Of Environmental Health, Poltekkes, Ministry Of Health, Aceh
Kartini
Department Of Environmental Health, Poltekkes, Ministry Of Health, Aceh

Submitted: 25/1/2024 *Accepted: 02/12/2024* *Published:05/12/2024*

ABSTRACT

Diarrhea, if not treated promptly, can lead to dehydration in children. Dehydration can range from mild to moderate to severe symptoms. Treatment includes administering oral rehydration salts (ORS) and immediately seeking hospital care. Substandard household environmental conditions are evident from the high incidence of diarrhea, with 30 cases reported in 2023. This study aims to examine the relationship between basic household sanitation and diarrheal diseases in Samalanga Subdistrict, Bireuen Regency, in 2024. This research is descriptive-analytical and employs a cross-sectional design. The population consists of 27,907 households, with a proportional sampling technique applied to select 100 respondents. The results indicate significant effects of clean water source sanitation (P-value = 0.001), SPAL sanitation (wastewater drainage systems) (P-value = 0.003), waste disposal sanitation (P-value = 0.010), and toilet sanitation (P-value = 0.001) on diarrheal diseases in Samalanga Subdistrict, Bireuen Regency, in 2024. The study concludes that the factors of clean water source sanitation, waste disposal facilities, SPAL sanitation, and toilet sanitation influence the incidence of diarrhea in Samalanga Subdistrict, Bireuen Regency, in 2024. It is recommended that local health centers (Puskesmas) enhance health education on diarrhea and Clean and Healthy Living Behavior (PHBS), particularly in preventing diarrhea.

Keywords : Basic Sanitation, Household, Diarrhea

INTRODUCTION

Government regulation of the republic of indonesia number 66 of 2014 on environmental health states that environmental health refers to efforts to prevent diseases and/or health disorders caused by environmental risk factors to achieve a healthy environmental quality in physical, chemical, biological, and social aspects [(1)]. Environmental health standards are specific guidelines or effective environmental reporting standards that affect public health or have a direct impact on public health assessments. Environmental health services aim to create a healthy environment in physical, chemical, biological, and social terms so that every individual can achieve a high level of health [(2)].

Diarrhea is a contagious disease caused by a change in the consistency of feces or stools. A person is diagnosed with diarrhea if they experience bowel movements three or more times a day or within 24 hours, marked by more watery stools than usual [(3)].

Ignorance and inability to maintain a clean environment are among the factors contributing to diarrhea issues [(4)]. Diarrhea can lead to decreased appetite, fatigue, abdominal pain, and weight loss. It can also cause complications such as organ damage, dehydration, and coma due to sudden loss of electrolytes [(5)].

Both individual and public health can be influenced by the environment. Poor environmental conditions are responsible for many public health problems. To achieve optimal public health, an optimal environmental condition is also required [(6)].

According to WHO, as cited in[(7)], diarrhea's impacts, aside from mortality, include dehydration. Currently, diarrhea remains a significant issue in the community. Poor environmental conditions are responsible for various public health challenges. Environmental agreements or regulations are also needed to achieve good public health [(8)].

Several factors affect mortality, malnutrition, and diarrhea from an environmental health perspective, including clean water sources, wastewater drainage systems (SPAL), garbage disposal facilities, and toilet facilities. From a behavioral perspective, poor personal hygiene in daily life also has negative impacts, making individuals susceptible to infections by diarrhea-causing viruses, bacteria, and parasites. Washing hands with soap (CTPS) is a key aspect of personal hygiene [(9)].

The World Health Organization (WHO) estimates that there are 4 billion cases of diarrhea worldwide, 2.2 million of which result in death. Diarrhea kills approximately 4 million people annually in developing countries, and it remains a significant issue in developed countries like the United States, where every child experiences diarrhea at a rate of 7-15% before the age of 5 [(10)].

The Ministry of Health's 2022 report states that the highest cases of diarrhea were found in Banten (55.3%), NTB (51.3%), North Kalimantan (32.6%), East Java (39.4%), and Aceh (16.0%) (Ministry of Health, 2022). The Aceh Provincial Health Office reported 9,591 diarrhea cases (16.0%) across 23 districts in 2022. The highest rates were in Gayo Lues (43.0%), Nagan Raya (27.0%), Bireuen (25.0%), Banda Aceh (7.2%), and Langsa (2.0%) (Aceh Health Office, 2021).

Research by Burdadi found a relationship between clean water access (P-value 0.045), waste and wastewater disposal (P-value 0.008), personal hygiene (P-value 0.018), physical water quality (P-value 0.001), and household waste disposal (P-value 0.002) with diarrhea incidents in the Way Kandis Public Health Center area, Bandar Lampung.

The Samalanga Health Center in Bireuen Regency reported 27,907 residents across 46 villages and 5 administrative regions in 2023, with 30 diarrhea cases across all age groups. Interviews with 10 diarrhea patients revealed that the high incidence of diarrhea was due to many residents still using dug wells and bore wells for bathing, washing, and sanitation. Due to high electricity costs associated with using PDAM water pumps, residents opted to save on water bills. However, drinking water needs were met with refillable water. Issues such as stagnant wastewater, non-standard family toilets, uncovered garbage disposal, and poor personal hygiene were also identified.

Given these background issues, the researcher is interested in studying "The Relationship Between Basic Household Sanitation and Diarrheal Diseases in Samalanga Subdistrict, Bireuen Regency, 2024".

METODE

The research method employs a descriptive-analytic approach with a cross-sectional design, aiming to study the dynamics of the relationship or correlation between risk factors and their impacts or effects. In terms of the data type, this study adopts a quantitative research approach. Quantitative research focuses on numerical data, which is analyzed using statistical methods.

In this study, the research subjects consisted of all residents in Samalanga Subdistrict in 2024, totaling 27,907 households. The sampling technique in this study was conducted using proportional sampling, which involves taking samples from each village as research samples based on the names in the Samalanga Health Center Report, with a total of 100

respondents. This research was conducted in Samalanga Subdistrict, Bireuen Regency, in 2024.

Result

Based on the field survey results on diarrheal incidents among respondents in Samalanga District, the data is presented in Table 1.

Table 1
Frequency Distribution of Diarrheal Disease in Samalanga District, Bireuen Regency, 2024

No	Diarrheal Disease	F	%
1.	No Diarrhea	32	32.0
2.	Diarrhea	68	68.0
	Amount	100	100

From Table 1, it is shown that 68.0% of respondents in Samalanga District experienced diarrhea, while 32.0% did not.

Based on the field survey results on clean water sources among respondents in Samalanga District, the data is presented in Table 2.

Table 2
Frequency Distribution of Clean Water Source Sanitation in Samalanga District, Bireuen Regency, 2024

No	Clean Water Source Sanitation	F	%
1.	Meets Standards	34	34.0
2.	Does Not Meet Standards	66	66.0
	Amount	38	100

From Table 2, 66.0% of respondents reported that their clean water sources did not meet sanitation standards, while only 34.0% had water sources that met sanitation standards.

Based on the field survey results on waste disposal sanitation among respondents in Samalanga District, the data is presented in Table 3.

Table 3
Frequency Distribution of Waste Disposal Sanitation in Samalanga District, Bireuen Regency, 2024

No	Waste Disposal Sanitation	F	%
1.	Meets Standards	31	31.0
2.	Does Not Meet Standards	69	69.0
	Amount	100	100

From Table 3, 69.0% of respondents' waste disposal systems did not meet sanitation standards, while 31.0% met the standards.

Based on the field survey results on wastewater sanitation among respondents in Samalanga District, the data is presented in Table 4.

Table 4
Frequency Distribution of Wastewater Sanitation (SPAL) in Samalanga District, Bireuen Regency, 2024

No	**Wastewater Sanitation**	F	%
1.	Meets Standards	34	34.0
2.	Does Not Meet Standards	66	66.0
	Amount	100	100

From Table 5.8, 66.0% of respondents reported that their wastewater systems did not meet sanitation standards, while 34.0% met the standards.

Based on the field survey results on toilet sanitation among respondents in Samalanga District, the data is presented in Table 5.

Table 5
Frequency Distribution of Toilet Sanitation in Samalanga District, Bireuen Regency, 2024

No	**Toilet Sanitation**	F	%
1.	Meets Standards	30	30.0
2.	Does Not Meet Standards	70	70.0
	Amount	100	100

From Table 5, 70.0% of respondents reported that their toilets did not meet sanitation standards, while 30.0% met the standards..

To determine the effect of sanitation variables on diarrheal disease, the Chi-Square test was applied.

Table 6
The Effect of Clean Water Source Sanitation on Diarrheal Disease in Samalanga District, Bireuen Regency, 2024

Clean Water Source	**Diarrhea**		**No Diarrhea**		F	%	P - Value
	f	%	f	%			
Meets Standards	19	55.9	15	44.1	34	100	0.001

Does Not Meet Standards	13	19.7	53	80.3	66	100
Amount	32	32,0	68	68.0	100	100

The results show a significant relationship between clean water source sanitation and diarrheal disease (P-value = 0.001).

Discussion

1. The Impact of Clean Water Sanitation on Diarrhea

Research findings show that respondents who did not experience diarrhea were predominantly from households with clean water sources that met sanitation standards (55.9%). Conversely, respondents from households with water sources that failed to meet sanitation standards were more likely to experience diarrhea (80.3%). This is attributed to water sources being located less than 10 meters from septic tanks and domestic wastewater disposal systems (SPAL), and water quality issues such as discoloration and unpleasant odor. A Chi-Square test revealed a significant association between water source sanitation and diarrhea occurrence, with a p-value of 0.001, indicating a strong influence of water sanitation on diarrhea in Samalanga District, Bireuen Regency, in 2024.

This finding aligns with research [(12)], which identified significant links between drinking water sources and diarrhea outbreaks. The study found that contaminated water sources, particularly those close to septic systems or with inadequate treatment, were key contributors to diarrhea. [(13)] emphasizes that clean water for human consumption must meet safety standards to prevent disease. Improper water management or poor-quality water sources, such as wells and rivers contaminated with waste, can serve as transmission mediums for diarrhea.

The researcher concludes that clean water sanitation significantly affects diarrhea occurrence due to factors such as contaminated water sources, poor water treatment practices, and unsafe water access. These findings highlight the necessity of safe and well-maintained water systems to mitigate diarrhea risks in the community.

2. The Impact of Waste Disposal Sanitation on Diarrhea

The research shows that households with proper waste disposal sanitation had fewer diarrhea cases (51.6%), whereas households with inadequate waste disposal had a higher prevalence (76.9%). Poor waste management, such as uncovered disposal sites behind homes, attracts disease vectors and increases health risks. A Chi-Square test indicated a significant association (p-value = 0.010) between waste disposal sanitation and diarrhea occurrence in Samalanga District.

This finding is consistent with[(14)], who found a significant link between sanitation facilities and diarrhea in Kertosari village, where inadequate waste disposal contributed to a high incidence of diarrhea.[(15)] supports the notion that improper waste management increases vector density, exacerbating health issues like diarrhea, particularly in vulnerable populations like children.

The researcher concludes that inadequate waste disposal is a critical factor in diarrhea outbreaks. Uncovered waste attracts vectors like flies, which can contaminate food and increase disease transmission risks.

3. The Impact of Wastewater Disposal Systems (SPAL) on Diarrhea

Research findings indicate that households with proper wastewater disposal systems (SPAL) had fewer diarrhea cases (52.9%), while those with improper SPAL had higher rates (78.8%). Open drains and stagnant wastewater were the main contributors. A Chi-Square test showed a significant association (p-value = 0.003) between SPAL sanitation and diarrhea in Samalanga District.

This aligns with research by Manik et al. [16], who observed that poor wastewater management contributes to diarrhea, especially when wastewater contaminates water sources[17],[18] further highlight that unprocessed wastewater leads to vector breeding and environmental contamination, increasing disease transmission risks.

The researcher concludes that inadequate SPAL systems significantly contribute to diarrhea due to issues like stagnant wastewater, proximity to water wells, and vector breeding, emphasizing the need for comprehensive SPAL improvements.

4. The Impact of Latrine Sanitation on Diarrhea

The study found that respondents with proper latrine sanitation had lower diarrhea rates (58.7%) compared to those with poor sanitation (78.6%). Factors like lack of latrine doors and exposure to disease vectors were significant contributors. A Chi-Square test indicated a strong association (p-value = 0.001) between latrine sanitation and diarrhea.

This finding aligns with [19], who demonstrated a clear relationship between latrine usage and reduced diarrhea prevalence.[20] emphasizes the importance of clean and safe latrines to prevent vector-borne transmission of diseases like diarrhea and other gastrointestinal disorders.

The researcher concludes that inadequate latrine facilities significantly affect diarrhea transmission. Poor hygiene practices and exposure to contaminated environments amplify the risks, highlighting the need for improved sanitation infrastructure and community hygiene awareness..

CONCLUSION

1. Based on the research findings, it can be concluded that:
2. There is an influence of clean water source sanitation on diarrhea cases in Samalanga Subdistrict, Bireuen District, in 2024, with a P-value of 0.001.
3. There is an influence of waste disposal sanitation on diarrhea cases in Samalanga Subdistrict, Bireuen District, in 2024, with a P-value of 0.010.
4. There is an influence of wastewater drainage system (SPAL) sanitation on diarrhea cases in Samalanga Subdistrict, Bireuen District, in 2024, with a P-value of 0.003.
5. There is an influence of latrine sanitation on diarrhea cases in Samalanga Subdistrict, Bireuen District, in 2024, with a P-value of 0.001..

REFERENCES

1. Agustini. (2017). Promosi Kesehatan. Deepublish.
2. Alhamda.S. (2015). Buku Ajar Ilmu Kesehatan Masyarakat (Ikm). Deepublish. Bekti. (2019). Air Sumber Kehidupan. Media Perkasa.
3. Burdadi. S. M. A. (2021). Hubungan Antara Personal Hygiene Dan Sanitasi Lingkungan Dengan Kejadian Diare Pada Anak Usia Balita Di Wilayah Kerja Puskesmas Way Kandis Bandar Lampung. In Skripsi. Universitas Lampung.

4. Dinkes Aceh. (2021). Profil Dinas Kesehatan Provinsi Aceh Tahun 2021. Dinas Kesehatan Aceh.
5. Efbertias. (2020). Proses Pengolahan Limbah. Yayasan Kita Menulis.
6. Endang. (2019). Pendidikan Dan Promosi Kesehatan: Teori Dan Implementasi Di Indonesia. Ugm Press.
7. Fachrul. (2021). Dasar-Dasar Kesehatan Lingkungan. Yayasan Kita Menulis. Freya. W. O. R. & Agusta. M. (2022). Hubungan Air Bersih Dan Sanitasi
8. Herawanto. (2019). Epidemiologi Kesehatan Lingkungan. Cv.Nas Media Pustaka. Ikhtiar. (2017). Pengantar Kesehatan Lingkungan. Puspa Swara.
9. Kemenkes Ri. (2014). Profil Kesehatan Indonesia Tahun 2014. Kementerian Kesehatan Republik Indonesia.
10. Kemenkes Ri. (2019). Menengok Perkembangan Diare Di Indonesia. Kementerian Kesehatan Republik Indonesia.
11. Kemenkes Ri. (2023). Profil Kesehatan Indonesia Tahun 2023. Kemenkes Ri. Manik.Dkk. (2021). Kondisi Sanitasi Dasar Dengan Kejadian Diare Pada
12. Masyarakat. Jurnal Ilmiah Pannmed (Pharmacist, Analyst, Nurse, Nutrition,Midwivery, Environment, Dentist), 16(2), 304.
13. Muzakir. (2017). Penanganan Penyakit Diare. Erlangga. Nurhayati. (2020). Ayo Cegah
14. Pinontoan.O.R. (2019). Epidemiologi Kesehatan Lingkungan. Deepublish.
15. Rahmadyanti. (2022). Sanitasi Dan Kesehatan Lingkungan Rumah Tinggal. Uwais Inspirasi Indonesia.
16. Riskesdas. (2018). Hasil Riset Kesehatan Dasar (Riskesdas) 2018. Badan Penelitian Dan Pengembangan Kesehatan Kementerian Repulik Indonesia.
17. Robbani. H. N. (2022). Hubungan Sarana Sanitasi Dasar Dengan Kejadian Diare Pada Masyarakat Di Desa Kertosari Wilayah Kerja Puskesmastanjung Sari Kecamatan Tanjung Sari Kabupaten Lampung Selatan Tahun 2022. In Doctoral Dissertation. Poltekkes Tanjungkarang.
18. Soebagyo. (2017). Diare Akut Klinik Dan Laboratorik. Rineka Cipta. Soemirat. (2015). Epidemiologi Lingkungan. Ugm Press.
19. Sugiyono. (2015). Metode Penelitian Pendidikan Pendekatan Kuantitatif,.Kualitatif, Dan R&D. Alfabeta.
20. Wandansari. A. P. (2014). Hubungan Antara Kualitas Sumber Air Minum Dan Pemanfaatan Jamban Keluarga Dengan Kejadian Diare Di Desa Karangmangu Kecamatan Sarang Kabupaten Rembang. Unnes Journal Of Public Health, 3(3).