THE INFLUENCE OF DEFECATION BEHAVIOR, DRINKING WATER SOURCES, AND MOTHERS' HANDWASHING HABITS ON THE INCIDENCE OF STUNTING

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ABSTRACT

Stunting is one of the nutritional problems in toddlers that has become a global concern in recent years, especially in low- and middle-income countries including Indonesia. The type of research is observational analysis with a design or design of control cases. The sample was divided into two, namely case and control with a ratio of 1:1. The number of samples was 124 toddlers, of which 62 cases were stunted and 62 were not stunted. The results of the study where the factors that significantly influenced the incidence of stunting were Age (p = 0.000, OR = 5.429), Toddler Weight (p = 0.000, OR = 0.205), Parental Income (p = 0.028, OR = 2.444), Number of Children Owned by Toddler Mothers (p = 0.001, OR = 3.561), Drinking Water Sources (p = 0.000, OR = 4.875) and Hand Washing Behavior with Soap (p = 0.001, OR = 4,253). Improving Clean Water Quality and Sanitation by improving clean water infrastructure and implementing Soapy Handwashing Behavior by implementing a broad campaign on the importance of handwashing with soap, especially before meals and after using the toilet

***Keywords**: (*Improvement ; RT; Stop BABS; CTPS; Manage Water*)*

INTRODUCTION

Stunting in toddlers, caused by chronic malnutrition and recurrent infections, is a significant nutritional problem in Indonesia, particularly in Merek District, Karo Regency, which is characterized by limited access to adequate sanitation and poor hygiene practices. This study aims to analyze the influence of defecation behavior, drinking water sources, and handwashing habits of housewives on the incidence of stunting in order to support effective intervention efforts.

METHOD

This study used an analytical observational case-control design, comparing a group of stunted toddlers (cases) totaling 62 individuals with non-stunted toddlers (controls) totaling 62 individuals from a population of 650 toddlers in the Working Area of Merek Health Center, Karo Regency, with the aim of assessing past exposure differences related to the occurrence of stunting.

The research location is in the Work Area of Merek Health Center, Karo Regency. This research was conducted from July to October 2024.

Primary data were obtained directly from respondents through field observations, in-depth interviews, and water sample examinations, whereas secondary data were sourced from literature studies as well as documentation and official reports from the Merek Health Center. Data analysis was conducted univariately by calculating frequencies and percentages, and bivariately using statistical tests to evaluate the relationship between independent and dependent variables.

RESULTS AND DISCUSSION

Inadequate defecation behavior occurs more frequently in the stunting group (19.4%) compared to the control group (14.5%); however, the Chi-Square test did not find a significant association with stunting (P = 0.632). An OR of 1.413 indicates that the risk of stunting is 1.4 times higher in toddlers with inadequate defecation behavior (95% CI 0.548–3.642).

Unsafe drinking water sources are more common in the stunting group (48.4%) compared to the control group (16.1%), with a significant association with stunting (P = 0.000) and an OR of 4.875, which means the risk of stunting is almost 5 times greater in children with unsafe drinking water sources (95% CI 2.104–11.206).

Handwashing behavior using soap that does not meet the requirements is more common in the stunting group (85.5%) compared to the control group (58.1%), with a significant relationship

to stunting (P = 0.001) and an OR of 4.253, meaning the risk of stunting is 4.25 times higher in children with inadequate handwashing behavior (95% CI 1.785–10.333).

Poor sanitation contaminates water and the environment, causing diseases that weaken children's immune systems and disrupt nutrient absorption, thereby increasing the risk of stunting. Access to adequate sanitation is important to prevent infections and support children's growth.

Access to clean water is important to prevent diseases and malnutrition that cause stunting, as contaminated water can interfere with nutrient absorption and weaken a child's immune system. Washing hands with soap is effective in eliminating germs that cause diseases such as diarrhea and respiratory infections, which can interfere with nutrient absorption and cause stunting. With proper handwashing, children are better protected from germs, reducing the risk of infection and allowing nutrients to be absorbed more effectively. Regular handwashing habits also strengthen children's immune systems and create a healthier home environment, supporting their growth

CONCLUSION

The factors that significantly influence the occurrence of stunting are Drinking Water Source (p = 0.000, OR = 4.875) and Handwashing Behavior with Soap (p = 0.001, OR = 4.253).

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REFERENCES

Alaerts GJ, 1984. Water Quality and Treatment Processes. New York: McGraw- Hill

Agus Hendra AL-R, SKM, MPH. Penilaian Status Gizi dan Pertumbuhan Balita. Modul Penilaian Status Gizi WHO-2006; 2023. Available from: **https://gizipoltekkesaceh.ac.id/wp-content/uploads/2023/03/ Modul_-Penilaian-Pertumbuhan-BALITA.pdf**

AKSANSI , 2025). Pendampingan sosial Kelompok Swadaya Masyarakat (KSM) sanitasi.

Alamsyah MD dkk (2024). Pengetahuan kualitas air dengan pengelolaan air minum di Desa Ketandan Kecamatan Dagangan Kabupaten Madiun. Jurnal Ners.

American Water Works Association (AWWA),1998. American Water Works Association (AWWA). Water Quality and Treatment: A Handbook on Drinking Water. 5th ed. New York: McGraw-Hill Water Quality and Treatment: A Handbook on Drinking Water. 5th ed. New York: McGraw-Hill

Ani S, Jumiati (2020). Efektivitas Program Sanitasi Berbasis Masyarakat dalam Meningkatkan Derajat Kesehatan Masyarakat. J Manajemen dan Ilmu Administrasi Publik.

Chandra B, 2007. Pengantar Kesehatan Lingkungan. Jakarta: Buku Kedokteran EGC.

Chayatin L,2009. Sanitasi Lingkungan dan Jamban Sehat. Yogyakarta: Pustaka Ilmu

Chusniati S (2018). Implementasi kebijakan program penyediaan air minum dan sanitasi berbasis masyarakat (PAMSIMAS) di Kabupaten Trenggalek. Jurnal Pengelolaan Kualitas Air Bersih.

Clasen T dkk (2007). Interventions to improve water quality for preventing diarrhoea: systematic review and meta-analysis. BMJ.

Core.ac.uk. (2010). Program Sanitasi Lingkungan Berbasis Masyarakat (SLBM) di Kabupaten Bangkalan. Artikel evaluasi).

Dahlan MAK, Umrah, 2013. Perilaku Hidup Bersih dan Sehat. Yogyakarta: Pustaka Pelajar

Daracantika A, Ainin, Besral, 2020.Systematic Literature Review: Pengaruh Negatif Stunting terhadap Perkembangan Kognitif Anak. Fakultas Kesehatan Masyarakat Universitas Indonesia; Available from: **https://scholarhub.ui.ac.id/cgi/ viewcontent .cgi?article =1012 & context=bikfokes**

Departemen Kesehatan Republik Indonesia, 2004. Syarat-syarat Jamban Sehat. Jakarta: Depkes RI

Dinas Kesehatan Kota Mojokerto. (2023). Stop Buang Air Besar Sembarangan. *Berita Kesehatan Lingkungan*.)

Entjang S, 2000. Sanitasi Lingkungan dan Kesehatan Masyarakat. Jakarta: Pustaka Ilmu

Fitrianingsih dkk (2020). Analisis faktor-faktor yang mempengaruhi perilaku buang air besar sembarangan di desa Tambe Kecamatan Bolo Kabupaten Bima Tahun 2020. Jurnal Sanitasi dan Lingkungan.

Handayani S, 2000. Edukasi Kesehatan Masyarakat tentang Kebersihan Tangan. Jakarta: Pustaka Kesehatan

Glanz K dkk (2008). Health behavior and health education: theory, research, and practice. 4th ed. San Francisco: Jossey-Bass

Galuh W. Sanitasi Lingkungan dalam Pembangunan Kesehatan. Yogyakarta: Pustaka Pelajar

Hamidah S, et al (2015). Pengolahan Air Sungai Menggunakan Slow Sand Filter Sistem Dual Media Pasir dan Kerikil. Jurnal Riset Teknik.

Harvey P dkk (2027). Community-based water filtration using locally available materials: a practical guide. J Water Health.

Israjunna, I. (2020). Pendampingan Perubahan Perilaku Dengan Strategi Sanitasi Total Berbasis Masyarakat (STBM). *Jurnal Pengabdian Masyarakat).*

Jati, B. D. W. (2024). Implementasi Program Sanitasi Total Berbasis Masyarakat. *Jurnal Wacana Publik).*

Karangasem Health Office (2021). Jumintan: Mengenal Sanitasi Total Berbasis Masyarakat (STBM). Karangasem

Kementerian Kesehatan Republik Indonesia, 2010. Peraturan Menteri Kesehatan Republik Indonesia Nomor 492/MENKES/PER/IV/2010 tentang Persyaratan Kualitas Air Minum. Jakarta: Kementerian Kesehatan RI

Kementerian Kesehatan Republik Indonesia. Peraturan Menteri Kesehatan Nomor 3 Tahun 2014 tentang Sanitasi Total Berbasis Masyarakat (2014). Jakarta: Kementerian Kesehatan RI

Kusnoputranto H, 2005 Dasar-Dasar Kesehatan Lingkungan. Yogyakarta: Gajah Mada University Press.

Madjid A, 2009. Sanitasi dan Kesehatan Lingkungan. Jakarta: Penerbit Kesehatan; 2009.

Maryunani N, 2013. Perilaku Cuci Tangan Pakai Sabun sebagai Pencegahan Penyakit Menular. Jurnal Kesehatan Masyarakat

Montgomery JM. Water, 1985. Treatment Principles and Design. 2nd ed. New York: Wiley

Nazifah dkk (2021).Pengelolaan Sumber Daya Air Berbasis Masyarakat di Desa Hortikultura Kabupaten Karo. Jurnal Lingkungan dan Pembangunan.

Noar SM dkk (2012). eHealth applications: promising strategies for behavior change. New York: Routledge.

Notoatmodjo S, 2007.Promosi Kesehatan dan Perilaku Kesehatan. Jakarta: Rineka Cipta

Petunjuk Teknis SANIMAS, 2024 (n.d.). Pola penyelenggaraan program sanitasi berbasis masyarakat oleh KSM. Dokumen resmi).

Practical Action. Slow sand filtration water treatment plants [Internet]. [cited 2025 Aug 14]. Available from: https://www.appropedia.org/Practical_Action/Slow_sand_filtrationwater_treatment_plants/id

Proverawati A, 2012. Sanitasi Dasar untuk Kesehatan Lingkungan. Yogyakarta: Pustaka Kesehatan.

Sari MD dkk, (2019). Partisipasi Masyarakat dalam Pengelolaan Air Bersih di Wilayah Pedesaan. Jurnal Pengelolaan Sumber Daya Alam.

Selfia M (2022). Vehicle Washing Liquid Waste Treatment with Multimedia Filter: Activated Carbon, Silica Sand, Zeolite, and Gravel [thesis]. Ar-Raniry University. Available from : https://repository.ar-raniry.ac.id/20719 /1/Meri%20Selfia,%20170702032,%20FST,%20TL ,%20082272345520.pdf

Sembiring P, Sastrawan G, Herawati T (2020). Sosialisasi kesehatan lingkungan dengan pengadaan jamban sehat dalam upaya pencegahan penyakit berbasis lingkungan. J Kesehat Lingkungan

Sholahuddin dkk (2025). Edukasi Pengelolaan Air Bersih dan Sanitasi Lingkungan dalam Meningkatkan Kesadaran Masyarakat Desa Margaluyu. J Kesehat Tambusai.

Susanto M dkk (2019). Evaluasi Peran Kelompok Swadaya Masyarakat dalam Pengelolaan Sanitasi di Kabupaten X. Jurnal Kesehatan Masyarakat Indonesia.

Teknik pengolahan air bersih dengan sistem saringan pasir lambat [Internet]. [cited 2025 Aug14]. Available from: https://media.neliti.com/media/publications/212134-teknik- pengolahan-air- bersih-dengan-sist.pdf

Tistiawati R dkk (2021). Partisipasi masyarakat dalam Program Sanitasi Total Berbasis Masyarakat (STBM) di Kelurahan Kasunyatan Kota Serang Provinsi Banten. Jurnal Kesehatan Masyarakat.

World Health Organization (2015). Sanitation safety planning: manual for safe use and disposal of wastewater, greywater and excreta. Geneva: WHO

World Health Organization (2017). Guidelines for drinking-water quality. 4th ed. Geneva: WHO