Dedicated:
Journal of Community Services
(Pengabdian kepada Masyarakat)
https://ejournal.upi.edu/index.php/dedicated/

The influence of water quality on the growth of children

Salsabila Nur Afifah[1], M. Ridwan[2], Ahdiyatul Fauza[3]
[1,2,3]Universitas Pendidikan Indonesia, Bandung, Indonesia
salsabilana@upi.edu[1], ridwanlbs@upi.edu[2], ahdyatulfauza@upi.edu[3]

ABSTRACT

Currently, stunting is an issue that is of concern to various parties. Monitoring toddler growth is very important to detect growth disorders early as an effort to prevent stunting. Clean water quality and good sanitation are factors that influence toddler growth. This community service is carried out to see the quality of water in Kutawaringin Village as a factor that influences toddler growth, physical indicators that can measure the quality of clean water, and the effect of water quality on toddler growth. This community service is carried out by directly approaching the community to measure the quality of water in Kutawaringin Village and analyzing its effect on toddler growth. The results of this community service show that in Kutawaringin Village, male toddlers have a higher risk of stunting than female toddlers, one of which is due to differences in clean water sources used by the local community. 20 toddlers have abnormal growth due to poor clean water quality. These results prove that clean water quality affects toddler growth. Based on this, this community service can provide direct information to the Kutawaringin Village community to jointly improve sources and access to clean water to improve the quality of water used daily.

ARTICLE INFO

Article History:
Received: 8 Apr 2024
Revised: 3 Dec 2024
Accepted: 8 Dec 2024
Available online: 23 Dec 2024
Publish: 27 Dec 2024

Keywords:
toddler development; toddler growth; water quality

Open access
Dedicated: Journal of Community Services (Pengabdian kepada Masyarakat) is a peer-reviewed open-access journal

ABSTRAK

Saat ini stunting adalah suatu isu yang menjadi perhatian berbagai pihak. Pemantauan pertumbuhan balita sangat penting dilakukan untuk mengetahui adanya gangguan pertumbuhan secara dini sebagai upaya pencegahan stunting. Kualitas air bersih dan penyediaan sanitasi yang baik sebagai salah satu faktor yang mempengaruhi pertumbuhan balita. Pengabdian ini dilakukan untuk melihat kualitas air di Desa Kutawaringin sebagai faktor yang mempengaruhi pertumbuhan balita, indikator fisik yang dapat mengukur kualitas air bersih, serta pengaruh kualitas air terhadap pertumbuhan balita. Pengabdian ini dilakukan dengan pendekatan langsung kepada masyarakat untuk mengukur langsung kualitas air yang ada di Desa Kutawaringin serta menganalisis pengaruhnya terhadap pertumbuhan balita. Hasil dari pengabdian ini menunjukkan bahwa di Desa Kutawaringin balita laki-laki memiliki angka risiko stunting lebih tinggi dibandingkan balita perempuan, hal ini salah satunya disebabkan perbedaan sumber air bersih yang digunakan masyarakat setempat. Terdapat 20 balita yang memiliki pertumbuhan tidak normal akibat memiliki kualitas air bersih yang buruk. Hasil ini membuktikan bahwa kualitas air bersih berpengaruh terhadap pertumbuhan balita. Berdasarkan hal tersebut pengabdian ini dapat memberikan informasi secara langsung kepada masyarakat Desa Kutawaringin untuk bersama memperbaiki sumber dan akses terhadap air bersih untuk meningkatkan kualitas air yang digunakan dalam sehari-hari.

Kata Kunci: *kualitas air bersih; perkembangan balita; pertumbuhan balita*

How to cite (APA 7)
Afifah, S. N., Ridwan, M., & Fauza, A. (2024). The influence of water quality on the growth of children. *Dedicated: Journal of Community Services (Pengabdian kepada Masyarakat), 2*(2), 357-366.

Peer review
This article has been peer-reviewed through the journal's standard double-blind peer review, where both the reviewers and authors are anonymised during review.

https://doi.org/10.17509/dedicated.v2i2.68663

INTRODUCTION

Growth is a physical change or transformation characterized by an increase in the number and size of cells, which can synthesize new proteins. This process occurs in age, height, weight, and tooth growth. Growth disorders in toddlers are closely associated with stunting, which can hinder a child's physical and mental development (Roesardhyati & Kurniawan, 2020). Toddlers who are short or have impaired growth can be categorized as toddlers affected by stunting (Budiana & Marlina, 2020). A toddler affected by stunting may experience short-term and long-term effects. Short-term effects include impairments in the motor, cognitive, and immune systems. Long-term effects include an increased risk of obesity, reduced reproductive health, and impaired cognitive development (Amalina et al., 2023).

Monitoring the growth of toddlers is crucial to detect growth faltering early (Febry et al., 2022). Children aged 12-59 months receive growth monitoring services every month, at least 8 times a year, which are recorded in the KMS or other record books (Sagita & Afriyani, 2022). Healthcare professionals worldwide widely accept growth monitoring as a standard component of pediatric care. Growth monitoring is defined as the routine recording of a child's weight, along with corrective actions if abnormal weight is detected (Widiastuti & Winarso, 2021). The Indonesian government has been monitoring the growth of toddlers by holding posyandu activities in every region (Styawati & Ariany, 2020).

Factors that can influence growth in toddlers include adequate nutrition, a balanced diet, general health, a supportive environment, and genetic factors from their own families (Sholikhah & Dewi, 2022). Toddlers with adequate nutrition will have good health (Fitrianingsih et al., 2021). Growth can be influenced by several factors, such as hereditary factors or genetics, which can be modified to achieve the outcome of the child's growth process. Environmental factors encompass both internal factors, such as hormones and emotions, and external factors, including culture, family socioeconomic status, nutritional status, physical activity, and the child's position within the family (Akastia et al., 2024). Lastly, adequate healthcare services in the child's environment are expected to be monitored, such as health posts (Azizah & Achyar, 2020).

Stunted growth in toddlers is associated with factors such as drinking water sources, water quality, toilet ownership, and healthy lifestyles (Anshari et al., 2023). Contaminated water contains numerous microorganisms that can cause diarrhea and increase children's susceptibility to worm infections (Sumarno & Syafiuddin, 2023). Diarrhea in toddlers can lead to death due to their weak immune systems and susceptibility to infections (Nurlaila & Susilawati, 2022). Diarrhea can cause dehydration, and even a 10% loss of body fluids can be life-threatening (Al Hajiri & Asih, 2023). On average, toddlers in Indonesia can experience diarrhea 12 times a year, making diarrhea the cause of 15-34% of deaths (Nurlaila & Susilawati, 2022). Nearly 70% of toddlers' deaths worldwide are caused by diarrhea, along with malnutrition, growth disorders, and immune system abnormalities (Hamijah, 2021).

Many regions in Indonesia face challenges with sanitation, environmental hygiene, and promoting healthy lifestyles. These factors can make toddlers in Indonesia vulnerable to diarrhea. Another factor is economics; economic inequality affects people's ability to choose clean water sources for daily use. Poor water quality has the potential to hinder toddlers' growth and increase the risk of stunting (Savitri & Susilawati, 2022). The provision of clean water quality needs to be prioritized by the government to prevent stunting cases in Indonesia, as clean water quality and sanitation are closely linked to stunting (Susilawati & Luthfiah, 2023). Kutawaringin Village, as a newly established area separated from Kopo Village, aims to enable the government to enhance its capacity in providing services to the community in line with the level of development and progress, including the local community's water needs.

Sanitary water depots do not entirely contain clean water for toddlers (Ndoka et al., 2024). Other studies have shown a relationship between clean water quality, sanitation, and cases of stunting in toddlers (Rah

https://doi.org/10.17509/dedicated.v2i2.68663

et al., 2020; Sumarno & Syafiuddin, 2023). The facilities and environmental quality around clean water sources, which also do not fully meet standards, also impact the quality of the water (Nurjazuli et al., 2023; Oginawati et al., 2023). Based on this background, it is necessary to examine the factors influencing toddlers' growth, physical indicators that can measure clean water quality, and the impact of water quality on toddlers' growth, particularly in Kutawaringin Village, Kutawaringin Subdistrict, Bandung Regency, West Java.

Literature Review

Clean Water Quality

Water is essential in human life because most human activities, such as washing, cooking, drinking, and sanitation, require it. Water can transmit diseases; contaminated water contains many bacteria that can easily spread diseases to humans. Water quality must be maintained to prevent deterioration that could have adverse effects on humans, such as diarrhea in toddlers and mortality among pregnant women (Febriawati et al., 2021). Factors affecting water quality include industrial waste, domestic waste, and mining waste. However, with the advancement of time and the increase in development, water quality has deteriorated, necessitating regular water quality checks (Sutisna & Yuniar, 2023).

Indonesia is geographically rich in water resources, but in reality, many areas still experience clean water crises. The quality of water in communities often fails to meet the standards for clean and safe water set by the Ministry of Health (Setioningrum et al., 2020). The growing population is one of the primary causes of increasing water demand, resulting in an imbalance between demand and supply. Especially during the dry season, communities often face water crises, and the water supplied by the government is sometimes of poor quality (Hidayat & Kusnadi, 2020). Most of Indonesia's water resources rely on surface water, which means that development projects can lead to water contamination (Kornita, 2020).

The increasing demand for clean water necessitates regular and thorough monitoring of water quality to prevent pollution in the community. Measuring and monitoring these physical indicators helps to understand water quality and identify potential environmental problems and health threats that can be caused by unsafe water (Annisa & Susilawati, 2022). The poor quality of water used in daily life can lead to infectious diseases, including diarrhea and parasitic infections. Toddlers who experience nutrient absorption disorders during the digestive process can experience weight loss. Infectious diseases that persist over time often result in stunting in toddlers. As the population grows, water quality may become increasingly contaminated due to the increasing amount of household waste (Dirgawati et al., 2024). Additionally, the lack of awareness regarding the cleanliness of the environment around water sources and waterways is an issue that requires attention from all parties (Nurdin et al., 2023).

Conservation initiatives, water efficiency, and the utilization of alternative water sources, such as groundwater, need to be implemented. Rainwater harvesting has not yet been widely adopted by the community, even though rainwater can be utilized in significant quantities for household activities such as washing, cooking, and drinking. Rainwater can be collected through building roofs and stored in storage tanks for daily use. A permanent rainwater system can be implemented in areas with high rainfall and water shortages. This system utilizes chlorination and filtration to ensure the water meets established safety standards for use. This system enables the fulfillment of community water needs by utilizing abundant rainwater (Dirgawati et al, 2024).

The clean water crisis can lead to harvest failure in rice fields due to drought. Factors affecting clean water quality include environmental exploitation, human activities, natural causes, climate change, and littering, all of which can contribute to polluted water quality. To address the clean water crisis, support is needed from all parties, including the government, the community, and the private sector. Collaboration among

https://doi.org/10.17509/dedicated.v2i2.68663

these three parties is necessary to provide infrastructure that ensures sustainable solutions. To address clean water challenges, improvements in infrastructure, efficient management, and collaboration among various stakeholders are necessary (Sari et al., 2024). Clean water quality can foster a healthy and productive society, thereby helping to realize the nation's aspirations (Purwanto, 2020).

Unequal population distribution and continuous population growth in Indonesia have caused a shortage of clean water. Poor sanitation and waste management systems have exacerbated the problem of water pollution. The quality of river and groundwater is sometimes unsuitable for everyday use, so water purification processes are needed to improve water quality. Water purification can be achieved through backwashing and draining to clarify the water. Poor water quality, resulting from exposure to and contamination by microorganisms in drinking water, can lead to gastrointestinal infections that interfere with nutrient absorption. Physical indicators are used to measure water quality, providing a direct assessment of the water's physical characteristics (Bahagia et al., 2024).

Physical indicators include temperature, turbidity, color, odor, and taste. Water temperature can affect the solubility of chemicals and biological activity in water. Extreme temperature changes can damage aquatic ecosystems. Turbidity measures the extent to which solid particles are suspended in water. High turbidity levels can disturb aquatic organisms and inhibit the penetration of sunlight into the water. Water color can be an indicator of the presence of organic or chemical compounds. Water that is too dark or too light in color may contain undesirable substances. The odor of water can indicate the presence of decaying organic matter or potentially hazardous chemicals. Water with an unpleasant odor may not be suitable for use. An unusual taste in water may indicate the presence of substances such as metals or disruptive chemical compounds (Bahagia et al., 2024).

METHODS

This community service was carried out through direct engagement with the community, where water quality was directly measured in Kutawaringin Village and its impact on toddlers' growth was analyzed. Water quality and toddlers' growth were the primary focus of observation during this community service activity. The community service activity was conducted in Kutawaringin Village, Kutawaringin District, Bandung Regency, during the Kuliah Kerja Nyata (KKN) program from July 26 to August 26, 2023. The population of toddlers, cases, and controls in this community service research was obtained from secondary data on toddlers' growth since January 2023. KKN participants took part in measuring toddlers' growth in the field (Posyandu). The inclusion criteria for cases and controls were households with stunted toddlers residing in Kutawaringin Village. The sampling technique used was total sampling. A total of 60 samples were used, with 30 toddlers in the stunting risk case group and 30 toddlers in the control (normal) group. KKN participants collected data and analyzed water quality and toddlers' growth to provide direct information to the Kutawaringin Village community, enabling them to work together to improve water sources and access to clean water, thereby enhancing the quality of water used in daily life.

RESULTS AND DISCUSSION

Characteristics of Toddlers in Kutawaringin Village

The respondents in this study consisted of 30 individuals from the stunting risk group and 30 from the normal toddler control group, obtained from secondary data on routine toddler weighing at 18 Posyandu in Kutawaringin Village in 2023, as shown in **Table 1.**

https://doi.org/10.17509/dedicated.v2i2.68663

Table 1. Summary of Characteristics of Toddlers in Kutawaringin Village

Characteristics of Toddlers	Case		Control	
	N	%	N	%
Gender				
Male	16	53%	15	50%
Female	14	47%	15	50%
Total	**30**	**100%**	**30**	**100%**
Toddler age (months)				
6-11	0	0%	4	13%
12-23	6	20%	5	17%
24-35	4	13%	8	27%
36-47	6	20%	7	23%
48-59	14	47%	6	20%
Total	**30**	**100%**	**30**	**100%**

Source: Secondary Data on Toddler Growth in Kutawaringin Village, 2023

Based on **Table 1**. Characteristics of toddlers in Kutawaringin Village indicate that the risk of stunting is highest among toddlers aged 48-59 months, with 14 toddlers (47%) affected.

Quality of Clean Water Supply Facilities

The assessment of the quality of clean water supply facilities in this research includes the type of clean water sanitation, physical parameters of clean water quality, and the level of water sanitation in the sample.

Table 2. Characteristics of Clean Water in Kutawaringin Village

Characteristics of Clean Water and Sanitation	Category	Case		Control	
		N	%	N	%
Types of Clean Water Sources	PAM	6	20%	21	70%
	Pump Well	0	0%	9	30%
	Dug Well	12	40%	0	0%
	Irrigation	12	40%	0	0%
Physical Quality of Clean Water	Good	10	33%	30	100%
	Not Good	20	67%	0	0%

Source: Community Service Data, 2023

Table 2 shows that pump wells are more commonly used by respondents for clean water sanitation, with a difference of 7 cases between respondents who use clean water sanitation sourced from irrigation and those who do not. The quality of clean water with poor physical parameters is found in 20 respondents (67%) with stunting and zero respondents (0%) with normal height. The primary factor contributing to the failure of the physical parameters of clean water in both groups to meet standards is water that is turbid,

https://doi.org/10.17509/dedicated.v2i2.68663

colored, odorous, and has an unpleasant taste. Good physical clean water quality was found in 10 respondents (33%) with stunting and 30 respondents (100%) without stunting. The physical parameters of respondents in both groups met the standards for clean water quality.

Analysis of the Effect of Clean Water Quality on Toddler Growth

In Table 2, out of 30 samples of toddlers with abnormal growth, 20 samples had poor physical water quality. Seven samples of toddlers who used irrigation water as their source of clean water had poor physical water quality, indicating that the irrigation water used was contaminated.

Table 3. Reservoir Characteristics

Specific Indicators	Good		Not Good	
	N	%	N	%
Reservoir Condition	40	67%	20	33%
Environmental Conditions Around the Reservoir	32	53%	28	47%
Condition of the Pipe Connecting the Water Source to the Reservoir	37	62%	23	38%

Source: Community Service Data, 2023

Table 3 shows that five samples from toddlers using irrigation had poor connections between the water source and the reservoir. This made the water more susceptible to contamination from the surrounding environment.

Discussion

The age range of 24-59 months is considered the golden age, characterized by increased nutritional needs. If the nutritional needs of toddlers are not met, it will cause growth and development disorders. Toddlers may be thinner and shorter, or can be described as stunted. At this age, toddler growth slows down, and motor development progresses as they begin to be weaned from their parents' care and care for themselves. During weaning, toddlers often experience a decrease in appetite as they start walking and engaging in various activities, which can lead to their nutritional needs not being met (Nisa et al., 2021).

Another factor that affects growth is gender. Female toddlers have more fat tissue and less muscle tissue than male toddlers. Female toddlers tend to feel full faster than male toddlers, which may lead to them consuming less nutritious food. This factor makes female toddlers more at risk of stunting than male toddlers (Sekarini, 2022). However, good maternal care can increase a toddler's appetite, so gender does not significantly affect stunting (Kurniawati & Yulianto, 2022). This is supported by research data from this study, which shows that male toddlers in Kutawaringin Village have a higher risk of stunting. Additionally, the 1,000 Hari Pertama Kehidupan (HPK) is a critical period for infants, making nutrition and sanitation essential factors to ensure optimal growth and development (Islam et al., 2020).

This finding suggests that there may be other factors that can influence toddler growth. One such factor is the provision of sanitation and clean water (Gizaw et al., 2022). Poor sanitation and inadequate provision of clean water were found in toddlers with abnormal growth who used dug wells as their primary source of clean water. Dug wells draw water from layers of soil relatively close to the surface, posing a higher risk of bacterial contamination. Dug wells are highly susceptible to contamination through seepage, such as

https://doi.org/10.17509/dedicated.v2i2.68663

from the use of healthy water itself (e.g., water used for washing and bathing). Additionally, dug wells constructed in open conditions have a higher risk of contamination. Drilled wells are considered insufficiently suitable to meet health standards compared to pumped wells or water mains. Pumped wells are safer because they have well covers that can prevent water contamination (Dappa et al., 2022).

The provision of clean water sourced from irrigation, which is classified as an unprotected water source, can cause health problems such as diarrhea. Toddlers who experience diarrhea may suffer from growth retardation. The quality of clean water can be said to influence the growth and development of infants, so the use of turbid water for infants is strongly discouraged. Turbidity in water is caused by suspended solid particles from metal corrosion, organic matter decomposition, and soil erosion, which can give the water an unpleasant taste. Consuming contaminated water can lead to health problems, dental issues, and digestive disorders. Providing clean water, managing waste, and ensuring proper sanitation are essential as primary preventive measures against stunting in infants (Asyaroh et al., 2024; Nisa et al., 2021; Woldesenbet et al., 2023). Based on this, this community service initiative can provide direct information to the residents of Kutawaringin Village, enabling them to collectively improve access to clean water sources and enhance the quality of water used in daily life.

CONCLUSION

Factors that can affect toddler growth include adequate nutrition, a balanced diet, overall health, genetic factors from their family, as well as gender and environmental factors. Generally, female toddlers are 0.8 times more likely to experience stunting than male toddlers. However, data show that male toddlers in Kutawaringin Village have a higher risk of stunting, suggesting that other factors may also affect toddler growth. Poor-quality water used in daily life can cause nutrient absorption disorders, leading to growth disorders in toddlers. Toddlers with abnormal growth often lack access to clean water. The residents of Kutawaringin Village have access to various sources of clean water. These differences affect the quality of clean water obtained. Based on the data, users of dug wells and irrigation systems often experience poor water quality, which can lead to growth disorders in toddlers who consume this water. Based on this, this community service can provide direct information to the people of Kutawaringin Village, enabling them to jointly improve access to clean water and enhance the quality of water used in daily life. Further community service can develop ways to deal with the challenges of water and clean water crises.

REFERENCES

Akastia, I., Ningtyas, W. S., & Suryawan, A. (2024). Optimalisasi pertumbuhan balita usia 12-36 bulan: Peran ASI eksklusif dan faktor BBLR. *Jurnal Vokasi Keperawatan (JVK)*, *7*(1), 10-20.

Al Hajiri, W. H. H., & Asih, A. Y. P. (2023). Review tentang: Kejadian diare pada balita di Indonesia. *Journal of Comprehensive Science (JCS)*, *2*(5), 1335-1342.

Amalina, A., Ratnawati, L. Y., & Bumi, C. (2023). Hubungan kualitas air konsumsi, higiene, dan sanitasi rumah tangga dengan kejadian stunting (Studi case control pada balita stunting di Kabupaten Lumajang). *Jurnal Kesehatan Lingkungan Indonesia*, *22*(1), 28-37.

Annisa, C., & Susilawati, S. (2022). Gambaran sanitasi lingkungan terhadap sarana air bersih dan jamban keluarga di Kelurahan Sukaraja. *PubHealth Jurnal Kesehatan Masyarakat*, *1*(1), 85-90.

Anshari, T., Desimal, I., & Astwan, N. W. J. (2023). Hubungan personal hygiene dan kualitas air bersih dengan kejadian stunting pada balita di Desa Serakapi Kecamatan Woja Kabupaten Dompu Tahun 2023. *Media of Health Research*, *1*(3), 94-99.

https://doi.org/10.17509/dedicated.v2i2.68663

Asyaroh, R. A. I., Kaulika, F. N., & Hermawan, D. A. SI CIPUNG program: Hygiene education to prevent stunting at Gunungsari Elementary School, Cianjur. *Dedicated: Journal of Community Services (Pengabdian kepada Masyarakat), 2*(2), 277-288.

Azizah, A., & Achyar, K. (2020). Pelatihan pemantauan pertumbuhan balita sebagai upaya deteksi dini stunting. *Jurnal Pengabdian Masyarakat Al-Irsyad (JPMA)*, *2*(1), 43-49.

Bahagia, D. S., Saputra, S., Muchlisun, R., & Cupriadi, S. A. M. (2024). Pengabdian Kepada Masyarakat (PKM) dalam pengolahan air resapan tanah menjadi air bersih di Desa Cibodas. *Jurnal Pengabdian Sosial*, *1*(8), 834-844.

Budiana, T. A., & Marlina, D. (2020). Efektivitas healthy dates sebagai suplemen koreksi pertumbuhan balita stunting di Kota Cimahi. *Jurnal Ilmu Kesehatan Bhakti Husada: Health Sciences Journal*, *11*(2), 137-151.

Dappa, E., Marilyn, S., & Sahdan, M. (2023). Gambaran inspeksi sanitasi sumur gali dengan kandungan bakteriologis air sumur gali di wilayah kerja Puskesmas Sikumana Kota Kupang Tahun 2022. *Sehat Rakyat: Jurnal Kesehatan Masyarakat*, *2*(1), 23-32.

Dirgawati, M., Sururi, M. R., & Ridwan, Y. S. (2024). Perencanaan sistem pemanenan air hujan sebagai teknologi alternatif penyediaan air bersih di kawasan pemukiman kepadatan tinggi. *Jurnal Teknologi Lingkungan*, *25*(2), 246-256.

Febriawati, L., Mellaty, R., & Widowati, T. (2021). Analisis aksesibilitas air bersih dalam rangka peningkatan ketahanan keluarga di DKI Jakarta. *Jurnal Lemhannas RI*, *9*(2), 24-39.

Febry, F., Misnaniarti, M., Ainy, A., Budi, I. S., & Safriantini, D. (2022). Pencegahan stunting balita melalui refreshing kader Posyandu dengan pelatihan pemantauan pertumbuhan dan pengisian KMS. *Jurnal Pengabdian Masyarakat: Humanity and Medicine*, *3*(1), 14-23.

Fitrianingsih, D., Bettiza, M., & Uperiati, A. (2021). Klasifikasi status gizi pada pertumbuhan balita menggunakan K-Nearest Neighbor (Knn). *Student Online Journal (SOJ) Umrah-Teknik*, *2*(1), 106-111.

Gizaw, Z., Yalew, A. W., Bitew, B. D., Lee, J., & Bisesi, M. (2022). Stunting among children aged 24–59 months and associations with sanitation, enteric infections, and environmental enteric dysfunction in rural northwest Ethiopia. *Scientific Reports, 12*(1), 1-11.

Hamijah, S. (2021). Hubungan sanitasi lingkungan terhadap kejadian diare pada balita. *Journal Transformation of Mandalika*, *2*(3), 29-35.

Hidayat, A., & Kusnadi, D. (2020). Keberlanjutan pelayanan air bersih di Perumda Air Minum Tirta Medal Kabupaten Sumedang. *JRPA-Journal of Regional Public Administration*, *5*(1), 68-78.

Islam, M. S., Zafar Ullah, A. N., Mainali, S., Imam, M. A., & Hasan, M. I. (2020). Determinants of stunting during the first 1,000 days of life in Bangladesh: A review. *Food Science & Nutrition, 8*(9), 4685-4695.

Kornita, S. E. (2020). Strategi Pemenuhan kebutuhan masyarakat terhadap air bersih di kabupaten Bengkalis. *Jurnal Samudra Ekonomi dan Bisnis*, *11*(2), 166-181.

Kurniawati, N., & Yulianto, Y. (2022). Pengaruh jenis kelamin balita, usia balita, status keluarga dan pendapatan keluarga terhadap kejadian pendek (stunted) pada balita di Kota Mojokerto. *Pengembangan Ilmu dan Praktik Kesehatan*, *1*(1), 76-92.

Ndoka, F. D. P., Junias, M. S., & Riwu, Y. R. (2024). Gambaran kualitas air pada depot air minum isi ulang di Kelurahan Tarus. *Sehatmas: Jurnal Ilmiah Kesehatan Masyarakat*, *3*(2), 276-285.

https://doi.org/10.17509/dedicated.v2i2.68663

Nisa, S. K., Lustiyati, E. D., & Fitriani, A. (2021). Sanitasi penyediaan air bersih dengan kejadian stunting pada balita. *Jurnal Penelitian dan Pengembangan Kesehatan Masyarakat Indonesia*, *2*(1), 17-25.

Nurdin, R. I., Nugraha, H., Arbie, I. I., Hamdani, S. A., Lestari, R., Khoerunnisa, I., ... & Hidayat, M. (2023). Community re-education on the urgency of keeping the river clean and sorting waste in Desa Cikole Kec. Lembang. *Dedicated: Journal of Community Services (Pengabdian kepada Masyarakat), 1*(1), 17-30.

Nurjazuli, N., Budiyono, B., Raharjo, M., & Wahyuningsih, N. E. (2023). Environmental factors related to children diagnosed with stunting 3 years ago in Salatiga City, Central Java, Indonesia. *Toxicologie Analytique et Clinique, 35*(3), 198-205.

Nurlaila, N., & Susilawati, S. (2022). Pengaruh kesehatan lingkungan terhadap kejadian diare pada balita di Kota Medan. *Nautical: Jurnal Ilmiah Multidisiplin Indonesia*, *1*(7), 463-466.

Oginawati, K., Yapfrine, S. J., Fahimah, N., Salami, I. R. S., & Susetyo, S. H. (2023). The associations of heavy metals exposure in water sources to the risk of stunting cases. *Emerging Contaminants, 9*(4), 1-8.

Purwanto, E. W. (2020). Pembangunan akses air bersih pasca krisis COVID-19. *The Indonesian Journal of Development Planning*, *4*(2), 207-214.

Rah, J. H., Sukotjo, S., Badgaiyan, N., Cronin, A. A., & Torlesse, H. (2020). Improved sanitation is associated with reduced child stunting amongst Indonesian children under 3 years of age. *Maternal & Child Nutrition, 16*(1)*,* 1-8.

Roesardhyati, R., & Kurniawan, D. (2021). Identifikasi faktor yang mempengaruhi pertumbuhan balita pendek (Stunting). *Jurnal Kesehatan Mesencephalon*, *6*(2), 142-149.

Sagita, C. D., & Afriyani, L. D. (2022). Description of Cadre knowledge about interpretation of toddler growth charts at Posyandu Losari Kidul Village in 2021. *Journal of Holistics and Health Sciences (JHHS)*, *4*(1), 28-40.

Sari, G. F. A., Yolanda, D., & Rajib, R. K. (2024). Krisis air menangani penyediaan air bersih di dunia yang semakin kekurangan sumber daya. *Jurnal Ilmiah Research Student*, *1*(5), 334-341.

Savitri, A. A. Q., & Susilawati, S. (2022). Literature review: Hubungan sanitasi lingkungan dengan kejadian diare pada balita. *Florona: Jurnal Ilmiah Kesehatan*, *1*(2), 72-77.

Sekarini, S. (2022). Kejadian stunting pada balita ditinjau dari karakteristik umur dan jenis kelamin. *Jurnal Ilmu Kesehatan Makia*, *12*(1), 8-12.

Setioningrum, R. N. K., Sulistyorini, L., & Rahayu, W. I. (2020). Gambaran kualitas air bersih kawasan domestik di Jawa Timur pada Tahun 2019. *Jurnal Ilmu Kesehatan Masyarakat*, *16*(2), 87-94.

Sholikhah, A., & Dewi, R. K. (2022). Peranan protein hewani dalam mencegah stunting pada anak balita. *JRST (Jurnal Riset Sains dan Teknologi)*, *6*(1), 95-100.

Styawati, S., & Ariany, F. (2021). Sistem Monitoring tumbuh kembang balita/batita di tengah COVID-19 berbasis mobile. *Jurnal Informatika Universitas Pamulang*, *5*(4), 490-497.

Sumarno, T. I., & Syafiuddin, A. (2023). Analisis kualitas air sumur dan sarana sanitasi dengan kejadian stunting di Desa Lokus Stunting Kecamatan Driyorejo. *Medic Nutricia: Jurnal Ilmu Kesehatan*, *1*(1), 20-30.

Susilawati, S., & Luthfiah, M. (2023). Pengaruh faktor lingkungan ibu dengan kejadian diare pada balita di Wilayah Pesisir. *Zahra: Journal of Health and Medical Research*, *3*(3), 273-281.

https://doi.org/10.17509/dedicated.v2i2.68663

Sutisna, S., & Yuniar, M. N. (2023). Klasifikasi kualitas air bersih menggunakan METODE Naïve baiyes. *Jurnal Sains dan Teknologi*, *5*(1), 243-246.

Widiastuti, A., & Winarso, S. P. (2021). Program PMT dan grafik pertumbuhan balita pada masa pandemi COVID. *Jurnal Sains Kebidanan*, *3*(1), 30-35.

Woldesenbet, B., Tolcha, A., & Tsegaye, B. (2023). Water, hygiene and sanitation practices are associated with stunting among children of age 24-59 months in Lemo district, South Ethiopia, in 2021: Community based cross sectional study. *BMC Nutrition, 9*(1), 1-9.

https://doi.org/10.17509/dedicated.v2i2.68663