Correlation Between Clean Water Supply And Waste Management With Knowledge Of Stunting

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Abstract

Stunting is an important global issue. One of the causes of stunting is the mother's inability to recognize it. Mother's knowledge will influence the way waste management and clean water supply. This study aimed to determine the relationship between knowledge about stunting and providing clean water and waste management in preventing stunting in Sukamulya Village. This research method is a quantitative correlation using secondary data. The population in this study were 55 mothers who had toddlers in Rancaekek District, Sumedang. The sampling technique used was total sampling. This study's analysis used univariate and bivariate analysis with the Chi-Square test. The results of the study show that there is no relationship between the level of knowledge about stunting and the provision of clean water ($p = 0.375$), and there is no relationship between knowledge about stunting and waste management ($p = 0.175$). These results show that the level of knowledge is not a reference in the emergence of good behavior. Good knowledge influences behavior, but there are other aspects. Especially behavior towards the availability of clean water and waste management in preventing stunting. Further studies are needed by changing the variables used and the methods used.

Keywords: Clean water; garbage; knowledge; mother; stunting.

Introduction

The Sustainable Development Goals (SDGs), which include eradicating hunger and all types of malnutrition by 2030 and achieving food security, include reducing stunting as one of its goals. Reducing the stunting rate by 40% is the target for 2025 (Pusat Data dan Informasi Kemenkes RI., 2018). Factors that directly contribute to the incidence of stunting include pregnant women with nutritional deficiencies, mothers who experience preterm pregnancies, suboptimal feeding, non-exclusive breastfeeding, and the incidence of infection. While the indirect factors that cause stunting include health services, social culture, education, and environmental sanitation (WHO, 2015). Stunting prevention is successful if public health behavior is included in the good category (Kemenkes RI, 2018). Inadequate sanitary conditions have a 5.0 times higher chance of causing children to be stunted because of their relatively significant association with the frequency of stunting (Yenita et al., 2021). Good sanitation can protect children against stunting by 70.6%, especially in toddlers (Vilcins et al., 2018).

Actions aimed at disease prevention include providing clean and healthy water, good sanitation, healthy food, sewerage, and solid waste management (WHO, 2018). Lack of clean water that is used daily causes infections such as diarrhea and intestinal worms to occur, so children will experience problems absorbing nutrients which results in weight loss. Long-term infectious infections often result in stunting in children under five years (Kemenkes RI, 2018). This is in line with research conducted by Prendergast and Humphrey (2014) In 137 developing countries, infections in children under five are caused by a lack of access to clean water sources and inadequate sanitation infrastructure, which divert energy from absorbing nutrients for growth against infection and inhibiting growth. Small child growth. Ulfah et al. (2018) stated that children under five from house with have access to clean water have lower rates of diarrhea and stunting than children under five from households that do not have access to clean water and latrines. In addition, domestic waste management has the potential to be processed, for example by separating organic waste from inorganic and utilizing it. Waste management aims to prevent disease-carrying animals from contaminating drinking water sources (Susanto et al., 2020).

Lack of mother knowledge about stunting causes children to be at risk of stunting. This is in line with research conducted in the Work Area of the Ulak Muid Health Center, Malawi Regency, in 2016 which stated that compared to mothers with adequate understanding, mothers with less knowledge have a 1.644 times higher risk of their children experiencing stunting (Rahmandiani et al., 2019). Community nurses are urgently needed; in these situations, they serve as educators who raise community awareness. Lack of stunting prevention initiatives due to lack of understanding and awareness. This is in line with the low awareness of mothers about stunting which is closely related to low nutritional status and a lack of environmental management (Ekayanthi & Suryani, 2019).

Rancaekek District, which is one of the 100 Priority Districts/Cities for Dwarfing or Stunting Intervention, is one of the areas that has become the focus of handling stunting in Bandung Regency and has received the attention of the Bandung District Government by the National Team for the Acceleration of Poverty Reduction (TNP2K) (Tobing et al., 2021). In February 2022, the results of the examination of toddlers in Sukamulya Village were recorded as having a high stunting rate; out of a total of 97 toddlers, there were 37 toddlers, or 38%, were stunted. The high prevalence of stunting is influenced by parental knowledge and environmental conditions in Sukamulya Village. Regarding water quality, the location does not meet the standard for proper water requirements and there is still much waste that is not sorted by the community. This study aims to analyze the relationship between knowledge about stunting and the provision of clean water and waste management in preventing stunting in Rancaekek District, Bandung Regency.

Research Methods

This research is a correlational study with a cross-sectional approach using secondary

data. The research was conducted at Sukamulya Village, Rancaekek District, from August to December 2022. The population in this study were mothers who had toddlers in Sukamulya Village, Rancaekek District, who were taken in the preliminary study as many as 55 people.

The instrument used was a questionnaire adapted from previous research, which was obtained from a study entitled "Environmental Modification Through Sanitation, Clean Water, Hygiene, and Nutrition for Stunting Prevention." The validity test with the r table with a significant degree of 5% is 0.227 and declared valid. The results of the Reliability Test using the Guttman split-half show a value of 0.770 which can be interpreted that the question items are reliable and get a value of 0.859 using Cronbach's Alpha, which means that the question items in the instrument have a substantial reliability value. There are 6 question items for knowledge about stunting, 1 question for clean water supply items, and one for waste management items there is 1 question.

This research uses secondary data that has fulfilled the ethical clearance of the Padjadjaran University Research Ethics Committee with an ethical number of 739/ UN6. KEP/EC/2022, this study uses research ethics in confidentiality, fairness, and benefits. Secondary data obtained were then analyzed using univariate analysis to see the frequency distribution of respondents, which will be presented in the form of frequencies and percentages, as well as categorizing good and bad variables and bivariate analysis using the Chi-Square test to determine the relationship between clean water supply and waste management with knowledge of stunting.

Results

Characteristic of participants

We found that the most significant number of respondents were in early adulthood, namely 23 people (41.8%) aged in the range of 26-35 years. Respondents aged into late adolescence amounted to 11 people (20%), and respondents who were late adults amounted to 21 people (38.2%). The distribution of education level characteristics showed that almost half of the respondents had a junior high school level of education with a total of 31 people (56.4%). A high school education level, there were 22 mothers with toddlers (40%), while at the university education level, there were only two mothers with toddlers (3.6%). The demographic of respondent are shown in table 1.

Table 1. Respondent Demographic Frequency Distribution (n=55)

Parameter	Frequency (f)	Percentage%
Mother's age (in years)		
Late teens (17-25)	**11**	**20.0**
Early adulthood (26-35)	**23**	**41.8**
Late adulthood (36-45)	**21**	**38.2**
Mother's last education		
Junior high school	**31**	**56.4**
High school	**22**	**40.0**
University	**2**	**3.6**

Stunting knowledge levels

Table 2 shows the respondents' knowledge level where most of them are at a good level of knowledge about stunting, amounting to 31 (56.4%).

Table 2. Frequency Distribution of Stunting Knowledge Levels (n=55)

Stunting knowledge levels	Frequency (f)	Percentage (%)
Good	**31**	**56.4**

Not good	**24**	**43.6**
Total	**55**	**100.0**

Clean water supply

Based on table 3, the results of clean water supply data show that most mothers with toddlers are included in the good category in terms of having clean water supply in terms of physical parameters at home with a total of 40 people (72.7%), while mothers with toddlers are in the category of providing clean water is not good with the physical quality of colored water, smell, and taste totaling 15 people (27.3%).

Table 3. Frequency Distribution of Clean Water Supply (n=55)

Clean water supply	Frequency (f)	Percentage (%)
Good (colorless, odorless, tasteless)	**40**	**72,7**
Not Good (Color, smell, taste)	**15**	**27,3**
Total	**55**	**100.0**

Waste management

Based on table 4 shower waste management data that the majority of mothers with toddlers do not carry out waste management which is included in the unfavorable category, totaling 31 people (56.4%). In contrast, mothers with toddlers have a good waste management category by sorting, totaling 24 people (43.6%).

Table 4. Frequency Distribution of Waste Management (n=55)

Waste Managemet	Frequency (f)	Percentage (%)
Good (do the sorting)	**24**	**43.6**
Not Good (Not doing sorting)	**31**	**56.4**
Total	**55**	**100.0**

Correlation Test Results for Stunting Knowledge Level and Clean Water Supply

Table 5 explains the relationship between the level of knowledge about stunting and the provision of clean water. Based on the results of the analysis using the Chi-square test, it was found that respondents with a good level of knowledge and a good supply of clean water were 24 people (77.4%) compared to respondents who had good knowledge and were not good at providing clean water as many as seven people (22.6 %). While respondents with less knowledge were 24 people, 16 people (17.5%) had a good clean water supply, and respondents who had poor clean water supply were eight people (33.3%). There is a tendency for a good level of knowledge to provide clean water, whereas a poor level of knowledge tends to be lacking in the clean water supply.

The results of data analysis with statistical correlation tests obtained a p-value of 0.375. These findings indicate that in Sukamulya Village, Rancaekek District, Bandung Regency, the provision of clean water and mothers' understanding of stunting is separate.

Table 5. Correlation Test Result for Stunting Knowledge Levels and Clean Water Supply (n=55)

Stunting knowledge levels	Clean Water						p	Chi-Square
	Good		Not Good		Total			
	n	%	n	%	n	%		
Good	24	77.4	7	22.6	31	100	0.375	0.789
Not Good	16	66.7	8	33.3	24	100		

Correlation Test Results for Stunting Knowledge Level and Waste Management

Table 6 explains the relationship between waste management and knowledge level. Sixteen respondents (51.6%) have a good understanding and waste management, compared to 15 respondents (48.4%), according to the analysis findings using the Chi-square statistical test. The number of respondents who know about stunting is lower, and most, 16 people (66.7%) lack waste management. There is a tendency for a good level of knowledge to be related to waste management, whereas a poor level of knowledge tends to be lacking in waste management.
The results of data analysis using a statistical correlation test showed that p-value = 0.175, which means there is no relationship between mothers' knowledge about stunting and waste management in Sukamulya Village, Rancaekek District, Bandung Regency.

Table 6. Correlation Test Result of Stunting Knowledge Levels and Waste Management (n=55)

Stunting knowledge levels	Waste Management						p	Chi-Square
	Good		Not Good		Total			
	n	%	n	%	n	%		
Good	16	51.6	15	48.4	31	100	0.175	1.838
Not Good	8	33.3	16	66.7	24	100		

Discussion

The number of respondents in this study was 55 respondents. Thre are 23 respondents were included in early adulthood, and 31 respondents with last junior high school education. The level of knowledge of mothers with toddlers in Sukamulya Village is mostly at a good level. As for the condition of the provision of clean water from a physical perspective, most of it is colorless, odorless, and tasteless. As many as 40 people are included in the good category. Meanwhile, waste management is unfavorable, showing a tendency not to sort waste (31).

The Relationship between Stunting Knowledge and Clean Water Supply

The results of the correlation study between the two variables showed no relationship between knowledge about stunting and clean water supply, with a p-value = 0.375. These results are in line with those described in the study by Adzura et al. (2021) that while some studies claim there is no relationship between adequate sources of clean water and stunting, other studies show that protected sources of clean water function as a protective factor. This shows that the lack of clean water is not the leading cause of stunting. According to other researchers, the ability to obtain a decent source of clean water is supported by high parental education, employment, and family income. This research is in line with the research of Torlesse et al. (2016) with a p-value of 0.23, indicating that there is no relationship between the availability of clean water sources and the prevalence of stunting. Besides that, Nkurunziza et al. (2017) stated that water sources had no relationship with stunting with a p-value = 0.46.

Most of the respondents in this study had poor knowledge but were already good at providing clean water. According to this study, there is no correlation between the two characteristics because not all people with good knowledge also have clean water, and vice versa. This can happen as a result of other external circumstances. Various factors may have caused the poor water quality in Sukamulya Village, namely dry

season conditions, which caused drought, and the location of the village, which is close to industrialization, which then polluted the river due to the waste disposal process, which resulted in a reduced supply of clean water (Sulistiyo & Herianto 2016).

The Relationship of Knowledge with Waste Management

The research results on the relationship test between the two variables showed no relationship between knowledge about stunting and waste management (p = 0.175). These results are in line with the research by Sufriannor (2017) with the results of bivariate analysis p-value = 0.747 indicating that there is no relationship between traders' knowledge and waste management in the market. According to this study, there is no correlation between the two factors because knowledgeable traders only sometimes act on their knowledge. New traders are aware of waste management's benefits and goals but need to be motivated to implement them. Conversely, traders who do not know the benefits and goals are motivated to implement waste management so that a person's behavior or actions depend on it.

The same results were also obtained in the research Astuti et al. (2019), p-value = 0.063, which means that because traders have paid the cleaning fee and the waste management problem has been handled, there is no relationship between their expertise and waste management in the market. The results of other studies show that knowledge has no relationship with action p-value = 0.071, which means that household waste management and knowledge are not related. Some respondents with knowledge of managing their waste poorly and others with inadequate knowledge of managing their waste effectively, there is no correlation between the two variables (Rohmatin, Lampus, & Tucunan, 2014). In a study conducted in Bener Village, most of the respondents were lazy and wanted to avoid dealing with waste problems; they had strong knowledge but poor waste management behavior. This is in line with other studies which did not find a correlation between knowledge and household waste management behavior (Sari & Mulasari, 2017).

In this study, most respondents' knowledge and skills in managing waste were below average and inadequate. Not all participants in this study have a good understanding of waste management. Therefore, other factors that affect waste management knowledge and variables can contribute to the research findings. Due to reluctance, ignorance, and the absence of local government policies on waste management, there may still be loopholes in waste management regulations. Age, education, and societal knowledge are all elements that help people develop superior behavior (Yudistirani, Syaufina, & Mulatsih, 2015).

A Study by Rahmandiani et al. (2019) states that education affects the level of a mother's knowledge about stunting because someone with higher education can easily receive information. Knowledge influences behavior change. Adequate knowledge will be able to provide rational thinking and even create motivation in a person to carry out an activity (Fegita et al., 2022). However, it is not only knowledge that can influence it; many other factors influence the implementation of waste management in preventing stunting.

Researchers realize that this research is close to lacking limitations. Renewable research on knowledge and environmental behavior is necessary and important to research, especially related to the relationship between stunting knowledge and clean water supply and household waste management, because the results of the search conducted showed that there were limited relevant articles that made it difficult for researchers to obtain review literature. Therefore, the role of the nurse is needed. Nurses must be able to maximize their role as educators because nurses are health service providers, both promotive and preventive. Therefore nurses need to play a role in preventing stunting that occurs in the community.

Conclusion

The level of knowledge of mothers with toddlers in Sukamulya Village regarding stunting is mostly in the good category. As for the condition of the provision of clean water from a physical perspective, most of it is colorless, odorless, and tasteless, which

is included in the good category. Meanwhile, waste management is in the category of unfavorable, showing a tendency not to sort waste. This study showed no relationship between mothers' knowledge about stunting and the provision of clean water and waste management in Sukamulya Village, Rancaekek District, Bandung Regency. This is different from most studies that examine the relationship between knowledge and behavior variables. Knowledge can indeed influence the occurrence of the behavior, but other aspects and external factors can influence behavior, especially in behavior related to the environment. Education, age, awareness, region location, nature, and socio-economy are examples of other aspects that can influence the level of knowledge and changes in behavior in providing clean water and waste management in preventing stunting.

Therefore, nurses should increase knowledge and awareness by providing education. Future researchers hope to examine the relationship between knowledge about stunting and the provision of clean water and waste management by modifying the methods and variables used.

References

Adzura, M., Yulia, Y., & Fathmawati, F. (2021). Hubungan sanitasi, air bersih dan mencuci tangan dengan kejadian stunting pada balita di Indonesia. Sulolipu: *Media Komunikasi Sivitas Akademika dan Masyarakat*, 21(1), 79-89.

Astuti, W., Adisanjaya, N., & Indahsari, A. (2019). Partisipasi pedagang dalam pengelolaan sampah di Pasar Tradisional Banjar Adat Mambal Kajanan Badung Bali. *Jurnal Higiene,* 5(3), 165–176.

Ekayanthi, N. W. D., & Suryani, P. (2019). Edukasi gizi pada ibu hamil mencegah stunting pada kelas ibu hamil. *Jurnal Kesehatan*, 10(3), 312. https://doi.org/10.26630/jk.v10i3.1389

Fegita, P., Hikmah, M., & Malik, R. (2022). Relationship between education level, age, and knowledge of pregnant women with antenatal care status. *Scientific Journal*, 1(2), 154–164. https://doi.org/10.56260/sciena.v1i2.41

Kemenkes RI. (2018). C*egah stunting, itu penting. Pusat Data dan Informasi,* Kementerian Kesehatan RI, 1–27. https://www.kemkes.go.id/download.php?file=download/pusdatin/buletin/Buletin-Stunting-2018.pdf

Nkurunziza, S., Meessen, B., Van geertruyden, J. P., & Korachais, C. (2017). Determinants of stunting and severe stunting among Burundian children aged 6-23 months: Evidence from a national cross-sectional household survey, 2014. *BMC Pediatrics,* 17(1), 1–14. https://doi.org/10.1186/s12887-017-0929-2

Prendergast, A. J., & Humphrey, J. H. (2014). The stunting syndrome in developing countries. *Paediatrics and International Child Health,* 34(4), 250–265. https://doi.org/10.1179/2046905514Y.0000000158

Pusat Data dan Informasi Kemenkes RI. (2018). *Situasi balita pendek (Stunting) di Indonesia.* 2018. https://doi.org/10.1017/CBO9781107415324.004

Rahmandiani, R. D., Astuti, S., Susanti, A. I., Handayani, D. S., & Didah. (2019). Hubungan pengetahuan ibu balita tentang stunting dengan karakteristik ibu dan sumber informasi di Desa Hegarmanah Kecamatan Jatinangor Kabupaten Sumedang. *JSK*, 5(2), 74–80. http://jurnal.unpad.ac.id/jsk_ikm/article/view/25661/0

Rohmatin, V. A., Lampus, B., & Tucunan, A. (2014). *Hubungan antara pengetahuan dan sikap dengan pengelolaan sampah rumah tangga di Lingkungan II Kelurahan Sumompo Kecamatan Tuminting Kota Manado* (Skripsi, Universitas Sam Ratulangi Manado).

Sari, N., & Mulasari, S. A. (2017). Pengetahuan, sikap dan pendidikan dengan perilaku pengelolaan sampah di Kelurahan Bener Kecamatan Tegalrejo Yogyakarta. *Jurnal Medika Respati*, 12(2), 74-84.

Sufriannor, M., Hardiono, H., & Zuraini, J. A. (2017). Pengetahuan, sikap dengan partisipasi pedagang dalam pengelolaan sampah pasar. Jurnal Kesehatan Lingkungan: *Jurnal dan Aplikasi Teknik Kesehatan Lingkungan*, 14(2), 519-524.

Sulistiyo, B., & Herianto, N. (2016). *Analisis penyebab dan dampak degradasi air pada lingkungan hidup*. Program Pascasarjana Pengelolaan Sumberdaya Alam, Fakultas Pertanian, Universitas Bengkulu, 1(1), 1–7.

Susanto, A., Putranto, D., Hartatadi, H., Luswita, L., Parina, M., Fajri, R., Sitiana, S., Septiara, S., & Amelinda, Y. S. (2020). Pemberdayaan masyarakat melalui pengelolaan sampah dalam mengurangi sampah botol plastik Kampung Nelayan Kelurahan Tanjung Ketapang. *Abdi: Jurnal Pengabdian dan Pemberdayaan Masyarakat,* 2(2), 94–102. https://doi.org/10.24036/abdi.v2i2.49

Tobing, M. L., Pane, M., Harianja, E., Badar, S. H., Supriyatna, N., Mulyono, S., & Tim Nasional Percepatan Penanggulangan Kemiskinan TNPK. (2021). 100 Kabupaten/ Kota Prioritas untuk Intervensi Anak Kerdil (Stunting). *PREPOTIF : Jurnal Kesehatan Masyarakat*, 13(1), 238–244. http://www.tnp2k.go.id/images/uploads/downloads/Binder_Volume1.pdf

Torlesse, H., Cronin, A. A., Sebayang, S. K., & Nandy, R. (2016). Determinants of stunting in Indonesian children: Evidence from a cross-sectional survey indicate a prominent role for the water, sanitation and hygiene sector in stunting reduction. *BMC Public Health*, 16(1), 1–11. https://doi.org/10.1186/s12889-016-3339-8

Ulfah, E., Rahayuningsih, S. E., Herman, H., Susiiarno, H., Gurnida, D. A., Gamayani, U., & Sukandar, H. (2018). Asuhan nutrisi dan stimulasi dengan status pertumbuhan dan perkembangan balita usia 12 – 36 bulan. *Global Medical and Health Communication*, 6(1), 12–20. https://ejournal.unisba.ac.id/index.php/gmhc/article/view/2323

Vilcins, D., Sly, P. D., & Jagals, P. (2018). What it is and what it means: Concern Worldwide U.S. *Annals of Global Health*, 84(4), 551–562. https://www.researchgate.net/publication/328753452_Environmental_Risk_Factors_Associated_with_Child_Stunting_A_Systematic_Review_of_the_Literature/link/5be0eca1299bf1124fbe13fd/download

WHO. (2015). *Stunting in a nutshell*. https://www.Who.Int/. https://www.who.int/news/item/19-11-2015-stunting-in-a-nutshell

WHO. (2018). T*hink global, act local*. https://www.Who.Int/. https://www.who.int/director-general/speeches/detail/think-global-act-local

Yenita, R. N., Ramadhani, M., & Saputri, E. (2021). Pengaruh air bersih dan status ekonomi terhadap kejadian stunting di Wilayah Kerja Puskesmas Tapung Hilir II. *EcoNews*, 4(2), 66–68. https://journal.pasca-unri.org/index.php/econews/article/view/55

Yudhistirani, S. A., Syaufina, L., & Mulatsih, S. (2016). Desain sistem pengelolaan sampah melalui pemilahan sampah organik dan anorganik berdasarkan persepsi ibu-ibu rumah tangga. *Jurnal Konversi*, 4(2), 29-42.