

The Relationship Between Handwashing Behavior and the Incidence of Diarrhea Among Students at SD GMIM 54 Lapangan, Mapanget District, Manado City

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Abstract

Health problems in school-aged children are often related to behaviors that contribute to the spread of germs. One common example is the habit of not washing hands before and after eating or after using the toilet. When children do not wash their hands, bacteria can enter the body through the food they consume. This study aims to determine the relationship between handwashing behavior and the incidence of diarrhea among students at SD GMIM 54 Lapangan, Mapanget District, Manado City. This is a quantitative study using a cross-sectional approach conducted on 50 randomly selected samples. Data were collected using a validated and reliable questionnaire. Data analysis was performed using the Chi-Square test with a significance level of $\alpha = 0.05$. The Chi-Square test results showed a significant relationship between handwashing knowledge and the incidence of diarrhea ($p = 0.000 < 0.05$). There was also a significant relationship between handwashing attitudes and the incidence of diarrhea ($p = 0.000 < 0.05$). Moreover, there was a significant relationship between handwashing behavior and the incidence of diarrhea ($p = 0.000 < 0.05$). The conclusion of this study indicates that there is a significant relationship between handwashing behavior and the incidence of diarrhea among students at SD GMIM 54 Lapangan. This suggests that hygienic behavior, especially handwashing, plays an important role in preventing diarrheal diseases among school-aged children.

Keywords: Behavior, Handwashing, Diarrhea Incidence

Abstract (Indonesian)

Masalah kesehatan pada anak usia sekolah sering kali terkait dengan perilaku yang mempengaruhi penyebaran kuman. Salah satu contohnya adalah kebiasaan tidak mencuci tangan sebelum dan sesudah makan atau setelah menggunakan toilet. Ketika anak-anak tidak membersihkan tangan mereka, bakteri yang ada dapat terbawa masuk ke dalam tubuh melalui makanan yang mereka konsumsi. Penelitian ini bertujuan untuk Mengetahui hubungan perilaku mencuci tangan dengan kejadian diare siswadi SD GMIM 54 Lapangan, Kecamatan Mapanget Kota Manado. Jenis Penelitian ini adalah penelitian kuantitatif dengan pendekatan *cross sectional* yang dilakukan terhadap 50 sampel yang ditentukan secara *random sampling*. Pengumpulan data diperoleh dari alat ukur menggunakan kuesioner yang sudah dilakukan uji *validitas dan reabilitas*. Analisa data Menggunakan uji *Chi-Square* sampel dengan kemaknaan $\alpha = 0,05$. Hasil Uji *Chi-Square* di dapatkan adanya hubungan yang bermakna antara Pengetahuan mencuci tangan dengan kejadian diare ($p=0.000<0.05$). Hasil Uji *Chi-Square* di dapatkan adanya hubungan yang bermakna antara sikap mencuci tangan dengan kejadian diare ($p=0.000<0.05$). Hasil Uji *Chi-Square* di dapatkan adanya hubungan yang bermakna antara Perilaku mencuci tangan dengan kejadian diare ($p=0.000<0.05$). Kesimpulan Penelitian ini menunjukkan bahwa terdapat hubungan yang signifikan antara perilaku mencuci tangan dengan kejadian diare pada siswa SD GMIM 54 Lapangan. Hal ini mengindikasikan bahwa perilaku higienis, khususnya mencuci tangan, berperan penting dalam pencegahan penyakit diare di kalangan anak usia sekolah.

Kata kunci: Perilaku, Mencuci tangan, Kejadian Diare

INTRODUCTION

Health is one of the most important needs in human life, and many efforts have been made to maintain and improve the health of individuals and groups since ancient times. To improve the degree of health, the first step that needs to be taken is to instill clean and healthy living behaviors (PHBS) in the family to realize the status of public health. Clean and Healthy Living Behavior provides a learning experience for individuals, families, groups, and communities by opening communication channels, providing information and education to improve knowledge, attitudes and behaviors through advocacy approaches, fostering atmosphere, and community strains, so that they can implement, and improve public health. (Rita F.P, 2023).

Health problems in school-age children are often related to behaviors that affect the spread of germs. The habit of not washing hands before and after eating or after using the toilet often occurs. When children do not clean their hands, the bacteria can be carried into the body through the food they consume. This can trigger various types of diseases, one of which is diarrhea which of course is closely related to poor handwashing habits. (Winda Amiar, 2020).

Diarrhea is still one of the serious public health problems in developing countries, including Indonesia. Every year, there are around 1.7 billion cases of diarrhea that occur worldwide (WHO, 2017). The high rate of pain due to diarrhea is influenced by various factors, one of which is the lack of implementation of clean and healthy living behaviors (PHBS). One of the four key steps in PHBS to improve public health is to encourage proper handwashing behavior. In Indonesia, it is estimated that there are around 200 to 400 cases of diarrhea per 1. 000 people every year, which means there are more than 60 million cases of diarrhea in the country every year.

Cases of diarrhea in North Sulawesi are still high, especially in children. According to Basic Health Research (Riskesdas) in 2018, diarrhea cases in North Sulawesi were recorded as many as 25,661 cases of diarrhea, the 3rd after West Nusa Tenggara and Papua and the city of Manado became the regions with the highest diarrhea cases of 4,467. (Ministry of Health, 2018). The high incidence of diarrhea in children occurs due to several factors, including poor personal hygiene or *personal hygiene* is one of the factors. (Firdaus, & F, A.2021).

Diarrhea in school children is classified into three levels, namely mild, moderate, and severe, based on the frequency of bowel movements, the consistency of the stool, and the accompanying symptoms. Mild Diarrhea At this stage, the child has bowel movements 3 to 4 times a day with the consistency of stool that is soft to slightly liquid. Children generally still look active and show no signs of dehydration. Treatment is enough with rest, adequate fluid consumption, and monitoring. Moderate diarrhea is characterized by a frequency of bowel movements of 5 to 7 times per day with a more liquid stool consistency. Children usually start to show symptoms such as excessive thirst, dry lips, fussy easily, and start to look weak. This condition requires more attention to prevent dehydration, including the administration of oral rehydration fluids (oralit) and close monitoring. At this level, the child has bowel movements more than 7 times a day with the consistency of very liquid or watery stools. Signs of severe dehydration appear, such as sunken eyes, inelastic skin, extreme weakness, and even reluctance to drink. This condition is an emergency and must be immediately taken to a health facility to receive further medical treatment (IDAI, 2017)

Based on research conducted by researchers on an observational basis in the second week on September 9-12, 2024 at SD GMIM 54 Lapangan, the lack of water sources in schools, problems in maintaining personal hygiene can also arise, because students cannot wash their hands. This situation is certainly very worrying, because the habit to carry out clean and healthy living behaviors should be started early.

Furthermore, based on data from observation results, there were 6 students of SD GMIM 54 Lapangan who experienced diarrhea and 5 of them did not apply hand washing with soap after using the toilet and experienced mild diarrhea (Paniki Health Center, 2024)

Improper CTPS behavior is still high in elementary school-age children. Children at these ages are very active and prone to diseases, so awareness is needed from children that the importance of healthy behavior CTPS must be applied in daily life

METHODS

This study uses a quantitative approach with a cross sectional design that aims to determine the relationship between handwashing behavior and the incidence of diarrhea in students at SD GMIM 54 Lapangan, Mapanget District, Manado City. The research was carried out on March 18-19, 2025 with a population of 50 students in grades 4 and 5, who were selected using total sampling techniques based on inclusion and exclusion criteria. The research instrument was in the form of a closed questionnaire consisting of 12 question items regarding handwashing behavior and 7 question items regarding the incidence of diarrhea, with an interval scale (Yes = 2, No = 1). Data was collected through the filling of questionnaires by respondents and analyzed using Chi-Square statistical tests to test the relationships between variables. The score results are then categorized based on the mean value into two categories, namely good and poor. This research also pays attention to research ethics, such as informed consent, anonymity, and maintaining the confidentiality of respondent data so that the entire process runs in accordance with scientific and ethical principles

RESULTS AND DISCUSSION

A. RESULTS

Univariate Analysis

This analysis aims to explain the characteristics of each research variable. In general, this analysis only produces a distribution of the frequency of each research variable, namely age, gender and the value of knowledge, attitudes and behaviors.

Respondent Characteristics

Gender

Table 1. Characteristics of Respondents by Gender

Gender	Frequency (n)	Percentage (%)
Male	23	46.0
Women	27	54.0
Total	50	100

source : Primary Data 2025

Table 1 shows that most of the respondents at SD GMIM 54 Lapangan were female (54.0%).

Age

Table 2. Characteristics of Respondents by Age

Age	Frequency (n)	Presentase (%)
10 Years	24	48.0
11 Years	26	52.0
Total	50	100

Source : Primary Data 2025

Table 2 shows that most of the respondents at SD GMIM 54 Lapangan were 11 years old (52.0%).

Frequency Distribution of Respondents in SD GMIM 54 Field

Handwashing behavior

Table 3. Distribution of Respondents by Behavior

Category	Behavior	
	(n)	%
Good	22	44.0
Less good	28	56.0
Total	50	100

Source : Primary Data 2025

Table 3 shows that handwashing behavior with the incidence of diarrhea in 28 people (56.0%) is categorized as poor.

Incidence of Diarrhea

The average incidence of diarrhea at SD GMIM 54 Lapangan is divided into 2 categories, namely yes and no.

Table 4. Distribution of Respondents Based on Incidence of Diarrhea

Category	Incidence of Diarrhea	
	(n)	%
Ya	35	70.0
No	15	30.0
Total	50	100

Data Source: Primary Data 2025

Table 4 shows that the incidence of diarrhea in 35 people (70%) is categorized as Yes.

Bivariate Analysis

Analysis of the relationship between handwashing behavior and the incidence of diarrhea at SD GMIM 54 Lapangan to see the relationship between handwashing behavior and the incidence of diarrhea at SD GMIM 54 Lapangan then used a test, namely *the Chi-Square test*.

Table 5. Behavior Analysis

Actions	Incidence of Diarrhea		Total	P Value
	Ya	No		
Good	8	20	22	.000
Less good	7	15	28	
Total	15	35	50	

Source : Primary Data 2025

Table 5 shows that the results of *the Chi-Square Test found a relationship between handwashing behavior and the incidence of diarrhea* $p=0.000<0.05$).

DISCUSS

Overview of Respondent Characteristics at SD GMIM 54 Field

Based on the results of the identification of the characteristics of the Respondents based on gender and age at SD GMIM 54 Field is female (54.0%). Gender is an important factor in a person's behavior so that the person can determine good and bad behavior. This is supported by research from Ikasari (2020) in his research that respondents with the female gender understand the importance of

washing and behave well compared to male respondents. Previous research from Jovie, et al (2023), because women value themselves more to do good things than men.

SD GMIM 54 Lapangan is 11 years old (52.0%) Likewise, from the theory of Sarwono (2016) states that age is the most important factor in individual retention and attitude, so that they will tend to have positive behavior compared to the age below. This is further emphasized by the journal from Dharawati (2018) in his research it is explained that when you get older, it also affects the level of maturity in thinking and acting. The older you get, the more a person's behavior will be different according to the knowledge that has been obtained.

Overview of Respondents' Handwashing Behavior at SD GMIM 54 Lapangan Handwashing Behavior

Based on the results, it was shown that handwashing behavior with the incidence of diarrhea as many as 28 people (56.0%) was categorized as poor. Good handwashing behavior is one of the most effective preventive measures in preventing the transmission of infectious diseases, especially diarrhea. Hands are the main medium for transmission of disease-causing microorganisms, especially if they are not cleaned properly after defecation, before eating, or after contact with an unclean environment.

These results are also in line with various previous studies by Rosida (2021) which showed that clean and healthy living behaviors, including the habit of washing hands, have a significant correlation with the incidence of diarrhea, especially in children and other vulnerable groups. Therefore, educational and promotive interventions are needed to increase public awareness of the importance of washing hands with soap, especially at critical times such as before meals and after leaving the toilet.

Researchers argue that the high percentage (56%) of people with diarrhea with poor handwashing behavior indicates that there are still many individuals who have not implemented the habit of washing their hands correctly and regularly. This can be caused by a lack of knowledge, awareness, or limited facilities and infrastructure to wash hands such as clean water and soap with an increase in good handwashing behavior, it is hoped that the incidence of diarrhea can be reduced, so that it can improve the quality of life and reduce the burden of public health.

Incidence of Diarrhea

Based on the results of the study, it is known that as many as 35 people (70%) of the respondents experienced diarrhea, and of these, 28 people (56%) had poor handwashing behavior. This data shows that the majority of respondents have diarrhea, and most of them have handwashing habits that do not meet health standards.

The high incidence of diarrhea (70%) illustrates that diarrhea is still a significant health problem in the respondents' environment. This disease is closely related to environmental factors and hygienic behavior, especially handwashing behavior. WHO and the Indonesian Ministry of Health emphasized that proper handwashing behavior using soap and running water can significantly reduce the risk of diarrheal diseases.

Poor handwashing behavior in 56% of respondents who experienced diarrhea reinforced the suspicion that lack of proper handwashing habits is the main risk factor for diarrhea. This is likely due to a lack of public health awareness or education about the importance of hand hygiene, especially at important times such as, Before eating, After defecation, After exercise.

These findings confirm the need for public health interventions, especially education and promotion on Clean and Healthy Living Behaviors (PHBS). In addition, the provision of adequate handwashing facilities also needs to be considered so that people can easily implement hygienic behavior in daily life, with the improvement of handwashing behavior, it is hoped that the incidence of diarrhea

can be significantly reduced. This effort is important not only to prevent diarrhea, but also various other infectious diseases transmitted through contaminated hands.

Results of the Analysis of the Relationship Between Respondents' Handwashing Behavior at SD GMIM 54 Lapangan

From the results of the Chi-Square test, a number of 0.000 was obtained with a P Value < 0.05, which means that there is a relationship between handwashing behavior and the incidence of diarrhea. Due to the lack of socialization from related parties, in this case, the Health Center and the Health Office are still minimal, especially for elementary school teachers, so they also provide PHBS socialization, one of which is washing hands to their students.

The results of the study are in line with research by Novitasari and Suklan (2023) which stated that there is a relationship between the practice variable and the incidence of diarrhea. This is because of the 53 respondents who practiced PHBS, 25.9% had suffered from diarrhea and 74.1% of respondents who practiced PHBS but did not suffer from diarrhea. Meanwhile, 88.5% of respondents who did not practice PHBS who had suffered from diarrhea and respondents who did not practice PHBS who had never suffered from diarrhea were 11.5%. Utomo and Alfiyanti (2023) in their research on the relationship between handwashing behavior with soap and the incidence of diarrhea in school-age children at SDN 02 Pelemsendir, Todanan District, Blora Regency, stated that the better the behavior or practice of washing hands with soap, the lower the incidence rate of diarrhea, and vice versa, the less good the behavior or action of washing hands with soap, the higher the incidence rate of diarrhea.

The results of this study are in accordance with the results of a study conducted by Rosyidah (2014) entitled The Relationship of Handwashing Behavior to the Incidence of Diarrhea in Children of SDN Ciputat 02, South Tangerang City, Banten, which shows a relationship between handwashing behavior and the incidence of diarrhea. The same thing was conveyed by Hidayat (2024) in his research on the relationship between soap handwashing behavior (CTPS) in SD 005 and SD 006 and the incidence of diarrhea in the Bangkinang Kota health center's work area, which stated that children who have poor soap handwashing behavior will be more susceptible to diarrhea compared to children who have good soap handwashing behavior.

Enikmawati and Aslamah (2017) stated that the act of washing hands with soap and water can be more effective in mechanically removing dirt and dust from the surface of the skin and significantly reduce the number of microorganisms that cause diseases such as viruses, bacteria, and other parasites in both hands than those who do not wash their hands. So, washing your hands with clean water and soap will be more effective in cleaning dirt and worm eggs that stick to the surface of the skin, nails and fingers on both hands (Rachmayanti, 2023).

CONCLUSION

Based on the results and discussion of the study regarding the relationship between handwashing behavior and the incidence of diarrhea at SD GMIM 54 Lapangan, it can be concluded that most of the respondents were female students (54%) and 11 years old (52%). The majority of students showed poor handwashing behavior (56%), and as many as 70% of respondents experienced diarrhea. The results of the analysis using the Chi-Square test showed a significant relationship between handwashing behavior and the incidence of diarrhea, with a value of $p = 0.000$ ($p < 0.05$), which means that poor handwashing behavior significantly contributes to the high incidence of diarrhea among students of SD GMIM 54 Lapangan.

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REFERENCES

1. Akmal Hadi Maulana. (2019). Penyelenggaraan Cuci tangan Bersama dan Jasa Boga. Jakarta: Bharata.
2. Alif. R (2020) Hubungan Mencuci Tangan Terhadap Kejadian Diare pada Siswa di Sekolah Dasar Negeri Ciputat 02. Jurnal Ilmiah Keperawatan Orthopedi Vol.3 No.1
3. Dharawati W 2018. Perilaku Hidup Bersih Dan Sehat Dengan Kejadian Diare Pada Anak Sekolah Dasar (SD).
4. Enikmawati, A., & Aslamah, F. H. 2017. Hubungan Antara Perilaku Cuci Tangan Dengan Kejadian Diare Pada Anak Sd. Motorik Jurnal Ilmu Kesehatan (JournalOfHealthScience),12(25).
5. Fazlin,S. 2023. Tingkat Pengetahuan Siswa tentang teknik Mencuci tangan yang benar terhadap kejadian diare di SDN 01 Pontianak utara. FK UNTAN.
6. Firdaus, & F, A. (2021). Analisis Usia dan Perilaku Cuci Tangan dengan Kejadian Diare di SDN Rangkah 1 Surabaya. Prosiding Seminar Nasional GERMAS 2018, 1(1), 30–38
7. Graham, I. 2021. Perilaku Organisasi: Teori, Aplikasi, dan Kasus. Cetakan Kedua. CV. Alfabeta.Bandung.
8. Green, W, Lawrence. (dalam bukuThe Johns Hapkins University) Health Education Planing A Diagnostik Approach,: Mayfield Publishing Company, 2005
9. Hartono Hadi (2019). Belajar dan Pembelajaran. Jakarta: Rineka Cipta.
10. Hasanah U, Mahardika D. Perilaku Mencuci Tangan Pakai Sabun Pada Anak Usia Dini untuk Pencegahan Transmisi Penyakit. Prosiding Seminar Nasional Pengabdian Masyarakat LPPM UMJ, 2020
11. Hidayat (2024). Patient Safety Memutus Rantai Infeksi.
12. Iksari 2020. Tingkat Pengetahuan Siswa tentang teknik Mencuci tangan yang benar terhadap kejadian diare di SDN 01 Pontianak utara. FK UNTAN.
13. Jovie, Z. O. N., Angraini, D. I., & Soleha, T. U. (2023). Pengaruh Pengetahuan, Pendidikan dan Ekonomi Terhadap Perilaku Hidup Bersih dan Sehat pada Masyarakat Desa Pekonmon Kecamatan Ngambur Kabupaten Pesisir Barat. 7, 6–13.
14. Kementrian Kesehatan Republik Indonesia. 2018. Pedoman mencuci tangan yang baik dan benar. Direktorat Jenderal promosi kesehatan dan Kesehatan Masyarakat. Jakarta.
15. Kemenkes RI. Laporan Nasional RISKESDAS 2018. Lembaga Penerbit Badan Penelitian Dan Pengembangan Kesehatan 2019;2019. p.145-51
16. Lynawati 2020. (n.d.). 245-Article Text-667-1-10-20200414. Hubungan PHBS (Perilaku Hidup Bersih Sehat) Terhadap Stunting Di Desa Kedung Malang Kabupaten Banyumas Lynawati1.
17. N. Arthini. Penjelasan Perilaku (Keterampilan Menyikat Gigi Sebelum dan Sesudah Penyuluhan Kesehatan Gigi dan Mulut pada Siswa SDN 4 Pinarungan, di Kecamatan Mengwi (Respository Poltekkes Denpasar), Volume 53, 2019
18. Notoatmodjo S 2011. Metododologi Penelitian Kesehatan. Jakarta : PT Rineka Cipta
19. Notoatmodjo Soekijo (2021), Ilmu Kesehatan Masyarakat, (Jakarta: PT Rineka Cipta, 1997).
20. Novitasari dan Suklan (2023). Jangan Meremehkan Manfaat Cuci Tangan Pakai Sabun. Arry

- Marsudi Utomo, Dera
21. Novitasari Desi 2020. Hubungan Pratik Perilaku Hidup Bersih Dan Sehat Dengan Kejadian Diare Pada Murid SDN Makasar 07 Pagi Jakarta Timur.
 22. Nurrokhmah 2021. Prilaku Masyarakat Dalam Pencegahan Penyebaran Virus Covid-19 Di Kelurahan Karang Mulia Distrik Samofa Kabupaten Biak Numfor, Vol.16 No 2
 23. Rachmayanti. 2023. Penggunaan Media Panggung Dalam Pendidikan Personal Hygiene Cuci Tangan Menggunakan Sabun di Air Mengalir.
 24. Rita. F.P (2023). Gambaran Penerapan perilaku hidup bersih dan sehat (PHBS) Di lingkungan sekolah Dasar Negeri 104219 Tanjung Anom Tahun 2023 (Skripsi Sarjana, STIKes Santa Elisabeth Medan)
 25. Rosyidah, A. N. (2024). Hubungan Perilaku Cuci Tangan Terhadap Kejadian Diare Pada Siswa Di Sekolah Dasar Negeri Ciputat 02. Skripsi. Jakarta, Universitas Islam Negeri Syarif Hidayatullah.
 26. Sarwono M. (2016). Efektivitas Hand Sanitizer Dibanding Mencuci Tangan Memakai Sabun Dalam Menjaga Kebersihan Tangan Pada Mahasiswa Fakultas Kedokteran Universitas Sumatera Utara Angkatan 2015.
 27. Sinipar. E (2021). Faktor-faktor Yang Berhubungan dengan Perilaku Cuci Tangan Pakai Sabun (CTPS) pada Mahasiswa Universitas Jambi Selama Pandemi Covid-19 (Skripsi Sarjana, Universitas Jambi)
 28. Sugiyanto, (2010). Belajar dan Faktor-Faktor yang Mempengaruhi, Jakarta : Pustaka Sinar Harapan
 29. Utomo, A. M., & Alfiyanti, D. 2022. Hubungan Perilaku Cuci Tangan Pakai Sabun (Ctps) Dengan Kejadian Diare Anak Usia Sekolah Di Sdn 02 Pelemsengir Kecamatan Todanan Kabupaten Blora. FIKkeS, 6(1).
 30. Valencia L, Giraldo D. Definisi Perilaku. Jurnal Angewandte Chemie Internasional Edition, 6(11), 951-952. Vol 2, 2019
 31. Winda Amiar, E. S. 2021. (2020). *Indonesian Journal of Nursing Science and Practice. Indonesian Journal of Nursing Practices*, 011(1), 42–47
 32. World Health Organization (WHO).2017. DiarrhoealDisease
 33. World Health Organization (WHO). (2020), Global Perilaku Hidup Bersih dan Sehat.2020
 34. World Health Organization (WHO). (2020), Perilaku hidup bersih dan sehat. [cited 2021 jun 11]. Available from: <https://www.who.int/news-room/fact-sheets/detail/PHBS>