

Knowledge and Implementation of Clean and Healthy Living Behaviors (PHBS) Among School-Aged Children

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ABSTRACT

Introduction: Clean and healthy living behavior (PHBS) is an important indicator of school-aged children's health. Good knowledge is expected to influence the implementation of PHBS. This study aimed to examine the relationship between knowledge and PHBS behavior among school-aged children at Public Elementary School of Kemiri 2, Kepanjen District, Malang Regency .

Methods: This study used a quantitative cross-sectional design. The sample consisted of 87 students in grades 3–6 selected using total sampling. Data were collected via questionnaires and analyzed using the Chi-Square test to determine the relationship between knowledge and implementation of PHBS.

Results: Most students had good knowledge (79.3%), but the majority showed adequate implementation of PHBS (74.7%). The statistical analysis showed that there was a significant relationship between knowledge and implementation of PHBS ($p = 0.000$).

Conclusions: Based on these findings, nurses, in collaboration with schools and families, should design interventions to improve implementation of PHBS, which needs to be supported through habit formation, role models from teachers and parents, and the provision of a supportive school environment.

Introduction

Clean and Healthy Living Behaviors (PHBS) are one of the main pillars in efforts to improve public health, especially among school-aged children, who are vulnerable to various infectious diseases (Arifah et al., 2022). At this developmental stage, children spend most of their time in the school environment, making schools a critical setting for health promotion and disease prevention (Notoatmodjo, 2021). Inadequate implementation of PHBS among school-aged children has been associated with an increased risk of preventable diseases such as diarrhea, respiratory tract infections, intestinal worms, and dengue fever, which continue to contribute to school absenteeism and decreased learning outcomes. Despite various health promotion programs implemented in schools, PHBS-related diseases remain a public health concern, indicating gaps between policy, knowledge, and actual behavior. Therefore, schools play a strategic and urgent role as key environments for instilling clean and healthy living habits through structured education, consistent habituation, and the provision of adequate supporting facilities (Srisantyorini & Ernyasih, 2020). This condition highlights the need for research that examines factors influencing PHBS implementation at the elementary school level.

Knowledge is an important factor influencing the formation of health behaviors. Globally, studies have shown that inadequate health knowledge among school-aged children is closely linked to poor hygiene practices and higher prevalence of communicable diseases. Previous community-based studies have demonstrated that creative and interactive health education



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methods are effective in improving children's understanding of clean and healthy living behaviors. In developing countries, preventable diseases related to poor sanitation and hygiene remain common among children, particularly in school settings. In Indonesia, several studies have reported that a significant proportion of elementary school students still demonstrate low compliance with PHBS indicators, despite having received health education (Notoatmodjo, 2021). At the local level, similar conditions are observed in schools where students possess basic knowledge of PHBS but fail to consistently apply it in daily activities. Children who have good knowledge of PHBS are generally more likely to practice healthy behaviors; however, in practice, not all students with sufficient knowledge demonstrate appropriate behaviors. This gap indicates that knowledge alone may not be sufficient to shape behavior, emphasizing the importance of examining the relationship between knowledge levels and PHBS implementation more deeply (Wibowo, 2024). Therefore, understanding this relationship at the research site is essential to identify existing barriers and support effective health interventions.

Previous studies have shown that the implementation of clean and healthy living behaviors (PHBS) in elementary schools is influenced by multiple determinants beyond students' knowledge alone. Anggraini, (2025) emphasized that factors such as students' attitudes, the availability of supporting facilities (including clean toilets and handwashing stations), as well as continuous support from teachers and parents play a crucial role in shaping consistent PHBS practices. Educational and participatory school-based interventions were also reported to be effective in strengthening healthy habits among students. These findings indicate that PHBS implementation requires an integrated approach involving individual, environmental, and social support factors.

Previous community-based programs have shown that school-based health promotion activities are effective in improving students' understanding of clean and healthy living behaviors. Asrina & Yusriani, (2023) reported that health promotion through counseling and poster media significantly increased students' PHBS knowledge at SMPN 4 Sungguminasa. These findings highlight the importance of structured health education as a foundation for fostering clean and healthy living behaviors in school settings.

Prevalence Globally, clean and healthy living behaviors among school-aged children remain a serious problem, with the World Health Organization reporting that more than 40% of school children in developing countries are not accustomed to washing their hands with soap, maintaining environmental hygiene, and adopting healthy eating habits, resulting in a prevalence of diarrhea reaching 15–20% and upper respiratory tract infections at 30–40% among school-aged children (Ummah, 2019). In Indonesia, the Ministry of Health noted that only 60.89% of districts/cities had clean and healthy lifestyle policies in 2017, with the lowest achievements in Papua (3.45%) and West Papua (15.38%) (Nelwan et al., 2023), while a study at SD Negeri Sampora 1 Cisaug found that only 52.4% of students had good knowledge of PHBS and healthy behavior was significantly associated with knowledge ($p=0.024$) (Srisantyorini & Ernyasih, 2020). At the regional level in East Java, a study at SDN Tlogomas 2 Malang showed that only 52.7% of students practiced PHBS well (Ummah, 2019), revealing a gap between the knowledge provided and the daily practices of students. Locally, at SDN 2 Kemiri, Kepanjen District, Malang Regency, school data from January to May 2025 showed that cases of diarrhea and dengue fever still occurred, and behaviors such as littering and washing hands without soap were still common. Therefore, research on the relationship between knowledge and clean and healthy living behaviors in school-age children in this location is very relevant. (Hearisa et al., 2023).

The gap between students' knowledge and actual behavior is also evident in their daily habits, such as buying snacks outside of school that are less hygienic, washing their hands only



with water without soap, and littering (Rahayu & Setiasih, 2022). These habits not only reflect the lack of PHBS implementation, but also increase the risk of disease spread in the school environment. This shows the need to understand the extent to which students' knowledge is related to the PHBS behaviors they practice (Wibowo, 2024).

The government, through the Ministry of Health, has established PHBS indicators in schools, including washing hands with soap, using clean toilets, exercising regularly, eradicating mosquito larvae, and maintaining environmental hygiene (Arifah et al., 2022). These indicators serve as a reference for schools in providing health services and creating a healthy learning environment (Department, 2023). However, the achievement of these indicators is highly dependent on the awareness and knowledge of students as the main subjects of health behavior. Therefore, it is important to assess how students' understanding of PHBS contributes to their health behavior patterns (Indonesia, 2023).

This study is expected to provide a comprehensive understanding of students' levels of knowledge, the PHBS behaviors they practice, and the relationship between these two variables (Arifah et al., 2022). Given the ongoing occurrence of preventable diseases and the observed gap between knowledge and behavior among elementary school students, this research is urgently needed to generate evidence-based insights specific to the school context. The findings are expected to serve as a scientific basis for schools, health professionals, and parents to develop more targeted, effective, and sustainable interventions aimed at improving clean and healthy living behaviors in the school environment. Ultimately, strengthening PHBS practices from an early age is crucial for supporting long-term health outcomes and creating a healthier school community (Notoatmodjo, 2021).

Methods

This study employed a quantitative research design with a cross-sectional approach. The study was conducted at Public Elementary School of Kemiri 2, Kepanjen District, Malang Regency, on 6 September 2025. The population consisted of all students in grades 3, 4, 5, and 6, totaling 87 students. These grade levels were selected because students at this stage are considered to have sufficient cognitive ability to understand questionnaire items and to independently report their knowledge and daily clean and healthy living behaviors. In addition, students in grades 3–6 are actively involved in school routines related to PHBS practices, making them appropriate respondents for assessing the relationship between knowledge and PHBS behavior. Given the relatively small population size and the feasibility of studying the entire group, total sampling was applied.

Data collection was carried out using two types of instruments: a knowledge questionnaire and a PHBS behavior questionnaire. Both instruments were developed based on PHBS indicators established by the Ministry of Health and Notoatmodjo's theory of health behavior and knowledge measurement (Wibowo, 2024). The knowledge questionnaire consisted of 15 multiple-choice questions, scored as 1 for correct answers and 0 for incorrect answers. Validity testing of the knowledge questionnaire showed that all items had a correlation coefficient (r -count) greater than the r -table value (0.361), indicating that all items were valid. Reliability testing yielded a Cronbach's Alpha value of 0.936, indicating very high reliability.

The PHBS behavior questionnaire consisted of 15 statements measured using a four-point Likert scale (always, often, sometimes, never) with both positive and negative scoring. Reliability testing of the PHBS behavior questionnaire resulted in a Cronbach's Alpha value of 0.823, indicating good reliability (Zayrin, 2025). All instruments were tested prior to data collection through a pilot study to ensure their validity and reliability, confirming their suitability for use in this study.



Data analysis included univariate analysis to describe the distribution of students' knowledge levels and PHBS behaviors, as well as bivariate analysis using the Chi-Square test to examine the relationship between knowledge and PHBS behavior. The Chi-Square test was chosen because the variables were categorical, with a significance level set at $\alpha = 0.05$. The entire research process adhered to ethical principles, including obtaining informed consent from parents or guardians before students participated in the study (Arifah et al., 2022).

Results

A total of 87 students participated in this study, consisting of 3rd grade (27.6%), 4th grade (20.7%), 5th grade (28.7%), and 6th grade (23.0%). This distribution showed a relatively even representation across grades, with the majority coming from the upper grades (5th–6th grade).

Table 1. Demographic Characteristics of Respondents

Class	Frequency	Percent (%)
3	24	27.6
4	18	20.7
5	25	28.7
6	20	23.0

The majority of students had good knowledge (79.3%), while PHBS behavior was mostly in the adequate category (74.7%) (Table 2).

Table 2. Distribution of Knowledge and Implementation of PHBS

Variables	Frequency (n)	Percentage (%)
Knowledge		
Low	8	9.2
Sufficient	10	11.5
Good	69	79.3
PHBS		
Low	12	13.8
Sufficient	65	74.7
Good	10	11.5

The Chi-Square test yielded a p-value of 0.000 (< 0.05), indicating a significant relationship between knowledge and implementation of HBS behavior. In general, higher knowledge levels corresponded to better implementation of PHBS. Although most students had good knowledge (79.3%), their PHBS behavior is remained in the adequate category (74.7%). This suggests that despite high knowledge, the implementation of PHBS is not yet fully consistent (Table 3).

Table 3 Correlation Between Knowledge and Implementation of PBHS

Knowledge	PHBS		p-value
	Good (%)	Poor (%)	
Good (%)	25 (69.4)	11 (30.6)	0.000
Poor (%)	6 (30.0)	14 (70.0)	

Discussion

Knowledge of PHBS among Elementary School-Aged Children

The results of this study indicate that the majority of students at SDN 2 Kemiri have a good level of knowledge regarding clean and healthy living behaviors (PHBS), with 79.3% of students categorized as having good knowledge. This finding shows that most students already understand essential PHBS concepts, such as proper handwashing, maintaining personal and environmental hygiene, and adopting healthy lifestyles. These results reflect the effectiveness of health education activities implemented at school, where teachers play an important role in delivering health-related information to students.

This finding is consistent with previous studies reporting that school-based health education significantly contributes to students' knowledge of PHBS. Wulandari et al., (2024) found that more than 80% of elementary school students demonstrated good PHBS knowledge after receiving health education. Similarly, Wibisono et al., (2023) reported that the frequency of health promotion activities in schools was positively associated with students' PHBS knowledge levels. These findings support the notion that schools serve as strategic settings for improving health literacy among school-aged children.

Basri et al., (2023) demonstrated that PHBS education delivered through interactive learning media significantly increased elementary school students' knowledge, as shown by a significant difference between pre-test and post-test scores ($p = 0.001$). This indicates that creative and participatory educational approaches are effective in improving students' understanding of clean and healthy living behaviors. Similarly, Asrina & Yusriani, (2023) reported that health promotion activities in schools effectively improved students' knowledge of PHBS, with 98.4% of participants reaching a very good knowledge category after educational interventions.

However, this study also found that 20.7% of students still had sufficient or low knowledge. This indicates that knowledge distribution among students is not yet evenly achieved. Differences in family support, daily habits at home, and parental involvement may influence students' understanding of PHBS. Anjarwati et al., (2022), the family environment plays a crucial role in reinforcing children's health knowledge, as many clean and healthy behaviors are formed and practiced consistently at home. Therefore, strengthening collaboration between schools and families is necessary to ensure that PHBS knowledge is comprehensively understood by all students.

Implementation of PHBS among Elementary School-Aged Children

Despite the high level of knowledge, the implementation of PHBS among students at SDN 2 Kemiri was predominantly categorized as adequate (74.7%), while only 11.5% of students demonstrated good PHBS behavior. This finding indicates a discrepancy between students' knowledge and their actual daily practices of clean and healthy living behaviors.

Several unhealthy behaviors were still observed, such as washing hands without soap, littering in the school environment, and purchasing snacks from outside the school that may not meet hygiene standards. These findings are in line with Hearisa et al., (2023), who reported that elementary school students often fail to consistently apply PHBS despite having sufficient knowledge. This suggests that knowledge alone is not sufficient to ensure optimal behavioral implementation.

This finding is Br Perangin-Angin, (2023), who reported that although students demonstrated good levels of knowledge and attitudes toward PHBS, their actions significantly



improved only after receiving health counseling. The study highlights that educational interventions play an important role in translating knowledge into actual clean and healthy living behaviors, particularly among school-aged children.

This finding aligns with Wijaya Siswanto & Syafei, (2024), who reported that access to clean water sources (OR = 7.821) and the availability of healthy latrines (OR = 4.991) were significantly associated with stunting risk, highlighting the role of environmental sanitation indicators within clean and healthy living behaviors.

Previous studies have shown that environmental factors strongly influence students' health behaviors. Wicaksana et al., (2022) found that limited facilities and lack of routine supervision contributed to suboptimal PHBS practices among students. In addition, Feby Priscilla Dewi et al., (2025) emphasized that teacher support, role modeling, and the availability of sanitation facilities such as handwashing stations and soap significantly affect students' PHBS behavior. These findings support Green's behavioral theory, which explains that health behavior is shaped not only by knowledge but also by enabling factors and reinforcing factors, including environmental support and social influence.

Relationship Between Knowledge and Implementation of PHBS

The Chi-Square test results showed a statistically significant relationship between knowledge and the implementation of PHBS, with a p-value of 0.000 (< 0.05). This indicates that students with higher levels of knowledge tend to demonstrate better clean and healthy living behaviors compared to those with lower knowledge levels.

This finding is consistent with previous research conducted by Marsofely & Setiawan, (2023), which reported a significant association between PHBS knowledge and behavior among elementary school students. Similarly, Aini, (2024) found a positive correlation between students' knowledge and their PHBS practices in school settings. These findings reinforce the importance of knowledge as a key determinant of health behavior.

From a theoretical perspective, this result aligns with Notoatmodjo, (2021) health behavior theory, which states that knowledge is a fundamental component in the formation of health behavior. Individuals who understand the benefits and risks associated with certain behaviors are more likely to adopt healthy practices. However, the results of this study also indicate that high knowledge does not always lead to optimal behavior. Habituation, consistent supervision, and reinforcement from teachers and parents remain essential to ensure that PHBS behaviors are practiced regularly and sustainably (Wibowo, 2024).

This finding is consistent with a study Herawati & Asyfiradayanti, (2025), which demonstrated a significant relationship between knowledge level and clean and healthy living behavior among senior high school students ($p = 0.001$). Their study reported that students with higher knowledge levels tended to show more frequent PHBS practices, although the strength of the correlation was weak. This indicates that knowledge plays an important role in shaping PHBS behavior, but it may not be sufficient on its own to ensure consistent behavioral implementation.

This finding is Novika et al., (2024), who reported significant relationships between attitude with clean and healthy living behavior (PHBS) among elementary school students. These results indicate that PHBS is influenced not only by individual factors but also by social and environmental support within the school setting.

In contrast, a study Putri et al., (2019) reported different findings, showing that knowledge was not significantly associated with the implementation of clean and healthy living behaviors (PHBS) ($p = 0.792$), while attitudes had a significant relationship with PHBS ($p =$



0.007). This indicates that knowledge alone is not sufficient to shape clean and healthy living behavior if it is not supported by positive attitudes and internal motivation. These findings suggest that behavioral change is influenced not only by cognitive factors but also by affective components, which may explain differences in PHBS implementation across various settings.

This study has several limitations. First, the respondents were limited to students from a single elementary school, which may restrict the generalizability of the findings to other school settings with different social and environmental characteristics. Second, data were collected using self-reported questionnaires, which may lead to response bias, as students could provide socially desirable answers rather than reflect their actual behavior. Additionally, this study did not explore family environmental factors and school facility availability in depth, even though these aspects may influence the implementation of clean and healthy living behaviors. Future studies are recommended to involve a larger sample, apply mixed data collection methods, and include environmental variables to obtain more comprehensive results.

Conclusion

The results of the study showed that most students at Public Elementary School of Kemiri 2, Kepanjen District, Malang Regency, have a good level of knowledge about clean and healthy living behaviors (PHBS), but the implementation of PHBS by the majority are still in the adequate category. Additionally, there was a significant relationship between the level of knowledge and implementation of PHBS, indicating that the higher the students' knowledge, the better their clean and healthy lifestyle behavior. Based on these findings, it is recommended that nurses in the community and schools actively organize health education and hands-on practices to reinforce the implementation of PHBS. Collaborative efforts between healthcare professionals particularly nurses, schools, families, and the community are expected to optimize the implementation of PHBS among school-aged children.

Ethics approval and consent to participate

This study has been approved by the Health Research Ethics Committee of ITSK dr. Soepraoen Kesdam V/BRW Malang Hospital certificate number KEPK-EC/342/X/2025. All research procedures were carried out in accordance with the principles of the Declaration of Helsinki regarding research involving humans. Prior to data collection, the researchers obtained official permission from the school, and written consent (informed consent) from all respondents and their parents or guardians. Respondents were given a clear explanation of the purpose of the study, its benefits, and their right to refuse or withdraw from participation at any time without consequences. The confidentiality of respondents' identities and personal data was fully guaranteed by the researchers.

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References

- Aini, N. (2024). Gambaran Perilaku Hidup Bersih Dan Sehat Tatanan Sekolah Di Indonesia : Literature Review. *Jurnal Kesehatan Tambusai*, 5(2), 5192–5203.
- Anggraini, H. (2025). DETERMINASI PERILAKU HIDUP BERSIH DAN SEHAT (PHBS) DI LINGKUNGAN SEKOLAH DASAR. *UNISAN JURNAL: JURNAL MANAJEMEN DAN PENDIDIKAN*, 04(4), 28–36.
- Anjarwati, A., Qomariyah, R. S., Az Zahra, P. F., Putri, D. R., & Faradilla, A. (2022). PENDAMPINGAN PROGRAM PHBS BAGI ANGGOTA PMR MULA DI SDN SUKABUMI 2 PROBOLINGGO. *Jurnal Pengabdian Masyarakat Dharma Andala*, 01(01), 108–113.
- Arifah, R. N., Indonesia, N. C., Safitri, T. R., Haniyah, F., Khoirrima, E., Saputri, A. W., Wardani, I. K., Ferdianto, M. K., Rohmah, D. N., Khoerinlisa, F. O., Adelia, S., Wulandari, N., Artistin, A. R., & Rahma, L. R. (2022). “Peningkatan Pengetahuan Siswa Sesudah Diberikan Penyuluhan Tentang Perilaku Hidup Bersih dan Sehat (PHBS) di SD Negeri 02 Ngrombo.” *National Conference on Health Sciene (NCoHS)*, 2963–1149.
- Asrina, A., & Yusriani. (2023). Peningkatan Pengetahuan mengenai PHBS sebagai Program Promosi Kesehatan pada Tatanan Sekolah di SMPN 4 Sungguminasa Kabupaten Gowa. *Jurnal Pengabdian Masyarakat Bidang Sains Dan Teknologi*, 2(3), 440–454.
- Basri, S., Jastam, S., Amansyah, M., Habibi, Widiastuty, L., Kahfi, M., & Ekasari, R. (2023). Clean and healthy living behavior (PHBS) education in school through Snakes and Ladders game. *Transformasi: Jurnal Pengabdian Masyarakat*, 19(2), 203–212.
- Br Perangin-Angin, S. (2023). The Effect of Counseling on Clean and Healthy Behavior (PHBS) in Increasing Knowledge, Attitudes and Actions for Students of SMA Negeri 1 Simpangempat, Karo Regency in 2022. *Indonesian Journal of Contemporary Multidisciplinary Research*, 2(2), 177–190. <https://doi.org/10.55927/modern.v2i2.3554>
- Department, J. H. (2023). *Implementasikan PHBS untuk mengatasi dampak penurunan kualitas udara*.
- Feby Priscilla Dewi, Feri Catur Yuliani, & Ratna. (2025). Efektivitas Pemberian Edukasi Kesehatan tentang PHBS terhadap Perubahan Perilaku Buang Limbah Ikan Masyarakat di Desa Doropayung Juwana. *Jurnal Keperawatan Mersi*, 14(2), 68–75. <https://doi.org/10.31983/jkm.v14i2.13852>
- Hearisa, P., Meliyanti, F., & Marita, Y. (2023). Hubungan Perilaku Hidup Bersih Dan Sehat (PHBS) Dengan Kesehatan Lingkungan Di Sekolah Dasar Negeri 06 Muaradua Tahun 2023. *JURNAL SMART ANKes*, 7(2), 72–80. <https://doi.org/10.52120/jsa.v7i2.113>
- Herawati, W., & Asyfiradayanti, R. (2025). Relationship Between Level Of Knowledge And Clean And Healthy Living Behavior (Phbs) Among Students At Sma N 3 Salatiga. *Jurnal Kesmas Dan Gizi (JKG)*, 8(1).
- Indonesia, M. of H. of the R. of. (2023). *PHBS Guidelines in Schools*.



- Marsofely, R. L., & Setiawan, Y. (2023). Bagaimana Pembelajaran Edugame Perilaku Hidup Bersih dan Sehat (PHBS) Mempengaruhi Perubahan Sikap dan Perilaku Siswa? *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 7(3), 3468–3476. <https://doi.org/10.31004/obsesi.v7i3.3443>
- Nelwan, J. E., Musa, E. C., & Sumampouw, O. J. (2023). Perilaku Hidup Bersih Dan Sehat Di Sekolah Pada Siswa Sekolah Dasar Kartika Jaya XXI-1 Kota Manado. *Jurnal Pengabdian Masyarakat Bangsa*, 1(9), 2088–2099. <https://doi.org/10.59837/jpmba.v1i9.472>
- Notoatmodjo, S. (2021). Ilmu perilaku kesehatan. *Jakarta : Rineka Cipta*.
- Novika, Sayati, D., & Murni, N. S. (2024). Faktor-Faktor Yang Berhubungan dengan PHBS. *Citra Delima Scientific Journal of CitraInternasional Institute*, 7(2), 70–76.
- Putri, R. M., Rosdiana, Y., & Nisa, A. C. (2019). Application of Clean and Healthy Living Behavior (PHBS) From The Household Knowledge and Attitude Study. *Journal Of Nursing Practice*, 3(1), 39–49.
- Rahayu, A. K., & Setiasih, O. (2022). Parents' Role in Familiarizing themselves with Clean and Healthy Living Behavior in Early Childhood during the COVID-19. *Indonesian Journal of Early Childhood Education Studies*, 11(2), 83–90. <https://doi.org/10.15294/ijeces.v11i2.51264>
- Srisantyorini, T., & Ernyasih. (2020). HUBUNGAN PENGETAHUAN DAN SIKAP SISWA TERHADAP PERILAKU HIDUP BERSIH DAN SEHAT DI SD NEGERI SAMPORA 1 KECAMATAN CISAUK TAHUN 2018 1. *Muhammadiyah Public Health Journal*, 1(1), 63–69.
- Ummah, M. S. (2019). No Covariance Structure Analysis of Health-Related Indicators in Home-Dwelling Elderly Individuals Focusing on Subjective Health PerceptionTitle. *Sustainability (Switzerland)*, 11(1), 1–14. http://scioteca.caf.com/bitstream/handle/123456789/1091/RED2017-Eng-8ene.pdf?sequence=12&isAllowed=y%0Ahttp://dx.doi.org/10.1016/j.regsciurbeco.2008.06.005%0Ahttps://www.researchgate.net/publication/305320484_SISTEM_PEMBETUNGAN_TERPUSAT_STRATEGI_MELESTARI
- Wibisono, A. F. D., Ramadhani, N. R., Rahayu, A. A., Salsabillah, S., Al-Fajr, S. M. Al, Damayanti, S., & Saragih, S. B. (2023). Hubungan Pengetahuan, Perilaku, dan Pengelolaan Jamban dengan Kejadian Diare di Wilayah Puskesmas Bogor Selatan 2022. *Journal of Public Health Education*, 2(2), 282–286. <https://doi.org/10.53801/jphe.v2i2.107>
- Wibowo, E. B. (2024). *TINGKAT PENGETAHUAN PESERTA DIDIK KELAS V TENTANG PERILAKU HIDUP BERSIH DAN SEHAT (PHBS) DI SD NEGERI PUREN KECAMATAN DEPOK KABUPATEN SLEMAN YOGYAKARTA*. Universitas Negeri Yogyakarta.
- Wicaksana, A. D. A.-G., Yeni, A. S., Pratiwi, D., & Roza, S. N. (2022). Pengenalan Perilaku Hidup Bersih (Phbs) Dan Sehat Kepada Anak Usia Sekolah Di Wilayah Kerja Puskesmas Desa Pauh Angit Hulu. *JCS - Journal of Comprehensive Science*, 1(2), 113–118. <https://doi.org/10.36418/jcs.v1i2.20>



- Wijaya Siswanto, A., & Syafei, A. (2024). The Affect Of Clean And Healthy Living Behavior (PHBS), EconomicLevel And Parenting Patterns On The Risk Of Stunting Incidence In TheWorking Area Of UPT Puskesmas Bereng. *Jurnal Eduhealth*, 15(2), 1495–1510. <https://doi.org/10.54209/eduhealth.v15i02>
- Wulandari, A. S., Nurinda, E., Dwinta, E., Fatmawati, A., Estiningsih, D., Fauzi, R., Kusumawardhani, N., Emelda, Radne, I., Putri, R., Fatimah, F. S., & Sarwadhama, R. . (2024). PENGENALAN PHBS (PERILAKU HIDUP BERSIH DAN SEHAT) CARA MENCUCI TANGAN SEJAK DINI DAN EDUKASI OBAT BUKAN PERMEN DI SD NEGERI DEMANGAN YOGYAKARTA. *Jurnal Pengabdian Indonesia*, 04(02), 348–357.
- Zayrin. (2025). *Implementasi Perilaku Hidup Bersih dan Sehat (PHBS) pada Anak Sekolah di SD Muhammadiyah Terpadu Ponorogo*. Universitas Muhammadiyah Ponorogo.