Journal of Language and Health
Volume 7 No 2, June 2026
e-ISSN 2722-3965; p-ISSN 2722-0311
http://jurnal.globalhealthsciencegroup.com/index.php/JLH

Clean and Healthy Living Behavior among Students of Islamic Boarding Schools

Yenny Rachmawati, Citra Ariani, Sulpiana, Desdiani*
Faculty of Medicine, IPB University, Jl. Rasamala, Kampus IPB Dramaga, Bogor, Jawa Barat 16680, Indonesia
*desdiani@apps.ipb.ac.id

ABSTRACT

Islamic boarding schools (*pesantren*), community-based institutions providing intensive Islamic and general education, play an essential role in shaping students' daily health behaviors. However, limited health knowledge and suboptimal sanitation conditions continue to pose challenges to the promotion of clean and healthy living behavior (*Perilaku Hidup Bersih dan Sehat*, PHBS) in this environment. This Cross-sectional study assessed the PHBS knowledge, attitudes, and practices in an Islamic boarding school in Depok, West Java, Indonesia. Data were collected using a structured knowledge, daily practices, facilities and infrastructure, institutional support, sanitation, and environmental health risks. Convenience sampling was used, validity was established through theory-driven content development and face validity. Descriptive and inferential statistics were used to analyze responses and examine gender differences. Basic hygiene practices such as handwashing and bathing showed high compliance (>80%), but preventive behaviors, including vector control and environmental sanitation, remained low (<30%). Knowledge of key health issues, including HIV/AIDS transmission, was limited. Significant gender differences were found in certain practices and reported health complaints. Inadequate facilities, weak institutional support, and high exposure to environmental health risks were identified as persistent challenges. Findings highlight the need for a comprehensive, multi-level approach combining infrastructure improvements, targeted health education, and strengthened institutional roles to promote sustainable PHBS among *pesantren* students.

Keywords: clean and healthy; islamic boarding school; living behavior; students

INTRODUCTION

Pesantren, also referred to in this manuscript as *Islamic boarding schools* (*IBS*), are community-based educational institutions in Indonesia designed to provide intensive Islamic religious education alongside general education appropriate to students' age levels (Hanafi et al., 2021; Widyasari et al., 2020). The Indonesian government, through the Ministry of Religious Affairs, oversees the health and environmental conditions of *santri* (students) via the post-IBS program. However, this program has not functioned optimally, primarily due to limited student knowledge and awareness regarding personal and environmental sanitation (Iqbalia Fisabilillah et al., 2020; Samsuni et al., 2019). Consequently, between 2014 and 2015, approximately 70% of *santri* experienced infectious diseases such as respiratory tract infections and skin disorders. Other common health problems reported in *pesantren* include diarrhea, scabies, reproductive tract infections, dental issues, and malnutrition (Susanto et al., 2016; Widyasari et al., 2020). Health promotion materials commonly provided to adolescents aged 15–24 years typically address topics such as personal hygiene, nutrition, prevention of sexual violence and bullying, and HIV/AIDS awareness (Damayanti et al., 2020; Susanto et al., 2016).

Sanitation refers to efforts to maintain cleanliness to promote health and comfort, ultimately aiming to enhance quality of life (Ross et al., 2021). Environmental management in schools involves integrated initiatives addressing water quality, waste management, energy use, and land management, which are often incorporated into extracurricular activities and supported by the school's strategic vision (Hens et al., 2010; Kanyimba et al., 2014). The Indonesian government has introduced the Clean and Healthy Living Behavior (*Perilaku Hidup Bersih dan Sehat*, PHBS) program, which has been implemented through health posts in Islamic boarding schools (*Poskestren*) to promote public health (Regulation of the Minister of Health No. 2269/Menkes/Per/XI/2011 Concerning Guidelines for Fostering Clean and Healthy Living Behavior, 2011).

However, fostering clean and healthy living behaviors among children in *pesantren* remains challenging due to insufficient knowledge, limited resources, and inadequate delivery of health education (Koem Zitty & Joseph, 2015; Krianto, 2009). According to the 2013 National Health Research conducted by the Ministry of Health of the Republic of Indonesia, only 32.3% of the population surveyed met the PHBS criteria (Ministry of Health of the Republic of Indonesia, 2013).

The general health conditions within the *pesantren* environment continue to require significant attention, particularly regarding access to health care, the adoption of healthy behaviors, and environmental health management. Evidence indicates that clean and healthy living behaviors among children in Islamic boarding schools (IBS) remain suboptimal, as reflected in low rates of adequate vegetable and fruit consumption (10.7%), proper handwashing practices (47.2%), and regular physical activity (52.8%) (Ministry of Health of the Republic of Indonesia, 2013). These figures illustrate the persistently low levels of clean and healthy living behavior in Indonesia, which contribute to behavioral and health problems associated with unhealthy living environments (Koem Zitty & Joseph, 2015).

Fostering healthy behaviors among students in IBS is expected to improve their personal hygiene and adherence to clean and healthy living practices. IBS are considered strategic settings for implementing school-based health promotion and have proven effective as institutions for delivering health education. Furthermore, school age represents a critical period for instilling PHBS values, as children can serve as agents of change who promote PHBS not only within schools but also in their families and broader communities (Ministry of Health of the Republic of Indonesia, 2008). Accordingly, this study aimed to assess students' knowledge, attitudes, and behaviors regarding key indicators of PHBS, and to examine differences across health education exposure and grade levels among students attending IBS in Depok, West Java, Indonesia.

METHOD

Study Design and Participant

A cross-sectional study was conducted in January 2025 using an Islamic boarding school–based survey in Depok, West Java, and Jember Regency, East Java, Indonesia, to assess the promotion of PHBS. The study population comprised all students enrolled at the selected Islamic boarding schools, with a total of 51 male and female students participating after providing informed consent. The sample size was determined using a total sampling approach. This study was approved by the ethics committee of the affiliated Bhayangkara hospital KET/EC-41/IV/2025.

Instrument and Procedure

In this survey, students were asked to complete a questionnaire comprising 55 items grouped into six main categories: knowledge, practice, facilities and infrastructure, institutional support, sanitation and environmental cleanliness, and environmental health risks. The questionnaire items were developed based on a modified version of the Knowledge, Attitude, and Practice (KAP) framework and the PRECEDE–PROCEED model, adapted to the context of Islamic boarding schools in Indonesia and informed by previous studies (Field, 2017; Fitriani, 2018; Pulihasih et al., 2024). Validity of the instrument was established through content and face validity rather than internal consistency reliability testing. The items represent heterogeneous but theoretically essential domains, including knowledge, daily practices, facilities and infrastructure, institutional support, sanitation, and environmental health risks. As such, the instrument was not intended to measure a single latent construct, but to descriptively capture multiple dimensions of clean and healthy living conditions. Internal consistency indices such as Cronbach's alpha and correlation-based construct validity tests assume unidimensional reflective measurement models and are not appropriate for formative or descriptive instruments. Face validity was supported through field testing to ensure clarity, relevance, and comprehensibility of items for adolescent respondents. Indirect construct validity was further supported by the instrument's ability to discriminate between known groups, as evidenced by observed gender differences in selected PHBS indicators.

Respondents provided answers using "yes" or "no" response options, where a "yes" response was generally interpreted as indicating a positive condition, except for items where the question reflected a negative situation—for example, the question *"Are the toilets in the Islamic boarding school smelly and dirty?"*, where a "yes"

response indicated a sanitation concern. Additionally, students were invited to provide open-ended responses regarding any health complaints experienced during their stay at the Islamic boarding school.

Data Analysis

Data analysis for this study was conducted in two stages. First, descriptive statistics were employed to summarize the distribution of respondents' answers to the 55 questionnaire items, which covered aspects of knowledge, attitudes, practices, and students' environmental conditions. Second, inferential analysis was performed using the Chi-square test to examine the association between gender and responses to each item. However, due to the limited sample size, the analysis was restricted to items that met the Chi-square assumption of an expected cell count greater than five, in accordance with standard validity requirements (Anggraeni et al., 2023). Based on these criteria, only 17 of the 55 items were included in the inferential analysis.

RESULT

This study aimed to describe the clean and healthy living behavior (*Perilaku Hidup Bersih dan Sehat*, PHBS) of students at Islamic boarding schools in Depok, West Java, Indonesia. As presented in Table 1, a total of 51 students participated in the survey, representing three educational levels: elementary school, junior high school, and high school. The majority of respondents were female (70.6%), most were enrolled at the junior high school level (53%), and 60.8% were aged between 13 and 17 years. This distribution indicates that most participants were in early to middle adolescence, a critical developmental phase for establishing healthy living habits. Accordingly, PHBS interventions targeting this age group are considered strategic for promoting sustainable health behaviors into adulthood.

Table 1.
Demographic Characteristics of Respondents (n= 51)

Variables	Category	f	%
Gender	Man	15	29.4
	Woman	36	70.6
Education	SD (elementary school)	24	47.1
	SMP (junior high school)	25	49.0
	SMA (senior high school)	2	3.9
Age (years)	8	2	3.9
	9	3	5.9
	10	3	5.9
	11	3	5.9
	12	9	17.6
	13-17	31	60.8

Distribution of Respondents' Answers to PHBS Questions

In the knowledge category, five items were used to assess students' understanding of key health issues, including HIV/AIDS and health funding. The results indicated that the proportion of respondents who answered "yes" to these items was relatively low, ranging from 18% to 45%. This finding suggests that students' health literacy remains insufficient, particularly regarding critical topics with significant public health implications, such as the transmission of HIV/AIDS. The healthy practice category comprised 18 questions and demonstrated a varied distribution of responses. Several positive practices, such as washing hands with soap, bathing twice daily, and wearing clean clothes, showed high levels of compliance (above 80%). However, other equally important practices, such as regularly inspecting water tanks for larvae, engaging in routine physical exercise, and maintaining an appropriate distance between wells and potential sources of contamination, received low rates of positive responses (below 30%). These findings indicate that while basic hygiene practices have been established, several key preventive behaviors have yet to become consistent habits among students.

Regarding facilities and infrastructure, responses to the nine relevant questions indicated that most students reported the availability of basic facilities such as toilets, clean water, and beds. However, other supporting facilities, including adequate air ventilation, proper lighting in study areas, and water sources located safely away from potential contaminants, were still perceived as inadequate by the majority of respondents, with

positive responses below 30%. This disparity suggests that the mere presence of physical infrastructure does not necessarily ensure that its quality meets environmental health standards.

In the institutional support category, the survey results showed that only 25% of respondents were aware of the presence of health cadres within the *pondok*, and an even smaller proportion (13%) considered the number of cadres to be adequate. This finding indicates weak institutional support for strengthening PHBS and highlights the need to revitalize the role of health cadres in the *pondok* environment. In the sanitation and environmental cleanliness category, responses varied. A relatively high proportion of positive answers (>50%) was recorded for the cleanliness of bedrooms and yards. However, low positive response rates (<30%) were observed for the condition of ablution areas, study rooms, and ventilation. These results suggest that sanitation efforts tend to focus on areas that are immediately visible, while other equally critical areas have not received sufficient attention. The final category, environmental health risks, included questions related to disease symptoms (such as itching and dizziness), exposure to cigarette smoke, and the presence of mosquito larvae or a history of dengue fever. More than 40% of respondents answered "yes" to these items, indicating that exposure to risk factors for infectious diseases and unhealthy environmental conditions remains relatively high. In particular, issues related to water cleanliness, lice infestations, and air quality underscore the need for targeted preventive and promotive interventions to reduce environmental health risks within the *pondok* setting.

Health Complaints

As shown in Figure 1, the majority of students (39%) did not report any health complaints during their stay at the Islamic boarding school. However, this figure should not be interpreted as an absence of health issues, as it may reflect reporting bias or a lack of awareness of mild symptoms. The most commonly reported complaints were related to skin disorders and allergies (27%), such as itching and irritation, which may indicate suboptimal personal hygiene and environmental sanitation. Disorders involving the head and nervous system (24%), including dizziness and fatigue, suggest the potential burden of daily activities and insufficient rest. Respiratory complaints (18%) were likely associated with inadequate ventilation and exposure to cigarette smoke, while digestive complaints (6%) point to possible concerns regarding food and water hygiene. The "other" category (8%) included non-specific symptoms such as aches and limited access to appropriate medication. Overall, these findings indicate that health complaints among students remain a concern, particularly in relation to sanitation, ventilation, and activity patterns. Therefore, comprehensive interventions are warranted, including improvements to infrastructure, enhanced PHBS education, measures to limit exposure to environmental risks, and the establishment of a proactive and responsive health reporting system.

Table 2.
Distribution of Respondents' Answers

Factor	No	Question	Total		Female		Male		χ^2	*p*-val
			f	%	f	%	f	%		
Know-ledge	1	Do you understand who is at risk for AIDS?	12	23.5%	10	27.8	2	13.3		
	2	Do you understand the causes of AIDS?	12	23.5%	9	25.0	3	20.0		
	3	Do you know clearly the signs and symptoms of people with AIDS?	9	17.6%	7	19.4	2	13.3		
	4	Do you understand how to prevent AIDS?	14	27.5%	8	22.2	6	40.0	1.68	0.17
	5	Do you know about healthy funds?	23	45.1%	11	30.6	12	80.0		
Practice	1	Do you wash your hands with running water and soap?	50	98.0%	35	97.2	15	100.0		
	2	Do you wash your hair/shampoo it every day?	35	68.6%	30	83.3	5	33.3	12.295	<0.001
	3	Do you use a clean and healthy toilet?	29	56.9%	21	58.3	8	53.3		
	4	Do you wash your hands with running water and soap after urinating and defecating?	48	94.1%	34	94.4	14	93.3		
	5	Do you cut your nails regularly?	42	82.4%	28	77.8	14	93.3		
	6	Do you shower twice a day?	49	96.1%	34	94.4	15	100.0		

Factor	No	Question	Total		Female		Male		χ^2	*p*-val
	7	Do you always wear neat and clean clothes?	49	96.1%	34	94.4	15	100.0		
	8	Do you clean your ears regularly?	45	88.2%	30	83.3	15	100.0		
	9	Have you ever worn your friend's clothes?	48	94.1%	35	97.2	13	86.7		
	10	Do you use clean water (e.g. for bathing and ablution)?	50	98.0%	35	97.2	15	100.0		
	11	Do you perform ablution using running water?	47	92.2%	33	91.7	14	93.3		
	12	Do you regularly clean the ablution area?	37	72.5%	25	69.4	12	80.0	0.592	0.343
	13	Do you regularly clean the toilets in Islamic boarding schools?	26	51.0%	19	52.8	7	46.7		
	14	Do you often hang clothes in the bedroom?	37	72.5%	27	75.0	10	66.7		
	15	Do you clean your bedroom regularly?	50	98.0%	35	97.2	15	100.0		
	16	Do you clean your study room regularly?	49	96.1%	34	94.4	15	100.0	0.867	0.494
	17	Do you routinely do 3M (drain, bury, and cover)?	23	45.1%	15	41.7	8	53.3		
	18	Do you eat regularly three times a day and at least once a day?	41	80.4%	29	80.6	12	80.0	0.002	0.621
	19	Is your balanced diet consisting of rice, vegetables and side dishes?	34	66.7%	28	77.8	6	40.0		
	20	Do you exercise regularly?	39	76.5%	27	75.0	12	80.0	0.147	0.503
	21	If you are sick, will you be taken to the nearest health center or health worker?	36	70.6%	29	80.6	7	46.7	5,857	0.020
	22	Are you a smoker?	5	9.8%	4	11.1	1	6.7	0.237	0.537
	23	Are you a healthy fund participant?	21	41.2%	11	30.6	10	66.7	5.70	0.019
	24	Do you have a health fund card?	21	41.2%	9	25.0	12	80.0		
Infra-structure	1	Does the source of clean water in the Islamic boarding school come from PDAM water or a well?	50	98.0%	35	97.2	15	100.0	0.425	0.706
	2	Are there toilets in the Islamic boarding school?	24	47.1%	22	61.1	2	13.3		
	3	Is the ventilation in your bedroom sufficient?	48	94.1%	34	94.4	14	93.3		
	4	Is the lighting in your bedroom sufficient?	48	94.1%	33	91.7	15	100.0		
	5	Is there a mat for you to sleep on?	49	96.1%	34	94.4	15	100.0	0.867	0.494
	6	Do you feel cramped or crowded in the Islamic boarding school environment?	22	43.1%	16	44.4	6	40.0		
	7	Is the room capacity appropriate to the number of students or residents at the Islamic boarding school?	46	90.2%	31	86.1	15	100.0		
	8	Is the lighting in the study room sufficient?	50	98.0%	35	97.2	15	100.0		
	9	Is there adequate ventilation in the study room?	48	94.1%	33	91.7	15	100.0		
	10	Are there trash bins in the yard of the Islamic boarding school?	49	96.1%	35	97.2	14	93.3		
Support	1	Are there health cadres in Islamic boarding schools?	43	84.3%	30	83.3	12	80.0		
	2	Are registered health cadres more than ten percent in Islamic boarding schools?	23	45.1%	16	44.4	7	46.7	0.425	0.506
Environ	1	Is the floor of your ablution area	27	52.9%	20	55.6	7	46.7		

Factor	No	Question	Total		Female		Male		χ^2	*p*-val
mental		slippery?								
Sanitation and Cleanliness	2	Are the toilets in Islamic boarding schools smelly and dirty?	13	25.5%	12	33.3	1	6.7		
	3	Is your bedroom clean and free of trash?	35	68.6%	22	61.1	13	86.7		
	4	Is your study room clean and free of trash?	45	88.2%	30	83.3	15	100.0		
	5	Is the Islamic boarding school yard clean?	44	86.3%	30	83.3	14	93.3		
	6	Are there well-maintained plants in the yard of the Islamic boarding school?	47	92.2%	34	94.4	13	86.7	0.886	0.336
Environmental Health Risks	1	If the water source comes from a well, is the distance between the well and the source of pollution more than ten meters?	33	64.7%	30	83.3%	3	20.0		
	2	Does the clean water used meet physical requirements (odorless, tasteless and colorless)?	49	96.1%	34	94.4%	15	100.0		
	3	Are there larvae in the water tank?	9	17.6%	15	41.7%	8	53.3	0.894	0.324
	4	Have any residents of the Islamic boarding school ever had dengue fever before?	26	51.0%	22	61.1%	4	26.7	5,027	0.026
	5	Have you found cigarette butts around the Islamic boarding school environment?	37	72.5%	21	58.3%	6	40.0		
	6	Is there a smell of cigarettes around the Islamic boarding school?	19	37.3%	10	27.8%	2	13.3		
	7	Do you experience itching that is especially felt at night?	27	52.9%	31	86.1%	6	40.0	11,304	0.002
	8	Do any of your friends or family members have similar itching complaints to yours?	12	23.5%	15	41.7%	4	26.7	1,019	0.247

Note: * bold indicates statistically significant values at the α <0.05 level

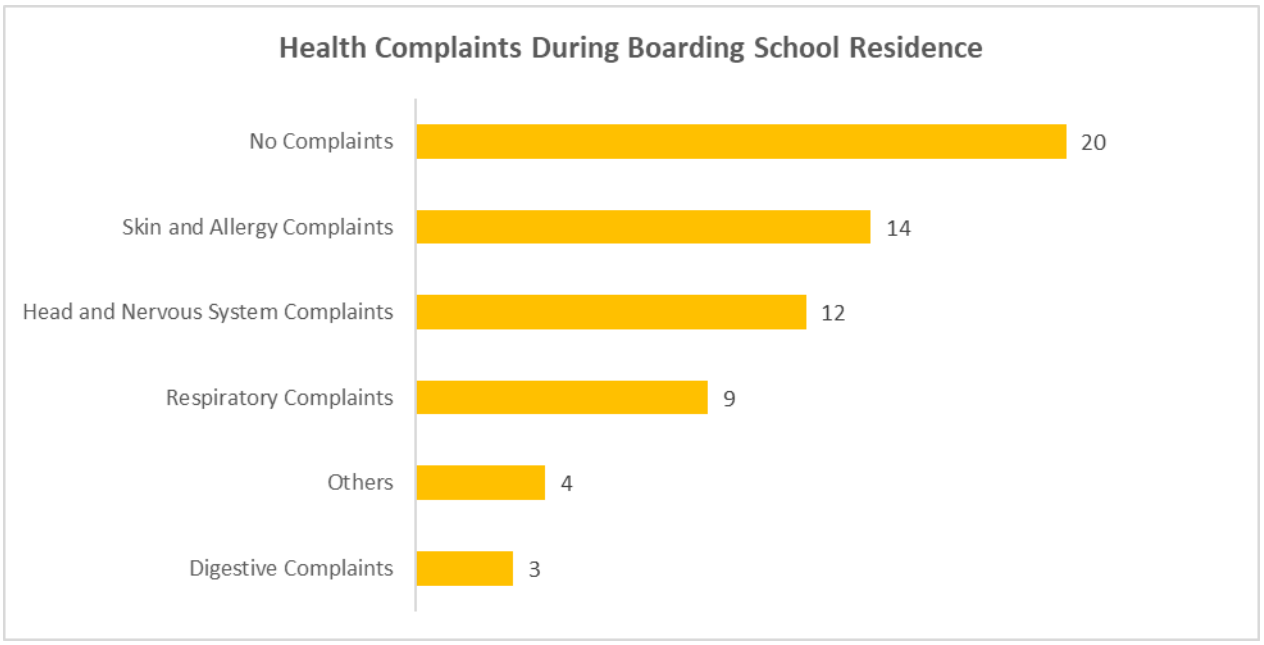

Figure 1. Distribution of students' health complaints during boarding school residence.

The Relationship between Gender and Healthy Living Behavior

As shown in Table 1, out of 17 items analyzed, there were four questions that showed statistically significant differences between male and female students. This finding indicates differences in health behavior patterns and experiences based on gender. In general, female students showed higher levels of awareness and healthy living practices than male students. As many as 83.3% of female students reported washing their hair every day, significantly higher than 33.3% of male students. When they were sick, female students also tended to seek immediate medical attention; the majority reported being taken to a community health center or treated by the nearest health worker, while less than 50% of male students reported the same. However, interesting findings emerged in the aspect of disease incidence in the boarding school environment. Dengue fever (DBD) was reported to be more common in female students (61.1%) compared to male students (26.7%). Similar things were also seen in complaints of itching, which were reported by 86.1% of female students, higher than 40% of male students. These differences may reflect both variations in the level of concern in observing and reporting symptoms, as well as differences in environmental exposure or hygiene habits that still need to be explored further. These results indicate the importance of promotive and preventive approaches that consider gender dimensions in the implementation of environmental health programs in Islamic boarding schools.

DISCUSSION

This study confirms that clean and healthy living behavior (*Perilaku Hidup Bersih dan Sehat*, PHBS) among students at Islamic boarding schools in Depok, West Java, remains inadequate in key areas, despite the existence of national programs and institutional efforts. The low proportion of students demonstrating knowledge of HIV/AIDS and health funding (18%–45%) echoes earlier findings by Susanto *et al.* (2016) and indicates persistent gaps in health literacy on issues with serious public health implications (Susanto et al., 2016). Basic hygiene practices such as handwashing and bathing were widely adopted (>80%), which aligns with Susanto's findings regarding good toilet practices among junior and senior high school students (Susanto et al., 2016). However, our study also reveals that preventive behaviors, such as larva monitoring, safe well placement, and regular exercise, are weakly practiced (<30%). This gap between basic compliance and preventive behavior is consistent with Farhany's observation that students often neglect balanced nutrition and routine physical activity (Ruslana & Mulyono, 2021). Together, these results suggest that while foundational hygiene routines are well internalized, critical thinking and proactive health management are lacking. This gap may be due to limited reinforcement of preventive health concepts in daily activities and a lack of practical application opportunities, as Damayanti (2020) highlighted in a comparable dormitory setting (Damayanti et al., 2020).

Institutional factors appear to constrain broader adoption of PHBS. Although most students reported basic facilities such as toilets and clean water, fewer than 30% rated ventilation, study room lighting, or safe water source placement as adequate. The presence of health cadres was reported by only one-quarter of students, with even fewer considering their numbers sufficient, indicating weak structural support for health promotion. This finding supports Farhany's recommendation that empowering 'Healthy Santri Cadres' with clear roles, training, and monitoring responsibilities is critical for effective peer-driven health initiatives (Ruslana & Mulyono, 2021). Environmental health risks remain significant. More than 40% of respondents reported conditions associated with poor sanitation, vector-borne disease, or exposure to cigarette smoke. This is comparable to the prevalence of skin infections, scabies, and respiratory complaints reported by Ruslana and Redjeki, who emphasized the cultural normalization of certain preventable illnesses in boarding school contexts (Ministry of Health of the Republic of Indonesia, n.d.; Sofia & Widad, n.d.). Our results support these observations and highlight the urgent need to break this cycle through consistent education and institutional accountability.

Gender differences also emerged: female students generally reported better hygiene practices but were paradoxically more likely to report symptoms such as itching and dengue fever. This may reflect higher awareness and reporting tendencies among female students or differential exposure linked to living arrangements or daily activities. This pattern emphasizes the importance of tailoring health promotion programs to gender-specific needs and behaviors. Overall, these findings suggest that simply providing health facilities and written guidelines is insufficient. Effective PHBS promotion in Islamic boarding schools must integrate structural improvements (e.g., safe water, adequate ventilation), sustained peer and staff training, and contextual behavioral reinforcement. Furthermore, boarding schools should routinely monitor compliance, strengthen the role of student health cadres, and cultivate a school culture where preventive health is valued and normalized. Despite its contribution, this study's findings are constrained by its small sample size and focus on a single geographic area, limiting broader generalizability. Future research should include larger, multi-site samples and examine how cultural norms within different *pesantren* communities shape health behaviors.

CONCLUSION

In general, the results highlight the urgent need for a comprehensive, multi-level approach to improving clean and healthy living behavior among students in Islamic boarding schools or *pesantren*. Improving basic facilities and infrastructure alone is insufficient if not matched by strong institutional support systems, such as the presence of trained health cadres and regular monitoring of environmental health standards.

REFERENCES

Anggraeni, H. E., Paramitadevi, Y. V., Apriliani, F., & Resmeiliana, I. (2023). Assessing students' "clean and healthy living behavior" in an intervention program. *International Journal of Public Health Science (IJPHS)*, *12*(1), 56. https://doi.org/10.11591/ijphs.v12i1.21811

Damayanti, M. R., Sudira, P. G., & Nopriani, N. L. P. (2020). Effectiveness of a school-based peer-led education program on high school students' health behavior in a boarding school in Bali, Indonesia. *Enfermería Clínica*, *30*, 90–95. https://doi.org/10.1016/j.enfcli.2020.07.019

Field, A. (2017). *Discovering statistics using IBM SPSS statistics* (5th ed.). SAGE Publications.

Fitriani, V. (2018). *Clean and healthy living behavior of elementary school students* [Undergraduate thesis]. Sriwijaya University.

Hanafi, Y., Taufiq, A., Saefi, M., Ikhsan, M. A., Diyana, T. N., Thoriquttyas, T., & Anam, F. K. (2021). The new identity of Indonesian Islamic boarding schools in the "new normal": the education leadership response to COVID-19. *Heliyon*, *7*(3), e06549. https://doi.org/10.1016/j.heliyon.2021.e06549

Hens, L., Wiedemann, T., Raath, S., Stone, R., Renders, P., Craenhals, E., & Richter, B. (2010). Monitoring environmental management at primary schools in South Africa. *Journal of Cleaner Production*, *18*(7), 666–677. https://doi.org/10.1016/j.jclepro.2009.11.001

Iqbalia Fisabilillah, R., Syari, W., & Khodijah Parinduri, S. (2020). GAMBARAN PELAKSANAAN MANAJEMEN PELAYANAN POSKESTREN (POS KESEHATAN PESANTREN) DI PONDOK PESANTREN DAARUL RAHMAN 3 KOTA DEPOK TAHUN 2020. *PROMOTOR*, *3*(5), 501–511. https://doi.org/10.32832/pro.v3i5.4206

Kanyimba, A. T., Richter, B. W., & Raath, S. P. (2014). The effectiveness of an environmental management system in selected South African primary schools. *Journal of Cleaner Production*, *66*, 479–488. https://doi.org/10.1016/j.jclepro.2013.10.052

Koem Zitty, A. R., & Joseph, B. R. C. S. (2015). Relationship between knowledge and attitude with clean and healthy living behavior. *Pharmacon: Jurnal Ilmiah Farmasi*, *4*, 290–294.

Krianto, T. (2009). Clean and healthy living behavior with a participatory approach. *Kesmas: National Public Health Journal*, *3*(6).

Ministry of Health of the Republic of Indonesia. (n.d.). *Basic guidelines for clean and healthy living behavior (PHBS)*.

Ministry of Health of the Republic of Indonesia. (2008). *Health promotion in school*.

Ministry of Health of the Republic of Indonesia. (2013). *Basic Health Research (Riskesdas) 2013*.

Pulihasih, A. Y., Handayani, D., Ibad, M., A., A. Q. A., & Zamzam, M. (2024). An Introspective Survey of Modern Islamic Boarding School to Increase Health Awareness of Islamic Boarding Schools in Surabaya. *Revista de Gestão Social e Ambiental*, *18*(5), e05642. https://doi.org/10.24857/rgsa.v18n5-096

Regulation of the Minister of Health No. 2269/Menkes/Per/XI/2011 Concerning Guidelines for Fostering Clean and Healthy Living Behavior (2011).

Ross, I., Cumming, O., Dreibelbis, R., Adriano, Z., Nala, R., & Greco, G. (2021). How does sanitation influence people's quality of life? Qualitative research in low-income areas of Maputo, Mozambique. *Social Science & Medicine*, *272*, 113709. https://doi.org/10.1016/j.socscimed.2021.113709

Ruslana, F. H., & Mulyono, S. (2021). Cultural values and clean and healthy life behaviour among students. *Journal of Public Health Research*, *11*(2).

Samsuni, S., Mulyono, S., Wiarsih, W., & Heni Kusumawardani, L. (2019). Photovoice interactive media improves the personal hygiene of teenage students at pesantren school in Tangerang. *Enfermería Clínica*, *29*, 681–686. https://doi.org/10.1016/j.enfcli.2019.04.104

Sofia, D., & Widad, S. (n.d.). Survey perilaku hidup bersih dan sehat terhadap santri. *Oksitosin: Jurnal Ilmiah Kebidanan*, *3*(2), 113–117.

Susanto, T., Sulistyorini, L., Wuryaningsih, E. W., & Bahtiar, S. (2016). School health promotion: A cross-sectional study on Clean and Healthy Living Program Behavior (CHLB) among Islamic Boarding Schools in Indonesia. *International Journal of Nursing Sciences*, *3*(3), 291–298. https://doi.org/10.1016/j.ijnss.2016.08.007

Widyasari, V., Prabandari, Y. S., & Utarini, A. (2020). Training intervention to improve hygiene practices in Islamic boarding school in Yogyakarta, Indonesia: A mixed-method study. *PLOS ONE*, *15*(5), e0233267. https://doi.org/10.1371/journal.pone.0233267