

IMPROVING STUDENTS' HEALTH INDEPENDENCE THROUGH HEALTHY STUDENT CADRE TRAINING AT THE BIN BAZ ISLAMIC BOARDING SCHOOL

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Abstrak: Pesantren sebagai ekosistem pendidikan berasrama memiliki potensi besar sekaligus tantangan kesehatan, mulai dari penyakit menular berbasis lingkungan hingga isu kesehatan remaja putri seperti anemia dan kebersihan personal. Kondisi ini menuntut model penguatan kemandirian kesehatan berbasis komunitas melalui kader internal pesantren. Kader berperan sebagai pendamping sebaya yang memperkuat Poskestren maupun Posyandu Remaja, memastikan program berjalan rutin, terukur, serta selaras kebijakan sekolah-sehat. Kegiatan pengabdian ini bertujuan meningkatkan kemandirian kesehatan santri melalui Pelatihan Kader Santri Sehat di Pesantren Islamic Center Bin Baz. Kegiatan menggunakan pendekatan Participatory Action Research (PAR) dengan melibatkan 30 santri putri kelas XI dan XII. Metode pelatihan meliputi ceramah, diskusi kelompok, simulasi, praktik, serta *peer support*. Evaluasi dilakukan melalui pre-test dan post-test, dengan analisis uji statistik paired sample t-test. Hasil menunjukkan peningkatan signifikan pada pengetahuan kesehatan reproduksi (rata-rata pre-test 80,13 menjadi 96,17; $p = 0,000$) dan keterampilan pemeriksaan dasar seperti pengukuran berat badan, LILA, lingkaran perut, dan tekanan darah ($p < 0,05$). Mayoritas peserta memiliki tingkat kematangan emosional sedang hingga tinggi, yang mendukung peran mereka sebagai kader santri sehat. Kegiatan ini menegaskan bahwa pelatihan kader santri sehat efektif meningkatkan kemandirian kesehatan santri di pesantren. Program ini berpotensi dijadikan model intervensi berkelanjutan dengan dukungan kelembagaan pesantren dan kolaborasi tenaga kesehatan.

Kata kunci: kemandirian Kesehatan, kader santri, posyandu remaja, pesantren, pelatihan kesehatan.

Abstract: Islamic boarding schools (pesantren) possess significant potential as educational environments but also encounter health issues, ranging from infectious diseases transmitted through the environment to distinct female health concerns like anaemia and personal hygiene. Therefore, it is crucial to enhance community health independence via internal Islamic boarding school cadres. This community service initiative sought to enhance students' health autonomy via the Healthy Student Cadre Training at the Bin Baz Islamic Centre in Islamic boarding schools. Using a Participatory Action Research (PAR) methodology, the initiative engaged 30 female students in 11th and 12th grades. Training techniques involved lectures, group discussions, simulations, hands-on sessions, and peer assistance. Assessment was carried out using pre- and post-tests, followed by statistical analysis using paired-samples t-tests. Findings indicated a notable increase in reproductive health knowledge (80.13 to 96.17; $p < 0.001$) and an improvement in fundamental examination skills, including weight, MUAC, waist circumference, and blood pressure assessments ($p < 0.05$). The majority of participants exhibited moderate to high levels of emotional maturity, reinforcing their position as health cadres. The results indicate that cadre training significantly improves the health independence of Islamic boarding school students and shows promise as a sustainable intervention model with the backing of institutional and professional healthcare.

Key words: health independence, student cadres, adolescent health post, pesantren, health training

Introduction

Islamic boarding schools (pesantren) are residential educational ecosystems characterised by intensive interactions, communal lifestyles, and structured daily routines. These

characteristics simultaneously create opportunities and health vulnerabilities, ranging from environmentally based infectious diseases (such as scabies) to health issues commonly experienced by female adolescents, including anaemia, personal hygiene challenges, reproductive health concerns, and varying levels of health literacy among Islamic boarding schools. The Bin Baz Islamic Centre (ICBB), located in Karangploso, Piyungan, Bantul, is an Islamic boarding school that provides education from early childhood to senior high school. As a residential institution, ICBB enforces strict regulations, including restrictions on mobile phone use and gender segregation in both academic activities and living arrangements. Such conditions place students within a highly communal environment, making health management a crucial and ongoing concern.

However, health governance within Islamic boarding school environments continues to face several limitations. Health data management remains manual mainly, and interviews with ICBB administrators indicate that students' health independence has not yet been fully established. Students who fall ill must still be referred to external clinics, while the Youth Red Cross, which should support preventive and promotive health efforts, has not functioned optimally. These conditions pose challenges to achieving students' health independence. According to the Ministry of Health policies, Islamic boarding schools play a strategic role in supporting national health development. Given their large student populations and strong community characteristics, Islamic boarding schools have the potential to act as agents of change in promoting healthy behaviours both internally and into the broader community (Faisal & Asnawi, 2025).

This policy aligns with the School Health Unit program and the Clean and Healthy Living Behaviour movement as key promotive and preventive pillars in educational institutions. Nevertheless, implementation in practice often encounters constraints related to cadre capacity, training continuity, and Poskestren management (Asri et al., 2023). Empirical evidence shows that training student health cadres and Poskestren personnel effectively improves knowledge, basic examination skills (vital signs and anthropometry), and preventive pillars in educational institutions' practices, while revitalising Poskestren services when accompanied by sustained mentoring. In the Indonesian adolescent context, peer education approaches have proven effective in improving health literacy and behaviours, making them particularly relevant in community-based Islamic boarding schools settings (Handayani et al., 2024). Various cadre empowerment models have been implemented in Islamic boarding schools, such as the Santri Husada training program in Banyumas, which significantly improved participants' knowledge ($p = 0.001$), and participatory preventive pillars in educational institutions education at Daarul Abror Modern Islamic boarding schools, which increased average knowledge scores from 74.63 to 83.33 among 27 students (Chaerani et al., 2024).

Healthy Student Cadre Training at the Bin Baz Islamic Center was designed as an empowerment model integrating: (1) strengthening female students health literacy; (2) enhancing cadres' skills in early detection and preventive pillars in educational institution promotion, including adolescent anemia, personal and menstrual hygiene, nutrition, and dormitory environmental health; and (3) revitalizing the Poskestren as a learning-based health

unit within the Islamic boarding schools. This intervention aimed to foster measurable health independence, motivation, and capability by changing students' knowledge, attitudes, and practices. Given the lack of sustained programs specifically targeting female student cadres in girls' Islamic boarding schools such as ICBB, this community service initiative is both timely and significant for advancing Islamic boarding school-based health cadre development.

Accordingly, this program aimed to develop Healthy Student Cadre Training at Bin Baz Islamic Centre as an internal health empowerment strategy that supports independent promotive and preventive health. This approach is expected to cultivate female students as agents of change, improve healthy living practices, and establish a sustainable, health-independent environment in Islamic boarding schools.

Method

This community service program employed a Participatory Action Research (PAR) approach, emphasising active participant involvement throughout all stages, including problem identification, planning, implementation, and evaluation (Stephen Kemmis & Robin McTaggart, 2014). PAR was selected to facilitate knowledge transfer while fostering critical awareness and health independence among students. Participants consisted of 30 female students in grades XI and XII at Bin Baz Islamic Boarding School, Bantul, Yogyakarta, selected purposively. Cadre selection criteria included: (1) interest in health-related activities, (2) good communication skills, and (3) willingness to serve as healthy student cadres and peer companions. The stages of the activities are presented in Figure 1.

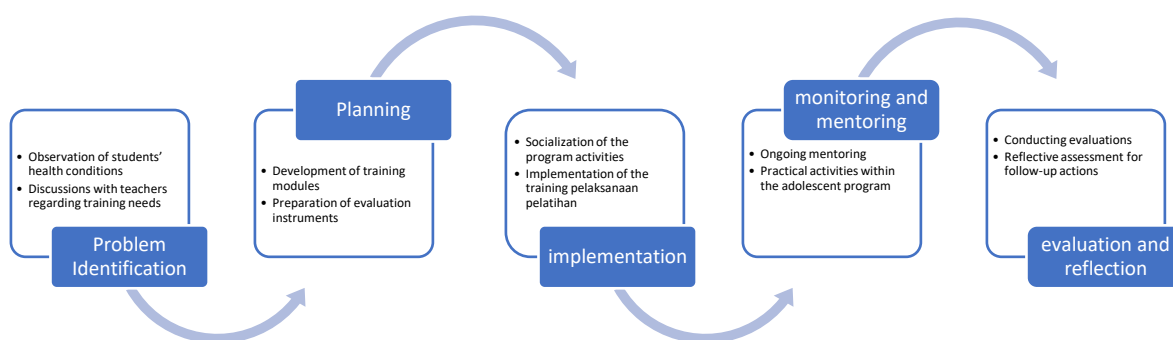


Figure 1. Stages of Community Service Activities in Healthy Student Cadre Training

Problem Identification

Initial observations assessed students' health conditions, including preventive practices in educational institutions, personal hygiene, basic health knowledge, and reproductive health. Discussions were conducted with caregivers, teachers, and student representatives to identify priority training needs.

Planning

Based on the findings, the team developed a Healthy Student Cadre Training module covering basic health, first aid, preventive pillars in educational institutions, adolescent

reproductive health, and simple health surveillance. Evaluation instruments were prepared for pre-test and post-test assessments and emotional maturity measurement.

Implementation

Training was delivered through interactive methods, including lectures, group discussions, simulations, and hands-on practice. Cadres were also assigned peer support activities to ensure continuous knowledge transfer.

Table 1. Types and Implementation of Healthy Student Cadre Training Activities

No	Activity	Objective	Materials	Implementation
1	Socialization	To provide an understanding of the roles of healthy student cadres and the importance of health in the Islamic boarding schools	Introductory program materials, training module	Lecture, interactive discussion
2	Peer Support	To train cadres to provide mutual support, serve as peer educators, and act as agents of change	Training module, case studies	Simulation, role play, group discussion
3	Health Assessment	to equip cadres with skills to identify basic signs and symptoms of illness among peers	Basic measuring instruments (thermometer, sphygmomanometer)	Hands-on practice, demonstration
4	Diarrhea Management	To provide skills for early management of diarrhea and emphasize the importance of rehydration	Training module	Practice in preparing and administering oral rehydration solution (ORS), simulation
5	Fever Management	To equip cadres with first-aid skills for students experiencing fever	Training module	Demonstration, compress application, and temperature monitoring practice
6	Introduction to Communicable Diseases	To increase knowledge of symptoms, transmission, and prevention of communicable diseases (e.g., tuberculosis, acute respiratory infections, skin diseases)	Communicable disease posters, training module	Interactive lecture, question-and-answer session, and visual media
7	Healthy Lifestyle Practices in School and Dormitory Settings	To foster clean and healthy living behaviors within the Islamic boarding schools environment	PHBS flipcharts	Health education, handwashing practice, communal cleaning activities
8	Prevention of Drug Abuse	To provide awareness of the dangers of drug abuse and strategies to refuse substance use	Training module, educational videos	Group discussion, video screening, refusal skills simulation
9	Adolescent Reproductive Health	To provide awareness of the dangers of drug abuse and strategies to refuse substance use	Training module, visual media	Lecture, discussion, small-group counseling

Monitoring and Mentoring

At this stage, the cadres are provided with the opportunity to independently apply the skills they have acquired, while being supervised by the project team to ensure that all processes adhere to the established standards. This process was conducted through a month-long mentoring program.

Evaluation and Reflection

The evaluation was conducted using several approaches, namely: (1) measuring the participants' emotional maturity using a structured questionnaire developed based on the concept of adolescent emotional maturity, which includes emotional regulation, emotional stability, self-awareness, empathy, responsibility, and social adjustment skills. These indicators were derived from theories of adolescent emotional development proposed by Hurlock and Goleman (Livesey, 2017); and (2) comparing pre-test and post-test results to assess improvements in the reproductive health knowledge of santri cadres. These indicators were then measured using an instrument developed in accordance with the adolescent reproductive health guidelines issued by the Ministry of Health of the Republic of Indonesia and the National Population and Family Planning Board (Muharrina et al., 2023). Knowledge indicators comprised several key aspects, namely: (1) understanding of the anatomy and physiology of the reproductive system; (2) knowledge of puberty and the physical and psychological changes experienced during adolescence; (3) understanding of menstrual health and reproductive organ hygiene; (4) knowledge of healthy and risky sexual behaviors; (5) understanding of the prevention of unintended pregnancy and sexually transmitted infections, including HIV/AIDS; and (6) knowledge of adolescents' rights and responsibilities related to reproductive health. During the reflection stage, the team, together with the santri cadres, formulated sustainability measures to ensure that the activities would have a long-term impact on strengthening santri health autonomy.

Program success was assessed using the following indicators: (1) an increase in santri cadre knowledge scores ($\geq 20\%$ compared to baseline); (2) the cadres' ability to perform simulations of basic health skills; (3) the establishment of at least one active peer education group within the pesantren environment; and (4) positive responses from Islamic boarding school caregivers regarding the cadres' contributions to supporting santri health autonomy. Data analysis employed a descriptive quantitative approach. Quantitative data in the form of pre-test and post-test scores were analyzed using a paired-sample t-test to determine significant improvements in the cadres' knowledge and skills.

Results and Discussion

The community service program, in the form of Healthy Student Cadre Training, involved 30 female students from the Bin Baz Islamic Boarding School in Bantul, Yogyakarta. The training was implemented in several stages, including socialization, material delivery, group discussions, simulations, and hands-on practice of basic health skills. Figure 2 presents documentation of

the Healthy Student Cadre Training activities, illustrating the process of delivering materials and conducting group discussions within the Islamic boarding school environment.



Figure 2. Documentation of Healthy Student Cadre Training Activities at ICBB Islamic Boarding School

To provide an overview of participants' readiness to perform their roles as health cadres, students' emotional maturity levels were assessed. Emotional maturity is considered an important factor, as it is closely related to students' ability to regulate emotions, communicate effectively, and assume responsibility when providing health support to their peers. [Figure 3](#) presents the distribution of participants' emotional maturity levels.

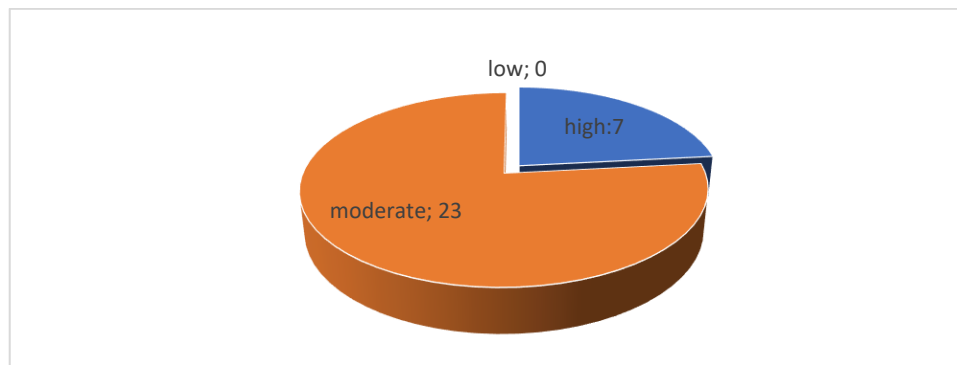


Figure 3. Distribution of Emotional Maturity Levels among Healthy Student Cadre Training Participants

The evaluation results of the Healthy Student Cadre Training, as illustrated in [Figure 3](#), indicate that the majority of participants were classified as having a moderate level of emotional maturity (77%). In comparison, 23% of students were categorized as having a high level of emotional maturity. No participants were classified in the low emotional maturity category. These findings suggest that participants' emotional maturity levels strongly support capacity-building among students, particularly in self-regulation, independence, and collaborative skills in basic health activities. The proportion of students with high emotional maturity (23%) is particularly favorable for the development of high-quality health cadres. Students in this

category have the potential to serve as role models for their peers, consistent with Triana & Marlina (2022), who emphasised that peer cadres play an effective role as key drivers of health programs in both school and Islamic boarding school settings.

The role of cadres extends beyond that of health educators to include serving as facilitators capable of creating participatory and sustainable learning environments. The absence of participants in the low emotional maturity category indicates that the training materials, methods, and mentoring were well received. From a theoretical perspective, the empowerment theory framework emphasises that enhancing individual capacity through participatory education leads to individuals who are more independent, critical, and capable of making appropriate decisions (Setyawan et al., 2025). Accordingly, students are no longer merely recipients of development but agents of change capable of internalizing health-related values in their daily lives.

The evaluation of improvements in participants' reproductive health knowledge in the Healthy Student Cadre Training was conducted using pre- and post-test methods. This approach was employed to assess the extent to which the training enhanced students' understanding of adolescent reproductive health issues. Table 2 presents the mean pre-test and post-test scores of participants' reproductive health knowledge.

Table 2. Mean Pre-test and Post-test Scores of Reproductive Health Knowledge

No	Questionnaire	N	Minimum value	Maximum value	Mean \pm standard deviation
1	Pretest	30	78	90	80,13 \pm 2,49
2	Posttest	30	90	100	96,17 \pm 3,57
	Total	30			

Table 3. Paired Samples Test

Pair	Mean Diff	Std Deviation	t	df	Sig (2-tailed)
Pre-post	-16,03	2,95	29,59	29	0,000

The community service program significantly improved students' knowledge of reproductive health. As shown in Table 2, the mean score increased from 80.13 \pm 2.49 (pre-test) to 96.17 \pm 3.57 (post-test), representing a gain of 16.03 points. This difference was statistically significant based on a paired-samples t-test ($t = 29.59$; $p < 0.05$), as shown in Table 3. These findings indicate that the training and health education intervention focusing on reproductive health was effective in improving the knowledge of student health cadres.

This improvement reflects the effectiveness of participatory education methods such as group discussions, simulations, and peer support in facilitating active engagement, experiential learning, and peer-to-peer communication, which collectively contribute to deeper understanding and retention of reproductive health information among adolescents (Amalia et al., 2020). Systematic education not only delivers information but also fosters students' critical awareness of the importance of maintaining reproductive health as an integral component of healthy lifestyle behaviors. Furthermore, the success of this program was influenced by the relevance of the training materials to adolescents' needs. Recent studies have shown that

contextual approaches, which adapt language and instructional methods to participants' characteristics, are more effective than one-way lecture-based education (Supiyani & Sukmawati, 2023).

This consideration is important given students' distinct cultural and religious backgrounds, which require health education to be delivered in alignment with moral and religious values. The program's effectiveness is further supported by behavior change theory, which emphasizes that increased knowledge marks the initial stage in the development of healthier attitudes and practices (Palupi et al., 2020). Accordingly, the success of this training extends beyond knowledge improvement and has the potential to foster positive changes in students' attitudes toward maintaining reproductive health. This finding is consistent with previous studies demonstrating that peer cadre training in Islamic boarding schools and school settings is effective in increasing adolescents' reproductive health knowledge by more than 15% (Jannah, 2014). Accordingly, this community service program may serve as a sustainable intervention model for improving health literacy in Islamic boarding school settings.

The impact of the Healthy Student Cadre Training on practical health skills was assessed through pre- and post-test measurements of participants' skills. The assessed skills included measurements of body weight, mid-upper arm circumference (MUAC), waist circumference, and blood pressure as fundamental competencies for health monitoring in the Islamic boarding schools setting. Statistical analysis was conducted to determine differences in skill scores before and after the training. Table 4 presents a comparison of healthy student cadre skill scores before and after the training.

Table 4. Scores of Healthy Student Cadres' Skills Before and After Training

Statistics	Pre-test	Post-test	p-value
Body weight measurement			
Mean	73,33	4,71	0,013
Standard deviation	78,33	2,55	
Minimum-maximum	70-80	75-80	
Mid-Upper Arm Circumference (MUAC) Measurement			
Mean	55,33	77,33	0,006
Standard deviation	4,98	2,60	
Minimum-maximum	65-70	75-80	
Body weight measurement			
Mean	73,67	78,33	0,015
Standard deviation	4,88	2,55	
Minimum-maximum			
Waist Circumference Measurement			
Mean	73	78	0,020
Standard deviation	5,48	2,60	
Minimum-maximum	60-80	75-80	
Blood Pressure Measurement			
Mean	51,67	77,3	0,004
Standard deviation	3,68	2,89	
Minimum-maximum	50-60	70-80	

The evaluation results presented in [Table 4](#) indicate significant improvements across several skill indicators following the training. For body weight measurement skills, the average score increased from 73.67 to 78.33 ($p = 0.015$). Maintaining appropriate body weight during adolescence is crucial, as underweight or overweight conditions among female adolescents can affect menstrual cycles and future reproductive health. Regular monitoring enables early intervention to prevent reproductive health complications and potential pregnancy-related risks later in life (Maedy et al., [2022](#)).

Mid-Upper Arm Circumference (MUAC) measurement skills also demonstrated a substantial improvement, with mean scores increasing from 55.33 to 77.33 ($p = 0.006$). MUAC is a sensitive indicator of nutritional status and responds quickly to changes in dietary intake and physical activity. Mid-Upper Arm Circumference measurement has been recognized as a practical and cost-effective alternative for assessing adolescent nutritional status. A study conducted at SMAN 2 Pringsewu reported a significant correlation between MUAC and body mass index ($p = 0.001$), reinforcing MUAC's value as an alternative screening tool (Akhriani et al., [2023](#)).

Similarly, waist circumference measurement skills improved from an average score of 73 to 78 ($p = 0.020$). Waist circumference is a simple yet important anthropometric indicator for assessing fat distribution, particularly abdominal or visceral fat. During adolescence, a critical transitional period marked by hormonal changes, dietary shifts, and varying physical activity levels, regular waist circumference monitoring is essential. Longitudinal studies have shown that adolescents with elevated waist circumference are at increased risk of adult obesity and cardiovascular disease, highlighting the importance of early prevention (Darsini et al., [2020](#)).

Regarding blood pressure measurement skills, the mean score increased from 51.67 to 77.30 ($p = 0.004$). Accurate blood pressure measurement is a fundamental competency for healthcare providers and health cadres, including those in school and Islamic boarding school settings. Measurement accuracy depends on proper equipment use, procedural adherence, and result interpretation. Regular blood pressure screening among adolescents is increasingly important, as hypertension is no longer limited to adults but is emerging among adolescents due to lifestyle changes, dietary patterns, and insufficient physical activity. Early detection through routine screening allows timely preventive interventions. Moreover, peer-based health education has been shown to reduce blood pressure-related risk factors by promoting healthier behaviors among adolescents (Elna et al., [2025](#); Savitri et al., [2024](#)).

Overall, the training program resulted in significant improvements in adolescent reproductive health knowledge and basic health examination skills, encompassing both nutritional indicators (body weight, MUAC, waist circumference) and physiological parameters (blood pressure). These findings confirm that the Healthy Student Cadre Training approach is effective in enhancing students' health independence. This outcome supports empowerment theory, which posits that increasing individual capacity through participatory education leads to more independent, critical, and informed health decision-making (Sharma, [2021](#)).

Equipping students with health-related knowledge and skills is essential for fostering a healthy, self-reliant, and sustainable Islamic boarding school environment. Student cadres play a dual role not only in maintaining individual and environmental health but also as agents of change who cultivate a culture of health independence. Sustained support from Islamic boarding schools administrators, healthcare professionals, and government institutions is necessary to ensure the program's long-term impact and effectiveness (Mardiyah et al., 2023).

Conclusion

Healthy Student Cadre Training at the Bin Baz Islamic Boarding School has proven effective in enhancing students' knowledge and skills in basic health care. Evaluation results demonstrated significant improvements in reproductive health knowledge and practical examination skills, including body weight, MUAC, waist circumference, and blood pressure measurements. These improvements reflect the effectiveness of participatory, peer-based training methods and reinforce students' roles as independent, critical agents of change in maintaining their personal and environmental health within Islamic boarding schools. To ensure program sustainability, cadre training should be integrated into the institutional structure of Islamic boarding schools through the Islamic Boarding School Health Post, with regular mentoring, monitoring, and evaluation to maintain cadre competence and engagement. Collaboration with local primary healthcare centers and healthcare professionals is also essential to strengthen referral pathways and enhance service quality.

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