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Development of an Evidence-Based Practice-Based Participatory Education Model for the Implementation of Clean and Healthy Living Behavior in Islamic Boarding Schools

Pengembangan Model Edukasi Partisipatif Berbasis *Evidence-Based Practice* dalam Penerapan PHBS di Pondok Pesantren

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Abstract

Clean and Healthy Living Behavior (CHLB) is a crucial preventive measure to improve health status in Islamic boarding schools (pesantren). This study aimed to develop an evidence-based education model for CHLB in a pesantren in West Sumatra. The research applied a Research and Development (R&D) design through the stages of analysis, design, development, implementation, and evaluation. Data were collected through observation, in-depth interviews, and pre- and post-test questionnaires. The findings revealed that unhealthy behaviors among students remained high, with 93.47% not practicing handwashing with soap, 50% littering, 65.22% spitting in public areas, and 76.08% not engaging in mosquito larvae control. Interviews with caregivers and administrators indicated the absence of nutritionists in meal planning, lack of educational media, and limited health education, which was only provided once during the Covid-19 pandemic. The developed educational model proved effective, demonstrated by significant improvements in knowledge (increase of 43 points) and attitudes (increase of 25 points) after the intervention. Respondents considered the model practical, easy to understand, and culturally appropriate within the pesantren context. Therefore, the participatory, evidence-based education model is feasible to be implemented more widely to strengthen CHLB practices and prevent behavior-related diseases in Islamic boarding schools.

Keywords : Behavior; Pesantren; Health Education.

Abstrak

Perilaku Hidup Bersih dan Sehat (PHBS) merupakan salah satu upaya preventif penting dalam meningkatkan derajat kesehatan di lingkungan pesantren. Penelitian ini bertujuan mengembangkan model edukasi PHBS berbasis *Evidence-Based Practice* di salah satu pesantren di Sumatera Barat. Metode penelitian menggunakan pendekatan *Research and Development* melalui tahap analisis, desain, pengembangan, implementasi, dan evaluasi. Data diperoleh melalui observasi, wawancara mendalam, dan kuesioner pre-test serta post-test. Hasil penelitian menunjukkan bahwa perilaku tidak ber-PHBS santri masih tinggi, di antaranya 93,47% tidak melakukan cuci tangan pakai sabun, 50% membuang sampah sembarangan, 65,22% meludah sembarangan, dan 76,08% tidak melakukan pemberantasan jentik nyamuk. Wawancara dengan pengelola dan pengasuh mengungkapkan belum adanya keterlibatan tenaga ahli gizi, kurangnya media edukasi, serta terbatasnya edukasi PHBS yang hanya diberikan sekali pada masa pandemi Covid-19. Model edukasi yang dikembangkan terbukti efektif, ditunjukkan dengan peningkatan signifikan pengetahuan (43 poin) dan sikap (25 poin) setelah intervensi. Responden menilai model ini praktis, mudah dipahami, serta sesuai dengan budaya pesantren. Dengan demikian, model edukasi partisipatif berbasis *Evidence-Based Practice* layak diimplementasikan secara lebih luas untuk meningkatkan penerapan PHBS dan pencegahan penyakit berbasis perilaku di pesantren.

Kata kunci : Perilaku; Pesantren; Edukasi Kesehatan

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Introduction

Clean and Healthy Living Behavior is a series of consciously performed actions aimed at preventing disease and improving the health status of individuals and communities. Clean and Healthy Living Behavior serves as one of the main strategies of health promotion in Indonesia and is formulated in the guidelines of the Ministry of Health as an effort to strengthen the capacity of families and communities to adopt healthy behaviors.[1][2]. Islamic boarding schools (*pondok pesantren*), as educational institutions with dense populations (students, caregivers, and teachers), face particular challenges in implementing Clean and Healthy Living Behavior. Several studies in various *pesantren* have shown that knowledge, attitudes, and practices related to Clean and Healthy Living Behavior among students are not yet optimal (for example, low rates of handwashing with soap, poor toilet sanitation, and inadequate waste management) thus increasing the risk of infectious disease transmission and other health problems. Similar conditions have also been reported in orphanages and other boarding institutions [3].

From a policy and program perspective, the Province of West Sumatra has a health profile with various indicators (environmental health, sanitation, service coverage) that should serve as the basis for planning promotive and preventive interventions. The availability of provincial data (West Sumatra Health Statistics Profile 2023/2024) is essential for identifying Clean and Healthy Living Behavior intervention priorities within *pesantren* settings in the province. However, to date, health interventions in *pesantren* across West Sumatra remain relatively limited to top-down approaches and one-way health education sessions. [4][5].

A participatory approach (actively involving students, caregivers, and pesantren stakeholders in the planning, implementation, and evaluation of programs) has been proven effective in increasing program ownership and the sustainability of health behaviors in other communities [6]. The concept and method of Community-Based Participatory Research (CBPR) support the development of contextual, culturally relevant, and sustainable interventions, as it emphasizes equitable collaboration between researchers and the community. Integrating the principles of evidence-based practice (EBP) into the participatory education model ensures that the strategies developed are supported by the best scientific evidence while remaining aligned with the local context of pesantren.[7].

Based on these conditions, there is a need to develop a participatory education model based on evidence-based practice that is tailored to the characteristics of pesantren in West Sumatra. This model is expected to (a) enhance students' knowledge and skills related to Clean and Healthy Living Behavior, (b) facilitate changes in daily practices (e.g., handwashing, waste management, toilet hygiene), and (c) encourage active involvement of caregivers and the pesantren community to ensure more sustainable behavioral change.

Many studies have described the PHBS status in pesantren; however, few have designed and tested a participatory educational model that systematically combines EBP and CBPR principles within the pesantren context in West Sumatra.[3]. The limitations of top-down interventions highlight the need for a prototype model co-developed with pesantren stakeholders to enhance relevance and adoption. [8][9]. The objective of this study is to develop and validate an Evidence-Based Participatory Education Model to improve the implementation of PHBS in Islamic boarding schools (pesantren) in West Sumatra Province, as well as to test the feasibility and acceptability of the model among students and caregivers.

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Methode

This study employed a Research and Development (R&D) approach with the aim of producing a participatory education model based on evidence-based practice for implementing Clean and Healthy Living Behavior in Islamic boarding schools (*pondok pesantren*). The research design referred to the ADDIE development model, which consists of five stages: analysis, design, development, implementation, and evaluation [10][11][12].

Analysis

At the analysis stage, needs identification was carried out through surveys using questionnaires, interviews, and observations to assess the implementation of Clean and Healthy Living Behavior (PHBS) in Islamic boarding schools (*pondok pesantren*). The results of the needs analysis were then used to design the initial prototype of a participatory educational model based on scientific evidence and relevant to the boarding school context. This stage employed a mixed-method approach. First, the quantitative research design used a cross-sectional method. The study population consisted of 46 *santri* (students), with a total population sampling technique. The inclusion criterion was *santri* who were literate, while the exclusion criterion was *santri* who were not present at the study location during data collection. Data were collected using questionnaires and analyzed using computerized chi-square tests.

In the second stage, a qualitative research design was conducted involving one boarding school administrator, two caretakers, and six *santri* as research informants. Data were collected through in-depth interviews with administrators and caretakers using interview guidelines. Data analysis was performed using triangulation. The results from both the quantitative and qualitative phases of the analysis stage served as the data source for the design and development stages.

Design and Development

At the design and development stage, the model was developed systematically and underwent expert validation. The validation team consisted of Prof. Dr. Rizanda Machmud, M.Kes (Public Health expert), Prof. Dr. Hardisman, M.HID., Dr.PH., FRSPH (Health Promotion expert), Dr. Inge Angelia, M.Pd (Education expert), and Syahrul, Sp.dI (Islamic education expert and boarding school administrator). At this stage, the learning materials, methods, and evaluation techniques for the educational model were designed to form a participatory, evidence-based education model for PHBS implementation in Islamic boarding schools. After validation, a module was developed as the final product to support the model's implementation.

Implementation

The implementation stage consisted of two steps. The first step was a pilot study conducted with 10 *santri* from different orphanages. After implementing the pilot study, the second step involved large-scale implementation of the model in three Islamic boarding schools in West Sumatra, with a total of 129 *santri* receiving the intervention.

Evaluation

At the evaluation stage, the effectiveness of the model was tested using a quasi-experimental design. The study population and sample consisted of 56 *santri* in West Sumatra. Data were processed using computerized t-tests to compare the *santri's* knowledge, attitudes, and PHBS behaviors before and after the intervention (pre-test and post-test).

Results and Discussion

Analysis

The prevalence of non Clean and Healthy Living Behavior practices in Islamic boarding schools remains high. A total of 93.47% of students had not practiced proper handwashing with soap, 50% still disposed of waste improperly, 65.22% were observed spitting indiscriminately, and 76.08% reported never participating in mosquito larvae eradication activities (Table 1).

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Table 1. Clean and Healthy Living Behavior in Islamic Boarding Schools

Variable	Frequency	Percentage (%)
Handwashing with soap		
- Yes	3	6,5
- No	43	93,5
Waste disposal		
- Yes	23	50
- No	23	50
Smoking and Drug Use		
- Yes	0	0
- No	46	100
Spitting in inappropriate places		
- Yes	16	34,78
- No	30	65,22
Mosquito larvae eradication		
- Yes	11	23,92
- No	35	76,08

The results of the in-depth interviews with caregivers and administrators revealed that the management always ensures the provision of food and drinks for students three times a day, but has not yet involved a nutritionist in the process.

"….. anak-anak selalu makan pagi, yaa,, tergantung apa yang sedan gada kami buat, kadang nasi goreng, atau nasi dan lauk,,, mereka selalu cukup makananya…."

"….. pagi makan, siang makan, ada yang bawa bekal ada yang disini kalua sudah pulang sekolah, malam kami makan bersamaa,, namun kamia sring sore, karena habis magrib anak- anak mengaji.."

"… iy selalu cukup, ya tidak ada dari puskesmas, tidak ada tenaga gizi khusus, namun kami rasa sudah cukup…"

After conducting observations of 12 bathrooms in the pesantren, it was found that all bathrooms had permanent and watertight structures; however, 40% of them had ventilation openings facing directly into the dormitory rooms, which caused unhealthy humidity levels inside the rooms.

Interviews with the administrators and caregivers revealed that PHBS-related education at the pesantren had previously been provided to them by the community health center (puskesmas) during the COVID-19 pandemic. The education was delivered in the form of general recommendations to implement Clean and Healthy Living Behavior. However, no educational activities have ever been conducted directly for the students (santri).

"…. Saat Covid-19 kami diberikan surat terkait harus cuci tangan, selalu membuka ventilasi, begitu- begitu…."

"… Petugas Kesehatan dulu pernah kesini menyakan, apa sakit yang sedang dialami anak-anak, anak- anak disuruh jaga Kesehatan, jagan sampai kena covid…"

"…. Selama saya disini belum pernah saya bertemu petugas Kesehatan untuk memberikan informasi, namun ada juga orang – orang datamng kesini mengajarkan anak, sikat gigi, cuci tangan,,, ada,,, anak – anak dikasih sikat gigi …"

The appropriate educational method for administrators and caregivers is training sessions supported by educational media such as booklets or modules. Meanwhile, for students (santri), education can be delivered through health talks, simulations, posters, or interactive games.

"…. Pengelola dan pengasuh kan sudah dikategorikan apda kelompok usia dewasa, sehingga metoda andragogi merupakan metoda paling tepat, banyak metodanya kan ya, bisa dalam bentuk pendampingan, workshop…… sebaiknya ada pegangan mereka sehingga sewaktu – waktu bisa di pelajari lagi…" informasn pakar

'… pendampingan, pelatihan, sudah paling bagus itu kan mereka akan menerapkan,,, media kalo dewasa bisa poster, buku saku, buku pegangan, modul, banyak yang bisa, sesuai materi saja…"

" … pemberian informasi berlaham, ditunjuki satu-satu kami bisa memahami, tapi klo hanya sekedar info saja, tindak lengkap ya, kami tidak dalam. Sebaiknya anak santri juga dikasih tau, sehingga bisa lansung paham juga kan ya…"informan pengasuh

"….. pemberian informasi dalam bentuk pelatihan, penyuluhan , kamid ikumpulkan, itu kami bisa sosialisasikan lagi nanti kepada pengasuh dan santri…" informan pengelola

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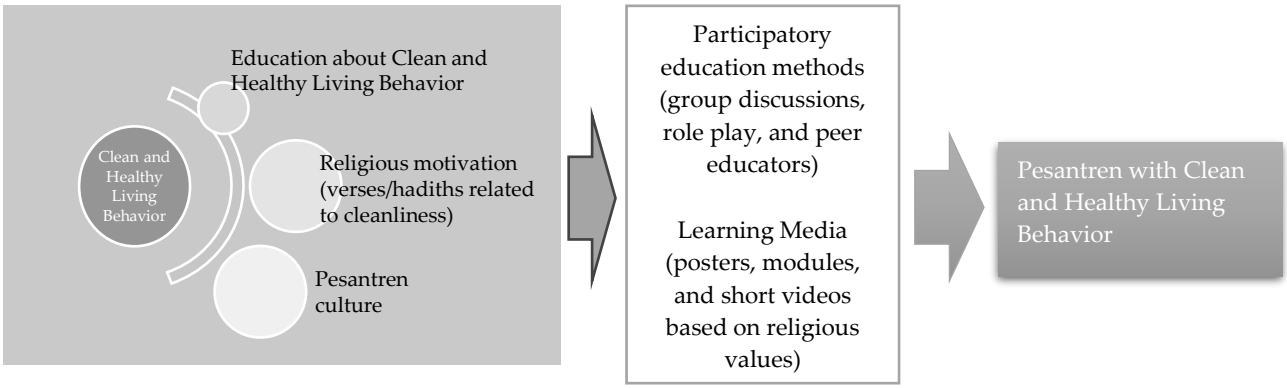
Table 2. Triangulation Results

Topic	In-Depth Interview	Observation	Conclusion
Implementation of PHBS	No knowledge yet related to a balanced diet menu.	Daily meal menu planning is carried out.	Managers and caregivers have not yet been exposed to the concept of a balanced diet.
Implementation of PHBS (continued)	PHBS information in the pesantren was only received once during the COVID-19 pandemic.	No banners, posters, or other educational media related to PHBS were found.	There is still a lack of exposure among managers, caregivers, and students to PHBS in the pesantren.
Education methods	Educational methods should be adjusted to target groups: andragogy for adults and pedagogy for children.	-	The appropriate method for PHBS education in pesantren is training supported by booklets or modules for caregivers and administrators, while for students it can be conducted through counseling, simulations, posters, or educational games.

Design dan Development

At this stage, the design and development of the model were carried out based on the results of the above analysis. After the design process, a Participatory Education Model Based on Evidence-Based Practice was developed, emphasizing that to implement PHBS (Clean and Healthy Living Behavior) in Islamic boarding schools (*pesantren*), it is necessary to enhance students' (*santri's*) understanding of PHBS concepts integrated with religious values and pesantren culture.

Each discussion within the PHBS concept should be reinforced with religious teachings (for example: *hadith*, *fiqh*, and the Qur'an) and complemented by pesantren cultural practices (such as *gotong royong* [mutual cooperation], discipline in behavior, and mutual reminders among students). Participatory educational methods (such as group discussions, role plays, and peer education) are considered appropriate approaches to deliver education related to PHBS implementation. To support the implementation of this model, a module is required that includes objectives, duration, reference materials, and guidelines for providing education to students.



Gambar 1. Model PHBS dengan Prinsip *Evidence-Based Practice*

Implementation and Evaluation

The pre-test and post-test results showed a significant improvement in the knowledge and attitudes related to Clean and Healthy Living Behavior among students, administrators, and caregivers. There was an increase of 43 points in knowledge and 25 points in attitude. Respondents (students and caregivers) provided

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positive feedback, stating that the model is practical, easy to understand, and culturally appropriate for the pesantren context. The model was assessed as effective, valid, practical, and feasible for broader implementation in Islamic boarding schools across West Sumatra. The results of the study showed that non-Clean and Healthy Living Behavior practices in Islamic boarding schools remain very high, as evidenced by the low rates of handwashing with soap (93.47% of students did not perform it), improper waste disposal (50%), spitting in inappropriate places (65.22%), and failure to conduct mosquito larvae eradication activities (76.08%). This model is effective in improving knowledge and attitudes related to PHBS in orphanages, as seen from the p-value of knowledge of 0.013 and attitude of 0.002.

Table 3. Results of the Implementation and Evaluation of the Clean and Healthy Living Behavior Model Based on Evidence-Based Practice Principles

Variable	Mean	Nilai Max	Nilai Min	SD	P-Value
Knowledge					
– Pre Test	54	30	73	65,100	0,013
– Post Test	97	85	100	87,113	
Attitude					
– Pre Test	50	30	70	54,013	0,002
– Post Test	75	50	86	78,322	

This condition is consistent with previous studies which found that Clean and Healthy Living Behavior behavior in pesantren remains low due to limited health education, inadequate supporting facilities, and the lack of consistent habituation. [8]. Factors contributing to the low PHBS behavior in pesantren include the lack of involvement of nutritionists in planning students' meal menus, bathroom facilities that do not meet health standards (40% have ventilation facing directly into the dormitory), and limited exposure to PHBS education, which was only provided once during the COVID-19 pandemic.

The in-depth interviews revealed that caregivers and administrators had only received PHBS-related information during the pandemic period, while students had never received any structured health education. In fact, other studies have shown that continuous health education and the provision of supporting media such as posters, banners, and visual materials can significantly improve students' knowledge and attitudes toward maintaining personal and environmental hygiene. [13][14][15][16][17]. The use of appropriate educational methods is also a key factor. For administrators and caregivers, an andragogical approach—through training sessions and instructional modules—is more suitable, whereas for students, a pedagogical approach involving health talks, simulations, posters, and educational games is more effective.

The intervention through the development of an Evidence-Based Practice (EBP)-based Clean and Healthy Living Behavior model proved to be effective, as shown by a significant increase in knowledge (43 points) and attitude (25 points) after implementation. Respondents considered the model practical, easy to understand, and culturally appropriate for the pesantren context. These findings indicate that evidence-based health education strategies, when combined with participatory methods and appropriate educational media, can serve as an effective solution to improve PHBS implementation in pesantren.

This finding is in line with research conducted in various pesantren across Indonesia, which emphasizes that habit formation, facility support, and repeated education are crucial factors in building sustainable clean and healthy living behaviors. [18] [19][20]. Thus, the implementation of this model has the potential not only to improve students' health status but also to be scaled up as a preventive effort across Islamic boarding schools in West Sumatra.

Research Limitations

This study has several limitations, including: (a) a limited number of research samples; (b) in measuring the effectiveness of the model implementation, the evaluation was conducted generally without separating each PHBS implementation standard; and (c) the analysis phase did not include behavioral variables, even though these variables play an important role in the implementation of PHBS in Islamic boarding schools.

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Conclusions

The intervention through the development of an Evidence-Based Practice (EBP)-based Clean and Healthy Living Behavior education model proved to be effective in improving both students' and caregivers' knowledge (by 43 points) and attitudes (by 25 points). Respondents perceived the model as practical, easy to understand, and culturally appropriate for the pesantren context. Therefore, the evidence-based participatory education model is feasible for broader implementation in Islamic boarding schools, not only to improve students' health status but also as a preventive strategy to reduce the risk of environmental and behavior-related diseases within the pesantren setting.

Based on the results of this study, it is recommended that (a) The management and caregivers of Islamic boarding schools (pesantren) be more consistent in implementing Clean and Healthy Living Behavior (PHBS) through daily routines, considering balanced nutrition patterns in meal planning, and improving health facilities such as ventilation and handwashing stations. Students (santri) should receive continuous health education using engaging methods such as simulations, games, and posters. In addition, it is necessary to establish *"santri health cadres"* who are trained to continue the educational efforts, and to advocate for internal pesantren policies that support and integrate PHBS materials into the pesantren curriculum. (b) Community health centers (*puskesmas*) and local health offices are expected to provide regular assistance through training, education, and monitoring so that the PHBS program in pesantren is sustainable and not merely temporary.

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