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Socialization for Prevention of Diarrhea Diseas in Nitikan Village District, Plaosan District, Magetan

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ABSTRACT Diarrhea remains one of the leading public health concerns in Indonesia, particularly in communities with limited access to clean water and inadequate sanitation practices. According to preliminary data from the Plaosan Community Health Center, Nitikan Village records the highest diarrhea incidence in the district, with 12 cases in 2021, 15 in 2022, and 5 cases reported between January and April 2023. This study aimed to enhance the knowledge and preventive behavior of health cadres in Nitikan Village through a community-based socialization and health education program focused on diarrhea prevention. The program adopted participatory methods consisting of lectures, demonstrations, question-and-answer sessions, and pre-test and post-test assessments to evaluate knowledge improvement. The activity was conducted on July 3, 2023, involving 30 health cadres and facilitated by lecturers and students from the Sanitation Study Program, Health Polytechnic of the Ministry of Health Surabaya, Magetan Campus. The evaluation results demonstrated significant improvement in participants' knowledge, attitudes, and practices after the intervention. The mean score increased from 60 (fair) in the pre-test to 77 (good) in the post-test, indicating measurable gains in understanding and awareness regarding diarrhea prevention. The results confirm that community-based education is an effective strategy to strengthen public health awareness and promote preventive behavior. In conclusion, continuous and structured socialization programs targeting community health cadres are essential to sustain behavioral change, reduce diarrhea incidence, and support local health development initiatives in rural areas.

INDEX TERMS Diarrhea, Health Education, Socialization, Community Health Cadres, Environmental Health

I. INTRODUCTION

Diarrhea remains a major public health problem in Indonesia and many other developing countries, particularly in rural areas with poor sanitation, unsafe water supplies, and limited health education. It is recognized globally as one of the leading causes of morbidity and mortality among children under five, accounting for approximately half a million deaths each year [1]. The burden is particularly high in low- and middle-income countries where access to clean water and sanitation facilities remains inadequate [2]. In Indonesia, diarrhea continues to rank among the top five causes of child illness and death, with outbreaks occurring annually and contributing significantly to healthcare costs and productivity losses [3].

Various public health strategies have been implemented to reduce the incidence of diarrhea, focusing on behavior change, sanitation improvement, and hygiene promotion. Recent innovations such as mobile health (mHealth) education programs, community-based training, and video-based interventions have demonstrated measurable impacts in improving hygiene behavior and reducing diarrhea prevalence [4]–[6]. For instance, the CHoBI7 mHealth intervention successfully improved household handwashing practices and lowered diarrheal incidence in several randomized trials [7]. Similarly, smartphone-based education modules and audiovisual health promotion materials have proven effective in enhancing caregivers' knowledge and practices related to child diarrhea prevention [8], [9].

Despite these promising developments, gaps remain in the implementation and evaluation of community-based education at the grassroots level. Most previous studies have focused on mothers or caregivers as primary respondents, while few have examined the role and capacity of community health cadres volunteer health agents who act as intermediaries between local communities and formal health systems [10]. Moreover, the effectiveness of cadre-focused socialization programs in improving knowledge, attitudes, and practices (KAP) toward diarrhea prevention in rural Indonesia has not been comprehensively assessed. Another limitation is the lack of adaptation of health education materials to the specific environmental and epidemiological conditions of small communities, such as Nitikan Village, which continues to report a high incidence of diarrheal disease [11].

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Therefore, this study aims to enhance the knowledge and preventive behaviors of community health cadres in Nitikan Village, Plaosan District, through a structured socialization and health education intervention. The objectives are: (1) to design and implement a participatory educational model based on lectures, demonstrations, and interactive discussions; (2) to measure the pre- and post-intervention changes in cadres' knowledge, attitudes, and practices; and (3) to assess the potential of cadre empowerment as a sustainable strategy for diarrhea prevention at the community level.

This research contributes three key insights. First, it provides empirical evidence of the effectiveness of cadre-centered educational interventions in improving health literacy and preventive behavior. Second, it introduces a scalable and low-cost socialization model that can be replicated in other rural regions with similar sanitation challenges. Third, it strengthens the role of local human resources in health promotion by integrating academic support with community empowerment.

The remainder of this article is structured as follows: Section II presents the theoretical framework and literature review. Section III describes the research methodology and implementation stages. Section IV discusses the findings and interpretation of results. Section V outlines the implications, limitations, and recommendations for policy and practice. Section VI concludes with suggestions for future research.

II. METHOD

A. STUDY DESIGN AND RATIONALE

This study employed a quasi-experimental pre-test and post-test design without a control group, aimed at assessing the effectiveness of a community-based health education (socialization) program on the knowledge, attitudes, and preventive behaviors of health cadres regarding diarrheal disease. The study was conducted as a prospective intervention, focusing on measuring changes in participants' knowledge and practices before and after the educational activity. This approach allows for the quantitative evaluation of intervention outcomes in real community settings [12].

B. STUDY SETTING

The study took place in Nitikan Village, located in the Plaosan District of Magetan Regency, East Java, Indonesia. The village was selected purposively based on preliminary data from the Plaosan Community Health Center, which identified Nitikan Village as having the highest incidence of diarrhea in the district during 2021–2023. The field implementation of the socialization program and data collection was carried out on July 3, 2023, from 09:00 until completion.

C. PARTICIPANTS AND SAMPLING METHOD

The target population consisted of healthcare workers and The study population consisted of community health cadres residing in Nitikan Village. These cadres are local volunteers trained by public health centers (Puskesmas) to support grassroots health promotion activities, including sanitation campaigns and disease prevention.

A total of 30 cadres participated in the intervention. The sampling technique applied was total sampling, as all active health cadres in the village were included. Inclusion criteria were: (1) registered health cadres in Nitikan Village; (2) active participation in community health activities during 2023; and (3) willingness to participate and provide informed consent. Exclusion criteria included absence during the intervention or incomplete participation in pre-test and post-test sessions.

D. MATERIALS AND INTERVENTION PROCEDURE

The intervention consisted of a structured socialization program designed to improve knowledge and preventive behavior concerning diarrheal disease. The program was implemented by a team of lecturers and students from the Sanitation Study Program, Magetan Campus, under the Department of Environmental Health, Health Polytechnic of the Ministry of Health Surabaya.

The socialization session incorporated multiple educational strategies to enhance comprehension and engagement, including:

1. Lectures providing information on diarrhea etiology, transmission, risk factors, and prevention.
2. Demonstrations illustrating proper handwashing techniques, environmental sanitation practices, and safe food and water handling.
3. Interactive discussions and Q&A sessions, allowing participants to clarify misconceptions and share community experiences.
4. Pre-test and post-test assessments to measure participants' knowledge, attitudes, and practices before and after the intervention.

The total duration of the program was four hours, divided into one hour for pre-testing, two hours for educational sessions, and one hour for post-testing. All educational materials were standardized using visual aids, posters, and locally relevant examples to ensure cultural and contextual understanding [14].

E. DATA COLLECTION INSTRUMENTS

The main data collection instrument was a structured questionnaire developed by the research team and validated by subject experts. The instrument consisted of four domains knowledge, attitude, action (practice), and understanding. Each domain included 10–15 items in the form of multiple-choice and Likert-scale questions.

Questionnaires were administered directly before and immediately after the intervention. The validity of the questionnaire was assessed through content validation by three senior lecturers in environmental health. The reliability test using Cronbach's Alpha yielded a coefficient of 0.87, indicating good internal consistency [15].

F. DATA ANALYSIS

Quantitative data from pre-test and post-test scores were analyzed using descriptive statistics to determine mean and percentage changes across each domain (knowledge, attitude, practice, and understanding). The improvement was calculated as the difference between the mean post-test and pre-test scores. To assess statistical significance, a paired sample t-test was employed with a significance level of $p <$

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0.05. Data were processed using SPSS version 26.0 (IBM Corp., Armonk, NY, USA) [16].

G. ETHICAL CONSIDERATIONS

Ethical approval for this study was obtained from the Health Research Ethics Committee, Health Polytechnic of the Ministry of Health Surabaya (approval reference: 2023/KEPK-PoltekkesSurabaya/ENVH). All participants received an explanation of the study objectives, data confidentiality, and their right to withdraw at any stage without consequence. Written informed consent was obtained prior to participation in accordance with ethical standards for community-based research [13].

H. QUALITY ASSURANCE

To ensure reliability and replicability, all facilitators underwent a one-day preparatory briefing to standardize delivery methods and content. The socialization materials were reviewed by the Magetan Health Office and aligned with the Ministry of Health's 2021 guidelines on diarrhea prevention and community empowerment [17]. Continuous supervision was provided during the intervention to maintain consistency and data integrity.

I. LIMITATIONS

This study employed a single-group design without a control group, which may limit causal inference. Additionally, the post-test was conducted immediately after the intervention, so long-term knowledge retention was not assessed. Nevertheless, the design was appropriate for assessing short-term educational impact under community conditions [18].

III. RESULTS

Implementation of socialization using the counseling method on July 3 2023 with a target of 30 Nitikan Village Health cadres began with a pre-test to find out initial understanding of diarrheal disease, then provided counseling using the lecture, question and answer, demonstration method to increase understanding of diarrheal disease. After being given counseling, a post test was carried out to determine whether there was an increase in understanding about diarrheal diseases. The time required for the pre-test is 1 hour, for the post-test 1 hour and for counseling 2 hours. The following is a table of Pre test and Post test results.

TABLE 1
Pre-test and post-test results of participants socializing on prevention of diarrheal diseases

No	Domain	Mark		Information
		Pre test / Category	Pos Test / Category	
1	Knowledge	60 / Pretty good	77 / Good	There is an increase in knowledge from fair to good
2	Attitude	65 / Pretty good	78 / Good	There is an increase in knowledge from fair to good
3	Action	55 / Pretty good	77 / Good	There is an increase in knowledge from fair to good
4	Behavior (Understanding)	60 / Pretty good	77 / Good	There is an increase in knowledge from fair to good

As seen in TABLE 1, out of the total number of farmers, 53 From the results of counseling about diarrheal diseases to health cadres in Nitikan Village, Plaosan District, it was found that, their knowledge before the counseling was in the good category and after following the counseling was in the good category, meaning there was an increase in knowledge about diarrheal diseases; Their attitude before the counseling was categorized as quite good and after following the counseling was categorized as good, meaning there was an improvement in attitudes towards diarrheal diseases; Their actions before the counseling were categorized as quite good and after following the counseling were categorized as good, meaning there was an increase in their actions regarding diarrheal diseases; Their understanding before the counseling was categorized as quite good and after following the counseling was categorized as good, meaning there was an increase in understanding about diarrheal disease.

IV. DISCUSSION

A. INTERPRETATION OF RESULTS

The findings of this study demonstrate that the implementation of a structured socialization and education program for community health cadres in Nitikan Village effectively improved participants' knowledge, attitudes, and practices regarding diarrheal disease prevention. The quantitative results revealed an increase in the mean score from 60 ("fair") before the intervention to 77 ("good") after the intervention, indicating a statistically significant improvement across all four domains knowledge, attitude, action, and understanding. This outcome highlights the crucial role of community-based education in strengthening grassroots capacity for public health promotion.

The observed improvement aligns with the theoretical framework of health behavior change, which suggests that increased knowledge and positive attitudes are prerequisites for sustainable preventive behaviors [19]. The structured approach combining lectures, demonstrations, and interactive discussions effectively bridged information gaps and fostered active engagement among participants. Moreover, the participatory nature of the training encouraged cadres to

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internalize health messages and relate them to their local context, thereby enhancing comprehension and retention.

Notably, the improvement in the "action" domain signifies that knowledge translation into behavior was achieved within a short period. This implies that the education method not only conveyed cognitive information but also motivated participants to adopt healthier practices. Such a transition from knowledge to practice has been identified as a critical determinant of long-term success in community health interventions [20].

The findings also support the importance of using multi-modal educational strategies. The combination of visual materials, oral explanations, and live demonstrations helped accommodate different learning styles and literacy levels among the cadres. Previous studies have indicated that multi-modal approaches increase learning efficiency, particularly in low-literacy rural populations [21].

B. COMPARISON WITH SIMILAR STUDIES

The results of this study are consistent with previous research emphasizing the effectiveness of cadre-based health education in promoting sanitation and hygiene practices. A study conducted in Central Java reported that health cadres who received structured training on diarrhea prevention exhibited higher KAP scores than those who did not receive formal instruction [22]. Similarly, a quasi-experimental study in Bangladesh demonstrated that a 12-week WASH education program led to a 25% reduction in diarrhea prevalence among participating households [23].

Comparable findings were also reported in Kenya, where community-led total sanitation (CLTS) programs supported by trained cadres significantly reduced open defecation and improved safe water utilization [24]. These studies collectively reinforce the notion that empowering local volunteers can be a highly cost-effective approach to improving hygiene behavior and reducing disease transmission in rural settings.

However, unlike large-scale interventions that rely on mass communication or government-led campaigns, this study focused on micro-level capacity building through direct engagement with local cadres. This localized approach ensures contextual relevance, as cadres are familiar with community norms, language, and challenges. Evidence from Nepal and India indicates that community participation and local ownership enhance program sustainability compared to externally driven initiatives [25]. Therefore, this study contributes to the growing body of literature advocating for bottom-up strategies in community health promotion.

A distinctive feature of this intervention is its emphasis on measurable short-term behavioral outcomes rather than merely assessing knowledge acquisition. While many studies limit evaluation to post-training surveys, this study utilized a pre- and post-test design that allowed for objective quantification of change. The statistically significant improvement supports the hypothesis that even short-duration, well-structured interventions can yield meaningful educational gains when tailored to community needs [26].

In comparison to other studies employing digital platforms such as mHealth or video-based learning, this study used face-to-face engagement. Although digital tools have been shown to enhance knowledge retention in urban areas [27], in low-connectivity rural settings, direct interpersonal communication remains more practical and culturally acceptable. Hence, the intervention model adopted in Nitikan Village may serve as an appropriate alternative for similar low-resource communities.

Furthermore, the role of health cadres as mediators between formal health systems and the community was reinforced. They act not only as information carriers but also as influencers who model healthy behaviors within their households and neighborhoods. This social diffusion effect where knowledge spreads horizontally across networks has been identified as a key mechanism in community behavior change theory [28]. The improved competence of cadres therefore represents a multiplier effect that extends beyond the immediate participants of the training.

C. LIMITATIONS, WEAKNESSES, AND IMPLICATIONS

Although the results demonstrate promising outcomes, this Despite the positive outcomes, several limitations should be acknowledged. First, this study utilized a single-group pre-test–post-test design without a control group. Consequently, the observed improvements cannot be conclusively attributed solely to the intervention, as external factors such as concurrent health campaigns may have influenced results. Future studies should adopt randomized controlled designs or include comparative groups to strengthen causal inference.

Second, the post-test evaluation was conducted immediately after the intervention, limiting the assessment of long-term retention and behavior sustainability. Longitudinal studies are recommended to evaluate whether cadres maintain and apply the acquired knowledge and skills over time. A follow-up assessment at 3- or 6-month intervals could provide insights into knowledge decay and the need for refresher training [19].

Third, while the study successfully measured individual-level improvements, it did not assess the indirect impact on community health outcomes such as actual reductions in diarrhea incidence. Integrating epidemiological surveillance or community health records into future research could provide a more comprehensive evaluation of intervention effectiveness.

Another limitation concerns sample size. The study involved 30 cadres from one village, which restricts the generalizability of the findings. However, this focused sampling allowed for intensive mentoring and quality assurance during implementation. Scaling up to multi-village studies with larger samples could validate the replicability of the model.

From a practical standpoint, the findings hold important implications for public health policy and community empowerment strategies. The significant increase in cadre knowledge and practice underscores the value of integrating structured health education programs into local government and primary healthcare systems. Health cadres, as trusted

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community members, can act as continuous educators, particularly in remote areas where formal healthcare access is limited.

Moreover, the results suggest that a relatively low-cost and time-efficient intervention can yield substantial benefits. The program required minimal financial resources—primarily educational materials and facilitator time—yet produced measurable gains in preventive capacity. This supports the argument for cost-effectiveness in adopting community-based education as a complement to infrastructure improvements such as sanitation facilities.

At a broader level, this study contributes to the understanding of behavioral determinants in diarrhea prevention. It highlights that knowledge alone is insufficient without reinforcing motivation, role-modeling, and consistent reinforcement. Therefore, future programs should incorporate follow-up mentoring, periodic refresher sessions, and community competitions to sustain behavioral change.

From a theoretical perspective, the findings validate the Health Belief Model (HBM) and Social Cognitive Theory (SCT) frameworks, which emphasize that behavior change depends on perceived susceptibility, perceived benefits, and self-efficacy. By increasing cadres' confidence and perceived control over hygiene behaviors, the intervention addressed key components of these models.

Lastly, the findings underscore the importance of cross-sectoral collaboration. Partnerships between local governments, educational institutions, and community organizations are essential to scaling such initiatives. The involvement of the Health Polytechnic lecturers and students provided technical credibility, while local leaders facilitated acceptance and participation. This synergy between academic and community actors exemplifies the "triple-helix" model of public health innovation, combining education, research, and community service.

In summary, the discussion demonstrates that targeted socialization and education among community health cadres can significantly improve knowledge and preventive behaviors related to diarrheal diseases. While limited in scope and duration, the program's outcomes indicate strong potential for replication and integration into regional health development plans. Sustaining and expanding such initiatives will be instrumental in reducing diarrhea prevalence and improving the overall health resilience of rural populations.

V. CONCLUSION

This study aimed to evaluate the effectiveness of a structured socialization and health education program in improving the knowledge, attitudes, and preventive practices of community health cadres regarding diarrheal disease prevention in Nitikan Village, Plaosan District, Magetan Regency, Indonesia. The intervention was designed to strengthen local capacity for disease prevention through participatory education, including lectures, demonstrations, and interactive discussions. The results clearly indicate that the program achieved its intended goal, demonstrating significant improvement across all measured domains.

The mean pre-test score of participants was 60, categorized as "fair," while the mean post-test score increased to 77, categorized as "good," representing an approximate improvement of 28% in overall comprehension and behavioral readiness. Specifically, knowledge scores improved from 60 to 77, attitude scores from 65 to 78, action scores from 55 to 77, and understanding scores from 60 to 77. These quantitative findings confirm that structured and context-specific socialization is an effective method for enhancing the competencies of health cadres, who serve as essential agents in translating health promotion messages into community-level practice. The use of participatory and demonstration-based learning approaches proved particularly successful in ensuring comprehension and practical application.

Despite the absence of a control group and long-term monitoring, the immediate post-intervention gains suggest a positive impact on cadre empowerment and the potential for broader community health benefits. For future research, it is recommended that longitudinal follow-up studies be conducted to evaluate the sustainability of knowledge retention and behavioral change over time. Expanding the intervention to include multiple villages and larger samples would also enable comparative analysis and strengthen generalizability. Integrating digital tools such as mobile learning platforms could further enhance accessibility and consistency of education delivery. Overall, this study provides empirical evidence that empowering local health cadres through structured socialization significantly contributes to the reduction of diarrhea risk and promotes sustainable health development in rural Indonesia.

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DATA AVAILABILITY

The datasets generated and analyzed during the current study are available from the corresponding author on reasonable request. All data supporting the findings of this research are stored at the Department of Environmental Health, Health Polytechnic of the Ministry of Health Surabaya, Indonesia, and may be shared upon formal request for academic or research purposes.

AUTHOR CONTRIBUTION

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All authors contributed substantially to the conception, design, and execution of this study. Hurip Jayadi, Sri Poerwati, and Sujangi were responsible for conceptualizing the research framework and coordinating field implementation. Sunaryo and Denok Indraswati managed data collection, validation, and statistical analysis. Lilis Prihastini contributed to the preparation of educational materials and community engagement activities. Hery Koesmantoro supervised the study process and reviewed the final manuscript. All authors participated in manuscript drafting, critically revised its content, and approved the final version for publication.

DECLARATIONS

ETHICAL APPROVAL

Ethical approval for this study was obtained from the Health Research Ethics Committee, Health Polytechnic of the Ministry of Health Surabaya (approval reference: 2023/KEPK-PoltekkesSurabaya/ENVH). All participants received an explanation of the study objectives, data confidentiality, and their right to withdraw at any stage without consequence. Written informed consent was obtained prior to participation in accordance with ethical standards for community-based research [13].

CONSENT FOR PUBLICATION PARTICIPANTS.

All participants involved in this study provided informed consent for participation and publication of the research findings. They were assured that all personal data and responses would remain confidential and that any information presented in publications would not reveal their identities. The participants consented voluntarily after being informed of the study's objectives, procedures, and intended dissemination of results.

COMPETING INTERESTS

The authors declare that there are no competing interests or potential conflicts of interest related to the conduct, authorship, or publication of this research. All authors have reviewed and approved the final version of the manuscript and confirm that no financial or personal relationships influenced the outcomes of this study.

REFERENCE

[1] World Health Organization, "Diarrhoeal Disease," WHO Fact Sheet, 2023.
[2] UNICEF, Progress on Household Drinking Water, Sanitation and Hygiene 2000–2023, Geneva: UNICEF/WHO, 2024.
[3] J. A. Thobari et al., "Direct and Indirect Costs of Acute Diarrhea in Children Under Five in Indonesia," BMC Public Health, vol. 21, 2021.
[4] M. S. Bhuyian et al., "Reduced Diarrhea Prevalence and Improvements in WASH Behaviors via CHoBI7 mHealth Program," PLoS One, 2023.
[5] F. N. Sari et al., "Prevention of Diarrhea in Children Through Play: A Systematic Review," Indonesian Journal of Community Health Nursing, vol. 8, no. 2, 2023.
[6] R. George et al., "Evaluation of CHoBI7 mHealth: Scaling Behavior Change Communication for Diarrhea Prevention," American Journal of Tropical Medicine and Hygiene, vol. 110, 2023.
[7] M. D. Goni et al., "Effectiveness of a Smartphone-Based Health Education Program," JMIR Public Health and Surveillance, vol. 7, no. 4, 2021.
[8] H. Rumboa et al., "Predictors of Mothers' Behavior in Diarrhea Prevention," KnE Life Sciences, 2022.
[9] D. Yunitawati et al., "Comparing Risk Factors for Diarrhea in Urban and Rural Indonesia," Journal of Environmental Health Research, vol. 34, no. 3, 2025.
[10] S. Endang, "Community-Based Strategies for Diarrhea Control in Rural Indonesia," Indonesian Journal of Environmental Health, vol. 10, no. 1, 2023.
[11] C. Lee et al., "Community-Based Health Education for Disease Prevention: A Quasi-Experimental Approach," International Journal of Public Health, vol. 69, pp. 112–122, 2024.
[12] World Health Organization, Ethical Standards for Public Health Research in Communities, Geneva: WHO, 2021.
[13] H. Rumboa et al., "Interactive Health Promotion to Prevent Diarrhea Among Rural Communities," BMC Health Education, vol. 22, 2022.
[14] A. H. Widodo and R. Sari, "Instrument Validation for Health Literacy Assessment in Indonesia," Journal of Health Research Methods, vol. 12, no. 3, pp. 45–53, 2023.
[15] M. J. Rahmawati et al., "Statistical Approaches for Health Education Intervention Studies," Indonesian Journal of Biostatistics, vol. 5, no. 1, pp. 33–41, 2022.
[16] Ministry of Health of Indonesia, Guidelines for Diarrheal Disease Prevention and Community Health Empowerment, Jakarta: Kemenkes RI, 2021.
[17] D. Yunitawati et al., "Effectiveness of Cadre-Based Education in Improving Hygiene Practices: A One-Group Pretest–Posttest Study," Asian Journal of Environmental Health, vol. 11, pp. 77–88, 2024.
[18] S. R. George et al., "Behavioral Outcomes of CHoBI7 mHealth Intervention for Diarrhea Prevention," Am. J. Trop. Med. Hyg., vol. 110, no. 2, pp. 450–460, 2023.
[19] F. A. Lestari, "Knowledge to Practice Transition in Community Hygiene Interventions," J. Environ. Health Educ., vol. 7, no. 1, pp. 12–22, 2022.
[20] M. D. Goni et al., "Effectiveness of Multi-Modal Learning in Rural Health Education," BMC Public Health, vol. 23, pp. 2101–2110, 2023.
[21] H. N. Kurniasari et al., "Impact of Cadre Training on Diarrhea Prevention in Central Java," Indonesian J. Health Promot., vol. 9, no. 2, pp. 85–94, 2021.
[22] M. S. Bhuyian et al., "WASH Education and Diarrhea Reduction: A Quasi-Experimental Study," PLoS One, vol. 18, no. 5, 2023.
[23] J. O. Nyaga et al., "Community-Led Total Sanitation Programs and Diarrhea Reduction in Kenya," Global Health Action, vol. 16, no. 1, 2024.
[24] R. P. Adhikari et al., "Local Ownership in Rural Sanitation Programs: Lessons from Nepal and India," Int. J. Community Health Dev., vol. 5, no. 3, pp. 201–214, 2023.
[25] D. Yunitawati et al., "Short-Term Effects of Environmental Health Education on Cadre Behavior," Asian J. Environ. Health, vol. 11, pp. 88–99, 2024.
[26] L. A. Chandra et al., "Digital Health Literacy and Diarrhea Prevention Knowledge among Mothers," Telemed. e-Health, vol. 31, no. 1, pp. 60–72, 2025.
[27] N. F. Rahim et al., "Social Diffusion of Hygiene Behavior through Community Health Workers," Soc. Sci. Med., vol. 318, pp. 115689, 2023.