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Dissemination of the Jumantik Guidebook to Strengthen the Role of High School Students in Dengue Fever Prevention

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ABSTRACT

Dengue Hemorrhagic Fever (DHF) remains a major public health issue in Indonesia, particularly among high school students. Limited knowledge regarding mosquito vector characteristics, breeding habitats, and larvae monitoring hampers community-based prevention efforts. This community service activity aimed to strengthen the role of high school students as agents of change in dengue prevention through the dissemination of the Jumantik guidebook. The method employed was Participatory Action Research (PAR) involving 55 high school students who are members of the Youth Red Cross (PMR) from various schools in Tasikmalaya City. The activity was conducted online via Zoom, followed by a questionnaire to evaluate participants' knowledge, perceptions, and feedback on the guidebook. The results of the study showed that participants' awareness increased from 18% to 100% regarding understanding of mosquito characteristics, mosquito habitat reproduction, and how to monitor mosquito larvae. A total of 95% of students found the book very helpful, and 53 students requested digital access. Feedback highlighted the need for better visualization, accessibility, and more comprehensive content. In conclusion, the dissemination of the Jumantik guidebook was effective in improving health literacy among adolescents and strengthening their role as agents of change in dengue prevention.

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INTRODUCTION

Dengue Hemorrhagic Fever (DHF) continues to be a major public health problem in Indonesia, particularly in tropical regions where Aedes aegypti mosquitoes thrive. Despite ongoing prevention programs such as the Pemberantasan Sarang Nyamuk (PSN), the incidence of dengue remains high. This persistence is attributed to limited public knowledge about mosquito breeding sites and preventive behaviors that can be independently practiced. The burden of DHF is especially evident among adolescents, who often lack awareness of mosquito vector characteristics and habitat management (Maula et al., 2018; Maulidi .T. & Setiyono, 2025).

Recent epidemiological data reinforce this concern. In 2023, Indonesia recorded 114,720 DHF cases, with West Java contributing the largest share (19,328 cases). Climatic variations such as El Niño and fluctuations in temperature, rainfall, and humidity accelerate mosquito breeding and increase transmission risks. These conditions make areas like Tasikmalaya particularly vulnerable and highlight the need for school-based interventions that engage young people in dengue prevention activities (Dewi et al., 2024).

Educational institutions especially senior high schools—hold great potential for mobilizing students as agents of change in health promotion. Programs like Si-Mantik (student mosquito larvae monitors) have demonstrated success in developing students' observational and preventive skills. By actively involving students in monitoring larvae and promoting environmental hygiene, these initiatives support the sustainability of the 3M Plus program (menguras, menutup, and memanfaatkan kembali water containers) while fostering a culture of community health responsibility among youth (Huvaid et al., 2024).

The term jumantik (short for juru pemantau jentik) refers to trained individuals either community volunteers or students responsible for inspecting and monitoring mosquito larvae in households and public areas. Their duties include identifying potential breeding sites, recording larval findings, providing feedback to residents, and encouraging preventive actions. Jumantik cadres serve as the frontline in breaking the mosquito life cycle through routine surveillance and education (Illahika et al., 2022; Nova & Sihombing, 2024). When implemented in schools, jumantik cilik (young jumantik) or student monitors promote early environmental awareness and health literacy.

However, previous studies on dengue prevention in schools have primarily focused on elementary or junior high levels. Research by Taufik et al. (2025) and Dapari et al. (2025) found that student participation in larval monitoring significantly improved knowledge and attitudes toward DHF prevention, but limited studies have evaluated the same model in high school contexts. Additionally, few initiatives have assessed the use of structured educational materials such as the Jumantik Guidebook as formal learning tools to enhance student engagement and understanding of DHF control (Dapari et al., 2025; Review, 2019).

Several factors influence the success of jumantik programs, including knowledge, motivation, facilities, and leadership (Illahika et al., 2022). The One House One Jumantik movement in Padang, for instance, demonstrated that community empowerment through larval monitoring could significantly reduce mosquito breeding sites (Huvaid et al., 2024). Nevertheless, there remains a gap in using evidence-based educational materials to sustain these practices among adolescents. Therefore, integrating guidebooks and digital resources can strengthen the continuity and effectiveness of school-based health interventions.

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Based on these considerations, the dissemination of the Jumantik Guidebook among senior high school students in Tasikmalaya was carried out to enhance their knowledge, attitudes, and preventive practices. This activity aims to empower students as change agents capable of influencing health behavior within their schools, families, and communities. By providing structured educational support through the guidebook, this community service project seeks to fill the existing research gap and contribute to the sustainability of dengue prevention efforts among youth (Dewi et al., 2024; Prayitno et al., 2025).

Dengue Hemorrhagic Fever (DHF) remains a major public health problem in Indonesia, particularly in West Java, where the increasing number of cases indicates the limited effectiveness of community-based prevention programs due to insufficient knowledge and participation. At the high school level, students' awareness and involvement in mosquito larvae monitoring (jumantik) activities remain low, and the Jumantik guidebook intended as an educational tool to promote preventive behavior has not been widely introduced or utilized. To address this issue, a community service program using the Participatory Action Research (PAR) approach was implemented by involving 55 members of the Youth Red Cross (Palang Merah Remaja or PMR) from various high schools in Tasikmalaya City. The dissemination of the Jumantik guidebook was carried out through an online socialization session via Zoom that included interactive presentations, discussions, and Q&A activities, followed by an online questionnaire to assess understanding and feedback. The results showed a significant increase in students' knowledge and awareness of dengue prevention, with all participants (100%) able to identify mosquito characteristics, breeding habitats, and larval monitoring methods, while 95% found the guidebook very useful and suggested broader digital access. This activity proved effective in strengthening students' roles as agents of change in dengue prevention, with recommendations to enhance accessibility, improve visual presentation, enrich content, and conduct continuous dissemination in schools to sustain behavioral change efforts.

METHOD

The community service activity employed a Participatory Action Research (PAR) approach and was conducted on September 16, 2025, in a single online session via Zoom. The participants consisted of 55 high school students who were members of the Youth Red Cross (Palang Merah Pemuda/PMR) from various schools in Tasikmalaya City. They were selected because of their strategic potential as agents of change in dengue prevention. The program aims to strengthen students' understanding and engagement in mosquito larvae monitoring and to promote healthy environmental practices through the dissemination of the Jumantik Guidebook (Israel et al., 1998).

Data were collected using a validated questionnaire designed to assess students' knowledge, attitudes, and perceptions related to dengue prevention and the Jumantik Guidebook. The instrument consisted of demographic questions, ten Likert-scale items measuring understanding of Aedes aegypti characteristics and larval control, and three open-ended questions for feedback. Expert validation yielded a content validity index (CVI) of 0.91, while reliability testing using Cronbach's alpha ($\alpha = 0.88$) confirmed strong internal consistency. The guidebook contains illustrated materials covering denguetransmission, mosquito vector identification, larval monitoring procedures, environmental sanitation practices (3M Plus), and the role of students as jumantik or larvae monitoring officers.

The activity was implemented in four stages: preparation, orientation, socialization, and evaluation. During the session, facilitators explained the importance of the jumantik role, presented educational materials interactively, and encouraged active discussion. Afterwards, participants completed an online

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questionnaire via Google Form. Quantitative data were analyzed using descriptive statistics to evaluate improvements in students' knowledge, while qualitative feedback from open-ended responses was analyzed using thematic analysis to identify participants' perceptions and suggestions for improvement. This integrated approach provided a comprehensive understanding of the effectiveness of the Jumantik Guidebook in enhancing awareness and promoting preventive behaviors among high school students.

RESULT AND DISCUSSION

Figure 1 illustrates the process of the Jumantik guidebook socialization activity conducted online via the Zoom Meeting application. The session began with a presentation delivered by the resource person, displayed on the main screen along with slides containing the key points of the guidebook. The material was presented systematically with an interactive communication style, making it easier for participants to understand the information conveyed. On the other hand, the figure also shows the active participation of high school students who are members of the Youth Red Cross (Palang Merah Remaja or PMR). A total of 55 students from various high schools in Tasikmalaya City attended the session from their respective locations. Their presence in the virtual meeting room reflects a collaborative spirit in gaining knowledge about the role of Jumantik and the prevention of Dengue Hemorrhagic Fever (DHF).

The use of online media through Zoom proved to be an appropriate choice given the limitations of in-person meetings. This platform allowed information to be delivered effectively while maintaining real-time interaction between the speaker and participants. Discussions and Q&A sessions were facilitated smoothly, ensuring that participants remained actively engaged despite being in different locations. From a documentation perspective, the figure portrays an orderly and well-structured activity, supported by adequate technology. This demonstrates that online-based socialization activities can serve as a strategic alternative to broaden the reach of health education, while ensuring that the key messages of the Jumantik guidebook are effectively received by the younger generation—those who serve as agents of change within the community.

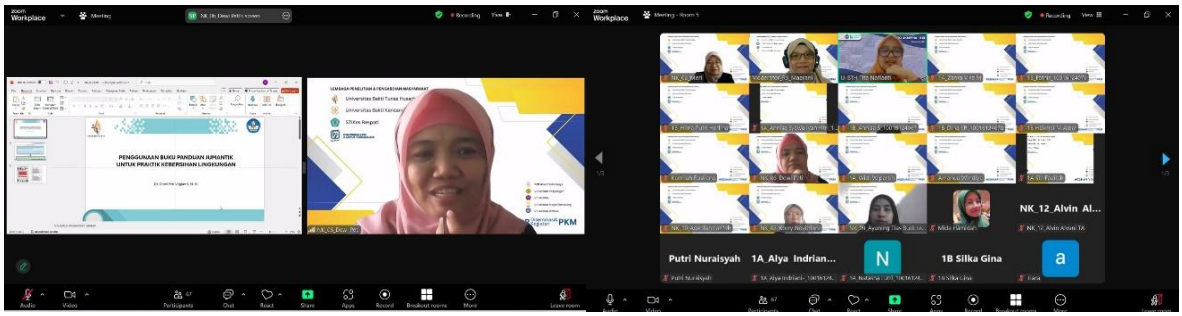

FIGURE 1. Implementation of Zoom Meeting Application-Based Socialization

TABLE 1. Students' Initial Knowledge of the Jumantik Guidebook

No.	Answer Categories	Amount	Persentace
1	Ever Known	9	18%
2	Never Know	46	82%

A total of 82% of respondents (46 students) stated they had never heard of the Jumantik guidebook before the outreach activity, while only 18% (9 students) had (Table 1). This finding indicates that the

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Jumantik guidebook is still relatively unfamiliar to high school students, even though they are part of the Youth Red Cross (PMR) community. This low initial exposure underscores the importance of outreach activities as an effort to introduce new educational media relevant to dengue fever prevention (Illahika et al., 2022; Review, 2019).

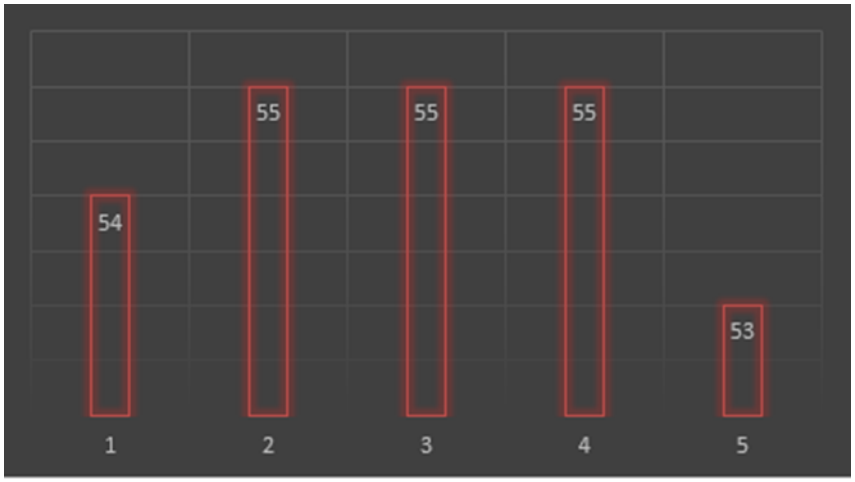

FIGURE 2. Student perceptions of the benefits of the guidebook

Description:

1. Perception of the Benefits of the Guidebook
2. Understanding the Characteristics of Dengue Mosquito Vectors
3. Understanding the Habitat of Mosquito Vectors
4. Ability to Monitor Larvae
5. Need for Accessibility of the Guidebook

Figure 2 shows that the majority of students, 98% (54 students), stated that the guidebook was very helpful in maintaining environmental cleanliness. This indicates that the guidebook was perceived positively and was considered relevant to students' needs. This perception is consistent with findings (Gregorio et al., 2024; Illahika et al., 2022), which state that clear and structured educational media can increase the motivation of mosquito larvae control personnel in carrying out their duties. All respondents (100%) stated that after reading the guidebook, they learned the characteristics of dengue vector mosquitoes. This finding reinforces the role of guidebooks as an effective educational tool in improving students' health literacy. This literacy is important, as a good understanding of mosquito morphology and behavior can help students recognize potential risks in their environment (Dewi et al., 2024; Nova & Sihombing, 2024; Wahab et al., 2025).

100% of respondents also reported knowing the habitat of dengue vector mosquitoes after participating in the outreach. These results indicate that the material delivery successfully increased students' awareness of environmental factors that support mosquito breeding. This awareness is crucial in encouraging students to take preventive measures, such as covering, draining, and recycling water containers (Maula et al., 2018). All respondents (100%) stated that they knew how to monitor mosquito larvae after receiving explanations in the guidebook. This means that the outreach activity successfully met one of its main objectives, namely equipping students with basic vector monitoring skills (Dapari et al., 2025). With this knowledge, students have the potential to become agents of change in driving the 3M Plus movement in their school and home environments. Fifty-three students (96%) stated that they

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wanted a digital link to the guidebook, although 3.6% of students did not feel it was necessary. These findings indicate that accessibility is a crucial factor in the program's sustainability. Providing books in digital format can expand the reach of readers and facilitate dissemination to a wider community (Dewi et al., 2024; Maulidi, T. & Setiyono, 2025; Prayitno et al., 2025).

FIGURE 3. Jumantik Guidebook
Source. https://heyzine.com/flip-book/d00b5a80a0.html#page/2

Based on the analysis of qualitative data from the “feedback” column, several important responses were identified that reflect students’ perceptions of the Jumantik guidebook. The majority of respondents stated that the book is already well-written, comprehensive, and does not require major revisions. This indicates a positive appreciation, showing that the material presented is relevant and useful as an educational resource (Dewi et al., 2024; Maulidi T. & Setiyono, 2025).

Nevertheless, several constructive suggestions for improvement were provided. First, in terms of accessibility, participants suggested that the book be made available in both digital and printed formats, and be disseminated more widely to the public so its benefits can be more evenly distributed (Diannita et al., 2024). Second, regarding content, although deemed adequate, readers proposed more in-depth explanations on certain topics and the inclusion of more diverse elements to make the book more comprehensive. Third, the visual aspect was also highlighted, with recommendations to make the illustrations more engaging and informative, particularly to attract younger readers. Additionally, several participants suggested including contact information for consultation purposes (Huvaid et al., 2024; Prayitno et al., 2025; Rakhmani & Zuhriyah, 2024).

Overall, the book has met readers’ expectations as a relevant and valuable source of information. However, further optimization of accessibility, content enrichment, and visual enhancement can still be implemented to improve its quality and expand its reach within the community.

CONCLUSION

The dissemination of the Jumantik Guidebook to 55 high school students in Tasikmalaya City proved highly effective in enhancing their knowledge and awareness of dengue prevention, with understanding of mosquito characteristics, breeding habitats, and larvae monitoring increasing from 18% before to 100%

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after the activity. The guidebook received strong positive feedback, as 98% of participants found it useful and 96% requested a digital version for wider accessibility. These findings demonstrate that structured, participatory educational media can significantly strengthen adolescents' roles as agents of change in dengue prevention. This program contributes to improving school-based health literacy and provides a model for integrating environmental health education into extracurricular activities such as the Youth Red Cross (PMR). It is recommended that the Jumantik Guidebook be adopted within the School Health Program (UKS) and supported through collaboration between the education and health sectors, while future research should examine its long-term behavioral impact, scalability across education levels, and adaptation into digital learning formats to sustain community-based dengue control efforts.

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