

Jumantik Cilik Training for Students of Elementary School 09 Kubu Raya: Empowering School Children as Agents of Change in Dengue Fever Prevention Using Audio Visual and Practical Methods

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Kata Kunci

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Abstrak

Dengue fever (DF) remains a major health problem in Indonesia, including in Kubu Raya District, West Kalimantan. Student involvement as a young volunteers of Larva Monitoring Project (Jumantik Cilik) is expected to be an effective prevention strategy. This Jumantik Cilik training aim to improving students' knowledge about DF and the Dengue Vector Control (PSN). The program involved 50 students fifth- and sixth-grade of Elementary School 09 Kubu Raya through lectures, audiovisual screen sessions, and hands-on practice. Knowledge was assessed using pretest and posttest questionnaires. The average pretest score was 6.46 (95% CI: 6.10–6.81), and the posttest average score was 9.06 (95% CI: 8.83–9.28). The Shapiro-Wilk test confirmed normal distribution ($p>0.05$), and the Paired t-Test conduct show significant differences between the pretest and posttest scores ($p<0.001$). These findings show that Jumantik Cilik training effectively increased students' knowledge of DF and PSN. This strategy is applicable as an educational approach to support sustainable Dengue control and can be replicated in other schools.

Abstract

Dengue fever (DF) remains a major health problem in Indonesia, including in the Kubu Raya District, West Kalimantan. Student involvement as young volunteers of the Larva Monitoring Project (Jumantik Cilik) is expected to be an effective prevention strategy. This Jumantik Cilik training aims to improve students' knowledge about DF and the Dengue Vector Control (PSN). The program involved 50 fifth- and sixth-grade students from Elementary School 09 Kubu Raya through lectures, audiovisual presentations, and hands-on practice. Knowledge was assessed using pretest and posttest questionnaires. The average pretest score was 6.46 (95% CI: 6.10–6.81), and the posttest average score was 9.06 (95% CI: 8.83–9.28). The Shapiro-Wilk test confirmed a normal distribution ($p>0.05$), and the Paired t-Test showed significant differences between the pretest and posttest scores ($p<0.001$). These findings show that Jumantik Cilik training effectively increased students' knowledge of DF and PSN. This strategy is applicable as an educational approach to support sustainable Dengue control and can be replicated in other schools.



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PENDAHULUAN

Dengue Fever remains a public health problem in Indonesia. This disease is caused by dengue virus infection transmitted through the bite of the *Aedes aegypti* mosquito (National Institutes of Health Islamabad, 2019; Haider *et al.*, 2024). The WHO reported 13.8 million cases and nearly 10,000 deaths due to DF in more than 100 countries in 2024, with Southeast Asia as the second most affected region (Yuan *et al.*, 2022; Haider *et al.*, 2025). Indonesia has consistently been recorded as a country with a high caseload, with 114,720 cases and 894 deaths in 2023, and increasing to 186,324 cases and 1,120 deaths by September 2024. West Java, East Java, and West Kalimantan were the provinces with the highest number of cases in Indonesia in 2023 with Kubu Raya Regency be the highest incidence in the province by contributed 1,445 cases. Trend data for the past five years shows that Kubu Raya has consistently been among the top three regencies with the most dengue fever cases (Dinas Kesehatan Provinsi Kalimantan Barat, 2024).

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The high incidence of dengue fever may be influenced by the region's climate. Temperatures between 23°C and 32°C, particularly between 25°C and 27°C, can accelerate the mosquito life cycle (World Health Organization, 2024; Xu, Xu and Wang, 2024). High humidity and optimal rainfall can also prolong mosquito lifespan and create conducive habitats for breeding, such as puddles. Furthermore, poor environmental sanitation, uncovered water containers, the habit of hoarding used goods, and a lack of public awareness of hygiene contribute to the increased risk of dengue fever transmission (Thach *et al.*, 2021; Moallemi, Lloyd and Rodrigo, 2023; Tayal, Kabra and Lodha, 2023). The government has promoted the PSN using the 3M Plus approach, which involves draining, covering, and burying/recycling containers that potentially hold water, as well as additional interventions such as larvicide, the use of mosquito nets, and mosquito repellent (Muhammad Rasyid Ridha *et al.*, 2022). However, the effectiveness of this program depends heavily on public awareness and active participation.

Empowering communities as mosquito larvae monitors (Jumantik) is a crucial strategy in supporting PSN and dengue fever control. These monitors are members of the community trusted and trained by district/city governments to help maintain environmental cleanliness free of mosquito nests (Ahmadi L, Majid and Bahar, 2022; Muhammad Rasyid Ridha *et al.*, 2022). Based on the 2023 Indonesian Health Survey (SKI), the highest prevalence of dengue fever cases was among children aged 5-14 years, most of whom were school students (Kemenkes RI, 2023). Because children spend a significant amount of time at school, educational institutions have significant potential for dengue fever transmission. Therefore, empowerment is needed not only for adults but also for involving school students as Jumantik Cilik who actively prevent and monitor mosquito larvae, both at school and at home (Askar *et al.*, 2021; Fathariq *et al.*, 2025). The Jumantik Cilik training not only aims to detect the presence of mosquito larvae early but also serves as a means of health education and character building for children (Heyrani *et al.*, 2024; Nurachman and Sansuwito, 2024). Students are encouraged to act as agents of change who can influence the behavior of their families and communities (Heyrani *et al.*, 2024; Taufik, Budiyo and Purnami, 2025). Based on these reasons, this community service program was implemented at Elementary School 09 Kubu Raya. The school is located in a densely populated area with dengue fever endemic. This community service program is expected to effectively train elementary school students through the Jumantik Cilik as part of a sustainable dengue control strategy..

METODE

This Jumantik Cilik training is intended for fifth and sixth grade students at Elementary School 09 Kubu Raya, West Kalimantan Province in August 2025. This Jumantik Cilik training was attended by 50 students who had never participated in Jumantik Cilik or similar training before. The title of the training material is "Jumantik Cilik Hero: Small Action, Big Impact" with the aim of increasing the knowledge and skills of elementary school students in efforts to prevent DF through student-based mosquito breeding site eradication activities. The Jumantik Cilik was implemented through three methods: lectures (using presentations and flipbooks), audiovisual sessions (Jumantik Cilik practice videos), and field practice (monitoring mosquito breeding site). All participants received a Jumantik Cilik pocketbook to be used as a guide and record the result during field practice.

At the beginning of the training all the students conduct a pre-test with students to assess their initial knowledge regarding dengue fever, mosquitoes, and PSN. At lectures session, training materials about dengue fever, PSN, and Jumantik Cilik were delivered by lecturers from the Faculty of Medicine, Tanjungpura University. Sessions continued to the presentation about the implementation of Jumantik Cilik practice was delivered by medical students from the Faculty of Medicine, Tanjungpura University, followed by a discussion session with students. The audiovisual sessions, a video of Jumantik Cilik practice was played. The field practice sessions started with Form a Jumantik Cilik team consisting of students and supervised by lecturers and medical students. The field practice involved assigning the Jumantik Cilik team to observe potential mosquito breeding sites in the school environment and record the larvae found in a Jumantik Cilik pocketbook. The entire team then presented their findings. The training concluded with a final test for all students. The post-test concluded after the entire educational intervention series was completed.

This training evaluated used a pre-experimental design with a one-group pretest and posttest approach to evaluate the effectiveness of the Jumantik Cilik training in improving students' knowledge about DF and PSN as a indicators of success. Pretest and posttest used a questionnaires about dengue fever and PSN. Data analysis was performed using the Shapiro-Wilk normality test and paired t-test on the results. The community service program is considered successful if there is a change in the level of knowledge of the young Jumantik cadres regarding dengue fever and PSN before and after the activity, through analysis of the questionnaire distributed to students.

HASIL DAN PEMBAHASAN

This activity focused on empowering students as Jumantik Cilik. It began with a pre-test to assess their initial knowledge regarding dengue fever and mosquito breeding site eradication program. This was conducted before the educational material was presented, as shown in Figure 1. The educational material was delivered through a lecture method supported by learning media in the form of a presentation and a flipbook presentation. This was followed by an educational video. The educational material covered the definition and symptoms of dengue fever, the morphology and life cycle of mosquitoes, the habitat of the *Aedes aegypti* mosquito, and the methods a young mosquito monitor should implement at school and at home, such as PSN with the 3M plus approach.

Next, young mosquito larvae monitor teams were formed. Each team was then sent into the field to observe potential mosquito breeding sites in the school environment and record larvae found in these locations in the previously distributed little mosquito larvae monitor book (as shown in Figure 2). Then, each group began monitoring for larvae (as shown in Figure 3). As part of the final evaluation, students were given a post-test to assess their understanding after participating in the Jumantik Cilik educational and practical activities. A short quiz was also administered to encourage student engagement. The students with the quickest answers were then awarded prizes. The activity concluded with a group documentation as a symbolic closing, as seen in Figure 4.



Figure 1. lectures, audiovisual sessions and field practice. (a) Presentation of Materials Related to Mosquito Breeding Site Eradication Program; (b) Conduct the field practice by assigning the Jumantik Cilik team to observe potential mosquito breeding sites in the school environment (Private Documents).

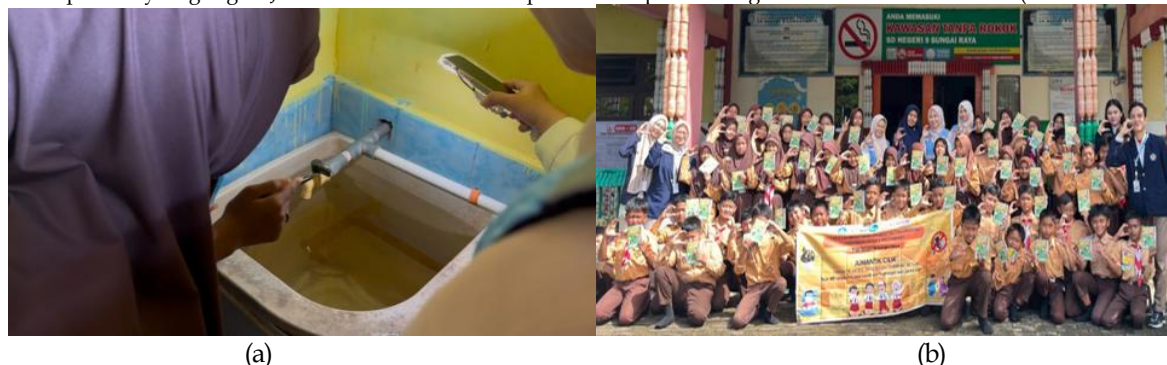


Figure 2. Field practice and a group documentation as a symbolic closing. (a) Jumantik Cilik team observe potential mosquito breeding sites in the school environment; (b) Students Jumantik Cilik, principal of Elementary School 09 Kubu Raya and the whole committee of the Faculty of Medicine, Tanjungpura University.

After the entire activity plan was completed, the results were evaluated by comparing pre-test and post-test scores. This assessment aimed to measure changes in students' knowledge of Dengue Fever and Mosquito Nest Eradication before and after the health promotion session. A summary of the pre-test and post-test scores is presented in Tables 1, 2, and 3 below. The analysis results show that the average pretest score of students was 6.46 (95% CI: 6.10-6.81), while the average posttest score was 9.06 (95% CI: 8.83-9.28), as shown in table 1. This indicates an increase in the average score of students' knowledge regarding DF and PSN after the intervention. The Shapiro-Wilk test, shown in table 2, obtained pretest data with a value of $W = 0.969$ and $p = 0.219$, while the posttest had a value of $W = 0.999$ and $p = 1.000$. Because the p value > 0.05 , then both variables are normally distributed. Furthermore, the results of the Paired t-Test in table 3 show a value of $t = -13.56$ with $p < 0.001$, which indicates a significant difference between the pretest and posttest results. Therefore, the training of Jumantik Cilik using a combined method of lectures, educational videos and field practice significantly increased the knowledge of 5th and 6th grade students at elementary school 09 Kubu Raya.

Table I. The results of the analysis of the mean and Shapiro-Wilk test analysis on the pretest and posttest of students on the material of Dengue Fever and Mosquito Nest Eradication.

No.	Variable	Mean	Std. Err.	95% CI	W	p value
1.	Pretest	6.46	0.1766121	6.105085 – 6.814915	0.969	0.219
2.	Posttest	9.06	0.1121588	8.834608 – 9.285392	0.999	1.000

Table II. The results of the Paired t-Test analysis on the students' pretest and posttest on the material of Dengue Fever and Mosquito Breeding Site Eradication Program.

No.	t	df	p value
1.	-13.5655	49	<0.001

Empowerment activities through training of Jumantik Cilik for fifth and sixth grade students at elementary school 09 Kubu Raya have proven effective in increasing knowledge about dengue fever and mosquito breeding site eradication program. Pretest and posttest results showed a significant increase in students' understanding after the health promotion intervention. The Jumantik Cilik program is recommended for sustainable development, both in schools and homes, as a way to empower elementary school students to become active agents of change in maintaining environmental cleanliness and preventing dengue transmission in their communities. Collaboration between schools, community health centers, and the community needs to be strengthened to ensure the program's sustainability and expand its impact to the family and surrounding community levels.

KESIMPULAN

Empowerment activities through training of Jumantik Cilik for fifth and sixth grade students at elementary school 09 Kubu Raya have proven effective in increasing knowledge about dengue fever and mosquito breeding site eradication program. Pretest and posttest results showed a significant increase in students' understanding after the health promotion intervention. The Jumantik Cilik program is recommended for sustainable development, both in schools and homes, as a way to empower elementary school students to become active agents of change in maintaining environmental cleanliness and preventing dengue transmission in their communities. Collaboration between schools, community health centers, and the community needs to be strengthened to ensure the program's sustainability and expand its impact to the family and surrounding community levels.

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