



EFFECT OF LITTLE JUMANTIK TRAINING ON THE BEHAVIOUR OF PREVENTING DENGUE FEVER

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ABSTRACT

The results showed a difference in knowledge, attitudes and practices to prevent dengue fever before and after the little jumantik training, with the results of statistical tests obtaining a value of $p = 0.000$ for knowledge, attitudes and practices. These findings can be used to create better and more beneficial health intervention programs for the community, significantly increasing awareness and efforts to prevent dengue fever among children.

Key words: Training, little jumantik, behaviour, knowledge, attitude, practice, effect, *Aedes* sp, larvae, DHF, dengue, prevention, intervention, awareness, children

Aedes sp. is a primary vector responsible for the transmission of dengue fever in tropical and subtropical regions. By the end of 2022, the number of dengue cases in Indonesia reached 143,000, with the highest number of dengue cases in West Java, East Java and Central Java. In 2022, larva testing was conducted in 23,829 out of 84,502 villages (28%) in Indonesia, and the results showed that most (14,936 villages, 63%) were declared at risk of dengue. So even though 94.6% of >46 million houses were declared free of mosquito larvae, the dengue incidence rate remained high. This larva-free rate, which exceeds 90%, has also been observed in the last three years (Kemenkes RI, 2022). The number of dengue cases in Indonesia in 2022 was 143,266, and 1,237 died from dengue hemorrhagic fever. As of the 33rd week of 2023, the number of dengue hemorrhagic fever cases was 57,884, and 422 died from dengue hemorrhagic fever. According to P2PM, 13 provinces in Indonesia have the highest dengue hemorrhagic fever cases, including parts of Sumatra, Java, Sulawesi, Bali and Nusa Tenggara. Provinces with the highest DHF cases are primarily provinces of trade centers of trade centers, industrial centers with mobility and dense populations (Kemenkes RI, 2023). The incidence of DHF in South Sulawesi Province in 2020 was 2,714 patients with a total morbidity rate of 29.6/ 100,000 population, which means there are 29-30 people with DHF in 100,000 population in South Sulawesi (Saputra Rian et al., 2023).

The indicator used in DHF control efforts is the larva-free rate (ABJ). Nationally, it is one of the

indicators in DHF control efforts until it has not reached the program target of $\geq 95\%$ (Magfironi, Rekawati and Rosdiana, 2023). DHF can affect all age groups. However, several studies have shown that children are more likely to contract DHF (Istiqomah et al., 2021) but it has not been implemented. The purpose of this study was to analyze differences in knowledge, attitudes, community practices and the presence of larvae that were intervened and not intervened by implementing the movement of One House One Jumantik. This type of research is a quasi experimental, with the Nonequivalent Group Design approach. The instruments used in this study were a questionnaire, a larva monitoring checklist, a guidebook. The research sample was 40 people in the experimental group and 40 people in the control group using purposive sampling technique. Analysis of the research data using the Mann Whitney test, Wilcoxon test, Chi square test.

The results showed that there were differences in the mean of knowledge ($p: 0.001 \leq \alpha (0.05)$. One of the reasons stated is due to immunity factors and nutritional status in children. The results of research in the group at risk of contracting DHF at the age of < 12 years had a risk of 19.06 times compared to the age group ≥ 12 years. Schools are a potential place for spreading and transmitting DHF in children (Tokan and Artama, 2022). The number of potential breeding sites for DHF vectors and the discovery of high-density larvae that can be found in schools (Hendri et al., 2020). The program promoted by the government is a clean and healthy living effort through community

empowerment activities, namely jumantik (Sulasmı et al., 2021). The role of jumantik is very high in early vigilance against dengue hemorrhagic fever outbreaks because it functions to monitor the presence of larvae (the beginning of vector development as a dengue transmitter); the activeness of this jumantik cadre is expected to reduce dengue cases. School children are part of a community group that can play a strategic role, considering that there are huge numbers; around 20% of Indonesia's population are school children (Jafar et al., 2019). Understanding PSN for school children plays a role in instilling PSN behavior at the earliest possible age, which will be used as the basis for their thinking and behavior in the future (Kosasih et al., 2021).

One of the programmes developed is the larva monitor (Jumantik) (Nabilah Utami et al., 2023). Health education has proven effective in improving knowledge, attitudes, and skills and enhancing preparedness for DHF incidents at Inpres Watujara Elementary School. School students who are members of the little jumantik are expected to be able to contribute as motivators and activators for other students in mosquito nest eradication activities at school, including in their family and living environment so that they have a significant impact on reducing morbidity due to dengue fever (Widyastutik et al., 2020). Little jumantik are expected to instill PSN behaviour at the earliest possible age, which will be the basis for their thinking and behavior in the future. At the same time, control starts from the closest scope, namely the household/family, so it is expected to create communal control (Nabilah Utami et al., 2023). Based on this description, the researcher is interested in researching the training of Little Jumantik on the Prevention Behaviour of Dengue Fever Events in Makassar City Public Elementary School Students.

MATERIALS AND METHODS

This type of research is Quasi-Experimental with a group pretest-posttest design. Experimental research was carried out on only one group called the intervention group without a control comparison group. This one-group pre-test and post-test design research is measured using a pretest conducted before being given an intervention and a post-test conducted after being given a little Jumantik training intervention. The population in this study were 4th and 5th grade students of Public Elementary School Daya, totaling 67 people. The sample in this study were 4th and 5th-grade students of Public Elementary School Daya with the determination of the sample using a purposive sampling technique that has the following

inclusion criteria domiciled in Daya Village and willing to follow the series of activities until the end. So the samples that meet these criteria amounted to 32 students who will become little jumantik. Data analysis was performed using Statistical Package for Social Science version 24. The questionnaire was tested for internal consistency, whose data were excluded from the final analysis Cronbach's alpha reached 0.7 (Aung et al., 2023). The Independent t-test was used to compare mean knowledge, attitude and practice (Suwanbamrung et al., 2021) it is necessary to identify determinants of knowledge, attitudes, and practices (KAP. This research has received approval from the Health Research Ethics Committee of the Faculty of Public Health, Hasanuddin University with letter number No: 070/0030/K/Umkep/II/2024.

RESULTS AND DISCUSSIONS

Knowledge is one of the factors that can make it easier to influence someone to behave positively or negatively in one's life (Novita Lusiana, 2023). The results of knowledge from the pre-test given to students before the Little Jumantik training intervention found that most of them knew that DHF could be prevented, had heard of the term larvae, the use of mosquito repellent as a preventive measure, and the mosquito that causes DHF. However, many respondents still needed to learn what DHF, PSN, and 3M stood for. Based on statistical tests using the T-test, they obtained a p-value = 0.000 (Table 1). The increase in respondents' knowledge was due to the intervention provided in the form of exposure to training materials related to *Aedes* mosquitoes and the 3M Plus PSN method, as well as the introduction of *Aedes* mosquito behavior as a disease vector (Ishak et al., 2021). Messages in the media aim to influence the target and invite the audience to implement the ideas given to the target (Masrurroh et al., 2023). In

Table 1. Analysis of knowledge, attitudes and practice before and after little Jumantik Training in Public Elementary Schools in Makassar city

Variable		Mean	SD	Min-Max	P-Value
Knowledge	Pretest	6.8750	2.39287	2-10	0.000
	Posttest	11.8125	2.78750	6-15	
Attitude	Pretest	6.3750	1.62143	3-9	0.000
	Posttest	8.2188	1.38504	5-10	
Practice	Pretest	5.6875	1.76777	2-10	0.000
	Posttest	6.9375	1.72154	5-11	

line with Gasper and Haluruk's research (2021), it shows that health media aids affect knowledge of dengue prevention (Gasper and Haluruk, 2021). Research has shown that repetition of information helps improve understanding (Ahmed et al., 2022). In this study, age and grade characteristics were not far apart. The respondents were between 9 and 12 years old, with the most being nine and the most grade level being grade IV. In line with research conducted by Artama and Kopong Tokan (2022) there is a significant relationship between age and respondents' knowledge, attitudes and skills after the intervention. This shows that health education in school children increases knowledge and positive attitudes about DHF and abilities, as Jumantik (Artama and Kopong Tokan, 2022).

This study aligns with Aung et al.'s (2023) research on Grade 9 and 10 students from two secondary schools in Yangon, Myanmar. The results showed a significant increase in knowledge of all items, including biology, transmission, preventive measures, and knowledge of the disease (Aung et al., 2023). This is also supported by research conducted by Istiqomah et al. (2021), which found that there was a statistically significant difference in the mean knowledge of the experimental group before and after the intervention with a p-value: $0.001 \leq \alpha (0.05)$ (Istiqomah et al., 2021) but it has not been implemented. The purpose of this study was to analyze differences in knowledge, attitudes, community practices and the presence of larvae that were intervened and not intervened by implementing the movement of One House One Jumantik. This type of research is a quasi experimental, with the Nonequivalent Group Design approach. The instruments used in this study were a questionnaire, a larva monitoring checklist, a guidebook. The research sample was 40 people in the experimental group and 40 people in the control group using purposive sampling technique.

Analysis of the research data using the Mann Whitney test, Wilcoxon test, Chi square test. The results showed that there were differences in the mean of knowledge ($p: 0.001 \leq \alpha (0.05)$. Different research results by Chng, Parvathi and Pang (2022) stated that dengue prevention knowledge between hotspots suffering from dengue fever and unsustainable hotspots in Singapore had no significant difference in mean scores ($p = 0.41$) (Chng, Parvathi and Pang, 2022). The attitude results from the pretest given to respondents before the Little Jumantik training intervention found that most respondents already had an attitude of agreeing that cleaning mosquito breeding sites around the house every

week is very important and draining water reservoirs, must use detergent, brushed and rinsed thoroughly. This is in line with the research of Suwanbamrung et al. (2021), which found that most children strongly agree (77.9%) that the number of dengue fever cases can be reduced by eradicating mosquito larvae (Suwanbamrung et al., 2021) it is necessary to identify determinants of knowledge, attitudes, and practices (KAP (Zaki et al., 2019) only a system which is accepted and utilised by the public would be sustainable in the long run. This study aimed to explore the perception and attitude of the Malaysian public towards a dengue early warning system. The sample consisted of 847 individuals who were 18 years and above and living/working in the Petaling District, an area adjacent to Kuala Lumpur, Malaysia. A questionnaire consisting of personal information and three sub-measures of; i. Attitude changes in respondents due to the intervention provided in the form of training for little jumantik.

Health education is a stimulus that affects the mindset and attitude patterns of individuals (Nontapet et al., 2022) vector control and the environment. In Thailand, village health volunteers emphasize the need for a health working group to interact, collaborate, and coordinate actions. The objectives of this study were to acquire an understanding of dengue solutions, as well as the larval indices surveillance system of village health volunteers in high- and low-risk dengue villages. Methods: After 12 months of training in dengue prevention and setting larval indices surveillance systems, an analytical cross-sectional survey was conducted. A total of 117 villages were included in the 18 primary care facilities within one district in southern Thailand, and they were divided into 71 high-risk and 46 low-risk dengue villages. Sample size was determined using the G*power formula. The content validity index and reliability values of Cronbach's alpha coefficient for the questionnaires were 0.91 and 0.83, respectively. A random sampling approach was used to acquire data. The chi-square test, t-test, and odds ratio were used to assess the sample's level of understanding. Results: The study included 1302 village health volunteers, including 895 and 407 from high- and low-risk dengue communities, respectively. In total, 87.9% were female, 51.6% were 20–35 years old, 48.8% had worked as a village health volunteer for 11–20 years, 27.1% had an upper elementary education, and 59.1% had dengue in the previous 12 months. Understanding of the dengue solution and larval indices surveillance system varied across high- and low-risk dengue villages. Village health volunteers with a high level of understanding

of the dengue solution and larval indices surveillance system were 1.064 and 1.504 times more likely to stay in high-risk dengue villages, respectively (odds ratio [OR] = 1.064, 95% confidence interval [CI]:0.798–1.419, $p = 0.672$ and OR = 1.504, 95% CI:1.044–2.167, $p = 0.028$). With an increase in students' knowledge about dengue disease and how to prevent it, it will lead to an increase in positive attitudes (Artama and Kopong Tokan, 2022). Research by Illahika et al. (2020) also suggests a significant effect of 3M plus program training on the level of attitude (Illahika et al., 2020). However, this research is not in line with research conducted by Ambarita et al. (2020), who researched community empowerment interventions in Gunung Ibul Village, Prabumulih City, where the p -value = 0.138 means that community empowerment interventions do not affect community knowledge, attitudes, and behavior (Ambarita et al., 2020). This is also supported by Ahbirami and Zuharah's research in 2022, which revealed that health education programs did not significantly improve attitudes in flooded areas with a p -value = 0.322 (Ahbirami and Zuharah, 2020). Supporting factors or a possible condition needed to turn an attitude into a real action. In addition, support is required from other parties, for example, parents, teachers, and others (Pakpahan et al., 2021). There is a link between knowledge about dengue and its benefits, attitudes toward dengue control, and effective prevention practices (Ahmed et al., 2022). A study by Khan et al. in 2023 on medical practitioners showed that most had seen dengue vectors; the media was the most cited source of information and knew about dengue transmission through mosquito bites. Practices based on preventive measures focused more on preventing mosquito bites than eliminating breeding sites (Khan et al., 2023) attitude and practices can play an important role in management of the disease. Current study was aimed to determine the level of knowledge, attitude and practices regarding dengue fever among health practitioners, to study the level of knowledge and attitude with preventive practices for dengue fever.

A cross sectional study was carried out in medical practitioners of the four districts of Malakand region during October to November 2019. A pre-structured questionnaire was used to collect data from medical practitioners. Data was analyzed using Graph Pad version 5. Significant value was considered when less than 0.05 (at 95% confidence of interval. Waste management or discarded items can reduce mosquito populations. Used items, such as bottles, cans, tires, or plastics, can collect rainwater and become breeding

places for mosquitoes, while clothes no longer worn can become resting places for mosquitoes (Simatupang and Yuliah, 2021). The results of action observations before the intervention of the little Jumantik training found that most of them had smooth waterways or gutters that were not clogged. However, based on observations, most respondents still found stagnant water around the house. It can be seen that, after the intervention by providing training for little Jumantik, participation from students who always keep the school clean, dispose of items or destroy used items that can hold water, as well as the UKS teacher who provides direction and supervises students to participate in preventing dengue fever through community service activities and implementing dengue fever prevention measures, especially PSN, so that there is a decrease in the number of containers that are positive for larvae.

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AUTHOR CONTRIBUTION STATEMENT

All authors contributed equally.

CONFLICT OF INTEREST

No conflict of interest

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