HEALTH EDUCATION STRATEGY TO IMPROVE COMMUNITY KNOWLEDGE ON DENGUE PREVENTION IN EAST SIDOMULYO VILLAGE

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Abstract

Dengue Hemorrhagic Fever (DHF) remains a serious public health concern in Indonesia, especially in densely populated urban areas. Lack of knowledge regarding prevention and symptom recognition increases the risk of outbreaks. This community service activity aimed to improve public knowledge and attitudes toward DHF prevention in RW 08 East Sidomulyo Village, Pekanbaru. Methods included interactive health education sessions with pre–post evaluation involving 25 participants selected through simple random sampling. The results showed a significant increase in participant awareness; knowledge improved from 60% in the low category to 92% in the good category after the intervention. This demonstrates that structured health education is effective in enhancing public understanding of DHF prevention through the "3M Plus" program and early symptom recognition.

Keywords: Dengue hemorrhagic fever, Dengue prevention, Health education, 3M Plus

Abstrak

Demam Berdarah Dengue (DBD) tetap menjadi masalah kesehatan masyarakat yang serius di Indonesia, terutama di daerah perkotaan yang padat penduduk. Kurangnya pengetahuan mengenai pencegahan dan pengenalan gejala meningkatkan risiko wabah. Kegiatan pengabdian masyarakat ini bertujuan untuk meningkatkan pengetahuan dan sikap masyarakat terhadap pencegahan DBD di Desa Sidomulyo Timur, RW 08, Pekanbaru. Metode yang digunakan meliputi sesi pendidikan kesehatan interaktif dengan evaluasi pra-pasca yang melibatkan 25 peserta yang dipilih melalui pengambilan sampel acak sederhana. Hasil menunjukkan peningkatan kesadaran peserta yang signifikan; pengetahuan meningkat dari 60% pada kategori rendah menjadi 92% pada kategori baik setelah intervensi. Hal ini menunjukkan bahwa pendidikan kesehatan terstruktur efektif dalam meningkatkan pemahaman masyarakat tentang pencegahan DBD melalui program "3M Plus" dan pengenalan gejala dini.

Kata kunci: Demam berdarah dengue, Pencegahan dengue, Pendidikan kesehatan, 3M Plus

A. INTRODUCTION

Dengue Hemorrhagic Fever (DHF) remains a significant public health challenge in Indonesia, particularly in densely populated urban areas with poor environmental sanitation. Although the Ministry of Health reported a decline in DHF prevalence to 21.6% in 2023, the incidence rate remains high and continues to pose a risk of serious complications, including

dengue shock syndrome and death. The persistence of this disease is largely driven by various risk factors, such as inadequate public knowledge, environmental conditions that support mosquito breeding, and low adherence to the "3M Plus" preventive movement (Draining, Closing, Burying, and avoiding mosquito bites). Without consistent preventive measures and awareness, these factors create a continuous cycle of outbreaks that are difficult to mitigate.

In the RW 08 area of East Sidomulyo Village, Pekanbaru City, the community faces specific challenges where many residents lack a proper understanding of DHF prevention and fail to recognize early symptoms. Preliminary interviews revealed that residents often misidentify DHF as a common fever, leading to delayed medical treatment and increased risks of severity. This issue is further exacerbated by the lack of prior health education or access to structured information regarding dengue in the region. Consequently, there is an urgent need for an educational intervention to bridge this knowledge gap, improve public awareness, and empower the community to adopt proactive preventive behaviors and early detection strategies.

Risk factors that contribute to the incidence of dengue include lack of knowledge about dengue prevention, the habit of hanging clothes in the house that is a mosquito resting place, water reservoirs that are not tightly closed, lack of awareness in carrying out the 3M Plus movement (Draining, Closing, Burying, plus avoiding mosquito bites), as well as environmental factors that support mosquito breeding such as puddles and garbage that are not properly managed. In the RW 08 area of East Sidomulyo Village, Pekanbaru City, Riau Province, the results of interviews with several residents and health cadres showed that most people did not have a good understanding of how to prevent dengue and recognize the early symptoms of dengue. Many of them think that a common fever does not need immediate medical attention, even though early recognition of dengue symptoms is very important to prevent complications. In addition, there has never been health education, especially about dengue prevention in the region. This problem is exacerbated by the lack of access to health information about dengue and low public awareness to take preventive measures regularly. In fact, education about dengue is very important to increase public awareness and knowledge so that they can take proper preventive measures through the 3M Plus movement and recognize the early symptoms of dengue to get immediate medical treatment.

According to Pratiwi and Wulandari (2021) previous research, the level of public knowledge is closely related to dengue prevention behavior. The better a person's knowledge,

the better the attitude and actions in preventing the breeding of *Aedes aegypti* mosquitoes. Therefore, increasing knowledge through education and health health education activities is an important step in efforts to prevent dengue early.

Based on this, health education or education about the prevention and introduction of dengue fever needs to be carried out. This is the basis for the team to carry out community service through community empowerment programs through education programs about dengue in striving for dengue-free villages in RW 08 East Sidomulyo Village. This community service is carried out with the aim of improving the community's ability to recognize, prevent, and control dengue, as well as increase knowledge about the importance of maintaining environmental cleanliness and carrying out the 3M Plus movement. This activity was carried out at the Al-Muslimin Mosque, which is one of the centers of community activities in RW 08 East Sidomulyo Village. Based on the results of the initial interview, it is known that health education related to dengue prevention has never been carried out in the area. Therefore, this program is expected to be the first step in increasing knowledge, awareness, and healthy behavior of the community in preventing dengue and realizing dengue-free villages.

B. METHODS

Community service is packaged in the form of educational health education on the prevention and introduction of dengue with the aim of increasing knowledge, attitudes, and actions in preventing the breeding of Aedes Aegypti mosquitoes and recognizing the early symptoms of dengue to avoid serious complications. The target of this activity is 25 people in RW 08 East Sidomulyo Village using simple random sampling. The general public was chosen as a target because they are expected to be able to recognize and take preventive measures to prevent dengue from an early age in order to prevent dengue outbreaks and their impacts. The stage of preparation for the activity is to contact posyandu cadres and RW heads to ask for permission to conduct health education in the RW 08 East Sidomulyo area. Next, the team prepared a questionnaire which will later be used for the Pre-Test and Post-Test. The team also prepared a PowerPoint presentation to be used as the medium for delivering the activity.

During the implementation of the activity, the team will first distribute a questionnaire to conduct a Pre-Test to the respondents to measure the level of knowledge, before being given health education. In this activity, the team used the lecture and discussion method. After health education, the team will again distribute questionnaires to respondents who previously received

questionnaires to be carried out post-tests. The results of this activity were the level of knowledge, attitudes and actions of respondents towards the prevention of dengue before and after being given health education.

The results of the measurement of knowledge, attitudes and actions of respondents will be grouped into 2 categories, namely good and poor. Furthermore, the results obtained will be processed into data. The instrument used is a structured questionnaire that has been validated to measure the level of knowledge, attitudes, and actions of the community related to dengue prevention. The level of success of the activity was measured by comparing the Pre-Test and Post-Test results, with success indicated by an increase of at least 40% from the poor knowledge category to the good category.

C. RESULTS

The difference in the results of measuring the level of public knowledge about dengue prevention before and after health education can be seen in the following diagram:

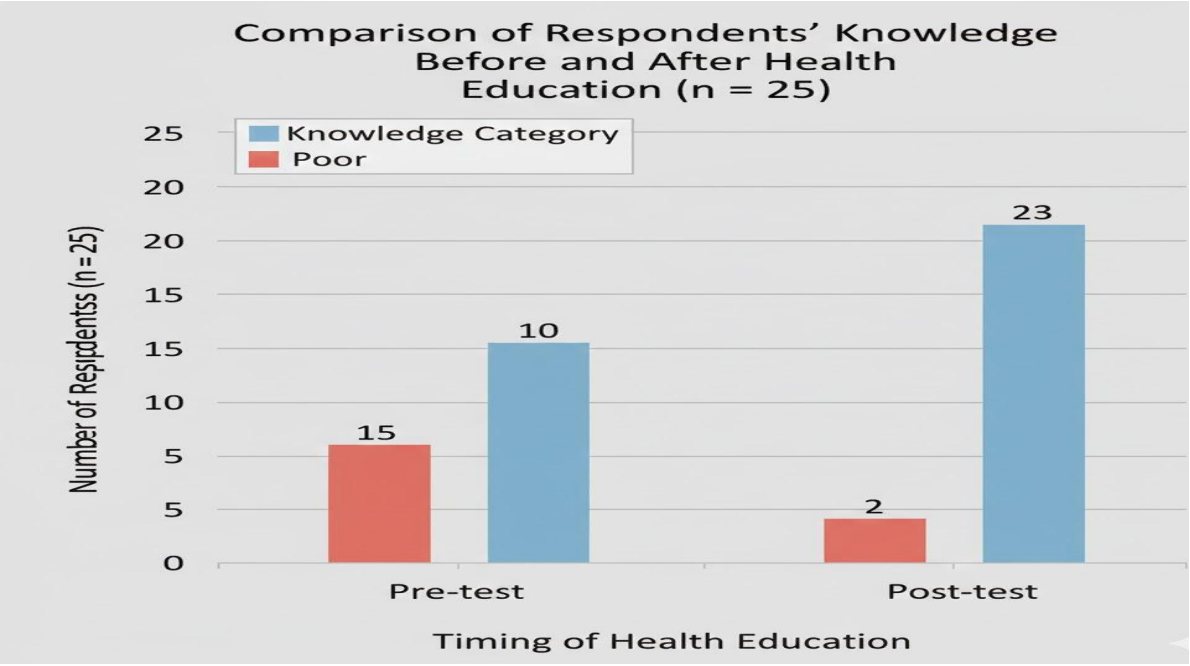

Diagram 1. Comparison of Respondents's Knowledge Before and After Health Education

Based on the diagram above, it is known that before being given health education, the majority of respondents had a level of knowledge about dengue prevention in the category of less than 15 people (60%) and good as many as 10 people (40%). After being given health education, there

was a significant increase in knowledge where 23 people (92%) were in the good category, and only 2 people (8%) were still in the poor category. In addition to the improvement in knowledge, this activity also resulted in positive changes in participants' attitudes and actions related to dengue prevention, in line with the aim of the program. After the health education sessions, participants showed a more positive attitude toward dengue prevention, such as increased awareness of the importance of maintaining environmental cleanliness and preventing mosquito breeding. Furthermore, improvements were observed in preventive actions, including regular draining and covering of water containers, proper disposal of unused items that could collect water, and the implementation of the 3M Plus practices. These changes indicate that the educational intervention not only enhanced knowledge but also successfully influenced attitudes and encouraged preventive behaviors among the community, supporting the overall goal of improving community capacity in dengue prevention. Thus, it can be concluded that there is an increase in knowledge by 52% after the implementation of health education on the prevention and introduction of dengue.

Figure 1. Dengue Disease health education

The activity began by conducting a Pre-Test to health education participants by providing several questions about the participants' knowledge about the prevention and introduction of dengue. After being given health education and closed by conducting a post-test. The results obtained by students were the answers of participants during the Pre-Test and Post-Test which were divided into aspects of knowledge, attitudes, and actions from 25 samples. This activity was attended by all people in RW 08 East Sidomulyo Village. This activity was also

accompanied by posyandu cadres and RW chairmen. The participants seemed enthusiastic about participating in this activity.

This health education activity was attended by the general public who were the main targets, and were also attended by posyandu cadres and village officials. The participants seemed enthusiastic about participating in the activity from start to finish. The enthusiasm can be seen from the participants' activeness in answering questions, discussing, and sharing personal experiences related to dengue problems that have been experienced by their families or neighbors. This shows that dengue is still common in the region and needs special attention, especially in terms of knowledge and prevention efforts.

The material presented in this activity included an explanation of dengue disease, how it is transmitted through the bite of Aedes Aegypti mosquitoes, the difference between Aedes mosquitoes and ordinary mosquitoes, signs and symptoms of dengue fever, phases of dengue disease, complications if not treated quickly, and prevention through the 3M Plus movement (Drain, Cover, Bury, plus avoiding mosquito bites). Participants were also given education on the importance of maintaining environmental cleanliness, eliminating standing water, closing water reservoirs tightly, burying or recycling used items that can hold water, and using mosquito repellents or mosquito nets to avoid mosquito bites.

Based on the results of the Pre-Test and Post-Test, it is known that there is an increase in participants' knowledge about dengue prevention after being given health education. Participants who previously did not know how to prevent dengue effectively after this activity became more aware of the importance of the 3M Plus movement and were able to identify early symptoms of dengue. In addition, there was an increase in participants' positive attitudes in maintaining environmental cleanliness, such as regularly draining the bathtub, closing water reservoirs, and cleaning the yard from standing water. These results are in line with the research of Nurjanah et al. (2021) which shows that health health education is effective in increasing public knowledge and attitudes about dengue prevention. Recent research by Sari et al. (2022) also shows that community-based education carried out repeatedly can increase community compliance with 3M Plus practices by up to 78%.

A significant increase in knowledge in this activity showed that the method of interactive lectures and discussions using PowerPoint media was quite effective in conveying health information to the public. This is in accordance with research by Sulistyawati et al. (2021) which states that the use of audio-visual media in health education can increase public understanding

of dengue prevention. Similar results were also found by Wijayanti and Kurniawan (2021), who stated that the use of interactive visual media such as animated videos can increase participants' knowledge retention by 40% compared to print media. Visual media helps participants to more easily understand and remember the information conveyed, especially related to the description of the Aedes Aegypti mosquito, the mosquito life cycle, and the stages of dengue prevention. However, there are still some weaknesses in the implementation of activities. One of them is the presentation media that is not clearly visible to all participants due to space limitations and suboptimal lighting. In addition, the unavailability of supporting media such as leaflets or brochures caused participants to not have reading materials that could be taken home as a reminder of the material that had been delivered. Some participants also lacked focus during the lecture session due to the atmosphere of the activities carried out outdoors and the lack of supervision from the committee. This is in line with the findings of Lestari et al. (2020), that the success of health education is not only influenced by delivery methods, but also by a conducive learning environment and the availability of supporting media.

Overall, the health education activity on dengue prevention went well and had a positive impact in the form of increasing participants' knowledge and attitudes towards the importance of maintaining environmental cleanliness and carrying out the 3M Plus movement. This activity is also a means for the community to be more open in discussing health issues that have received less attention. With activities like this, it is hoped that the public can be more aware and concerned about the importance of dengue prevention and immediately carry out an examination if they experience fever symptoms accompanied by signs of dengue. Research by Nguyen et al. (2023) supports a community participation-based approach, where active citizen involvement in early detection and larval prevention has been shown to reduce dengue incidence by up to 35% in a single program year.

In addition, this health education activity is expected to be an example for other regions to carry out similar activities on a regular basis. The active involvement of posyandu cadres and village officials is also the key to the sustainability of the program, because they play a key role in the community. Findings by Rahman et al. (2022) confirm that the support of health cadres plays an important role in maintaining long-term dengue prevention behaviors through routine larval monitoring activities. In the future, this activity can be developed by adding direct practices, such as how to monitor mosquito larvae (jumantik), the use of abate in water reservoirs, and the use of more interesting educational media, so that participants can more

easily understand and remember the material provided. According to research by Budiarto et al. (2024), the combination of education and direct practice has been proven to improve the community's ability to identify and eliminate mosquito breeding sites.

With continuous efforts, it is hoped that the incidence of dengue can be reduced and the degree of public health will increase. In addition to increasing knowledge and attitudes, this activity also has the potential to have a wide social impact. People who have received education are expected to be able to transmit this knowledge to family members, neighbors, and the surrounding community. Thus, these activities are not only beneficial to individuals, but also to the wider social environment. This hope is supported by the theory of health behavior change which states that knowledge is a very important domain for the formation of a person's actions (Astuti & Dharmawan, 2020). In addition, the Health Belief Model (HBM) theory reinforced by the study of Kumar et al. (2023) explains that perceptions of vulnerability and preventive benefits greatly determine individual actions in avoiding dengue disease.

This health education activity on dengue prevention not only provides benefits for the community as recipients of information, but also for students and posyandu cadres as implementers and companions of activities. The success of this activity is expected to be a motivation to continue to implement similar programs with a wider scope and more innovative methods to support the improvement of public health and the realization of dengue-free villages. The importance of this sustainable activity is also emphasized by the World Health Organization (2022) which recommends a community approach in the prevention and control of dengue. This health education activity on dengue prevention provides significant benefits for the community, students, and Posyandu cadres. The success of this program, which achieved a 52% increase in knowledgesurpassing the 40% targetdemonstrates that the method used was appropriate for the community’s characteristics. This achievement was further supported by community leaders and cadres, aligning with Zhang et al. (2021), who state that social support is a key factor in the success of local health programs. The significant improvement in knowledge serves as a critical foundation for shaping positive community attitudes toward dengue prevention. This shift in attitude is expected to bridge the gap toward sustainable health practices, specifically driving consistent actions in maintaining environmental cleanliness and practicing the "3M Plus" movement independently.

D. CONCLUSION

From the results of data analysis carried out after education on the prevention and introduction of dengue in RW 08 East Sidomulyo Village, there was an increase in knowledge by 52%. This activity shows that health education through health education is effective in improving public knowledge, attitudes, and actions in preventing dengue through the 3M Plus movement and recognizing the early symptoms of dengue. This health education activity has achieved its goal of improving the community's ability to recognize, prevent, and control dengue. Recommendations for the next activities are to conduct continuous mentoring and evaluation of community behavior in the long term, as well as provide educational media that can be taken home such as leaflets or brochures so that the community can continue to remember and apply the material that has been delivered.

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