

Analysis of the prevention of dengue fever in the community

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ABSTRACT

Dengue Hemorrhagic Fever (DHF) is a major health problem that causes an extraordinary number of incidents in Indonesia. Fever is an infectious disease that still infects people throughout the world. The aim of this research is to analyze the prevention of dengue fever in society, especially in the Majalengka Regency. The research used is qualitative research, using phenomenological methods. Phenomenology requires seeing and hearing deeper explanations of events as well as personal understanding of these events. Based on the findings of the study, prevention of dengue fever in the community, particularly in Majalengka Regency, is as follows: 1) Early Warning and Prevention System for Dengue Fever, PSN is a safer, more affordable and easier eradication technique. Efforts to control dengue fever vectors are mostly directed at this program because it is government policy, although the success of this approach is very dependent on community involvement; 2) The Role of the Family in Preventing DHF, 89.1% of those surveyed said they did not take any preventive measures. DHF is recommended because the majority of respondents maintain water reservoirs with existing plants, there are cans scattered in the yard and house, there are larvae in the water reservoirs, the water reservoirs are not closed, and mosquitoes develop; 3) Carrying out tracking and assessment. From the results of in-depth interviews, it shows that the implementation of monitoring and evaluation is not good, where the implementation is only 45%. Informants from the health service and the Community Health Center gave the answer: carrying out monitoring and evaluation.

Keywords: Dengue Fever; Aedes Aegypti mosquito; Prevention; Infectious

ABSTRAK

Demam Berdarah Dengue (DBD) merupakan masalah kesehatan utama yang menyebabkan angka kejadian luar biasa di Indonesia. merupakan penyakit menular yang masih menjangkiti masyarakat di seluruh dunia. Tujuan penelitian ini adalah untuk menganalisis pencegahan penyakit demam berdarah pada masyarakat, khususnya di Kabupaten Majalengka. Penelitian yang digunakan adalah penelitian kualitatif, dengan metode fenomenologi. fenomenologi memerlukan melihat dan mendengar penjelasan yang lebih mendalam tentang peristiwa-peristiwa serta pemahaman pribadi terhadap peristiwa-peristiwa tersebut. Berdasarkan hasil analisis yang telah dilakukan, Pencegahan Penyakit Demam Berdarah Pada Masyarakat, khususnya di Kabupaten Majalengka adalah: 1) Sistem Peringatan Dini dan Pencegahan demam berdarah, PSN merupakan teknik pemberantasan yang lebih aman, terjangkau, dan mudah. Upaya pengendalian vektor demam berdarah lebih banyak diarahkan pada program ini karena merupakan kebijakan pemerintah, meskipun keberhasilan pendekatan ini sangat bergantung pada keterlibatan masyarakat; 2) Peran Keluarga dalam Pencegahan DBD, 89,1% dari mereka yang disurvei mengatakan mereka tidak melakukan tindakan pencegahan apa pun. DBD dianjurkan karena mayoritas responden memelihara tempat penampungan air dengan tanaman yang ada, terdapat kaleng yang tersebar di pekarangan dan rumah, terdapat jentik pada bak penampungan air, tempat penampungan air tidak ditutup, dan terjadi perkembangan nyamuk; 3) Melakukan Pelacakan dan Penilaian, Dari hasil wawancara mendalam menunjukkan implementasi itu monitoring dan evaluasinya kurang baik dimana implementasinya baru 45%, Informan dari dinas kesehatan dan Puskesmas memberikan jawabannya melakukan pemantauan dan evaluasi.

Kata kunci: Demam Berdarah; Nyamuk Aedes Aegypti; Pencegahan; Menular.

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INTRODUCTION

A serious health problem contributing to a high number of cases in Indonesia is dengue hemorrhagic fever (DHF). Humans contract dengue fever through the bite of an infected *Aedes* mosquito, specifically the *Aedes aegypti* mosquito (Yuningsih, 2019). DHF, also known as Dengue Hemorrhagic Fever, remains a global infectious disease, with the World Health Organization (WHO) estimating a significant increase in the incidence of dengue fever worldwide over the last few decades (Wang et al., 2020). Dengue fever affects people of all ages and has the potential to recur annually. As of July 2023, the Ministry of Health of the Republic of Indonesia reported 35,694 cases of dengue fever, resulting in fatalities from the virus transmitted through mosquito bites, primarily by *Aedes aegypti* (Vikantara et al., 2023).

First identified in Manila, Philippines, in 1953, dengue fever has since spread globally. A study by the Centers for Disease Control and Prevention (CDC) in the United States revealed an annual global reporting of 50 million to 100 million cases of dengue fever (Adisasmito, 2021). Dengue Hemorrhagic Fever, identified in 1968 in Surabaya and Jakarta, has become a nationwide concern, particularly during the 1998 outbreak, marking the largest incidence of dengue fever in Indonesia to date, with an incidence rate (IR) of 35.19/100,000 people and a case fatality rate (CFR) of 2%. Dengue fever outbreaks persist as a health problem in urban and semi-urban areas, influenced by vector behavior and their interactions with various environmental factors such as climate, vector control, and urbanization (Brahmastha et al., 2023). Accurate estimates of vector density, especially *Aedes aegypti* in urban and semi-urban areas, remain elusive (Brahmastha et al., 2023). Climate elements like temperature, humidity, and rainfall play a crucial role in the spread of dengue fever, with higher air humidity during the rainy season favoring mosquito survival (Farich et al., 2020).

According to information from the Majalengka District Health Service, there were 356 incidents of dengue hemorrhagic fever (DBD) in the Majalengka area from January to October 2022, resulting in four known deaths. The four sub-districts with the highest dengue cases in 2022 are Majalengka District (16 cases), Cigasong District (47 cases), Sumberjaya (46 cases), and Ligung (39 cases). The government, especially the Health Service, has implemented countermeasures. The Ministry of Health has introduced dengue fever prevention and control programs, including first aid for dengue fever patients referred to hospitals, ongoing community counseling, fumigation of the homes of dengue fever victims, placing abate powder in water reservoirs, and involving the community in eradicating mosquito nests (PSN) (Gusriani & Firdaniza, 2021). In promoting dengue fever prevention programs, community involvement has been emphasized, aiming to develop active participation in efforts to prevent dengue fever (Budiman & Oetami, 2020). Despite current efforts, changing the status of several endemic areas in a region to non-endemic areas remains a challenge. The current approach to preventing and eradicating dengue fever involves the effective eradication of disease-transmitting mosquito nests (PSN-DBD) through the 3 M movement (C. Yboa & J. Labrague, 2013). This necessitates the involvement of all levels of society, emphasizing the need for community mobilization to continuously and comprehensively implement PSN-DBD efforts. The success of these actions is indicated by the increased larvae-free rate (ABJ) determined through routine larval inspections (PJB) (Syamsul et al., 2018). The sustainability of ABJ is crucial until the threat of dengue fever in residential areas can be fully overcome, especially with ongoing PSN activities.

To address this issue, there is a need to enhance health promotion through health education initiatives. The 4M Plus program encompasses various actions, such as cleaning and securely sealing water reservoirs, discarding used items, measuring and monitoring larvae, managing the environment to maintain cleanliness, and more. In addition to implementing 4M Plus, environmental factors also play a significant role in influencing dengue fever, with waste management practices being a crucial consideration. Poor housekeeping practices can create breeding grounds for mosquitoes. A common method of waste disposal involves throwing it in landfills, burning it, or discarding it into rivers (Suwanbamrung et al., 2010). The community's practice of burning waste often involves waiting for a substantial amount of waste to accumulate before disposal. During this waiting period, when trash is left outdoors and exposed to the elements, mosquitoes may hatch from their eggs, becoming active upon hatching. If not processed within 12 days, these mosquito eggs will mature into adult mosquitoes, contributing to an increased mosquito population (Susilowati & Cahyati, 2021).

As an integral aspect of community mobilization for action, behavior modification is a strategic approach in dengue fever prevention. The concept of group counseling intervention takes the form of KIE (communication, information, and education), with the goal of fostering awareness. The challenge lies in raising awareness and altering thought patterns to facilitate behavior modification and empower individuals to actively participate in preventing dengue fever (Sulidah et al., 2021). Building upon the presented explanation, this article aims to provide an analysis of dengue fever prevention within the community, particularly in the Majalengka area, West Java.

RESEARCH METHOD

The research employed qualitative methods, utilizing phenomenological approaches. Phenomenology involves exploring and understanding events on a deeper level, considering personal interpretations of these events (Sugiyono, 2016). The purpose of this study is to interpret and explain individuals' life experiences, including their interactions with others and their environment. Data collection methods included in-depth interviews and observations, with residents of the Majalengka district serving as informants, providing essential information for the research.

RESULTS AND DISCUSSION

Dengue hemorrhagic fever (DHF) is an environmental disease influenced by urbanization, climate change, increasing population density and mobility, and a lack of understanding about maintaining environmental cleanliness. The tropical weather in the Philippines is conducive to developing dengue fever (Sari et al., 2022). Dengue fever results from infection with a virus species from the Flaviviridae family, specifically the Flavivirus genus, comprising serotypes DEN 1, DEN 2, DEN 3, and DEN 4. Cases of dengue fever and its transmission tend to increase, particularly during the rainy season. According to the Data and Information Center of the Indonesian Ministry of Health (2016), the rainy season provides an ideal environment for developing and breeding mosquitoes. Throughout this period, the density of *Aedes aegypti* larvae increases due to the presence of containers containing stagnant water (Suryowati et al., 2018).

The primary objective of the PSN (Mosquito Nest Eradication) movement, employing the 3M technique, is to eliminate mosquito nests and prevent mosquito eggs from hatching into larvae and adult mosquitoes. The life cycle of the *Aedes* mosquito *Aedes aegypti* involves transformations from egg to larva, pupa, and imago (Hijroh et al., 2017). Although the image represents the adult mosquito, the larva is in a smaller developmental stage.

The growth and maturation of eggs into adult mosquitoes typically take 7–14 days, but this process may occur more rapidly under ideal humidity and temperature conditions.

Based on the results of the analysis conducted, the strategies for preventing dengue fever in the community, especially in Majalengka Regency, include:

Early Warning and Prevention System for Dengue Fever

The PSN (Mosquito Nest Eradication) program is a crucial initiative. The government employs a communication method called Behavior Change Communication (KPP) or Behavioral Impact Method Communication (COMBI) to disseminate information and aims to change behavior based on local socio-cultural wisdom. To halt the disease's spread, efforts focus on eradicating mosquito nests (PSN), fogging, and breaking the mosquito-borne disease transmission chain. PSN is considered a safer, more affordable, and more accessible eradication technique. While the success of this approach heavily relies on community involvement, health advice plays a crucial role in raising awareness and building individual capacity through instructional or learning techniques to change or influence behavior independently and in groups within society (Said et al., 2018). As reported by interviewed officers, the 3M Plus PSN Program faces implementation challenges. It is perceived as less effective than fogging, which is still considered by many to be the most effective method to stop the spread of dengue fever (Juliasih et al., 2022). Fogging requests are often made at Community Health Centers (SUTRIYAWAN, 2021). Educating the public about dengue fever contributes to increased awareness and community involvement in combatting the disease.

In-depth interviews indicate an implementation success rate of 88% for the early warning and control system for dengue fever. Respondents contribute to the program's effectiveness, including community involvement in addressing dengue fever, focused fogging operations, pre-season disease prevention, and response to extraordinary events. However, challenges in community health centers include limited access to hospital data on dengue fever cases, delayed epidemiological investigations due to chained information, and difficulty conducting studies when hospitals need to promptly provide case reports, especially regarding patient's parents' names and place of residence.

Interview findings also reveal several issues in reporting dengue fever cases by health services. There needs to be more socialization and reinforcement at the hospital management level and in other sub-district areas. Additionally, only one person manages the dengue fever program in health services, leading to varying reporting intensities among hospitals. Some hospitals report late, while others are challenging to note and require regular inquiries. Changes in hospital surveillance managers can disrupt the KD-RS Application and must be addressed by the health service. Dengue fever outreach and surveillance are interconnected, involving simultaneous monitoring and assessment of continuous dengue fever surveillance conducted three times a year through conferences and Community Health Center Performance Evaluation.

The Role of Family in Preventing DHF

Despite the absence of drugs that can eradicate the dengue virus and the experimental stage of vaccine development, controlling infectious vectors like *Aedes aegypti* remains the primary approach. Both adult mosquitoes and the immature stages (eggs, larvae, pupae) of this vector can be controlled (Himah & Huda, 2018). The main focus of efforts to prevent and eradicate dengue fever lies in handling the *Aedes aegypti* mosquito, the disease's primary vector. The community recommends physical or chemical eradication of mosquito nests (PSN) (Farich et al., 2020).

Research findings indicate that only a few respondents take action to prevent dengue fever, as reflected in the small percentage of respondents who close water reservoirs, eliminate mosquito breeding sites, and remove larvae from water reservoirs. A significant 89.1% of those surveyed reported not taking any precautions against DHF. Most respondents maintain water reservoirs with existing plants, scattered cans in the yard and house, larvae in the water reservoirs, open water reservoirs, and mosquito development. Regularly cleaning shelters can help control the larval population and prevent their development into adult mosquitoes. Minimizing water storage frequency to once a week is advisable to reduce the risk of dengue fever transmission.

The PSN 3M Plus movement requires the involvement of all levels of society, as residential areas often serve as breeding grounds for mosquitoes (Brahmastha et al., 2023). In residential areas, dengue fever transmitters are typically abundant. Health education is crucial in increasing knowledge and skills through learning or teaching techniques to change or influence people's behavior at the individual, group, and community levels (Pham, 2023). Public education about dengue fever is a crucial objective of health education, empowering individuals to use information obtained from counseling to change behavior and attitudes, ultimately improving their health (Anggraini & Siddiq, 2018). Raising awareness about dengue fever contributes to increased public understanding of the issue, identifying societal challenges, and promoting community involvement in preventing dengue fever.

Carrying out Tracking and Assessment

From the results of in-depth interviews, it is evident that the implementation of monitoring and evaluation is suboptimal, with a rate of only 45%. Informants from the health service and the Community Health Center reported conducting monitoring and evaluation. However, the Community Health Center in the Majalengka area did not engage in these activities due to the infrequent dengue fever incidents. The health department monitors and evaluates every quarter, while other Community Health Centers do it every month. Observing the control scheme through operational technical assistance is aimed at managing the P2 DBD program in city/district offices and their staff, as well as in Community Health Centers and their personnel in areas with high cases of DBD, making efforts to reduce dengue fever.

Based on the results of interviews and observations, a consistent pattern in the rainfall index for each dengue fever incident throughout the year is apparent. Specifically, the rainfall index increases in the first and second quarters, accompanied by a high number of dengue cases, while in the third and fourth quarters, there tends to be a decrease in dengue cases. Although this pattern persists, there has been an increase in the incidence of dengue fever over the past six years in recent months. This aligns with Rasmanto's research findings, which indicate comparable patterns. However, the mosquito population in Indonesia increases during the rainy season. Storing water in tubs and drums during the dry season contributes to the year-round presence of mosquitoes and their larvae, contributing to a large population. Despite the pattern remaining the same, caution is necessary, considering the increasing unpredictability of seasons and variations between wet and dry seasons.

The overall findings of this study indicate generally safe conditions. However, policymakers and program organizers in DBD must prepare themselves before the annual increase in cases, particularly from the beginning to the end of February. Aggressively promoting the mosquito nest eradication (PSN) program through counseling and larva monitoring (*jumantik*) is crucial to preventing incidents and reducing case numbers from March onward. According to research findings (Adisasmito, 2021), PSN behavior influences the prevalence of dengue fever.

CONCLUSIONS AND SUGGESTIONS

Based on the results of the analysis that has been conducted, the Prevention of Dengue Fever in the Community, especially in Majalengka Regency, involves: 1) Early Warning and Prevention System for Dengue Fever (PSN): PSN is considered a safer, more affordable, and more accessible eradication technique. Efforts to control dengue fever vectors are primarily directed at this program as it aligns with government policy, although the success of this approach is highly dependent on community involvement. 2) The Role of the Family in Preventing DHF: 89.1% of those surveyed said they did not take any preventive measures. DHF is recommended because the majority of respondents maintain water reservoirs with existing plants, there are scattered cans in the yard and house, there are larvae in the water reservoirs, the water reservoirs are not closed, and mosquitoes develop; 3) Carrying Out Tracking and Assessment: From the results of in-depth interviews, it shows that the implementation of monitoring and evaluation is not exemplary, where the implementation is only 45%. Informants from the health service and the Community Health Center gave the answer: carrying out monitoring and evaluation.

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