



The Role of Community Health Nurses in Handling Dengue Fever Outbreaks in Residential Areas

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ABSTRAK

Controlling Dengue Hemorrhagic Fever (DHF) outbreaks is a complex public health challenge that requires collaboration from various stakeholders, including community health nurses. This study aims to assess the role of these nurses in managing DHF outbreaks in residential areas. Using a descriptive qualitative approach, the research involved in-depth interviews with community health nurses and direct field observations to gather comprehensive data. The findings revealed that community health nurses are crucial in preventing and controlling DHF outbreaks. Their responsibilities include educating the community about DHF prevention, identifying and managing mosquito breeding sites, and implementing environmental interventions. They also play a vital role in early detection of DHF cases and coordinate with government and health institutions for effective prevention and control measures. Furthermore, community health nurses provide counseling and training to raise awareness about DHF dangers and promote preventive actions. They are instrumental in encouraging community participation in environmental management to reduce mosquito habitats. This study emphasizes the need for ongoing support and capacity building for community health nurses to enhance their effectiveness. In conclusion, collaboration among health workers, communities, and stakeholders is essential to control dengue outbreaks and minimize the disease's impact.

Keywords: Community Health Nurses, Dengue Fever (DF), Population

INTRODUCTION

Dengue Hemorrhagic Fever (DHF) is one of the infectious diseases that poses a serious health challenge in various tropical countries, including Indonesia (Saragih, 2019). This disease is caused by the dengue virus which is transmitted through the bite of the *Aedes aegypti* mosquito, which breeds in environments with suboptimal sanitation conditions (Sofia, 2024). The spike in DHF cases that occurs especially during the rainy season shows the urgency of implementing comprehensive and effective prevention and control strategies (Tazkiyati, 2024). In efforts to control DHF, the community approach plays an important role, with community health nurses as the main actors in its implementation (Apiyah, 2024). Dengue Hemorrhagic Fever (DHF) is an infectious disease that continues to be a global health challenge, due to the fact that no effective drugs or vaccines have been found to treat it. This disease is transmitted through the bite of the *Aedes aegypti* mosquito, which carries the dengue virus (Prayitno, 2020). The *Aedes*



aegypti mosquito lives at temperatures between 8°C and 37°C, so it can breed in various supportive environments (Agustin, 2017). Places such as bathtubs, jars or drinking water storage containers, used cans, used drinking water plastic, used tires, and other man-made containers provide ideal conditions for this mosquito to lay eggs and breed. The environment can be a significant breeding ground for mosquitoes, increasing the risk of dengue fever (Oroh, 2020). To overcome this problem, a comprehensive approach is needed that includes environmental management to reduce mosquito breeding grounds as well as community education efforts to raise awareness of the importance of maintaining cleanliness and avoiding water accumulation (Permatasari, 2024). These efforts are important to reduce the prevalence of the disease and prevent a wider outbreak, and require cooperation between the government, community, and health sector.

Data from the World Health Organization (WHO) shows that the number of dengue cases has increased significantly from decade to decade. During the period 1996-2005, the number of cases recorded was 1.3 million. However, in the following decade, 2006-2015, this figure increased to 5.4 million cases. This trend reflects the increasingly widespread spread of the disease at the global level. The latest mathematical modeling estimates that each year there are between 50 and 100 million cases of dengue fever worldwide, with the greatest impact seen in Asia, Latin America, and Africa. The increase in the number of cases can be influenced by various factors, such as climate change, urbanization, and environmental conditions that affect the habitat of disease vectors (Wowor, 2017). To overcome this health threat, a comprehensive approach is needed, including vector control, public education, and strengthening health systems in affected areas. These steps are important to reduce the spread and impact of dengue fever globally.

Community health nurses not only act as medical personnel, but also as agents of social change who serve as a liaison between the formal health system and the community. This role is very important, especially in outbreak situations, where active community participation is needed to prevent the spread of disease (Chusna, 2020). The educational task of community health nurses is to increase public awareness of the importance of maintaining environmental cleanliness and implementing independent preventive measures at home (Mufizarni, 2023). The education provided includes actions such as draining, covering, and burying containers that can become breeding grounds for mosquitoes, known as the 3M approach (Draining, Covering, Burying). Community health nurses also provide information on the early symptoms of dengue fever, so that the community can immediately get the necessary medical care, which has the potential to save lives and prevent more serious complications. In the educational role, community health nurses also play a role in health monitoring in residential areas (Sembiring, 2023). This monitoring includes identifying risk areas that have the potential to become mosquito nests, as well as conducting surveillance to detect cases of dengue fever. Systematic monitoring allows for early intervention, such as fogging, abate distribution, and increased environmental cleanliness campaigns.

Community health nurses play a direct role in efforts to break the chain of dengue virus transmission (Hursepuny, 2018).

The Southeast Asia region records the highest number of dengue fever (DHF) cases each year (Yustati, 2024). According to Syahria, Kaunang, and Ottay (2015), this region ranks first in terms of the number of DHF cases. In 2008, the number of cases in Southeast Asia and the Western Pacific was recorded at more than 1.2 million. This figure increased to 3 million cases in 2013, as reported by Mulyati, Majid, and Ibrahim (2013). Currently, DHF in this region is the leading cause of hospitalization and the highest cause of death among children. Among countries in the Southeast Asia region, Indonesia reports the highest number of DHF cases, especially among children (Soedarto, 2011). This condition emphasizes the importance of increasing effective prevention and intervention efforts to address the impact of this disease in the most affected areas. Active participation in efforts to combat and prevent the spread of dengue fever (DBD) is the responsibility of various levels of society (Nurulhuda, 2024). The role of health cadres is also very important in creating a clean environment free from the potential for the development of mosquitoes that cause DBD (Giyantolin, 2019).

A strategic step that can be implemented is the formation of special officers tasked with monitoring the presence of mosquito larvae in the surrounding environment, known as juru pemantau jentik (Jumantik). These officers act as the front line in preventing dengue fever, with the main task of conducting routine inspections in places that have the potential to become mosquito nests, such as puddles around houses, parks, and other public areas. Jumantik also has the responsibility to provide education to the public about the importance of maintaining environmental cleanliness and eliminating water sources that can become breeding grounds for mosquitoes. This activity is expected to increase public awareness of the importance of preventing dengue fever, so that real action in preventing the spread of this disease can be taken together. This approach is not only effective in monitoring and controlling mosquito populations, but also contributes to building collective awareness of the importance of joint efforts in maintaining environmental health.

Prevention of dengue fever (DHF) requires a primary focus on controlling and reducing the population of the vector mosquito, namely *Aedes aegypti* (Cakranegara, 2021). Methods can be applied to achieve this goal, with the environmental approach being one of the main methods (Pertiwi, 2022). This approach includes several steps, such as Mosquito Nest Eradication (PSN), solid waste management, adjustment of mosquito breeding sites formed by human activities, and improvement of home design to reduce mosquito breeding sites. The most efficient approach to preventing DHF involves a combination of these methods in a strategy known as "3M Plus." (Arfianto, 2019).

This strategy consists of three main steps: covering (covering water reservoirs), draining (emptying water reservoirs), and stockpiling (storing items that can hold water well). Additional steps or "pluses" in this strategy include raising larvae-eating fish, spreading larvicide, using mosquito nets when sleeping, installing screens on windows and doors, spraying insecticides, using

repellents, and placing mosquito coils. Regular inspection of larvae is also an important part of this prevention. All of these actions need to be adjusted to local conditions to ensure the effectiveness of dengue control and prevention (Nasution, 2024).

Mosquitoes that have been infected with the dengue virus can transmit the virus to healthy humans through bites (Mosesa, 2016). This process begins when mosquitoes, after sucking blood from an infected individual, carry the virus in their bodies. Mosquitoes bite other people, the virus moves into the bloodstream of the person bitten (Handayani, 2017). This transmission cycle continues, because infected mosquitoes can continue to spread the virus to the next healthy individual. The dengue virus, carried by the *Aedes aegypti* and *Aedes albopictus* mosquitoes, can cause varying degrees of disease severity, from mild fever to more serious dengue hemorrhagic fever (DHF) (Putra, 2021). The cycle of virus transmission through mosquitoes is very important for disease prevention and control strategies (Judha, 2024). Therefore, controlling the mosquito population and preventing mosquito bites are the main steps in stopping the spread of the virus and protecting public health.

Prevention and control of dengue fever (DHF) is usually carried out with a primary focus on breaking the chain of transmission through controlling the *Aedes aegypti* mosquito (perangin, 2023). This mosquito is the main vector for the spread of the dengue virus that causes DHF (Sembiring, 2021). However, it is important to note that *Aedes albopictus*, another mosquito species, can also transmit the same disease. Both species of mosquitoes have similar habits in choosing habitats, namely places that store clean water. These habitats include various water reservoirs in the household environment and its surroundings, such as bathtubs, water drums, jars, buckets, used cans, flower vases, and used bottles. In addition, holes in rocks or other areas that collect clear water can also be breeding grounds for mosquitoes. With the existence of these various places, prevention efforts must be carried out comprehensively by eliminating these places and implementing effective mosquito control methods. To control these two mosquito species, actions such as regular monitoring and cleaning of water reservoirs, use of larvicides, and implementation of other control methods are essential. Empowering communities in implementing Mosquito Nest Eradication (PSN) activities is also an important strategy in preventing mosquito breeding and reducing the risk of dengue transmission. By making consistent and integrated efforts, it is hoped that the incidence of dengue fever can be reduced and public health can be protected more effectively.

Monitoring tasks, community health nurses also have an important role in curative actions. They not only provide initial care for patients suspected or confirmed of dengue fever, but also ensure that patients receive appropriate referrals to more complete health facilities. Community health nurses also provide psychosocial support to patients and their families, help them understand the recovery process, and monitor the patient's health development periodically.

The implementation of this role is inseparable from the various challenges faced by community health nurses. Some of the main challenges identified include limited resources, both in terms of health personnel and equipment, as well as community resistance to certain health programs. Lack of community understanding and participation, especially in areas with low levels of education, is also a significant obstacle. In addition, the wide scope of work areas with a limited number of nurses results in less than optimal monitoring and intervention.

The *Aedes aegypti* mosquito is the main vector in the transmission of dengue fever, breeding in environments with high humidity, heavy rainfall, and puddles found both inside and outside the home (Supartha, 2018). These conditions create an ideal habitat for mosquitoes to breed. In addition, other factors that contribute to the spread of dengue fever include poor environmental sanitation, unhealthy community behavior, and activities inside the home during the day. Population mobility is a very significant factor in the spread of the dengue virus, where the movement of people from one area to another can accelerate the transmission process.

Dengue fever, caused by the dengue virus, can affect all age groups, from children to adults. Symptoms experienced by dengue fever sufferers vary widely, from mild fever to more serious symptoms such as vomiting or gastrointestinal bleeding. Generally, infants and children are the most vulnerable groups to this disease, and the symptoms that often appear are skin rashes. This condition requires high alertness from the community and comprehensive prevention efforts, including improving sanitation, controlling mosquitoes, and reducing unnecessary population mobility during the outbreak season. Alertness to early symptoms is also very important to help detect and treat this disease more effectively, especially in vulnerable age groups (Warsidi, 2009).

Symptoms of dengue hemorrhagic fever (DHF) generally begin with a sudden fever, accompanied by severe headaches and pain in the joints and muscles, known as myalgia and arthralgia. One of the typical signs of this disease is the appearance of a bright red skin rash. This rash usually first appears on the lower body and can spread to almost cover the entire surface of the skin. Other symptoms that may arise are gastritis, which is characterized by abdominal pain, nausea, vomiting, or diarrhea. Symptoms of dengue fever can be accompanied by high body temperature, bleeding, thrombocytopenia (a decrease in the number of platelets in the blood), and hemoconcentration (an increase in the concentration of red blood cells). These symptoms indicate a serious disorder in the circulatory system that can potentially cause further complications. In some cases, dengue fever can develop into dengue shock syndrome, which is a critical condition with a high mortality rate if not treated quickly and appropriately (Siregar, 2005). Dengue shock syndrome is the most severe form of the disease, in which sufferers experience a drastic decrease in blood pressure, require intensive medical care to overcome fluid loss and maintain hemodynamic stability. It is important to recognize and treat dengue fever symptoms promptly to prevent the development of more serious conditions (Usman, 2017). Community health

nurses demonstrate a high level of commitment in carrying out their duties. They continue to seek ways to overcome existing challenges, such as by taking a more personal approach to the community, building partnerships with community leaders and local institutions, and utilizing communication technology to disseminate health information. In some cases, nurses also innovate by adapting new methods that are more effective in controlling the spread of dengue fever in residential areas.

This study aims to explore in depth the role of community health nurses in managing dengue fever outbreaks in residential areas, focusing on the strategies used, the effectiveness of interventions, and the challenges faced. In addition, this study also aims to provide insight into how community health nurses can be more empowered in managing dengue fever outbreaks more effectively, as well as providing policy recommendations that can support these efforts. Thus, this study is expected to contribute to the development of more effective dengue fever control strategies in the future, as well as improving the quality of life of people in areas vulnerable to this disease. Based on the results of the survey above, the researcher wants to conduct a study on "The Role of Community Health Nurses in Managing Dengue Hemorrhagic Fever Outbreaks in Residential Housing".

METHOD

This study uses a qualitative approach with a case study method, which aims to examine in depth the role of community health nurses in controlling Dengue Hemorrhagic Fever (DHF) outbreaks in residential areas. The selection of the research location was carried out purposively, by selecting a housing complex that had experienced a DHF outbreak and involving community health nurses who were active in the control efforts. This location was selected based on the relevance of the case and the direct involvement of nurses in DHF control programs. Data in this study were collected through three main techniques, namely in-depth interviews, direct observation, and document analysis. In-depth interviews were conducted with community health nurses who were directly involved in controlling the DHF outbreak. The interview guide used was semi-structured, covering key aspects such as the role of nurses in providing education to the community, monitoring environmental health, implementing health interventions, and challenges faced during the control process.

This interview aims to gain an in-depth understanding of the experiences, views, and strategies implemented by community health nurses. Direct observation was conducted to directly monitor how community health nurses carry out their duties in the field. This observation includes various activities such as community outreach, environmental surveillance, and direct actions such as fogging and abate distribution. Through this observation, researchers can obtain empirical data that enrich the results of the interviews, as well as understand the interaction between nurses and the community in the context of controlling dengue fever outbreaks. Document analysis was also conducted as an integral part of data collection. The documents analyzed included dengue

fever prevention and control programs that have been implemented in the area, reports on community health nurse activities, and local policies related to dengue fever control.

This document analysis aims to gain an understanding of the framework, strategies used, and outcomes of the programs that have been implemented. The data that has been collected is then analyzed using a thematic approach. The thematic analysis process includes data coding, identification of key themes, and interpretation of results in the context of public health theory and practice. Through this analysis, patterns related to the role of community health nurses, outbreak response strategies, and challenges faced can be identified and understood in depth. This study is expected to provide comprehensive insights into the strategic role of community health nurses in responding to dengue outbreaks, as well as recommendations to improve the effectiveness of future response programs.

RESULT AND DISCUSSION

The role of community health nurses in handling Dengue Hemorrhagic Fever (DHF) outbreaks in residential areas has very diverse and crucial dimensions. One of the main aspects of this role is as an educator. Community health nurses routinely conduct outreach to the community to raise awareness about the importance of maintaining environmental cleanliness and implementing preventive measures. This education program includes various activities, such as direct outreach to homes, distribution of information brochures, and delivery of materials through social media or community forums. The focus of this education is on the implementation of 3M, namely draining places that have the potential to become mosquito nests, closing water reservoirs, and burying unused items. Consistent and continuous outreach, community health nurses have succeeded in increasing community knowledge about ways to prevent DHF.

This effort has proven effective in changing people's behavior towards a healthier and cleaner lifestyle (Hayati, 2020). People who have received sufficient information are more likely to implement these preventive measures, which in turn reduces the population of *Aedes aegypti* mosquitoes in their environment. This increased awareness contributed directly to the decline in the incidence of dengue fever in the residential area where the study was conducted. Another aspect of the role of community health nurses is health monitoring. Nurses routinely conduct surveillance to detect early signs of dengue fever. This activity includes checking the health of residents and monitoring the environment to identify potential mosquito breeding grounds. The health conditions of the community and the environment, nurses can detect an increase in cases of fever or other symptoms that may indicate an outbreak.

The data collected during this surveillance is very important to determine the right intervention steps, such as fogging or additional counseling on environmental hygiene. The role of community health nurses also functions as a facilitator in coordinating efforts to control the outbreak. Collaboration between

nurses, health centers, health offices, and local communities is a key element in the effectiveness of the control program. Nurses organize various activities, such as mass hygiene campaigns, distribution of abate, and fogging, and ensure that these efforts are carried out according to the established plan and schedule. This collaboration helps create the synergy needed to overcome the outbreak in a comprehensive and coordinated manner.

The role of community health nurses is very important, they face several challenges in carrying out their duties. Limited resource support, community resistance to certain health programs, and wide coverage of work areas are significant obstacles. Limited resources, such as manpower, equipment, and funds, often hinder the ability of nurses to carry out optimal monitoring and intervention. Community resistance to several health programs, such as fogging, also requires a more persuasive approach and one based on community understanding. Limited coverage of work areas can result in uneven implementation of preventive and intervention actions, which has the potential to affect the effectiveness of outbreak control.

Overall, the role of community health nurses in managing dengue fever outbreaks is critical and multifaceted. Through effective education, monitoring, and collaboration, nurses contribute significantly to outbreak control and public health. With adequate resources and well-planned strategies, community health nurses can improve the effectiveness of dengue control efforts and create a healthier environment free from the risk of outbreaks. The role of community health nurses as health monitors plays a very important role in managing dengue fever outbreaks. One of the main aspects of this role is to carry out routine surveillance to detect early signs of dengue fever. This surveillance includes two main components: monitoring the health conditions of the population and observing the environment. Community health nurses regularly conduct health checks to identify early symptoms of dengue fever, such as high fever, muscle pain, and skin rashes, both through home visits and at community health facilities.

Information about the individual's health history and mosquito exposure is also collected to assist in risk assessment and identification of potential cases. Nurses conduct environmental surveillance to identify potential mosquito breeding sites. They assess environmental cleanliness and the presence of standing water that can serve as breeding sites for *Aedes aegypti* mosquitoes. Locations such as used containers, non-functioning drains, and loosely closed bottles are identified as high-risk areas. This identification allows nurses to take appropriate preventive measures, such as directing the community to clean the area and reduce potential mosquito breeding sites. Data obtained from this surveillance form the basis for determining appropriate intervention measures. If an increase in dengue cases or many mosquito breeding sites are found, nurses may recommend fogging or insecticide spraying in the affected area. In addition, they may initiate a cleanliness campaign to encourage the community to maintain a clean environment. These campaigns often involve educating the community

about the importance of preventive measures and working together to clean up risky areas.

Systematic and ongoing surveys, community health nurses can not only identify health problems early but also ensure that dengue control strategies remain effective and responsive to changes in the epidemiological situation. Community health nurses play a very important role as facilitators in efforts to control dengue fever (DHF) outbreaks, with a focus on coordination and collaboration with various parties. In this capacity, community health nurses work together with health centers, health offices, and local communities to ensure that outbreak control efforts are carried out in an integrated and effective manner. Collaboration between community health nurses and health centers is crucial in providing coordinated health services. Nurses act as a bridge between health centers and the community, conveying important information from health centers to residents and vice versa, reporting on developments in the health situation in the field.

Puskesmas, as health facilities at the sub-district level, provide technical support and necessary resources, such as medicines, protective equipment, and additional medical personnel. In this collaboration, nurses also assist in planning and implementing activities such as fogging or immunization campaigns to reduce the risk of dengue fever transmission. Community health nurses also work closely with the health office, which has broader responsibilities in managing public health programs. The health office provides administrative support, supervision, and additional resources to strengthen outbreak response efforts.

Nurses play a role in conveying data and information obtained from surveillance and field activities to the health office, which can then be used to adjust policies and strategies for controlling the outbreak. This collaboration ensures that dengue control efforts are based on accurate data and informed decisions. In the context of the local community, community health nurses serve as liaisons who mobilize active community participation in dengue control programs. Community meetings, organizing workshops, and facilitating mutual cooperation activities to clean the environment from potential mosquito nests. Direct community involvement, nurses help increase awareness and community involvement in maintaining environmental cleanliness and implementing preventive measures (Upa, 2024).

Active community involvement also strengthens prevention efforts by creating a sense of collective responsibility for environmental and community health (Purba, 2024). Effective coordination and collaboration between community health nurses, health centers, health services, and the community, the synergy formed is key to overcoming dengue fever outbreaks as a whole. This collaboration not only strengthens the response capacity to outbreaks but also ensures that response strategies are implemented consistently and comprehensively, providing a significant impact on dengue fever control and prevention at the community level. Community health nurses face a number of significant challenges in carrying out their duties, which can affect the

effectiveness of dengue fever (DHF) control. One of the main challenges is limited resource support. Limited equipment, funds, and manpower can hinder the ability of nurses to carry out the various activities needed to control outbreaks.

These limitations have the potential to affect the frequency and quality of surveillance, education, and implementation of interventions that are essential for preventing the spread of dengue fever. Community resistance to several health programs is also a challenge. Disbelief in the effectiveness of preventive measures, such as fogging, or unwillingness to participate in environmental cleaning activities often arises. Community health nurses need to address these negative attitudes and perceptions through effective educational and communication approaches to increase community participation in health programs (Barlett, 2021). Limited coverage of the work area is an additional challenge for nurses. Large and diverse areas often make it difficult for nurses to reach every corner of the environment evenly. This can lead to inequity in the implementation of prevention and intervention programs, which has the potential to reduce the effectiveness of overall dengue fever control efforts.

Large areas require appropriate strategies, such as efficient task division and increasing resource capacity. The challenge for community health nurses is to remain committed to carrying out their duties. Their dedication to education, monitoring, and intervention has contributed significantly to controlling dengue outbreaks in residential areas. They continue to strive to carry out these tasks with enthusiasm, despite limited resources. The role of community health nurses is very important in handling dengue outbreaks, especially in the preventive and educational aspects. With the implementation of appropriate strategies and adequate support, nurses can overcome various challenges and continue to function as effective agents of change. Strong support from various parties, including the government and the community, will strengthen the capacity of community health nurses in carrying out their duties and ensure more effective handling of dengue outbreaks.

The environment plays a significant role in influencing public health status, particularly through factors related to household sanitation, housing conditions, and clean water supply. Prevention of dengue fever (DHF), which is caused by the *Aedes aegypti* and *Aedes albopictus* mosquitoes, relies heavily on vector control. Environmental vector control methods include strategies such as Mosquito Nest Eradication (PSN) and the 3M approach, namely Draining, Covering, and Burying. The environment can be divided into two main categories: the physical environment and the biological environment. The physical environment involves factors such as Water Reservoirs (TPA), rainfall, land use, pesticide use, and air humidity.

Poorly managed water reservoirs, such as bathtubs, drums, and other containers, have the potential to become ideal habitats for mosquitoes, so good management of the physical environment is essential to reduce the risk of mosquito breeding (Ferdousi, 2015). On the other hand, the biological environment includes factors such as the presence of ornamental plants or yard plants, which can affect the microclimate around the house and, in turn, affect the

mosquito population. Effective management of both types of environments includes regular cleaning of water reservoirs, the use of appropriate covers, and the arrangement of vegetation around residential areas. In addition, community involvement in prevention and education activities regarding the importance of maintaining environmental cleanliness to prevent the spread of mosquitoes is very important. With a comprehensive and participatory approach, it is hoped that the incidence of dengue fever can be reduced and public health can be significantly improved (Ramadhani, 2024).

Florence Nightingale's nursing theory, put forward in 1859, emphasized that a healthy environment plays a crucial role in the healing process of sick family members. Nightingale argued that a clean and comfortable environment, such as a decent place to live, is an important aspect that family nurses should pay attention to. According to this theory, the home environment significantly affects the physical and mental health of residents. A good home environment not only supports physical comfort but also plays a role in the psychological well-being of individuals. From a psychological perspective, the condition of the home environment can affect the self-perception and life satisfaction of residents. An unsupportive or uncomfortable environment can cause stress, which in turn can worsen health conditions (Watson, 2019). Stress caused by a poor environment can worsen health conditions, especially in individuals who are already sick.

The physical environment of the home is also related to potential hazards that can affect health. Factors such as cleanliness, ventilation, lighting, and home layout have a significant impact on preventing health risks. Homes with poor ventilation or inadequate sanitation facilities can increase the likelihood of infection and disease. Nightingale's theory is that family nurses can effectively support the health of family members by ensuring that the home environment is conducive to healing and well-being. This approach involves assessing and improving the home environment to meet the required standards of health and comfort, thereby improving the quality of life and overall health of the family.

Nurses play a crucial role in the provision of home health care, with roles that include coordination of services and case management. These tasks range from initial care to discharge planning, to ensure a smooth transition from hospital care to the home environment (Rice, 2001). In this context, nurses not only provide medical care but also serve as liaisons between clients, families, and other health care providers, and play a role in planning and monitoring ongoing care. The *Aedes aegypti* mosquito, which is the primary vector for dengue fever, has a habit of breeding in clean water reservoirs around the home. These include bathtubs, water jugs, bird baths, and other items that can hold water during the rainy season.

These mosquitoes cannot breed in stagnant water that is in direct contact with the ground, so these places are ideal habitats for them. After the female mosquito sucks blood, it takes about 2-3 days to rest and mature its eggs. The *Aedes aegypti* mosquito is known as a domestic species, which prefers indoor environments to outdoor environments. Nurses tend to rest in damp places that are less exposed to sunlight such as bathrooms, kitchens, and toilets. Inside the

house, these mosquitoes are often found resting on hanging clothes, mosquito nets, and curtains. Meanwhile, outside the house, they prefer to hide among the plants around the house (Ministry of Health of the Republic of Indonesia, 2008). Efforts to prevent dengue fever involve managing and cleaning these places regularly to reduce the possibility of mosquito development and the spread of disease.

The head of the family has a central role in determining household conditions, including the home environment (Azizah, 2020). This position makes the head of the family the main decision maker as well as an important source of information and social support for environmental health education and the implementation of a healthy lifestyle. Based on WHO theory (2012), knowledge can shape beliefs that influence a person's behavior. Behavior based on knowledge tends to be more sustainable than behavior without a basis in knowledge. Knowledge of environmental health, the head of the family can increase positive attitudes and public awareness of the importance of creating healthy environmental conditions. This contributes to efforts to break the chain of disease transmission through the environment and encourage clean and healthy living behaviors (Ekasari, 2022). The effective application of health knowledge can reduce the risk of disease transmission, especially Dengue Fever (DHF), by improving prevention habits in the household environment (Yusuf, 2019).

This effort involves regular cleaning and education about preventive measures, so that the head of the family plays an important role in creating an environment that supports health and prevents the spread of disease. Based on the results of the study, heads of families who routinely carry out home sanitation management, such as draining bathtubs or water reservoirs, show a high level of awareness of the importance of these steps in preventing dengue fever (Apriyani, 2024). This awareness arises not only because of the encouragement of rewards, coercion, or imitating others, but because of a deep understanding of the benefits of these preventive measures. The information and education provided by health workers are well received and implemented by the head of the family, indicating that the counseling has been successfully translated into daily practice. The head of the family is expected to maintain and even improve these good habits in water management in the home environment. It is important for health workers to continue to strengthen cooperation with the community in efforts to prevent dengue fever through mosquito nest eradication methods (Fauzi, 2023). Success in controlling this disease is greatly influenced by active community participation. The relationship between health workers and the community is an important step to achieve maximum effectiveness in prevention efforts and improve overall public health (Holveck, 2017).

CONCLUSION

the role of community health nurses in managing Dengue Hemorrhagic Fever (DHF) outbreaks in residential areas is both critical and multifaceted. As educators, they actively raise community awareness about the importance of

environmental cleanliness and preventive measures through education and the promotion of the 3M approach. This has led to effective behavior change towards healthier and cleaner living, resulting in a reduction in the *Aedes aegypti* mosquito population and a decrease in DHF incidence. Additionally, nurses play a crucial role in health and environmental monitoring to detect early signs of DHF, and they serve as facilitators in coordinating outbreak control efforts with various stakeholders. Despite challenges such as limited resources and community resistance, the commitment and collaboration between nurses, the government, and the community are key to the success of DHF control. With adequate support, community health nurses can continue to enhance the effectiveness of DHF prevention efforts and create a healthier environment free from the risk of outbreaks.

REFERENCES

- Agustin, I., Tarwotjo, U., & Rahadian, R. (2017). Perilaku bertelur dan siklus hidup *Aedes aegypti* pada berbagai media air. *Jurnal Akademika Biologi*, 6(4), 71-81. <https://doi.org/10.32382/sulolipu.v2i20.1848>
- Apiah, I. H., Fathurohman, I., Prahardik, S. E., & Farihin, A. (2024). Optimasi Pelayanan Kesehatan Balita Melalui Posyandu Merpati Di Desa Kalensari Compreg. *Jurnal Ilmiah Pengabdian Pada Masyarakat*, 1(3), 391-397. <https://doi.org/10.55123/sehatmas.v2i2.1748>
- Apriyani, A., Magdalena, H., & Lejab, B. K. (2024). Relationship Between The Frequency Of Draining Water Reservoirs And The Incidence Of Dengue Fever (Dhf) In The Working Area Of Temindung Health Center, Samarinda City. *Hearty*, 12(1), 35-41. <https://doi.org/10.31964/jkl.v20i2.661>
- Azizah, N. (2020). Struktur dan Kultur Budaya dalam Keluarga di Era Adaptasi Kebiasaan Baru (AKB) di Lingkungan Keluarga Kota Bandung. *Az-Zahra: Journal of Gender and Family Studies*, 1(1), 1-11. <https://doi.org/10.15575/azzahra.v1i1.9474>
- Bartlett, E. E. (1981). The contribution of school health education to community health promotion: what can we reasonably expect? *American Journal of Public Health*, 71(12), 1384-1391. <https://doi.org/10.2105/ajph.71.12.1384>
- Chusna, P. A., & Utami, A. D. M. (2020). Dampak pandemi COVID-19 terhadap peran orang tua dan guru dalam meningkatkan kualitas pembelajaran daring anak usia sekolah dasar. *Premiere: Journal of Islamic Elementary Education*, 2(1), 11-30. <https://doi.org/10.51675/jp.v2i1.84>
- Ekasari, D., F, K., A.N, P., & H, F. (2022). Hubungan Pengetahuan Tentang Perilaku Hidup Bersih Dan Sehat (Phbs) Dengan Upaya Pencegahan Covid-19 Pada Masyarakat Di Pekon Air Abang Kabupaten Tanggamus. *Jurnal Maternitas Aisyah (Jaman Aisyah)*, 3(1), 43-51. <https://doi.org/10.30604/jaman.v3i1.407>
- Fauzi, Y., & Sari, F. M. (2023). Analysis of the Relationship between the Eradication of Mosquito Nests and the Implementation of 3M Plus with the incidence of dengue fever in the working area of the Beringin Raya Public

- Health Center, Bengkulu City. ISEJ: Indonesian Science Education Journal, 4(3), 158-163. <https://doi.org/10.37638/jsk.24.1.53-61>
- Ferdousi, F., Yoshimatsu, S., Ma, E., Sohel, N., & Wagatsuma, Y. (2015). Identification of Essential Containers for *Aedes* Larval Breeding to Control Dengue in Dhaka, Bangladesh. *Tropical Medicine and Health*, 43(4), 253-264. <https://doi.org/10.2149/tmh.2015-16>
- Giyantolin, G., Poerwanto, S. H., Hakim, A. I., Abustani, M., & Wibowo, R. (2019). Pemberdayaan masyarakat hidup sehat bebas vektor nyamuk melalui konsep ecohealth village berbasis education for sustainable development. *Riau Journal of Empowerment*, 2(2), 61-69. <https://doi.org/10.31258/raje.2.2.61-69>
- Handayani, K. D., Kusmintarsih, E. S., & Riwidiharso, E. (2017). Prevalensi Mikrofilaria pada Nyamuk Culex dan Manusia di Desa Dukuhturi, Kecamatan Bumiayu, Kabupaten Brebes. *Biosfera*, 34(1), 1. <https://doi.org/10.20884/1.mib.2017.34.1.369>
- Hayati, N. S., & Hasibuan, R. (2020). Potret Upaya Perilaku Hidup Bersih Dan Sehat (PHBS) Menuju Adaptasi Kebiasaan Baru di Kecamatan Binjai Barat Kelurahan Sukaramai. *Jurnal Kesehatan Ilmiah Indonesia (Indonesian Health Scientific Journal)*, 5(2), 13. <https://doi.org/10.51933/health.v5i2.203>
- Hursepuny, V., & Manuputty, J. (2018). Permasalahan Program Pencegahan Dan Pemberantasan Demam Berdarah Dengue Di Kota Ambon Tahun 2016. *Molucca Medica*, 19-36. <https://doi.org/10.30598/molmed.2018.v11.i1.19>
- Iqbal Elka Putra, F. (2021). Peran Tanaman Sebagai Insektisida Nabati Terhadap Gigitan Nyamuk Aedes Aegypt Vektor Demam Berdarah Dengue. *Essential: Essence of Scientific Medical Journal*, 18(2), 1. <https://doi.org/10.24843/estl.2020.v18.i02.p01>
- Mohamad Judha. (2024). Upaya Pencegahan Demam Berdarah Melalui Lintas Program Berternak Ikan Cupang (*Betta Splendens*) Di Dusun Mertosanan Desa Potorono Bantul. *Jurnal Pengabdian Masyarakat Kesehatan (Abdimakes)*, 4(2), 51-58. <https://doi.org/10.55316/amk.v4i2.1043>
- Mohammed Yusuf, A., & Abdurashid Ibrahim, N. (2019). Knowledge, attitude and practice towards dengue fever prevention and associated factors among public health sector health-care professionals: in Dire Dawa, eastern Ethiopia. *Risk Management and Healthcare Policy*, Volume 12, 91-104. <https://doi.org/10.2147/rmhp.s195214>
- Mosesa, L. P., Sorisi, A., & Pijoh, V. D. (2016). Deteksi transmisi transovarial virus dengue pada *Aedes aegypti* dengan teknik imunositokimia di Kota Manado. *Jurnal E-Biomedik*, 4(1). <https://doi.org/10.35790/ebm.4.1.2016.10846>
- Mufizarni, M., Rahayu, E. S., Reza, R., Salfiyadi, T., Nuraskin, C. A., Mardhiah, A., & Nurhaida, N. (2023). Upaya peningkatan kesehatan gigi melalui penerapan konsep quality home care pada anak disabilitas di SDLB Kota Banda Aceh. *Jurnal PADE: Pengabdian & Edukasi*, 5(2), 67. <https://doi.org/10.30867/pade.v5i2.1456>

- Mulyati, S. A., Majid, R., & Ibrahim, K. 2013. Studi Spasial Persebaran Penyakit Demam Berdarah Dengue (DBD) di Wilayah Kerja Puskesmas Lepo-lepo Kota Kendari Tahun 2013-2016. Fakultas Kesehatan Masyarakat Universitas Halu Oleo. <https://doi.org/10.37887/jkl-uho.v2i4.35449>
- Nasution, S., Firdaus, S. J., & Widyatami, A. (2024). Inovasi OPAT SIHAT Sebagai Model Pemberdayaan Anak Sekolah Dasar dalam Pengendalian Vektor DBD Terpadu di Kabupaten Bogor. *Matra Pembaruan*, 8(1), 31-44. <https://doi.org/10.21787/mp.8.1.2024.31-44>
- Nurulhuda, A. A., Widowati, N., & Maesaroh, M. (2024). Implementasi Kebijakan Pencegahan Dan Penanggulangan Demam Berdarah Dengue Di Kecamatan Bekasi Utara. *Journal of Public Policy and Management Review*, 13(3), 786-805. <https://doi.org/10.55606/jass.v4i2.353>
- Oroh, M. Y., Pinontoan, O. R., & Tuda, J. B. (2020). Faktor lingkungan, manusia dan pelayanan kesehatan yang berhubungan dengan kejadian demam berdarah dengue. *Indonesian Journal of Public Health and Community Medicine*, 1(3), 35-46. <https://doi.org/10.33088/jmk.v5i2.189>
- Permatasari, D. (2024). Analisis Risiko Demam Berdarah Terhadap Lingkungan: Meninjau Dampak Dan Strategi Pengelolaan. *Jurnal Kesehatan*, 1(01), 1-6. <https://doi.org/10.12928/jkpl.v3i1.6329>
- Perangin-angin, S. (2023). Penyuluhan Dan Pemberantasan Sarang Nyamuk Serta Pelaksanaan Fogging Dalam Rangka Pencegahan Penyakit Demam Berdarah Dengue Di SMA Negeri 1 Berastagi. *Journal of Smart Community Service*, 1(1), 1-11. <https://doi.org/10.31237/osf.io/9y7nb>
- Prayitno, P. A., Kusmintarsih, E. S., & Wahyono, D. J. (2020). Deteksi Molekuler Virus Dengue Serotipe 3 Pada Nyamuk Aedes Aegypti Di Wilayah Purwokerto Timur. *BioEksakta : Jurnal Ilmiah Biologi Unsoed*, 2(2), 215. <https://doi.org/10.20884/1.bioe.2020.2.2.1826>
- Purba, E. R., Rumaseb, E., Mebri, E., Rahayu, G., Muspitha, F. D., Mandowen, R., & Prayitno, Y. (2024). Kampung sehat: transformasi masyarakat melalui edukasi PHBS, scabies, malaria, tuberkulosis, hipertensi dan jumat bersih di kampung Yobeh kabupaten Jayapura. *SELAPARANG: Jurnal Pengabdian Masyarakat Berkemajuan*, 8(2), 1734-1741. <https://doi.org/10.59025/js.v3i3.227>
- Ramadani, E. F. (2024). Pemberdayaan Masyarakat Dalam Sosialisasi Upaya Pencegahan Penyakit Demam Berdarah Dengue. *Jurnal Baca*, 3(1), 01-09. <https://doi.org/10.36089/pgm.v4i1.607>
- Saragih, I. D., Fahlefi, R., Pohan, D. J., & Hartati, S. R. (2019). Analisis indikator masukan program pemberantasan demam berdarah dengue di Dinas Kesehatan Provinsi Sumatera Utara. *Contagion: Scientific Periodical Journal of Public Health and Coastal Health*, 1(01). <https://doi.org/10.30829/contagion.v1i01.4821>
- Sembiring, M. A. (2021). Penerapan Metode Algoritma K-Means Clustering Untuk Pemetaan Penyebaran Penyakit Demam Berdarah Dengue (Dbd). *Journal Of Science And Social Research*, 4(3), 336. <https://doi.org/10.54314/jssr.v4i3.712>

- Sembiring, V. S. B., Hakim, L., & Tarigan, F. L. T. (2023). Analisis Pelaksanaan Strategi Promosi Kesehatan Rumah Sakit Pada Era Pandemi Covid-19 Di Rumah Sakit Efarina Etaham Berastagi Tahun 2022. *Prepotif: Jurnal Kesehatan Masyarakat*, 7(1), 1492-1509. <https://doi.org/10.31004/prepotif.v6i1.3173>
- Siregar, SA. (2005). Instalasi Pengolahan Air Limbah. Yogyakarta: Kanisius. <https://doi.org/10.25077/dampak.18.1.1-6.2021>
- Sofia, S., Suhartono, S., & Wahyuningsih, N. E. (2024). Hubungan kondisi lingkungan rumah dan perilaku keluarga dengan kejadian demam berdarah dengue di Kabupaten Aceh Besar. *Jurnal Kesehatan Lingkungan Indonesia*, 13(1), 30-38. <https://doi.org/10.31219/osf.io/vqns7>
- Soedarto.2011. Buku ajar parasitologi kedokteran. Surabaya: Sagung Seto.
Soedarto. 2012. Demam Berdarah Dengue (Dengue Haemorrhagic Fever).
- Supartha, I. W. (2008). Pengendalian terpadu vektor virus demam berdarah dengue, *Aedes aegypti* (Linn.) dan *Aedes albopictus* (Skuse)(Diptera: Culicidae). *Penelitian Ilmiah*, 3-6. <https://doi.org/10.5994/jei.12.1.31>
- Tazkiyati, N., & Sabila, D. M. (2024). Peningkatan Angka Kematian Akibat Kasus Dbd Di Kota Serang. *Jurnal Inovasi Kesehatan Adaptif*, 6(6). <https://doi.org/10.52000/jsi.v1i2.30>
- Tran Minh, N. N., Huda, Q., Asghar, H., Samhoury, D., Abubakar, A., Barwa, C., Shaikh, I., Buliva, E., Mala, P., & Malik, M. (2016). Zika virus: no cases in the Eastern Mediterranean Region but concerns remain. *Eastern Mediterranean Health Journal*, 22(5), 350–353. <https://doi.org/10.26719/2016.22.5.350>
- Upa, L., & Winarti, E. (2024). Peran Teori Health Belief Model Dalam Menelaah Hubungan Antara Perilaku Masyarakat, Ketersediaan Penampungan Air Hujan, Dan Kejadian Diare Di Daerah Yang Bergantung Pada Sumber Air Hujan: Tinjauan Pustaka. *Jurnal Kesehatan Tambusai*, 5(1), 871-893. <https://doi.org/10.32679/jsda.v18i2.776>
- Usman, U. (2017). Kejadian Demam Berdarah Dengue (Dbd) Di Wilayah Kabupaten Aceh Tenggara Tahun 2017: Kejadian Demam Berdarah Dengue (Dbd) Di Wilayah Kabupaten Aceh Tenggara Tahun 2017. *Jurnal Kesehatan Masyarakat Dan Lingkungan Hidup*, 2(1), 11-31. <https://doi.org/10.32883/hcj.v7i3.2315.s610>
- Warsidi. Edi (2009). Bahaya dan Pencegahan DBD. Bekasi: Mitra Utama. <https://doi.org/10.31596/jkm.v11i1.1400>
- Watson, D., & Pennebaker, J. W. (2019). Health complaints, stress, and distress: Exploring the central role of negative affectivity. *Psychological Review*, 96(2), 234–254. <https://doi.org/10.1037//0033-295x.96.2.234>
- Wowor, R. (2017). Pengaruh Kesehatan Lingkungan terhadap Perubahan Epidemiologi Demam Berdarah di Indonesia. *E-CliniC*, 5(2). <https://doi.org/10.35790/ec1.5.2.2017.16879>
- Yustati, E., Astriana, W., & Haryanti, I. (2024). Analisis Faktor Yang Berhubungan Dengan Demam Berdarah Dengue (DBD). *Jurnal'Aisyiyah Medika*, 9(1). <https://doi.org/10.31539/jka.v6i1.8776>