

The Role of Community Health Nurses in Overcoming Dengue Hemorrhagic Fever Outbreaks in Densely Populated Housing

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ABSTRACT

Densely populated housing often faces challenges in managing a healthy environment, which exacerbates the spread of Aedes Aegypti. Efforts to prevent Dengue Hemorrhagic Fever (DHF) can be carried out collaboratively between the community and nurses to suppress the spread of the disease. This research aims to explore the role of community nurses in dealing with dengue hemorrhagic fever outbreaks in densely populated housing areas. The research approach used in this research is a qualitative systematic literature review approach. The research results show that community nurses play an important role in empowering the community through the Larva Monitoring Officer (Jumantik) program to monitor and prevent dengue fever. Collaboration between the government, health workers and the community is very important to reduce the incidence of dengue fever significantly.

Keywords : Aedes Aegypti, Dengue Hemorrhagic Fever, Community Health Nurse

INTRODUCTION

Dengue hemorrhagic fever (DHF) is a health problem in Indonesia that needs to be treated seriously. Based on the data released by Databox, it shows that the level of dengue fever (DHF) in Indonesia in 2024 will experience a significant increase. Until the 18th week of 2024, 91,269 cases of dengue fever were recorded with 641 deaths, an increase of almost three times compared to the same period the previous year. The Ministry of Health also reported that from March 1 2024, 16,000 cases of Dengue Hemorrhagic Fever (DBD) had been found in 213 Regencies/Cities in Indonesia with a total of 123 deaths. DHF also causes the possibility of shock complications known as Dengue Shock Syndrome which can result in death (Directorate General of P2P, 2024). The high number of cases is thought to be due to the impact of the rainy season after El Nino. This will get worse if an area has a high population density.

A high population and residential density will shorten the flight distance of mosquitoes so that the transmission process will be faster (Marlena et al., 2020). The distribution area is also expanding due to increased land clearing for settlements which increases mosquito habitat (Ministry of Health, 2012). The conversion of land into temporary or permanent housing is one of the factors in the spread of dengue fever from one region to another (Hadinegoro & Satari, 2024). Densely populated housing often faces challenges in managing a healthy environment, which exacerbates the



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spread of disease. This condition creates an environment that supports the development of the *Aedes aegypti* mosquito, which is the main vector for spreading dengue fever.

Densely populated housing often becomes the epicenter of dengue fever outbreaks. Limited space, poor environmental cleanliness, and high population mobility increase the risk of spreading the dengue virus. Therefore, effective prevention and control efforts are very necessary. In many areas, adequate health facilities and medical personnel are often disproportionate to population size. Community health nurses can be at the forefront of dengue prevention education and intervention, filling gaps in existing health services.

Efforts to prevent Dengue Fever (*Dengue*) (DHF) can be carried out collaboratively between the community and nurses in suppressing the spread of the disease. Community health nursing is a professional nursing service aimed at the community as an effort to improve health and prevent disease which involves clients as partners in planning, implementing and evaluating nursing services (Spradley, 1985; Logan & Dawkins, 1987; Mahyudin, 2009; Hidayah, 2009). Community health nurses are the spearhead in disease prevention and control at the community level. Community health nurses have the knowledge and skills needed to carry out disease surveillance, educate the public about dengue prevention, as well as early intervention in dealing with cases that occur.

METHOD

The research approach used in this research is a qualitative systematic literature review approach to identify, evaluate and interpret all research that is relevant to the study under study (Calderon & Ruiz, 2015). This type of research is used to find the right strategy in overcoming the research problem, namely overcoming dengue hemorrhagic fever (DHF) from various perspectives based on previous empirical studies.

RESULT AND DISCUSSION

Population Density on the Incidence of Dengue Hemorrhagic Fever (DHF)

Population density has a close relationship with the incidence of dengue hemorrhagic fever (DHF). The occurrence of urbanization in densely populated areas and the development of transportation as well as poor environmental sanitation will increase the density of *Aedes* mosquitoes (Ministry of Health of the Republic of Indonesia, 2017). A changing environment and high population mobility will worsen conditions for the spread of Dengue Hemorrhagic Fever (Wesolowski et al., 2015). Uncontrolled urbanization will create liquid waste disposal systems and increased air transportation and the use of bottled water will increase the spread of mosquito breeding sites (Ribka, 2017). Urbanization brings many people to urban areas, increasing population density. Areas with high population density provide more human hosts for the *Aedes aegypti* mosquito, which increases the opportunity for the dengue virus to spread. Urbanization is often accompanied by increased population mobility. People moving from one place to another can carry the dengue virus to new areas, expanding the area where the disease spreads.

Environments with high population density tend to provide ideal conditions for the *Aedes aegypti* mosquito to breed and spread the dengue virus. Densely populated environments often have many places that can hold clean water, such as water containers, flower pots, and rubbish that are not managed properly (Zulkarnaini et al., 2009; Dinata & Dhewantara, 2012). Poor sanitation will create waterlogging when rainfall is high (Apriyani et al., 2017). *Aedes* sp. mosquitoes tend to lay eggs in containers containing clean water, such as bathtubs, flower pots, used cans, and used tires which are often found in environments that are not kept clean. The results of

research conducted by Prasetyo (2014) show that poor sanitation has a 3.65 times chance compared to areas that have good sanitation. This is in line with the findings of research conducted by Ohe Chairil (2017) which shows that sanitation influences the risk of dengue fever.

A densely populated environment makes contact between humans more intensive. When someone is infected with dengue fever, the mosquito that bites that person can easily bite other people in close proximity, accelerating the spread of the virus. Population density often correlates with a lack of adequate sanitation infrastructure. Environmental conditions that are less clean increase the risk of mosquito breeding. Based on the results of research conducted by Emilia (2019) conducted in Jambi City, it shows that population density has a low influence on the incidence of dengue hemorrhagic fever (DHF) and has a positive pattern. This means that the higher the population density, the higher the dengue fever cases. Population density and close distance between houses will increase the chances of *Aedes aegypti* infection because it spreads dengue fever to the population in the area. Similar findings were also obtained by Kusumawati & Nila (2020) that population density influences the transmission of disease from one individual to another.

The Role of Community Nurses in Overcoming Dengue Hemorrhagic Fever (DHF) Outbreaks

WHO (1959) defined community nursing as a special field of care which is a collaboration between nursing science, public health science and social assistance as part of a public health program. Community Nurses function to improve health, social conditions, improve the physical environment, rehabilitation, disease prevention and larger issues aimed at individuals or families that have an influence on society as a whole.

Education and health education about Dengue Hemorrhagic Fever (DHF) is very important to prevent the spread of this disease. Through proper education, the public can understand better what dengue fever is, how this disease spreads, as well as effective steps to prevent and treat dengue fever. This health education aims to increase public awareness of the importance of maintaining environmental cleanliness, recognizing the early symptoms of dengue fever, and the actions that must be taken if infection occurs. Apart from that, regular and structured counseling will help build strong preventive behavior in the community, so that it can significantly reduce the incidence of dengue fever. With collaboration between the government, health workers and the community, it is hoped that efforts to prevent and control dengue fever can run more effectively and efficiently.

Improving public health can be achieved in various ways, including improving environmental sanitation, preventing and controlling infectious diseases, health education and developing social elements to achieve a decent standard of living. Health problems that occur in society cannot only be resolved from the medical aspect but must also pay attention to the community aspect. Based on research conducted by Novrika et al., (2024) that education through health education makes people experience increased knowledge about dengue fever starting from symptoms, how to prevent it and the ongoing impact of dengue sufferers. Similar findings were made by Yanti & Wijonarko (2023) who found that insight into dengue fever increased through education.

Prevention education can be done in various ways, including through community service activities carried out by academics from various universities such as those carried out by Haluoleo University (Mubarak, 2022) or outreach carried out in collaboration with community health centers (Ariyani et al., 2023). Counseling can be done by providing material in the form of leaflets or educational videos. The results of research conducted by Indah & Endang (2019) also show that community

empowerment through socializing the prevention of dengue fever also influences people's clean and healthy living behavior and the use of herbal ingredients.

Community nurses can also educate the public regarding handling dengue fever by training health cadres or local volunteers on tips for preventing dengue fever. Public education is also to increase environmental care attitudes which will have an impact on themselves and the surrounding community. This implementation can be done by becoming part of the Larval Monitoring Committee (Jumantik). Jumantik cadres aim to involve all Neighborhood Units (RT) so that they can provide guidance in eradicating larvae. Jumantik cadres have a role in monitoring and preventing dengue fever as follows (Aunul et al., 2021)

1. Be part of Periodic Larval Monitoring (PJB) in their home environment;
2. Providing information and education in the form of counseling to family members and the community in their environment;
3. Recording and reporting the results of PSN activities carried out periodically (weekly and monthly) to the Rukun Warga (RW), village heads and local health centers;
4. Carrying out PSN activities and eradicating dengue fever by providing abate powder and larvae-eating fish.

CONCLUSION

This research shows that population density has a significant relationship with the incidence of Dengue Hemorrhagic Fever (DHF). Uncontrolled urbanization and poor environmental sanitation exacerbate the spread of this disease. High-density areas provide more hosts for the *Aedes aegypti* mosquito, which accelerates the spread of the virus. Poor sanitation increases mosquito breeding sites, with standing water an ideal place for mosquitoes to lay their eggs. High population mobility due to urbanization also expands the spread of the virus to new areas. Routine and structured health education and counseling is effective in increasing public knowledge about dengue fever, including symptoms, prevention and treatment. Community nurses play an important role in empowering the community through the Larva Monitoring Officer (Jumantik) program for monitoring and preventing dengue fever. Collaboration between the government, health workers and the community is very important to reduce the incidence of dengue fever significantly.

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