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Household Waste Management Education for Dengue Fever Prevention in Murtigading Bantul

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Abstract

Purpose: This study investigates the impact of household waste management education on Dengue Hemorrhagic Fever (DHF) prevention in Murtigading, Bantul. It highlights the significance of improper waste disposal as a risk factor for dengue transmission.

Method: Educational lectures were conducted for residents in targeted areas (Ngentak, Pucanganom I, Trisigan I). Data on community knowledge of waste management were collected and analyzed to assess the intervention's effectiveness.

Practical Applications: The findings inform public health efforts to prevent DHF by improving community awareness of proper waste management. Similar education programs can enhance disease prevention and community health.

Conclusion: Community knowledge regarding waste management remains insufficient, highlighting the ongoing need for education and awareness initiatives. Continued efforts to improve community understanding of proper waste disposal practices are essential in combating dengue transmission and reducing the incidence of DHF.

Introduction

In the face of the Covid-19 pandemic situation that has occurred approximately two years Dengue Hemorrhagic Fever (DHF) is a vector-borne disease carried by the Aedes aegypti mosquito, mostly found in tropical regions (Wahyono and MW 2016). Female Aedes aegypti mosquitoes are the main cause of DHF. The peak time for mosquito infection is during the day, and they breed in homes. DHF can also be caused by Aedes albopictus mosquitoes, which live in forests or urban outskirts (Binsasi et al., 2021).

DHF has become a global problem over the last decade, with an increasing number of DHF patients worldwide. The disease is found in over 100 tropical countries. The World Health Organization (WHO) states that more than 2.5 billion people are at risk of dengue virus infection, and it is estimated that around 50 million people are infected with the dengue virus each year (Wahyono and MW 2016). In 2020, there were recorded 108,303 DHF cases. The number of districts/cities affected by DHF in 2020 was 477, accounting for 92.8%. This indicates an increase in DHF cases from 2010 to 2019 (Ministry of Health of the Republic of Indonesia).

The environment is an indicator that often receives special attention, especially when assessing public and individual health. Behavioral factors, healthcare services, and the environment determine the health status of individuals or communities. Poor environmental conditions and community behaviors can be risk factors for the transmission of various diseases, especially DHF. Environmental factors greatly affect the population density of Aedes aegypti mosquitoes (Putri et al., 2021).

Several factors causing DHF include low adherence to DHF prevention practices such as the 3M (Drain standing water, cover water storage containers, and dispose of containers), hanging clothes, and improper waste management such as the habit of piling up trash. These things can serve as breeding grounds for Aedes aegypti mosquitoes. Additionally, lack of knowledge among the public about DHF can also be a risk factor for high DHF incidence, hence public knowledge is crucial in DHF prevention efforts (Putri et al., 2021).

Waste management should be carried out in a way that provides health benefits to the local community, is environmentally safe, and can change community behavior. Many people still lack the habit of disposing of waste properly and leave waste items around their homes. Waste items can collect rainwater and become breeding grounds for mosquitoes. Therefore, to prevent Aedes aegypti breeding, proper waste management is necessary, such as disposing of waste items and placing them in locations that cannot collect water (Hidayah et al., 2021).

Knowledge is any form of information in a specific field known by an individual (Alias & Serang, 2018). An individual's knowledge plays a crucial role in influencing their behavior. If someone has good knowledge, it can positively influence their actions (Mujiburrahman et al., 2020). Therefore, it is necessary for the public to increase their knowledge and receive information about proper waste management to improve DHF prevention efforts. Community engagement aims to assess the knowledge of the Ngentak, Pucanganom, and Trisigan I communities regarding household waste management for DHF prevention, to subsequently provide education on household waste management.

Method

The steps undertaken in this community service initiative involve several key stages. Firstly, it begins with the crucial phase of socialization, wherein students from KKN Regular 96 UAD engage with the local community to raise awareness and understanding of the issues at hand. Through various interactive activities and dialogues, the aim is to foster a sense of community involvement and cooperation.

Following this, the next step involves assessing the community's existing knowledge and practices regarding waste management. This assessment serves as a vital baseline to understand the current level of awareness and identify areas that require targeted intervention and improvement.

Once the assessment is complete, the third stage entails delivering structured educational sessions through informative lectures and discussions. These sessions are designed to impart practical knowledge and strategies for effective waste management, covering topics such as proper disposal methods, recycling practices, and the importance of environmental stewardship.

Moreover, interactive workshops and demonstrations may also be organized to provide hands-on learning experiences and empower community members with the necessary skills and resources to implement sustainable waste management practices in their daily lives. Through these comprehensive efforts, the aim is not only to disseminate information but also to inspire and empower individuals within the community to take proactive steps towards creating a cleaner, healthier environment for themselves and future generations.

Result

This community service was attended by 36 participants, with the details as follows:

1. Participant Characteristics Based on Gender

Table 1. Participant Characteristics Based on Gender

No	Gender	N	%
1.	Male	10	27,8
2.	Female	26	72,2
	Total	36	100

Table 1 depicts participants consisting of 26 (72.2%) females, while 10 (27.8%) are males.

2. Participant Characteristics Based on Age

Table 2. Participant Characteristics Based on Age

No	Age Group	N	%
1.	17-25	3	8,3
2.	26-35	9	25,0
3.	36-45	10	27,8
4.	46-55	10	27,8
5.	56-65	4	11,1
	Total	36	100

Most participants in the age groups of 36-45 and 46-55 years are 10 individuals each (27.8%), followed by the age group of 26-35 years with 9 individuals (25.0%), the age group of 56-65 years with 4 individuals (11.1%), and the least represented group is the age group of 17-25 years with 3 individuals (8.3%) (Table 2).

3. Participant Characteristics Based on Education

Table 3. Participant Characteristics Based on Education

No	Tingkat Pendidikan	N	%
1.	Elementary School	4	11,1
2.	Junior High School	6	16,7

3.	Senior High School	18	50,0
4.	Diploma-III	2	5,6
5.	Bachelor's Degree	6	16,7
	Total	36	100

Most participants have completed Senior High School (SMA/SMK/SLTA) education, totaling 18 individuals (50.0%), followed by participants with Junior High School (SMP/SLTP) and bachelor's degree (Sarjana) education, each with 6 individuals (16.7%), Elementary School (SD) education with 4 individuals (11.1%), and the least represented group is participants with Diploma-III education, totaling 2 individuals (5.6%).

4. Participant Characteristics Based on Occupation

Participants' occupations include Housewives with 14 individuals (38.9%), followed by Private Employees with 8 individuals (22.2%), Laborers with 4 individuals (11.1%), Farm Laborers and Students with 2 individuals each (5.6%), and the least represented are respondents with occupations such as Teacher, Village Head, Trader, Retiree, Civil Servant (PNS), and Entrepreneur, each with 1 individual (2.8%).

Table 4. Participant Characteristics Based on Occupation

No	Occupation	N	%
1.	Laborer	4	11,1
2.	Farm Laborer	2	5,6
3.	Teacher	1	2,8
4.	Housewife	14	38,9
5.	Private Employee	8	22,2
6.	Village Head	1	2,8
7.	Student	2	5,6
8.	Trader	1	2,8
9.	Retiree	1	2,8
10.	Civil Servant (PNS)	1	2,8
11.	Entrepreneur	1	2,8
	Total	36	100

5. Participant Characteristics Based on Knowledge

Table 5. Participants' Knowledge Regarding Household Waste Management for Dengue Fever Prevention

No	Level of Knowledge	N	%
1.	Good	4	11,1
2.	Sufficient	22	61,1

3.	Poor	10	27,8
	Total	36	100

Participants with sufficient knowledge are 22 individuals (61.1%), followed by participants categorized with poor knowledge, totaling 10 individuals (27.8%), and the least represented are participants with good knowledge, totaling 4 individuals (11.1%).

6. Methods of Household Waste Management

Table 6. Methods of Household Waste Management by Participants

No	Methods of Household Waste Management	N	%
1.	Incineration	1	2,8
2.	Processed	1	2,8
3.	Processed and collected by personnel	1	2,8
4.	Processed and incinerated	29	80,6
5.	Processed, incinerated, and collected by personnel	2	5,6
6.	Processed, incinerated, collected by personnel, and dumped into the river	1	2,8
7.	Buried	1	2,8
	Total	36	100

The most common method of household waste management is processing and incineration, with 29 individuals (80.6%), followed by household waste management by processing, incinerating, and collecting by personnel with 2 individuals (5.6%), while the least common methods are household waste management by incineration; processing; processing and collection by personnel; processing, incineration, collection by personnel, and dumping into the river; and burial, each with 1 individual (2.8%).

Discussion

Based on the data analysis, it is known that the knowledge of the community at the service location is mostly sufficient. Knowledge encompasses all forms of information known by an individual (Husnawati et al., 2023). Factors influencing knowledge include education, occupation, and age. Participants in this community service mostly have a Senior High School (SMA/SMK/SLTA) education, totaling 18 individuals (50.0%). This could be a reason why many participants have sufficient knowledge, as education plays a crucial role in shaping one's knowledge. Individuals with higher levels of education tend to have more information and experiences. Those with lower levels of education may face barriers in accessing various information, particularly in the field of health (Deng et al., 2022).

In addition to education, another significant factor influencing knowledge is occupation. Based on the data analysis, the most common occupation among participants is Housewife, with 14 individuals (38.9%). One's occupation significantly affects their knowledge as it requires mental engagement for thinking and facilitates information acquisition. Having an occupation that involves more cognitive activity and exposure to information can enhance one's ability to retain information, thus improving their knowledge (Ekawati et al., 2022; Mujiburrahman et al., 2020). The lack of knowledge among housewives about waste management may be due to insufficient information, despite the availability of information from

various sources such as electronic media, health books, and even friends (Heryawan & Mukono, 2023).

Age can also influence an individual's knowledge. The participants in this community service mostly belong to the age groups of 36-45 and 46-55 years, with 10 individuals each (27.8%). According to the age classification established by the Ministry of Health, the age group of 36-45 years represents late adulthood, while the age group of 46-55 years represents early elderly. Late adulthood is a stage transitioning towards elderly where individuals begin to experience changes. Most participants fall into the elderly category, and the growing elderly population poses various challenges, especially in the healthcare sector. Cognitive functions such as learning, perception, understanding, and others generally decline with age, leading to slower reactions and behaviors among the elderly (Lestari et al., 2019).

Waste is anything unused or discarded produced by human activities and does not occur naturally. According to Government Regulation No. 81 of 2012 concerning Waste Management, good waste management involves two systems: waste reduction and waste handling systems. Many people still do not implement waste management based on the principles of the 3Rs: reduce, reuse, and recycle, resulting in negative impacts on environmental health (Hidayah et al., 2021).

The most common method of household waste management in this community service is processing and incineration, with 29 individuals (80.6%). Most participants process organic waste, such as kitchen leftovers, which are used as animal feed. However, participants do not process inorganic waste such as used items. There is a program in Dengue Fever prevention called the 3M program, which includes activities such as draining water containers and recycling or reusing used items (Ariyanto et al., 2019).

Many participants still do not implement the 3M program properly, such as never recycling household waste items and just leaving them, which could provide breeding grounds for Aedes aegypti mosquitoes, leading to Dengue Fever. (Dompas et al., 2020) also explain that the presence of used items such as tires, bottles, plastics, and other items that can hold water serve as breeding grounds for mosquitoes. The more used items that can hold water, the more places' mosquitoes must lay eggs and reproduce, thus increasing the risk of Dengue Fever.

Efforts to improve household waste management can be made by increasing public knowledge. If the public has good knowledge about household waste management, it can improve their behavior in managing waste. This aligns with Lawrence W. Green's theory in (Moon, 2021), which explains that the main factors underlying and motivating someone's behavior include predisposing factors such as knowledge, attitudes, beliefs, and individual trust. If someone's knowledge about waste management is considered good, then their waste management behavior will also be good, thus serving as a preventive measure against Dengue Fever.

Conclusion

Based on the data analysis, it can be observed that the knowledge of the community in the villages of Ngentak, Pucanganom, and Trisigan I regarding household waste management is largely sufficient, with 22 individuals (61.1%). This may be attributed to factors such as age, occupation, and education of the participants. Due to the lack of knowledge among participants about household waste management, there may be a decrease in efforts to prevent Dengue Hemorrhagic Fever (DHF) because accumulated and improperly managed waste can become breeding grounds for the DHF vector mosquito, Aedes aegypti. It is hoped that the community can enhance their knowledge about household waste management as a measure to prevent DHF, thus improving environmental health and enhancing the overall health status of the community.

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