



ANALYSIS HEALTH PROBLEMS OF DENGUE HEMORRHAGIC FEVER IN THE WORKING AREA OF THE KEDIRI CITY HEALTH SERVICE

Syarofatul Imamah¹, Chatarina Umbul Wahyuni^{2*}

¹ Master of Epidemiology, Faculty of Public Health,

Universitas Airlangga, Campus C Mulyorejo District, Surabaya, 60115, Surabaya City

Corresponding Author: ² chatarina.uw@fkm.unair.ac.id

Abstract

Dengue Hemorrhagic Fever is still an endemic disease in more than 100 countries, including Indonesia. Every year Dengue Hemorrhagic Fever breaks out into outbreaks in several areas and becomes a public health problem in general in Indonesia. The incidence rate of Dengue Hemorrhagic Fever in Kediri City in 2023 exceeds the Regency/City target, namely >10 per 100,000 population. The research aims to analyze health problems in the Dengue Hemorrhagic Fever program in the Kediri City Health Service Work Area in 2023. This research is an observational descriptive study conducted in the Kediri City Health Service Work Area in July-August 2023. Problem prioritization uses the USG method (Urgency, Seriousness, Growth). Root causes of problems using Fishbone and providing alternative problem solving. The research results showed that the priority problem of the Dengue Hemorrhagic Fever program at the Kediri City Health Service in 2023 was the lack of public awareness in doing the 3M Plus Mosquito Nest Eradication (PSN 3M Plus). The root causes of the problem are a lack of public knowledge, a lack of public attention to health, a community that relies on cadres, the influence of livelihoods on mosquito breeding, an environment that is a breeding ground for mosquitoes, a lack of socialization and training for cadres and the community, no educational media; lack of facilities and infrastructure for cadres. Alternative problem solving that can be provided is socialization, community service, and holding 3M Plus application competitions in the form of implementing PSN in sub-districts/villages and public places.

Keywords: Dengue Hemorrhagic Fever, Determining Problem Priority, Root Cause of Problem, Alternative Problem Solving

Introduction

Dengue Hemorrhagic Fever (DHF) is the most common infectious disease in humans in recent years, so it is still a world health problem. DHF occurs mostly in tropical and subtropical areas. DHF is an acute infectious disease belonging to the Arthropod-Borne Virus, the Flavivirus genus, and the Flaviviridae family which has 4 serotypes, namely DEN-1, DEN-2, DEN-3, DEN-4^[19]. Dengue fever is transmitted through the bite of a female *Aedes Aegypti* mosquito which has the dengue virus in its body. Apart from the *Aedes Aegypti* mosquito, there are also other mosquito vectors including the *Aedes Polynesiensis*, *Aedes Scutellaris*, and *Aedes Albopictus* mosquitoes, but these types are fewer^[14].

Every year dengue hemorrhagic fever spreads to become a general outbreak in Indonesia. Based on data from the Ministry of Health, it is stated that the number of dengue fever cases has increased from 65,602 cases in 2018 (DHF incidence rate = 24.8 per 100,000 population) to 138,127 cases in 2019 (DHF incidence rate = 51.5 per 100,000 population)^[8]. Nationally, the 2019 DHF IR exceeded the national target of ≤ 49 per 100,000 population. Based on data from the Ministry of

Health, the DHF Case Fatality Rate (Death Rate) in Indonesia shows an increase from 2020 to 2021, namely from 0.69% to 0.96% in 2021 ^[6].

East Java is ranked second as the region with the highest number of dengue fever cases in Indonesia in 2021 with 6,760 cases. Based on data from the East Java Provincial Health Service, it was found that the incidence rate of dengue hemorrhagic fever in East Java in 2018 was 23.9 per 100,000 population, experiencing an increase in 2019, namely 47 per 100,000 population ^[2]. The Case Fatality Rate (CFR) of DHF in East Java in 2020 was 0.8%, but in 2021 it was 1.1%, this shows that the death rate due to DHF in East Java exceeds the national target set at < 1% ^[3].

Based on data from the Kediri City Health Service, it was found that the DHF Incidence Rate in 2022 was 30.2 per 100,000 population and in 2023 until June the DHF IR was recorded at 25.4 per 100,000 population. Based on the provincial target, it was found that the DHF IR rate in Kediri City exceeded the target, where the target was <10 per 100,000 population, so efforts must be made to reduce DHF cases in Kediri City. The DHF death rate or Case Fatality Rate (CFR) at the Kediri City Health Service in 2021 was recorded at 0.6%, so this shows that the DHF death rate at the Kediri City Health Service has met the target of <1%.

The National Dengue Management Strategy 2021-2025 unites us all to work together to tackle dengue towards zero deaths by 2030. In the National Medium Term Development Plan (RPJMN) 2020-2024 and the Ministry of Health's Strategic Plan (Renstra) 2020-2024, dengue is included as a disease. which has the potential to cause an outbreak [9]. The dengue fever prevention strategy has been implemented by the Indonesian Ministry of Health with a focus on efforts to prevent the eradication of mosquito nests (PSN) by strengthening health service capacity and resources, strengthening epidemiological surveillance and optimizing early awareness of dengue hemorrhagic fever outbreaks. ^[10].

PSN 3M Plus is an action to control dengue fever by making efforts to eradicate mosquito nests and avoid being bitten by Aedes mosquitoes. PSN 3M Plus behavior can break the chain of transmission of the dengue virus so that the expected result is a reduction in the incidence of DHF ^[11]. Preventing dengue fever through PSN activities is still dominated by Jumantik by involving the community to participate in the implementation of PSN as a dengue prevention measure. Efforts to eradicate dengue fever can only be successful if the entire community plays an active role in PSN dengue fever ^[4]. Based on research conducted by Hidajat (2004) shows that the failure of the dengue fever prevention and eradication program in preventing and reducing the high number of cases is closely related to the lack of community participation. This is because the education of the dengue fever program to the community has not gone well ^[5].

Efforts to prevent and eradicate Dengue Hemorrhagic Fever have been carried out by the Kediri City Health Service which aims to reduce the spread of areas infected with Dengue Hemorrhagic Fever, reduce the number of Dengue Hemorrhagic Fever sufferers, and reduce the death rate due to Dengue Hemorrhagic Fever. However, until now we have not been able to reduce the morbidity and mortality rates as expected and have not been able to change the status of several areas from endemic areas to non-endemic areas. Therefore, researchers want to examine the analytical picture of Dengue Hemorrhagic Fever health problems in the work area of the Kediri City Health Service in 2023.

Method

This research is qualitative research with an observational descriptive design. This research was conducted in the Kediri City Service Working Area in July-August 2023. The informants in this research were the Sub-Coordinator for Prevention and Control of Infectious Diseases (P2PM), the Dengue Hemorrhagic Fever program holder at the Health Service, and three DHF program holders at the Community Health Center who had the highest number of cases. The highest dengue fever in 2023

is Sukorame Community Health Center, Balowerti Community Health Center, and Pesantren Community Health Center 1. The dependent variable in this research is Dengue Hemorrhagic Fever, while the independent variables are priority health problems, root causes of problems, and alternative problem solutions.

Determining problem priorities in this research uses the USG method (Urgency, Seriousness, Growth). Priority problems found will be identified as the root cause of the problem using a fishbone diagram and alternative problem solving will be created. Data collection in this research was carried out using in-depth interviews via questionnaires. Presentation of data in this research uses tables and narrative text.

Result

1. Priority Health Problems

Based on the results of the problems revealed through interviews, five health problems were found in the DHF program in the Kediri City Health Service Work Area in 2023 (Table 1.)

Based on table 1, it is known that the results of the priority problem analysis in the DBD Program at P2PM Kediri City Health Service, it is known that the priority problem is related to the lack of public awareness in carrying out PSN (Mosquito Nest Eradication) with 3M Plus in Kediri City. So with these known problems, it is necessary to study the causes of the lack of public awareness in carrying out PSN (Mosquito Nest Eradication) in 2023.

2. Root Cause of the Problem

Based on the problem priorities that have been obtained using the ultrasound method, an analysis of the causes of the problem is carried out using a fishbone diagram (Figure 1).

Table 1. Priority Analysis of Dengue Hemorrhagic Fever Program Problems in the Work Area of the Kediri City Health Service in 2023

No.	Issues/Concerns	Assessment criteria			Total value	Priority
		U	S	G		
1.	The community is still focused on fogging in dealing with Dengue Fever (DHF) in Kediri City	3	3	3	9	III
2.	Reporting of dengue fever surveillance from community health centers to the Kediri City Health Service is not yet optimal	3	2	3	8	IV
3.	The implementation of larva monitoring carried out by jumantik cadres once a week is less than optimal and reporting to the community health center is also slow	4	3	3	10	II
4.	low public awareness in carrying out PSN (Eradication of Mosquito Nests) with 3M in Kediri City	5	5	4	14	I
5.	There is still resistance from the community to carry out larva monitoring by jumantik cadres even though they have complete attributes and a permit	3	2	3	8	IV

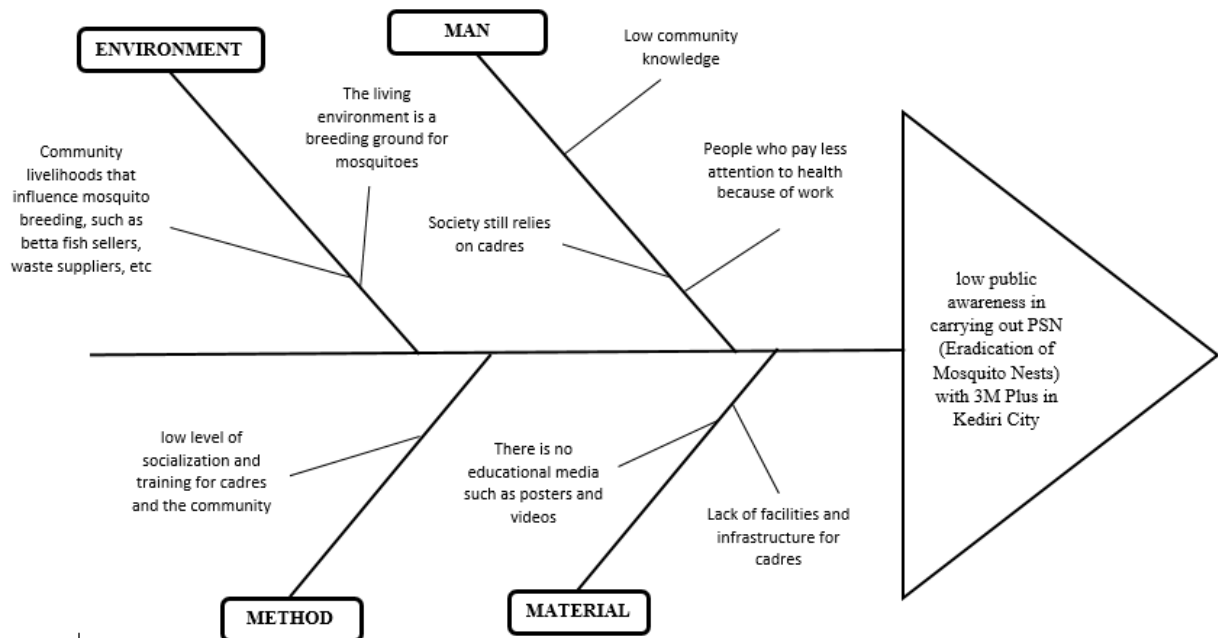


Figure 1. Fishbone Causes of Priority Problems in the Work Area of the Kediri City Health Service in 2023

Based on interviews, it is known that the cause of the lack of public awareness in Kediri City in carrying out Mosquito Nest Eradication (PSN) is due to several causes including lack of public knowledge; people who pay less attention to health because of work; communities that rely on cadres; livelihoods that influence mosquito breeding, such as betta fish sellers who leave their place without betta fish, garbage suppliers, etc.; Living environment that is a breeding ground for mosquitoes; Lack of socialization and training for cadres and the community; There is no educational media such as posters and videos; Lack of facilities and infrastructure for cadres.

3. Alternative Problem Solving

Alternative problem solving based on analysis of the causes of the problem due to lack of public awareness in carrying out PSN (Mosquito Nest Eradication) with 3M in Kediri City, is as follows:

- Providing socialization and training to jumantik cadres by the Health Service and also the Community Health Center which is not only carried out once in socialization/training but several times to provide awareness first to jumantik cadres before providing awareness to the community.
- Providing outreach that attracts public attention by making videos that address the risks of not carrying out PSN which has an impact on dengue fever and providing information posters about dengue fever.
- Jumantik cadres can provide dengue fever outreach at important events such as RT meetings, social gatherings, women's dharma association events, etc. in each RT.
- Starting to actively provide Ledang activities in the dengue-prone months in the transition season where it can be done around the house by car and toa or by broadcasting through the village mosque/prayer room.
- Replacing the ceramic bathroom with a bucket or bucket to collect water for bathing.
- Jumantik cadres also play an active role in abatization of residents.
- Elderly jumantik cadres can be transferred to other people who are ready to replace the new jumantik cadres.

- h. Community service is carried out between RW/RT in implementing PSN and if necessary, a 3M Plus implementation competition is held in the form of implementing PSN in sub-districts/villages and public places.

Discussion

1. Priority Health Problems

The Larva Free Rate (ABJ) is an indicator to measure the success of the implementation of PSN DHF in Indonesia. The government sets a minimum target for ABJ of $\geq 95\%$. The Larva Free Rate (ABJ) in the Kediri City Health Service in 2022 is still below the national target, namely 94.7%. This shows that the implementation of DBD PSN in Kediri City is not yet optimal. Hal ini sependapat dengan penelitian Tampang (2022) which shows that ABJ is still below the national target of 78% ^[17].

Mosquito nest eradication (PSN) activities are the right step to prevent the transmission of dengue cases because no vaccine or definitive therapy has been found for dengue fever. The implementation of the PSN DBD program in the community is known as the 3M Plus activity (draining water reservoirs, tightly closing water reservoirs, and reusing used goods that have the potential to become mosquito breeding sites). Meanwhile, plus actions are actions that consist of sprinkling abate powder, using mosquito nets, keeping fish that prey on larvae, planting mosquito repellent plants, avoiding habits that can attract mosquitoes, and using spray or topical mosquito repellent ^[7]. The aim of the PSN DHF program is to control the mosquito population, specifically the *Aedes aegypti* mosquito as the main vector of dengue fever. However, in reality, the implementation of PSN has not been optimal.

Factors that can trigger less than optimal implementation of DBD PSN include: community knowledge, facilities and infrastructure, and the level of community compliance in the practice of implementing DBD PSN. ^[15]. The important thing in the case of dengue fever lies in public awareness. Based on research studies conducted in Guangzhou, China, it shows that the most important thing in reducing dengue fever infections is public awareness regarding preventing dengue fever, increasing knowledge, disposing of rubbish in its place, and always cleaning waterways around the residence so that it doesn't become infected. flooding, and the use of mosquito repellent ^[1].

2. Root Cause of the Problem

The lack of public knowledge about dengue fever can be caused by a low level of education and also a lack of access to information about dengue fever and how to deal with it. Based on research conducted by Wijaya et al (2021) which stated that respondents who had a low level of knowledge regarding PSN were due to their low level of education. The lack of knowledge referred to in this case is ignorance in sorting out what items have the potential to cause puddles so that this increases the potential for increased mosquito breeding ^[18].

Based on interviews at one of the community health centers in the Kediri City Health Service area, it was found that there were some who lived in housing complexes where it was very difficult to collaborate in implementing PSN and there were some who were difficult to find due to work problems. Apart from that, based on interviews with the P2PM Sub-Coordinator and DBD program holders at the Health Service, it was stated that the community still relies on cadres in monitoring larvae so that when dengue cases are found, they still assume that the cadres are the ones carrying out the PSN, not them, even though it is the community who plays a very important role. only jumatic cadres.

Based on interviews with the P2PM Sub-Coordinator, it was stated that livelihoods also influence the incidence of dengue fever. Where there was a case of dengue fever where it turned out the source of infection was a rubbish dump and a Betta fish seller where the place was left without

any fish in it. Based on research Romadani (2019) stated that one of the diseases caused by waste is dengue fever, apart from that, clean water reservoirs also become breeding grounds for mosquitoes [12].

Based on interviews with the P2PM Sub-Coordinator and DHF program holders, it was found that there was a lack of outreach, training and media that supported reducing the number of DHF cases. This is in line with research Saragih *et al.* (2019) that outreach media is not yet fully available resulting in health promotion about dengue hemorrhagic fever not running optimally as the availability of banners on outreach media has not yet reached the general public [13]. Based on research Suyasa, et al. (2017), To foster community participation, it is necessary to carry out intensive counseling and motivation through various channels of communication and information to the community, such as through television, radio and other mass media, community service and PSN DHF competitions in sub-districts/villages, schools or other public places [16].

Conclusion

Based on the priority analysis of problems using the USG method, it is known that the priority is the lack of public awareness in carrying out PSN (Mosquito Nest Eradication) with 3M Plus in Kediri City. Based on the analysis of the causes of the problem using Fishbone, it is known that the cause of the priority problem in the DBD program of the Kediri City Health Service is a lack of public knowledge; people who pay less attention to health because of work; communities that rely on cadres; livelihoods that influence mosquito breeding, such as betta fish sellers, waste suppliers, etc.; Living environment that is a breeding ground for mosquitoes; Lack of socialization and training for cadres and the community; There is no educational media such as posters and videos; Lack of facilities and infrastructure for cadres. So that alternative problems can be provided with socialization, actively carrying out ledang, community service, holding PSN competitions, and training for jumantik cadres.

References

- [1] B. Yohan, *Demam Berdarah Dengue: Problematika Interaksi Virus, Pejamu, Vektor*. Jakarta: Ejjikman Institute for molecular biology., 2018.
- [2] D. Setiabudi, “Memahami Demam Berdarah Dengue Bagian 1,” 2019. <https://www.idai.or.id/artikel/seputar-kesehatan-anak/memahami-demam-berdarah-dengue> (accessed Feb. 28, 2019).
- [3] Kemenkes RI, *Profil Kesehatan Indonesia Tahun 2019*. Jakarta: Kementerian Kesehatan Republik Indonesia, 2019.
- [4] Kemenkes, *Profil Kesehatan Indonesia Tahun 2021*. Jakarta: Kementerian Kesehatan Republik Indonesia, 2021.
- [5] Dinkes Jawa Timur, *Profil Kesehatan Jawa Timur Tahun 2019*. Jawa Timur: Dinkes Jawa timur, 2019.
- [6] Dinkes Jawa Timur, *Profil Kesehatan Jawa Timur Tahun 2021*. Jawa Timur: Dinkes Jawa timur, 2021.
- [7] Kementerian Kesehatan RI, *Strategi Nasional Penanggulangan Dengue 2021-2025*. 2019.
- [8] M. S. Pratama, E. Vestikowati, and K. Endah, “Strategi Puskesmas Cigeureng Dalam Penanggulangan Demam Berdarah Dengue (Dbd) Di Kelurahan Sukamanah Kecamatan Cipedes,” *J. Kesehat. Masy.*, vol. 2, pp. 2449–2461, 2022.
- [9] F. Priesley, M. Reza, and S. R. Rusdji, “Hubungan Perilaku Pemberantasan Sarang Nyamuk dengan Menutup, Menguras dan Mendaur Ulang Plus (PSN M Plus) terhadap Kejadian Demam Berdarah Dengue (DBD) di Kelurahan Andalas,” *J. Kesehat. Andalas*, vol. 7, no. 1, p. 124, 2018, doi: 10.25077/jka.v7.i1.p124-130.2018.
- [10] L. Erviana and M. I. Purnamasari, “Penerapan Jumantik Dan 3M Dalam Upaya Penanggulangan Demam Berdarah Pada Mahasiswa Stkip Pgri Pacitan,” *Semin. Nas. Has. Penelit. dan Abdimas*, vol. 6, pp. 168–172, 2021, [Online]. Available: http://seminar.stkippacitan.ac.id/wp-content/uploads/2022/02/PROSIDING-SEMNAS-2021_31_PENERAPAN-JUMANTIK-DAN-3M-DALAM-UPAYA-PENANGGULANGAN-DEMAM-BERDARAH-PADA-MAHASISWA-STKIP-PGRI-PACITAN.pdf.
- [11] D. D. I. Hidajat, “Peran Serta Masyarakat dalam Upaya Pencegahan dan Pemberantasan Penyakit Demam Berdarah Dengue: Kasus di Jakarta,” *Tesis*, 2004.
- [12] T. O. . Tampang., “Analisis Spasial Demam Berdarah Dengue Kota Manado dan analisis Upaya Pengendalian Vektor Demam Berdarah Dengue Sebelum dan Masa COVID-19 di Kecamatan Malayang,” in *Tesis*, Makassar: FKM Universitas Hasanuddin, 2022.
- [13] Kemenkes RI., *Pedoman Pengendalian Penyakit Demam Berdarah Dengue di Indonesia*. Jakarta: Ditjen Pengendalian Penyakit dan Penyehatan Lingkungan., 2018.
- [14] Supriyanto, “Hubungan antara pengetahuan, sikap, praktek keluarga tentang pemberantasan sarang nyamuk (PSN) dengan kejadian demam berdarah dengue di wilayah kerja Puskesmas Tlogosari wetan Kota Semarang,” in *Skripsi*, Semarang: Universitas Diponegoro, 2011.
- [15] B. Chen, J. Yang, L. Luo, Z. Yang, and Q. Liu, “Who is vulnerable to dengue fever? A community survey of the 2014 outbreak in Guangzhou, China,” *Int. J. Environ. Res. Public Health*, vol. 13, no. 7, 2016, doi: 10.3390/ijerph13070712.
- [16] Y. N. Wijaya, R. S. Bestari, L. M. Dewi, and N. Nurhayani, “Hubungan Tingkat Pengetahuan dan Persepsi dengan Perilaku Pemberantasan Sarang Nyamuk Demam Berdarah Dengue (PSN DBD) pada Siswa SMA 2 Bae Kudus,” *Proceeding of The URECOL*, vol. 1, no. 2, pp. 136–142, 2021.
- [17] Romadani, “Hubungan Upaya Pencegahan Terhadap Kejadian Penyakit DBD Pada Masyarakat di Desa Gemaharjo Wilayah Kerja Puskesmas Gemaharjo Kabupaten Pacitan,” in *Skripsi*, Madiun: Stikes Bhakti Husada Mulia, 2019.

- [18] I. D. Saragih, R. Fahlefi, D. J. Pohan, and S. R. Hartati, "Analisis Indikator Masukan Program Pemberantasan Demam Berdarah Dengue Di Dinas Kesehatan Provinsi Sumatera Utara," *Contag. Sci. Period. J. Public Heal. Coast. Heal.*, vol. 1, no. 01, 2019, doi: 10.30829/contagion.v1i01.4821.
- [19] D. A. I. W. . Suyasa, I.G., Putra, N. A., "Hubungan Faktor Lingkungan dan Perilaku Masyarakat dengan Keberadaan Vektor Demam Berdarah Dengue," *J. Ilmu Lingkung.*, vol. 3, no. 1, pp. 1–6, 2017.