

Community Empowerment Program in Overcoming the Problem of Disease in Tomajiko Kelurahan, Pulau Hiri District

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ARTICLE INFO

Article history:

Received: 5th April 2021

Accepted: 20th September 2021

Published: 1st December 2021

Keywords:

DHF, GPSN, Literacy, Hiri Island, Community Empowerment.

ABSTRACT

Dengue Hemorrhagic Fever (DHF) is a problem for tropical countries such as Indonesia. The increasing number of deaths caused by this disease every year is an extraordinary event. To overcome this problem, the UM-MU Ibm team attempted to carry out DHF control activities by disseminating DHF and the PSN (Mosquito Nest Eradication) movement with 3M plus, namely Draining, Closing and Burying. This program aims to increase public understanding of the risk of dengue disease as well as public awareness of clean lifestyles. The empowerment method used is literacy provision and mosquito nest eradication practice. This program is proven to be able to improve students' understanding in eradicating mosquito nests that cause dengue fever. Through this program, the people of the Tomajiko sub-district, Hiri Island sub-district are expected to keep the environment clean all the time to avoid dengue fever. The results of this program are expected to be replicated by several villages around the Hiri archipelago that have the same demographic characteristics.

How to cite: Patilaiya, H. L., & Ishak, S. N. (2021). Community Empowerment Program in Overcoming the Problem of Disease in Tomajiko Kelurahan, Pulau Hiri District. *Jurnal Pemberdayaan Masyarakat Madani (JPMM)*, 5(2), 189-200. <https://doi.org/10.21009/JPMM.005.2.02>

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INTRODUCTION

Dengue hemorrhagic fever (DHF) is a disease caused by the dengue virus belonging to the Arthropod-borne virus, genus flavivirus, and family Flaviviridae. DHF is transmitted through mosquito bites from the *Aedes* genus, especially *Aedes aegypti* (Candra, 2010). Dengue fever can appear throughout the year and can affect all age groups. The emergence of this disease is related to environmental conditions and community behavior (Kemenkes RI, 2017). Data from WHO explains that in 2012, dengue disease ranks as the most important viral disease transmitted by mosquitoes in the world and has increased 30 times since the last 5 decades (World Health Organization, 2012). The study by Tang et al. (2020) explained that DHF is an arboviral infectious disease that often occurs as an extraordinary event because of its rapid spread and deadly potential in Indonesia.

The spread of DHF is caused by the influence of weather and climate factors as well as the transitional season which tends to increase the number of dengue vector habitats, environmental sanitation with the availability of breeding places for female mosquitoes, namely vessels filled with clear water (bathtubs, used cans and other water reservoirs). This condition is exacerbated by a low level of community participation in dengue control is due to the lack of knowledge, attitudes, and actions of groups and communities in dengue control (Syafrawati et al., 2019). Imad et al. (2020) explained that several factors such as globalization, urbanization, and lack of effective vector control have facilitated the spread of this disease which is estimated at 50-400 million infections occur annually. DHF is an endemic disease in most of the tropics with a significant mortality rate between 1-5% (Medagama et al, 2020; Wang et al., 2020).

Eradication of the *Aedes aegypti* mosquito population is not limited to planting behavioral patterns, namely draining, closing, and burying (3M), but also thinking about environmental patterns that occur in support of the 3M program. 3M's behavior is individual behavior within the community and a more universal concept of preventing it is part of a government program. These mosquitoes live in puddles of clean water, apart from being triggered by water reservoirs, mosquitoes also thrive in the presence of puddles due to the excessive volume of organic waste. By cleaning mosquito nesting places, by closing water reservoirs that have the potential to become mosquito larvae nests is one step to minimize the development of this disease.

This empowerment is carried out in the Tomajiko Village, Hiri Island District, Ternate City, where the condition of the community still adheres to the traditional culture of the archipelagic community. The small island with an area of only 9.2 KM was declared by the local government and the central government as a child-friendly island (Subuh & Mulae, 2020). In addition, the condition of people who depend on agriculture such as cloves and fishermen in the sea makes the level of education less of a major concern in this area. As a result, the level of literacy regarding the dangers of DHF is an important problem to be solved. The lack of knowledge about preventive measures in preventing this disease has

led to the development of the *Aedes aegypti* mosquito.

In response to this, the IBM Team of the University of Muhammadiyah North Maluku (UMMU) took the initiative to provide literacy and motivation to the community to jointly prevent the transmission of this disease. This program can also increase the motivation of the residents of Tomajiko Village, Hiri Island District in terms of knowledge and practice of PSN DHF. Based on the observations of the UMMU IBM team to Tomajiko Village, Hiri Island District, Ternate City, there were several problems in preventing dengue disease on this island. The main problem for residents is the lack of public knowledge in preventing dengue fever. The low level of education in this area compared to the national average is a separate problem in the attitudes and behavior of the people. As explained by Zakiy & Rozikan (2020) that low levels of education can worsen the condition of society to development. For this reason, the UMMU IBM team will try to empower the community to overcome the problems that occur in the Tomajiko Village, Hiri Island District, Ternate City.

LITERATURE REVIEW

Community behavior can be formed from attitudes, norms that apply, and control over behavior. For this reason, adequate information is needed so that the behavior carried out can run as it should. Tackling the problem of DHF transmission also requires knowledge, so that the public has information that can be maximized for decision making. Individual behavior towards disease depends on the knowledge, attitudes, and actions of individuals. If the individual's knowledge of a disease is not known, then attitudes and actions in prevention efforts are neglected. Therefore, it is necessary to empower the community by increasing public knowledge about PSN DHF to control the high cases of DHF by providing literacy in the form of socialization and movement to eradicate mosquito nests. Empowerment itself is defined as increasing the ability to access elements of development, especially health, education, income-earning opportunities, rights, and political participation (Duflo, 2012).

Dengue Hemorrhagic Fever (DHF) is an endemic disease in more than 100 countries in the world, including in Africa, America, Southeast Asia, and the Western Pacific (Tomia et al., 2020). Based on the number of dengue cases reported globally by the World Health Organization (WHO), it is known that there has been an increase in the number of dengue cases from 2.2 million cases in 2010 to 3.2 million cases in 2015, about 40% of the world's population. Including unreported cases, WHO estimates that there are around 50-100 million cases of DHF that occur every year, mainly in Asia, Latin America, and Africa. In 2016 WHO reported that there were 15.2 million cases of DHF in the Asia Pacific (CDC, 2016).

Based on data released by the Ministry of Health, the number of dengue cases reached 13,683 throughout Indonesia from the beginning of the year in January-February 2019. 133 people died. This case has increased, along with high rainfall conditions in Indonesia (Kemenkes RI, 2019). Especially in island

areas such as Hiri Island where the rainfall is very high.

The number of cases of dengue hemorrhagic fever (DHF) in North Maluku Province for the period January-February 2019, recorded 154 cases and 1 died. This number is spread over 10 districts and cities in North Maluku. Of that number, North Halmahera Regency recorded the most DHF patients with 63 people, followed by Ternate City with 38 people, Central Halmahera Regency with 17 people, Tidore Islands City with 17 people. Then, Central Halmahera Regency 17 people, Morotai Regency 8 people, South Halmahera Regency 5 people, and East Halmahera and West Halmahera districts every 3 people. 1 patient who died was Tidore Kepulauan (Kompas.com, 2019).

The high number of DHF patients in North Maluku Province needs to take preventive measures to prevent an increase in DHF cases in this province. Preventive steps can be taken care of by conducting socialization about dengue disease and carrying out the Mosquito Nest Eradication Movement as a tangible form of preventing DHF for the people of North Maluku Province, especially in Tomajiko Village, Hiri Island District.

MATERIAL AND METHOD

The empowerment carried out was divided into 2 parts, namely the socialization of dengue disease and the Mosquito Nest Eradication Movement in Tomajiko Village, Hiri Island District. Community service through social service activities. The socialization participants were followed by students and the local community. For the service team, we involve several students to help carry out this activity so that it can run smoothly. Several stages in the implementation of this program can be explained as follows:

a. Planning Stage

The planning stage is preparing a plan of activities to be carried out such as the division of tasks for the members of the implementing team, designing materials, banners, and pretest and posttest questionnaires. The implementation team consulted with partners consisting of the school and the village head in terms of licensing, the readiness of participants, and facilities that support the implementation of activities. At this stage, we make observations to the community to find out the situation and conditions experienced by the partner community, especially in the health problems of the village community. In this observation stage, we held discussions with several empowerment program partners which resulted in problems that would be sought for solutions, such as the low level of community knowledge regarding DHF. We confirmed this data with data on the level of DHF in the local area and concluded to carry out this empowerment program.

b. Implementation Stage

The stages of socialization about dengue hemorrhagic fever (DHF) and continued with the Mosquito Nest Eradication (PSN) action. The implementing team divides the duties and responsibilities

ties to accommodate these activities. The division of tasks in this program is that the team leader is Julesti Liamban as well as the speaker of DHF socialization, while the Mosquito Nest Eradication action is accommodated by Nurain Basahona and as assistant lecturers Mr. Hairudin La Patilaiya and Mrs. Sitti Nurhidayanti Ishak. about the dangers of dengue fever, followed by cleaning of villages and houses of residents that have the potential to become a breeding ground for dengue mosquitoes. This program is carried out regularly every week so that people are aware of the dangers of DHF and improve public health.

c. Evaluation Stage

At this stage is the stage of monitoring and evaluating the overall activities that have been carried out. Empowerment evaluation is important to find out the shortcomings of the programs that have been implemented (Zakiy, 2021). Monitoring includes during the activity and is carried out by the implementing team. Evaluation of activities is carried out by carrying out pretest and post-test. The provision of this test is carried out to see the public's understanding of the risks and ways of controlling dengue disease so that the program that has been given can run sustainably. In addition, we also evaluate after each activity is carried out to find out the shortcomings and obstacles that must be prepared for in the next program.

RESULT AND DISCUSSION

Overview and Implementation of Activities

After the service team conducted a survey at the partner location, namely in Tomajiko Village, Hiri Island District, we found several important things that could be done to empower the local community. The lack of knowledge of residents regarding preventive measures to eradicate dengue mosquito nests has made the service team formulate several programs to carry out counseling and literacy to the community to increase public awareness in maintaining a clean environment. In addition, the geographical location of Hiri Island, which is one of the island's tourist destinations in North Maluku, makes this island must always maintain the cleanliness and beauty of the environment to attract tourists who visit this place. For this reason, in addition to providing public awareness literacy on the environment, we also carry out a social service empowerment program to become a community habit every week in cooperation. This step is a form of our responsibility as members of the community (Rozikan & Zakiy, 2019). Several stages of empowerment can be explained as follows:

a) Preparation for the Implementation of Activities

The initial step in this activity we did by determining the relevant parties involved in this program. We carried out this activity by establishing communication with the agencies, including the Tomajiko Village Head and the Tomajiko Elementary School Principal. Lurah Tomajiko was chosen as a village apparatus to encourage or mobilize residents to join this program. Meanwhile, the Principal of SD Tomajiko was chosen because we involved elementary school students to be

trained in awareness of clean and healthy living from an early age. We have prepared all the preparations starting from December 10, 2019, until the day of the activity, which is December 29, 2019. In preparing this program we communicated with partners and took care of several permits so that this activity could run smoothly.

b) Making Materials and Materials

After compiling the empowerment program that will be carried out, the service team prepares the materials and materials needed for the smooth running of this program. In this stage, we made presentation slides, pre-test, and post-test questionnaires to determine the level of understanding of the community towards dengue fever. For our equipment, we provide cleaning tools such as brooms, soap, and buckets. For other equipment, the villagers prepared through the village apparatus.

c) The Practice of Implementation of Service Activities

Before carrying out the activity, the IBM team visited the location of the activity to consolidate with the Tomajiko Village Head and the Tomajiko Elementary School Principal and it was agreed to carry out DHF socialization activities and continued with the Mosquito Nest Eradication action in the morning. The activities carried out include:

1. DHF socialization activities at SD Tomajiko

Before the DHF socialization material was delivered to students, the IBM team distributed pre-test sheets about DHF to test student's knowledge, and after the socialization, the IBM team retested students' knowledge about BDB by distributing post-test sheets to students with a total of 10 questions.

To find out the level of knowledge, the IBM Team gave sheets (pre-test and post-test), which can be seen in Table 1. below.

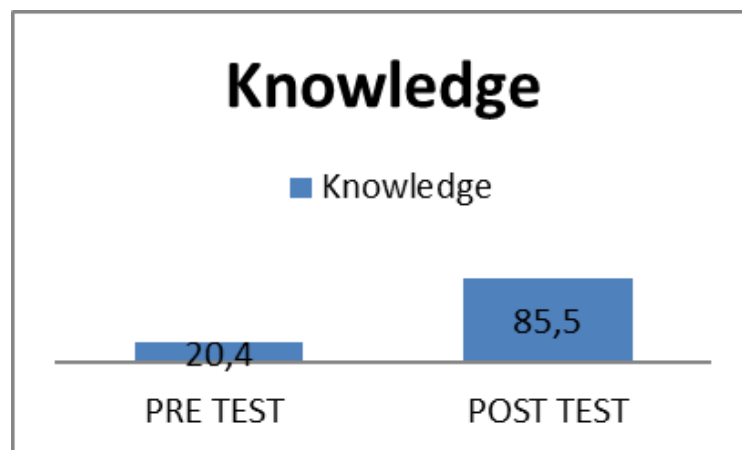


Figure 1.
Results of DHF socialization measurement (pre-test and post-test).

Based on the results (pre-test and post-test), the above shows an increase in students' knowledge about DHF at SD Tomajiko before and after socialization can be seen from the results (pre-test 20.4% and post-test 85.5%) of 28 students. This indicates that the program that was run was fairly good because the level of knowledge after being given socialization increased to a good category. According to Arikunto (2021), the level of knowledge is in a good category if the value is above 76%. The IBM Team with Tomajiko Elementary School students participating in the program, which can be seen in Table 2.



Figure 2.
The IBM Team with Tomajiko Elementary School students participating in the program

The IBM Team with the Tomajiko Elementary School Teacher Council, which can be seen in Table 3. below.



Figure 3.
The IBM Team with the Tomajiko Elementary School Teacher Council

One of the things that affect a person's knowledge is the information that can be obtained, where socialization is one method to provide information (Pratiwiet al., 2018). In addition, the provision of motivation is also considered capable of moving someone to perform a behavior. For this reason, we carry out this empowerment to direct the community to behave positively, following the concept of empowerment that provides added value to the community (Noermawati, et al., 2019; Zakiy et al., 2020).

These results are in line with research (Pratiwi et al., 2018) that there is an increase in knowledge before and after counseling with the lecture method, it is known that the post-test average value is higher than the pre-test average value. From these results, it can be concluded that there was an increase in the average knowledge of program participants about DHF using the extension method. The IBM Team with Residents Cleans the Environment which can be seen in Table 3. below.



Figure 4.
The IBM Team with Residents Cleans the Environment

Knowledge is the result of the human sensing process of an object so that humans become aware. Knowledge is the first factor in changing human behavior. Behavior in the context of preventing DHF will change if students know about DHF. Respondents' knowledge about dengue, although there was a significant increase from before and after counseling, it was still necessary to disseminate information through socialization about dengue.

2. Mosquito Nest Eradication Activities

PSN is a movement to eradicate mosquito nests by carrying out 3M Plus. What is meant by 3M Plus are:

- 1) Drain and clean places that are often used as water reservoirs such as bathtubs, water buckets, drinking water reservoirs, refrigerator water reservoirs, and others.
- 2) Close the water reservoirs such as drums, jugs, water towers, and so on.
- 3) Reuse or recycle used goods that have the potential to become a breeding ground for dengue mosquitoes.
- 4) Sprinkle sida larvae powder (better known as abate powder) on water reservoirs that are difficult to clean.
- 5) Using mosquito repellent or mosquito repellent
- 6) Use a mosquito net while sleeping
- 7) Keeping fish that eat mosquito larvae
- 8) Plant mosquito repellent plants
- 9) Regulate light and ventilation in the house
- 10) Avoid the habit of hanging clothes in the house which can be a resting place for mosquitoes and others.

Eradication of mosquito nets to prevent dengue transmission with 3M Plus, namely regularly draining the bath, closing the tub or water reservoir, and burying cans or containers that can hold water. Community participation is very important in eradicating mosquito nests with PSN 3M Plus. One of the most effective ways to prevent this is to routinely carry out PSN 3M Plus activities and do community service to clean up the neighborhood. To the people in the Tomajiko sub-district, Pulau Hiri sub-district to always apply a healthy lifestyle, such as eating nutritious food, getting enough rest, and exercising. A healthy lifestyle will support the creation of resistance to diseases including DHF (Warta Kota live, 2019).

CONCLUSION AND RECOMMENDATION

This program has provided an understanding for elementary school students regarding preventive measures to eradicate mosquito nests that cause dengue fever. This is evidenced by the significant difference between before and after health education. In addition, this program has also provided added value for the community in Tomajiko Village, Hiri Island District, in their awareness of keeping the environment clean and healthy.

REFERENCES

- Arikunto, S. (2021). *Dasar-Dasar Evaluasi Pendidikan Edisi 3*. Bumi Aksara.
- Candra, A. (2010). Demam Berdarah Dengue: Epidemiologi, Patogenesis, dan Faktor Risiko Penularan. *Aspirator Journal of Vector-Borne Diseases*, 2(2), 536-36.
- CDC. (2016). Dengue Epidemiology. <https://www.cdc.gov/dengue/epidemiology/index>.
- Duflo, E. (2012). Women empowerment and economic development. *Journal of Economic Literature*, 50(4), 1051-79.
- Imad, H. A., Phumratanaprapin, W., Phonrat, B., Chotivanich, K., Charunwatthana, P., Muangnoicharoen, S., ... & Shioda, T. (2020). Cytokine expression in dengue fever and dengue hemorrhagic fever patients with bleeding and severe hepatitis. *The American journal of tropical medicine and hygiene*, 102(5), 943-950.
- Kemkes RI. (2019). Direktorat Jendral Pengendalian Penyakit dan Penyakit Lingkungan. Kesiapsiagaan Menghadapi Peningkatan Demam Berdarah Dengue. <http://p2p.kemkes.go.id/kesiapsiagaan-menghadapi-peningkatan-kejadian-demam-berdarah-dengue-tahun-2019/>
- Kemkes RI. (2017). Info Datin Situasi Penyakit DBD di Indonesia, Pusat Data dan Informasi. <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwjlrn9q-PvAhWH4XMBHbKQDaAQFjAAegQIB-BAD&url=https%3A%2F%2Fpusdatin.kemkes.go.id%2Fdownload.php%3Ffile%3Ddownload%2Fpusdatin%2Finfodatin%2FInfoDatin-Situasi-Demam-BerdarahDengue.pdf&usq=AOvVaw2YOz4xWWonK5JhKaO9I8UB>
- Kompas.com - 06/02/2019, 22:05 WIB, judul "DBD di Maluku Utara 154 Kasus, 1 di Antaranya Meninggal Dunia", Klik untuk baca: <https://regional.kompas.com/read/2019/02/06/22050341/dbd-di-maluku-utara-154-kasus-1-di-antaranya-meninggal-dunia>.
- Medagama, A., Dalugama, C., Meiyalakan, G., & Lakmali, D. (2020). Risk factors associated with fatal dengue hemorrhagic fever in adults: A case-control study. *Canadian Journal of Infectious Diseases and Medical Microbiology*, 2020.
- Noermawati, J., Pratiwi, A., Rozikan, R., & Zakiy, M. (2019). Pemberdayaan Kelompok Hadroh Dalam Peningkatan Status Sosial Dan Ekonomi Masyarakat Di Indonesia. In *Seminar Nasional Hasil Penelitian & Pengabdian Kepada Masyarakat (SNP2M)* (pp. 399-404).
- Pratiwi, A. S., Mutiara, H., & Fakhrudin, H. (2018). Perbedaan Peningkatan Pengetahuan tentang Demam Berdarah Dengue antara Metode Ceramah dan Video Animasi Pada Murid Kelas V dan VI SD Negeri 12 Metro Pusat. *MAJORITY*, 7(3), 41-48.
- Rozikan, R., & Zakiy, M. (2019). Pengaruh Religiusitas dan Tanggungjawab Sosial Terhadap Etos Kerja Islami pada Karyawan Lembaga Filantropi. *Islamadina: Jurnal Pemikiran Islam*, 20(2), 191-209.
- Subuh, R. D., & Mulae, S.O. (2020). Strategi Pengembangan Kampung Wisata Berbasis Masyarakat Kepulauan Di Pulau Hiri. *Humano: Jurnal Penelitian*, 10(2), 417-425.
- Syafrawati, S., Argameli, S., Oktari, F., & Putra, H. S. N. (2019). Upaya menurunkan angka demam berdarah dengue (DBD) melalui penguatan peransiswa di SDN 38 Kuranjikota Padang. *Jurnal Hilirisasi IPTEKS*, 2(1), 36-42.

- Tang, S. C. N., Musofa, R., & Pudji, L. (2020). Climate Variability and Dengue Hemorrhagic Fever in Surabaya, East Java, Indonesia. *Indian Journal of Medical Research*, 11(2), 131-137.
- Tomia, S., Hadi, U. K., Soviana, S., & Retnani, E. B. (2020). Epidemiologi Kejadian Demam Berdarah Dengue di Kota Ternate, Maluku Utara. *Jurnal Veteriner*, 637-645.
- Wang, W. H., Urbina, A. N., Chang, M. R., Assavalapsakul, W., Lu, P. L., Chen, Y. H., & Wang, S. F. (2020). Dengue hemorrhagic fever—a systemic literature review of current perspectives on pathogenesis, prevention, and control. *Journal of Microbiology, Immunology and Infection*, 53(6), 963-978.
- Wartakotalive, 2019. dengan judul Pemerintah Kota Bekasi Gencarkan Aksi Pemberantasan Sarang Nyamuk Demam Berdarah Dengue, <https://wartakota.tribunnews.com/2019/02/07/pemerintah-kota-bekasi-gencarkan-aksi-pemberantasan-sarang-nyamuk-demam-berdarah-dengue>.
- World Health Organization. (2012). Global strategy for dengue prevention and control 2012-2020
- Zakiy, M. & Rozikan (2020). The Establishment of a Joint Business Group (KUB) as an Alternative to The Economic Independence of The People of Pedak Village, Srandakan, Bantul. *Jurnal Pemberdayaan Masyarakat Madani (JPMM)*, 4(2), 187-201.
- Zakiy, M., Wardana, L. K., & Vebrynda, R. (2020). Pendirian Koperasi Kelompok Usaha Bersama (Snack) Dusun Kasihan RT 6 Tamantirto Kabupaten Bantul DI Yogyakarta. *ETHOS: Jurnal Penelitian dan Pengabdian kepada Masyarakat*, 8(2), 145-153.
- Zakiy, M. (2021). Inisiasi Pembentukan Usaha Baru Melalui Pemberdayaan untuk Mewujudkan Kemandirian Ekonomi Warga. *JPPM (Jurnal Pengabdian dan Pemberdayaan Masyarakat)*, 5(1), 1-6.