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Research Article

Community Empowerment with Independent Larva Monitor in Reducing the Dengue Hemorrhagic Fever Incidence, in Sidrap Regency

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ABSTRACT

Objective: This study aims to determine the effectiveness of developing a community empowerment model through independent larva monitor with an overlap in controlling dengue disease incidence in Sidrap Regency. **Methods:** This study used a mix-method conducted in Tanete Village. The number of samples for quantitative data was 70 respondents, and the qualitative data was 12 informants. Data collection was carried out through Focus Group Discussions, observations, and interviews. The data were analyzed using the McNemar test. **Results:** The results showed that the behavior of the people affected by dengue fever is people who do not maintain the cleanliness of their environment, litter, and people's habits do not routinely drain water tanks, and drinking places for livestock become mosquito shelters. The results of dengue counseling showed a significant difference between people's behavior related to dengue fever disease before and after counseling. Most people stated that explanations related to how to make and the process of making ovitrap were easy to do. They were interested in making their own because they used materials that were easy to find at home. In addition, the community has been obedient in implementing independent romantic programs. The results of overlap observations show that simple overlap can trap mosquitoes. **Conclusion:** The development of empowerment models through independent larva monitor can be used to prevent and control dengue disease.

Key words: Dengue Fever, Community Empowerment, Independent Larva Monitor, Ovitrap.

INTRODUCTION

Tropical diseases such as Dengue Hemorrhagic Fever (DHF), malaria, and tuberculosis are still public health problems. The increased incidence of tropical diseases is due to warming up global.[1-4] Cases number of DHF disease tend to increase and spread widely. About half of the world's population is at risk of being infected with the dengue virus. There are an estimated 100-400 million dengue infections each year. More than 50% of the global population exposed to dengue is in the Asia- Pacific region.[5]

DHF disease is caused by infection with the dengue virus transmitted through the bite of mosquitoes of the genus Aedes in particular Aedes aegypti or Aedes albopictus.[6] The incidence of dengue is influenced by ecological factors such as rainfall, temperature, and humidity.[7] Detection and serotype mapping in an area can be strategies for monitoring dengue virus transmission.[8]

South Sulawesi Province is an endemic area of dengue fever. Based on data from the South Sulawesi Provincial Health Office, dengue cases continue to increase yearly and are almost evenly distributed in several regions. The number of dengue cases in South Sulawesi in 2021 increased significantly. Makassar City and Sidrap Regency are the two regions in South Sulawesi as the highest contributors to dengue cases in South Sulawesi.

Dengue fever cases were recorded in Sidrap Regency from January to June 2021, reaching 316 cases, and five died. Generally, those who are infected are school-age children.[9] These facts are interesting to study to determine the factors that may play a role in the increase in cases.

Until now, efforts to involve community participation in eradicating Aedes aegypti mosquitoes have been carried out but still have not shown satisfactory results. Overcoming and preventing the outbreak of the danger of dengue disease requires the participation of the community and health cadres. One of the efforts that can be made is to form an officer who can monitor the presence of larvae called a larva monitor. Community empowerment through romantic cadres is an important subject in controlling dengue vectors.

Egg surveys have proven to be quite effective for detecting the presence of Aedes aegypti mosquito populations, usually by using overlap or egg traps.[10] The use of overlap successfully reduces mosquito populations in several countries, including Houston, Thailand, Sao, and Australia. The results of Sukesi's research found that community empowerment with the independent home romantic cadre method with the overlap application was effectively carried out to help efforts to control dengue fever in Yogyakarta.[11] The successful use of ovitrap for mosquito control has also been conducted research in South Jakarta and Malang. Until now, there has been no use of ovitrap by officials or the public to reduce mosquito density in Sidrap District.

Based on the background description, the researchers are interested in developing a model of

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dengue prevention intervention in Sidrap District through community empowerment of romantic cadres of independent homes with the use of overlap.

MATERIALS AND METHODS

Location and research design

This study is in Tanete Village, Maritengngae District, Sidrap Regency, South Sulawesi Province. The study was conducted from June to November 2022. This analytical research uses a mix- method research design.

Subject of research

The subjects of this study were people who had been affected by dengue fever or who were not affected by dengue fever, Tanete Village officials, health cadres, romantic cadres, and community leaders in Tanete Village.

Data collection

This study used primary data and secondary data. The collection of primary research data was carried out through Focus Group Discussion (FGD), interviews, filling out questionnaires, and observation sheets. Secondary data on the incidence of dengue fever in Sidrap Regency in 20 20-202 2 was obtained from the Sidrap District Health Office. The stage of this study is to identify the cause of dengue disease, intervene by providing counseling and training, and monitor the intervention results.

Data analysis

The analysis was performed with a member test using the McNemar test to see differences in behavior (knowledge, attitudes, and actions) before and after the intervention.

RESULTS

The focus group discussion (FGD) results on research subjects related to DHF disease revealed that community efforts in eradicating dengue vector mosquitoes are not new. The community has often received counseling about keeping the environment clean. However, this has not become a priority or a habit of the people. As quoted in the following FGD:

"... It has also been conveyed to the community through counseling. But it's the person who, eh... don't want to, who doesn't care, who is ignorant..."

(HK, Tanete Village Officer)

"... If it's in that society. If it is delivered today, it will be implemented today. It's generally like that. Two or three days later, if you don't pay much attention. So, well, they went back to old habits...."

(NA, Tanete Village Health Cadre)

People also often throw garbage in the river or pile garbage in front of their homes. It is this garbage that becomes a container for mosquitoes to breed. As quoted in the following FGD:

"... Usually, that, if it's kept in front of the house, there's a dog, what's there, ... It's also common to throw in the river..."

(MSL, Community leader)

In addition, the place of drinking water for livestock is also a place for mosquitoes to eat. As quoted in the following FGD:

"... a place where chicken drinking water is rarely replaced by many mosquitoes there..."

(AE, Tanete Village Community)

Based on the Focus Group Discussion (FGD) activities, it can be concluded that the behavior of the people affected by dengue fever is people who do not maintain the cleanliness of their environment and litter. In addition, in Tanete Village, most chicken farmers have cages in the home environment. The place where livestock drink becomes a place for mosquitoes to eat.

Don the characteristics of respondents in Sidrap District in 2022 can be seen in table 1. Seventy respondents participated in the study, and more were aged 26-35 (41.4%). The last education of more respondents who graduated from high school/equivalent was 44.3%. Based on the exposure to information about DHF disease, more respondents were exposed to or had information about DHF disease (78.6%). In terms of preventive measures against DHF disease, more than 50% of respondents have good DHF prevention measures.

The behavior (knowledge and attitudes) of the community related to DHF disease before and after counseling was analyzed using the Mc Nemar test. The results of the analysis showed a significant difference between the level of knowledge and attitudes of the community regarding DHF disease before and after counseling, each with a p-value = 0.000. That is, there is an influence on counseling on improving knowledge and attitudes related to DHF disease (Table 2 and Table 3).

Table 2 shows that before counseling, 31 people were less knowledgeable, and 37 people were sufficiently knowledgeable. After being given counseling, two people changed their knowledge from enough to less, and 24 people changed their knowledge from less to enough.

Table 3 shows that before counseling was given, 28 people had negative attitudes, and 42 people had positive attitudes related to DHF. After being given counseling, two people changed their attitudes from positive to negative, and 20 changed their attitudes from negative to positive.

There were 30 participants in the humanistic training and simple overlap-making. The community seems enthusiastic about participating in humanistic training and making simple overlaps such as mosquito egg traps. Most respondents stated that explanations related to the manufacturing method and manufacturing process of ovitrap are easy to do, and they are interested in making their own because they use materials that are easy to find at home (Table 4).

Table 1: Distribution of respondent characteristics in Sidrap regency in 2022.

Characteristics of Respondents	Number	
Age Group (years)		
17-25	7	10,0
26-35	29	41,4
36-45	23	32,9
46-55	8	11,4
>55	3	4,3
Final Education		
Not Finished Elementary School/Not Yet in School	6	8,6
Finished Elementary School	17	24,3
End of Junior High School	2	2,9
Senior High School	31	44,3
College	14	20,0
Information Exposureabout DHF Disease		
Exposed	55	78,6
Not exposed	15	21,4
DHF Preventive Actions		
Good	57	60,0
Bad	43	40,0
Total	70	100

Source: Primary Data, 2022

Table 2: Level of public knowledge related to DHF disease before and after counseling in Sidrap regency in 2022.

Before	After		p-value
	Less	Enough	
Knowledge Level			
Less	7	24	0,000
Enough	2	35	

Source: Primary Data, 2022

Table 3: Community awareness related to DHF disease before and after counseling in Sidrap regency in 2022.

Before	After		p-value
	Negative	Positive	
Attitude			
Negative	8	20	0,000
Positive	2	40	

Source: Primary Data, 2022

Table 4: Respondents' perceptions related to Sidrap district simple Ovitrap making training in 2022.

Simple Ovitrap Creation Training	Frequency	
	n	%
Presentation of Training Materials		
Easy to UnderstandElusive	19	63,3
Manufacturing Process	11	36,7
Easy	22	73,3
Difficult	8	26,7
Interest in Making Simple Ovitrap		
Already	26	86,7
Do not	4	13,3
Total	30	100

Source: Primary Data, 2022

DISCUSSION

The results showed that the behavior of the people affected by dengue fever is people who do not maintain the cleanliness of their environment, litter, and people's habits do not routinely drain water tanks. Drinking places for livestock become mosquito shelters. The results of dengue counseling showed a significant difference between people's behavior (knowledge, attitudes, and actions) related to dengue disease before and after counseling. Most people stated that explanations related to the manufacturing method and process of making ovitrap were easy to do, and they were interested in making their own because they used materials that were easy to find at home. In addition, the community has been obedient in implementing independent romantic programs. The results of overlap observations show that simple overlap can trap mosquitoes.

Public knowledge about dengue disease, especially prevention and treatment methods, has not been fully good, so health counseling related to DHF is very necessary. Counseling activities can add insight to the community about the importance of preventing and eradicating dengue cases.[12] This is evidenced by the research of Siti and Al-Zulfi in Malaysia, namely the influence of counseling related to dengue disease on increasing the knowledge and attitudes of parents of children with DHF in the prevention of DHF.[13,14] This proves the important role of counseling in the decline in dengue cases and the need for an increase in counseling activities and interpersonal communication.

Counseling activities and interpersonal communication regarding dengue disease are very important to improve good dengue prevention behavior in the community.[15] Hasanah's research found that health counseling on DHF significantly improved family behavior in the prevention of DHF.[16] The same thing was discovered by Baequni in Jakarta found that providing health counseling in the form of posters and flipcharts to elementary school students was effective in triggering dengue eradication and prevention behaviors.[17] Therefore, health workers need to conduct health counseling on dengue fever and its prevention regularly and continuously to reduce the incidence of DHF.

Until now, efforts to eradicate Aedes aegypti mosquitoes have been carried out a lot, but they still have not shown satisfactory results. Various methods can be used to detect the presence of Aedes aegypti mosquito populations, including larval, pupa, adult, and egg surveys. Egg surveys have proven to be quite effective for detecting the presence of Aedes aegypti mosquito populations, usually by using overlap or egg traps.[10]

Overlap is a simple but WHO-standard method used in monitoring mosquito population density. The principle of this method is to make a trap so that mosquitoes lay eggs in the trap, then periodically, once a week, the presence of mosquito larvae is checked for their presence. So that the trapped eggs or larvae of mosquitoes do not become adults. The use of overlap has successfully reduced mosquito populations in several countries. Until now, there has been no use of ovitrap by officials or the public to reduce mosquito density in Sidrap District.

Overcoming and preventing the outbreak of the danger of dengue disease requires the participation of the community, government, and health cadres.[18,19] Community empowerment in the prevention and control of dengue fever is carried out by building community trust, providing education, organizing the community, and implementing programs with the community. Community empowerment can be done in various ways adapted to the community's conditions. One of the efforts that can be made is to form officers who can monitor the presence of larvae called larva monitors. Community empowerment through romantic cadres is a very important subject or organizer in controlling dengue vectors. The existence of human tics can increase people's motivation to participate in controlling dengue vectors.[20]

Larva monitors are members of the public who voluntarily monitor the presence of Aedes aegypti mosquito larvae in their environment. The purpose of the formation of larva monitors cadres is to mobilize community participation in efforts to eradicate dengue disease, especially in eradicating infectious mosquito larvae so that the transmission of DHF disease can be prevented or limited. The active role of larva monitors in monitoring, supervision, and education carried out periodically is the main key to increasing the success of dengue control and preventing an increase in cases.[21]

Community empowerment will greatly help the government succeed in dengue prevention efforts to control dengue fever. The results of Sukesi's research found that community empowerment using the romantic cadre method of independent houses with the overlap application is effectively carried out to help efforts to control dengue fever in Yogyakarta.[11] The overlap can be used as an additional alternative to mosquito nest control programs, especially during the rainy season.

Although overlap has been widely used in some countries and domestically, this technique is not yet widely known by the public. The research is expected to improve efforts to prevent dengue disease empowerment models through independent larva monitors using simple ovitarp. This will certainly have implications for reducing the incidence of dengue fever.

CONCLUSION

Community empowerment will greatly help the government succeed in dengue prevention efforts to reduce dengue fever. The development of an empowerment model through independent larva monitors with overlap can be used to prevent and control dengue disease in Sidrap District.

REFERENCES

1. Arsin. Correlational study of climate factor, mobility and the incidence of Dengue Hemorrhagic Fever in Kendari, Indonesia. Enferm Clin. 2020;30(6):284-6.
2. Noor NB, Arsunan AA, Marleni NMR, Mallongi A. Algorithm malaria diagnosis as a result of the comparison between clinical symptoms and microscopy test in the population central Sulawesi Province. Asian J Epidemiol. 2017;10(1):32-6.
3. Hasnik S, Rahardjo SP. Environmental analysis related to pulmonary TB incidence in work area of puskesmas kaluku bodoa Makassar City. 2018.
4. Madjid S, Muhammad AA, Andi IL, Maria T, Abdullah, Russeng R. Effect of Knowledge and Attitude Factors on Tuberculosis Incidents in Mandar Ethnic in The District of Majene West Sulawesi. Indian J Public Heal Res Dev. 2019;10(8):1935-9.
5. W. H. Organization,. Global strategy for dengue prevention and control 2012-2020. 2012.
6. Arsin. Epidemiologi Demam Berdarah Dengue (DBD) di Indonesia. Makassar Masagena Press diakses pada. 2013;24.
7. Zamli. Potential of rainfall, humidity and temperature, against the increasing of larvae in makassar city, Indonesia. Int J Innov Technol Explor Eng. 2019;9(1):1485-7.
8. Taslim M, Arsunan AA, Ishak H, Nasir S, Usman AN. Diversity of dengue virus serotype in endemic region of South Sulawesi Province. J Trop Med. 2018.
9. Suhaela S, Hasan M. Strategi Promosi Kesehatan Pencegahan Penyakit Demam Berdarah Dengue (Dbd) Di Wilayah Kerja Puskesmas Antang Kota Makassar. Andragogi Kesehat. BBPK Makassar. 2021;1(2):68-74.
10. Hadi MC, Sujaya IN, Purna IN, Jana IW. Meningkatkan Angka Bebas Jentik Menggunakan Ovitrap Di Upt Kesmas Sukawati Ii Kabupaten Gianyar. J Pengabmas Masy Sehat. 2020;2(2):127-37.
11. Sukesi TRIW. Pemberdayaan Masyarakat Melalui Model Jumantik Mandiri Dengan Aplikasi Ovitrap Sebagai Upaya Pengendalian Penyakit Demam Berdarah Dengue (Dbd) Di Sleman Yogyakarta. Universitas Gadjah Mada. 2021.
12. Van Nguyen. Knowledge, attitude and practice about dengue fever among patients experiencing the 2017 outbreak in Vietnam. Int J Environ Res Public Health. 2019;16(6):976.
13. Siti NQ, Riski DP, Zuni A, Lina MR, Retno T, Abu B. Counseling improves parental attitudes for prevention of dengue hemorrhagic fever (DHF) shock in tropical coastal area. Indian J Public Heal Res Dev. 2019;10(8):2671-5.
14. Al-Zurfi M. Knowledge, attitude and practice of dengue fever and health education programme among students of Alam Shah Science School, Cheras, Malaysia. Practice. 2015;15(2):69-74.
15. Salam. A dynamic model approach to estimating events dengue hemorrhagic fever in gowa district. Ann Rom Soc Cell Biol. 2021;4240-8.
16. Hasanah. Health Education in Increasing Prevention Behavior of Dengue Hemorrhagic Fever in Families at Gubeng Village, Surabaya, Indonesia. Indian J Public Heal Res Dev. 2019;10(11):1977-88.
17. Baequni MN, Adhiyanto C. Attitude and preventive behavior of dengue hemorrhagic fever among elementary school students in Jakarta, Indonesia. Asian J Microbiol Biotechnol Env Sci. 2019;21(4):1028-32.
18. Farich NI, Lipoeto H, Bachtiar, Hardisman H. The Effects of Community Empowerment on Preventing Dengue Fever in Lampung Province, Indonesia. Open Access Maced J Med Sci. 2020;8(1):194-7.
19. Hestiningsih R. Pemberdayaan Masyarakat Dalam Program Pencegahan dan Penanganan Penyakit Demam Berdaran Dengue (DBD) Berbasis Keluarga di Desa Lebak Kecamatan Grobogan Kabupaten Grobogan in Seminar Nasional Pengabdian Kepada Masyarakat UNDIP 2020. 2020;1(1).
20. Pratamawati. Peran juru pantau jentik dalam sistem kewaspadaan dini demam berdarah dengue di Indonesia. Kesmas J Kesehat Masy Nas (Nat Public Heal J). 2012;6(6):243-8.
21. Latifa N, Arusyid WB, Iswidaty T, Sutiningsih D. Pengaruh Ovitrap Sebagai Monitoring Keberadaan Vektor Aedes sp di Kelurahan Bulusan Kecamatan Tembalang Kota Semarang. J ILM MHS. 2013;3(1):26-9.

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