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The Relationship between Mosquito Nest Eradication Behavior and the Habit of Using Mosquito Repellent Against Dengue Hemorrhagic Fever in Pekat Village, Sumbawa District, Sumbawa Regency

Abdul Hamid[1*], Hamdin[1]

[1] Undergraduate Public Health Study Program, STIKES Griya Husada Sumbawa, Sumbawa Besar, NTB

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Corresponding Author:
Abdul Hamid
dhelonk@gmail.com

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Abstract: Dengue Hemorrhagic Fever (DHF) is a disease caused by the dengue virus and transmitted by the Aedes Aegypti mosquito, DHF also occurs regularly and affects all age groups. This disease is related to people's behavior and the conditions or circumstances of the surrounding environment. This study aims to determine the relationship between mosquito nest eradication behavior and the habit of using mosquito coils on the incidence of DHF in Pekat Village, Kec. Sumbawa Regency Sumbawa. The type of research used in this research is an analytical survey using a case control research design. The results of the study based on the results of the Chi-Square test (X2) showed that there was a significant relationship between the practice of eradicating mosquito nests and the incidence of DHF (p value = 0.035), while the OR calculation results obtained OR = 0.267 indicating that the respondent's confidence interval (CI) was 95 %= 0.78-0.930. From these results it can be interpreted that eradicating mosquito nests is not a risk factor for DHF. The results of the Chi-Square test (X2) showed a significant relationship between the habit of using mosquito coils and the incidence of DHF (p value = 0.033), while the OR calculation results obtained OR = 0.260 by showing the respondent's habit of using mosquito coils Confidential Interval (CI) 95% = 95% = 0.73-0.921. From these results it can be interpreted that the habit of using mosquito coils is not a risk factor for DHF.

Keywords: Dengue fever; Eradication of mosquito nests; Habit of using mosquito coils

Introduction

Dengue Hemorrhagic Fever (DHF) is a disease caused by dengue infection and transmitted by the Aedes Aegypti mosquito (Andriawan et al., 2022; Asep, 2014). DHF also occurs regularly and affects all age groups. This disease is related to the way people behave in the local area and the general climatic conditions or conditions (Rubandiyah et al., 2018).

The World Health Association (WHO) revealed that the number of declared cases of dengue fever has increased more than 8 times over the past few years, from 505,000 cases increasing to 4.2 million every 2019. The number of uncovered deaths has also increased from 960 to 4032 During 2015. Not only is the number of cases increasing as the disease spreads to new areas including Asia, but dangerous outbreaks are also occurring.

The dangers of a potential dengue fever episode today in Asia. The Americas region details 3.1 million cases, with more than 25,000 serious cases. Despite this alarming number of cases, the number of deaths associated with dengue fever is lower than in previous years. The number of dengue cases is a detailed issue worldwide that occurred in 2019.

Based on information from the Health Service in 2020, cases of Dengue Hemorrhagic Fever (DHF) in Indonesia as of July reached 71,700 cases. There are 10 regions that reported the highest number of cases, namely West Java 10,772 cases, Bali 8,930 cases, East Java 5,948 cases, NTT 5,539 cases, Lampung 5,135 cases, DKI Jakarta 4,227 cases, NTB 3,796 cases, Central Java 2,846

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cases, Yogyakarta 2,720 cases, and Riau 2,255 cases, while in 2019 the number of cases was higher, namely 112,954. What's more, the number of cases and deaths throughout Indonesia has reached 459. However, the number of cases and cases this year is still low when compared to 2019. Likewise with the number of cases, this year there are 459 people. , while in 2019 it became 751.

DHF is still a public health problem in Indonesia. The level of infection of this disease is evenly distributed throughout Indonesia (Manalu et al., 2016; Megawaty et al., 2017; Wowor, 2017). Throughout 2020, the Health Service recorded 103,781 patients with a death rate of 727 people. The IR figure is 38.25/100 thousand population, while the CFR is 0.70%. The number of cases of DHF continues to increase. Based on information from the Health Service, as of June 14 2021, the total number of dengue cases in Indonesia has reached 16,320 cases. This number has increased by 6,417 cases when compared to DHF cases on May 30, which were only 9,903 cases. The number of dengue deaths has also increased from 98 cases by the end of May to 147 cases on June 14 2021.

The number of cases of DHF in West Nusa Tenggara (NTB) was 4,733 cases spread across 10 regions/wards, especially West Lombok with 1,613 cases, Central Lombok with 171 cases, East Lombok with 572 cases. Sumbawa has increased 401 cases, Dompu 204 cases, Bima 145 cases, West Sumbawa 106 cases, North Lomboh 454 cases, Mataram 811 cases, and Bima City 256 cases (NTB Public Welfare Office 2020).

Sumbawa Regency recorded the number of DHF cases in the January-April 2020 period reaching 323 cases. The number of cases over the last four months is arguably equivalent to the January-December 2019 cases of 335 cases. a relatively high spike in cases spread to almost all sub-regions/districts. Except for the Alas, Lenangguar, Lantung and Batulanteh sub-districts, which so far have had zero cases. The most prominent DHF cases in 2020 were in the Empang District with 105 cases while in the Sumbawa District there were 87 cases, 49 cases came from the Unit II Health Center work area and 38 cases from the unit 1 work area while the Labuhan Badas Sub-Area (Unit 1) was 44 cases (Profile of the Sumbawa District Health Office 2020).

In mid-2021, people in Sumbawa Regency began to be infected with cases of DHF, up to 35 cases were recorded at the Regional Health Office, Sumbawa regency. Of the 35 cases, most occurred in the Sumbawa Region with 16 cases, Kec. Moyo Hilir 6 cases, Labuhan Badas 5 cases, Plampang 3 cases, Lape 1 case, Lopok 1 case, Moyo Hulu 1 case, Lunyuk 1 case, and Alas Barat 1 case (Department of Communication and Informatics Statistics and Coding of Sumbawa Regency).

The Sumbawa sub-district consists of the Seketeng Sub-District, Pekat Sub-District, Brang Bara Sub-District, Bugis Sub-District, Samapuin Sub-District, some of which are endemic areas for DHF and occur quite a lot in line with natural conditions that can cause mosquito larvae and until now the rainy season is currently underway. which can cause stagnant water and overflow of water in rivers which can cause the breeding of mosquito larvae.

Until now, there are still no successful drugs and antibodies for dengue fever. Eradication of Mosquito Nests (EMN) is a vector control technique as one of the efforts made to prevent the transmission of DHF (Masruroh et al., 2016; Priesley et al., 2018; Rahmawati et al., 2019). Public authorities have advanced the EMN campaign at 3M's insinuation, in particular routinely draining water reservoirs, shutting off water supplies and sealing used items that could harbor mosquitoes (Hidayat et al., 2019; Wanti et al., 2014).

This activity has now developed into 3M plus, namely 3M activities are expanded by changing the water in flower vases, bird drinking bowls or other similar places once a week, repairing channels and gutters that are not smooth, closing holes in bamboo/tree pieces, sprinkling larvicidal powder, rearing larvae-eating fish, installing wire netting, seeking adequate lighting and room ventilation. Apart from training, 3M's activities were also extended to building the habit of using mosquito nets during naps, using drugs that prevent mosquito bites, and avoiding the tendency to store clothes in the house.

In addition to EMN, various vector control efforts to prevent DHF are carried out by avoiding contact with adult mosquitoes. This anticipation needs to be done by considering family tendencies, including resting habits, using mosquito nets during the day, using mosquito coils during the day, and the tendency to hang used clothes that can be replaced or adjusted to reduce the possibility of the risk of DHF cases occurring in family members. DHF is an environment-based disease whose incidence can be reduced by taking vector control measures, including the EMN (Ikawati, 2018; Sari et al., 2020; Sutriyawan et al., 2022).

Based on the problems above, the researcher is interested in conducting research on the relationship between Eradication of Mosquito Nests (EMN) behavior and the habit of using mosquito repellent with the incidence of Dengue Hemorrhagic Fever (DHF) in Pekat Village, Sumbawa District, Regency Sumbawa. With the aim of knowing the relationship between Eradication of Mosquito Nests (EMN) Behavior and the habit of using mosquito repellents on the incidence of Dengue Hemorrhagic Fever in Pekat Village, Sumbawa District, Regency Sumbawa.

Method

This type of research is an analytic survey research using a case control research design. In this study, the

case group (the group with DHF) was compared with the control group (the group without DHF), then retrospectively (backtracking). The sample cases are people who live in the concentrated sub-district of Sumbawa District who have been diagnosed by health workers according to the applicable technical instructions as DHF sufferers and experienced signs and symptoms of DHF during January 2020 - June 2021. Meanwhile, the control sample is residents who live in the concentrated village of Sumbawa District who were not diagnosed by health workers according to the applicable technical guidelines as DHF sufferers and did not experience signs and symptoms of DHF during January 2020 - June 2021. The sample size for the case group was 20 and the control group was 20. Data analysis used the chi square test, so obtained significance value and association size Odds Ratio (OR)

Result and Discussion

Relationship Between Eradication of Mosquito Nests (EMN) Behavior and Dengue Hemorrhagic Fever (DHF)

Eradication of Mosquito Nests (EMN) is a vector control technique as one of the efforts made to prevent the transmission of DHF. The sampling process in this study is shown in Figures 1, 2 and 3.

Figure 1. Observation of people who have been diagnosed with DHF by health workers

Figure 2. Observation of people who are not diagnosed with DHF by health workers

Figure 3. Mosquito Nest Eradication Behavior by health workers

Table 1 shows the results of 22 people (100%) of the case group respondents who carried out the practice of eradicating mosquito nests were not good enough by 15 people (68.2%) and good EMN by 7 people (31.8%), while the control group was 8 people (36.4%) who 8 people (36.4%) did bad mosquito nest eradication practices and 14 people (63.6%) did good EMN. The results of the Chi-Square test (X2) showed a significant relationship between the practice of eradicating mosquito nests and the incidence of DHF (p value = 0.035), while the OR calculation results obtained OR = 0.267 by showing the respondent's confidence interval (CI) 95% = 0.78 -0.930. From these results it can be interpreted that eradicating mosquito nests is not a risk factor for DHF.

In implementing the EMN, there are still obstacles with the reason that not all individuals need to do EMN. The occurrence of DHF in this study is closely related to EMN actions because there are still many people who do not know for sure the benefits of EMN so that it is not yet complete. expected, such as the ability to drain and cover the water reservoir tightly outside the house. there is an assumption that water that is stored outside the home is not used for daily needs except for outside purposes such as watering the yard and a place for pets to drink so there is no need to bother cleaning or closing it.

Table 1. Relationship Between Eradication of Mosquito Nests Behavior and Dengue Hemorrhagic Fever

Eradication of Mosquito Nests Behavior	Dengue Hemorrhagic Fever				OR	P *value*
	Case		Control			
	n	%	n	%		
Good	7	31.8	14	63.6	0.267	
Not good	15	68.2	8	36.4	(0.78-	0.035
Total	22	100	22	100	0.930)	

Individuals also do not realize that the water reservoir behind the refrigerator can also be a good place for Aedes Aegypti mosquito larvae, so they rarely check or dispose of water behind the refrigerator. The results

of the study also showed that only a few respondents cleaned the gutters and many of the drains were still clogged or did not flow smoothly. The community also sowed very little abate powder due to the lack of support or invitation from the local government to invite the whole community to do so.

The results of this study are in line with research Hentti (2021), namely that there is a relationship between mosquito nest eradication behavior and dengue hemorrhagic fever in children in Serdang Bedagai District with OR = 3,100 (95% CI = 1,240 – 7,751). Research conducted by (Kasim et al., 2019)regarding ''the relationship between mosquito nest eradication actions and the incidence of DHF in the working area of the Imandi Public Health Center, East Dumoga District'', from statistical results, the odds ratio (or) = 2,733 where the value of or > 1 means that EMN is a risk factor that has significance with DHF. There is a significant relationship between EMN and DHF.

This research is also in line with research Sandra et al. (2019), Based on the results of the analysis of EMN practices it is proven to have an effect on the incidence of DHF in children. The statistical test results obtained a value of p = 0.025, which means that there is an influence of EMN practices that are not good on the incidence of DHF in children aged 6 -12 years (p = 0.025; OR = 2.471; 95% CI = 1.108-5.978).

This is the same as research conducted by Azlina et al. (2016) showing that there is a significant relationship between the EMN actions of respondents and the presence of dengue vector larvae. Research conducted by Pangemanan et al. (2016) found that there was a relationship between measures to EMN and the incidence of DHF. While research Priesley et al. (2018) there is a significant relationship between EMN 3M Plus behavior and the incidence of DHF in Andalas sub-district.

The Relationship Between the Habit of Using Insect Repellent and the Incidence of Dengue Hemorrhagic Fever

Based on Table 2 shows the results of 22 people (100%) of the case group respondents who did not normally use mosquito coils as many as 16 people (72.7%) and Usually used Mosquito Remedies as many as 6 people (27.3%) while the control group who did not usually use mosquito coils as many as 9 people (40.9%) and 13 people (59.1) used to use mosquito repellent. The results of the Chi-Square test (X2) showed that there was a significant relationship between the habit of using mosquito coils and the incidence of DHF (p value = 0.033), while the OR calculation results obtained OR = 0.260 by showing the respondent's habit of using mosquito coils Confidential Interval (CI) 95% = 95% = 0.73-0.921. From these results it can be interpreted that the habit of using mosquito coils is not a risk factor for DHF.

Table 2. Relationship Between the Habit of Using Insect Repellent and the Incidence of DHF

The Habit of Using Insect Repellent	Dengue Hemorrhagic Fever				OR	P *value*
	Case		Control			
	n	%	n	%		
Ordinary	6	27.3	13	59.1	0.260	
Not ordinary	16	72.7	9	40.9	(0.07-	0.033
Total	22	100	22	100	0.921)	

Based on the field, some respondents never used mosquito repellents in the morning and evening, but instead used mosquito repellents such as spraying or using mosquito nets only at night, their assumption is that during the day people are more active so that protection against mosquito bites is not necessary. The Aedes aegypti mosquito dynamically sucks blood during the day (diurnal) with two bite peaks, to be precise in the morning between 8-9 hours and in the afternoon between 16-17 hours. However, Aedes aegypti and Aedes albopictus mosquitoes can also suck blood in the afternoon (night). Therefore, efforts were made to prevent mosquito bites from the DHF vector by using mosquito repellents in the late afternoon and early afternoon and evening.

This study is in line with research Hentti (2021), namely that there is a significant relationship between the habit of using mosquito repellents and the incidence of dengue hemorrhagic fever in children in Serdang Bedagai District (p=0.002) with OR = 4,580 (95% CI = 1,811-11,582) . This shows that residents who have bad habits of using mosquito repellents have a 4,580 times the risk of getting DHF compared to residents who have good habits of using mosquito repellents. The results of this study are also consistent with research Sandra (2019) which states that there is an effect of routine use of mosquito coils on the frequency of DHF in children with p = 0.001, OR 4.000; 95% CI 1.889-8.468.

Conclusion

From the results of research on the relationship between Mosquito Nest Eradication Behavior and the Habit of Using Mosquito Remedies with Dengue Hemorrhagic Fever, the results of the chi square test analysis have a significant relationship with the incidence of DHF, but are not a risk factor for the occurrence of DHF.

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