



Eradicating Mosquito Nests Through Draining, Covering and Burying Efforts with the Presence of Mosquito Larvae

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ABSTRACT

In Southeast Sulawesi, measures have been taken to prevent dengue hemorrhagic fever with vector control efforts using the 3M Plus method, namely draining, covering and burying items that are no longer used so that they do not become breeding places for mosquitoes. The aim of the research is to take measures to prevent dengue hemorrhagic fever by controlling vectors using the 3M Plus method, namely draining, covering and burying items that are no longer used so that they do not become breeding places for mosquitoes. Meanwhile, the plus is avoiding mosquito bites by using anti-mosquito lotion, wearing a mosquito net when sleeping, abatization, fishization and fogging. With these efforts, it is hoped that the death rate due to dengue hemorrhagic fever can be reduced. This research is a survey research with a cross sectional study approach. The variables in this research are the independent variable (draining, covering, burying used goods and abatement) and the dependent variable (presence of mosquito larvae). The result is that the Chi Square statistical test on the variable draining water reservoirs shows a p value = $0.000 < 0.05$, which means that H_0 is rejected and H_a is accepted, so the statistical test shows that there is a relationship between draining water reservoirs and the presence of mosquito larvae. The Chi Square statistical test on the variable closing water reservoirs shows a p value = $0.003 < 0.05$, which means that H_0 is rejected and H_a is accepted, so the statistical test shows that there is a relationship between closing water reservoirs and the presence of mosquito larvae. The Chi Square statistical test on the variable burying used goods shows a p value = $0.000 < 0.05$, which means that H_0 is rejected and H_a is accepted, so the statistical test shows that there is a relationship between burying used goods and the presence of mosquito larvae.

Keywords: Implementation, Eradication, Mosquito Nests, Draining, Covering and Burying





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1. Introduction

Mosquito Nest Eradication is a community and government activity carried out on an ongoing basis to prevent dengue fever. Until now, no effective medicine or vaccine has been found for dengue hemorrhagic fever. Eradicating mosquito nests is a method of vector control as one of the efforts made to prevent the spread of dengue hemorrhagic fever. The campaign to eradicate mosquito nests has been promoted by the government, in this case the Department of Health, with the motto 3M, namely draining water reservoirs regularly, closing water reservoirs and burying used items that can become mosquito nests.

This activity has now developed into 3M Plus, namely by changing the water in flower vases, bird drinkers or other similar places once a week, repairing water channels and gutters that are not running smoothly, closing holes in bamboo/tree pieces, sprinkling larvicide powder, raising fish that eat flick, install wire mesh, ensure adequate lighting and ventilation of the room. 3M Plus activities have also been expanded to include efforts to increase the community's habit of using mosquito nets when taking naps, using medicine that can prevent mosquito bites, and avoiding the habit of hanging clothes indoors at home.

In Southeast Sulawesi, measures have been taken to prevent dengue hemorrhagic fever with vector control efforts using the 3M Plus method, namely draining, covering and burying items that are no longer used so that they do not become breeding places for mosquitoes. Meanwhile, the plus is avoiding mosquito bites by using anti-mosquito lotion, wearing a mosquito net when sleeping, abatization, fishization and fogging. With these efforts, it is hoped that the death rate due to dengue hemorrhagic fever can be reduced.





Based on the results of initial observations by researchers in Liabuku Village, eradicating mosquito nests is still very rarely carried out by the community. Most communities do not have covers on their water reservoirs. Even though they have a lid, people rarely close the water reservoir tightly on the grounds that it is easier to get water from the container. Apart from that, there is still a lot of rubbish such as used bottles or cans scattered around people's houses so that when it rains there will be puddles of the rubbish which eventually becomes a breeding place for mosquitoes to store their eggs which will turn into larvae.

2. Research Method

This research is a survey research with a cross sectional study approach. The variables in this research are the independent variable (draining, covering, burying used goods and abatement) and the dependent variable (presence of mosquito larvae).

3. Results And Discussions

a. Result

In table 1, the research shows that of the 78 respondents studied, the distribution of respondents who drained their water reservoir was 25 people (32.1%) and those who did not drain it was 53 people (67.9%).

Table 1.

Distribution of Draining Water Storage Places, Closing Water Storage Places, Burying Used Goods, Abatement, Hamlet, Age Group, Gender, Education and Occupation

Variable	n	%	Variable	n	%
Draining the landfill			Gender		
Drain	25	32,1	Man	64	82,1
Not Draining	53	67,9	Woman	14	17,9
Closing the landfill			Education		
Close	12	15,4	Elementary school	3	3,8
Not Closing	66	84,6	Junior high school	16	20,5
Bury Used Items			Senior high school	52	66,7





Bury	20	25,6	D III	2	2,6
Not Burying	58	74,4	S 1	5	6,4
Abatization			Work		
Yes	24	30,8	Laborer	4	5,1
No	54	69,2	Honorary	2	2,6
			Housewife	8	10,3
The presence of mosquito larvae			Taxibike	3	3,8
There is	61	78,2	Farmer	32	41,0
There isn't any	17	21,8	Civil servants	11	14,1
			Police	2	2,6
Hamlet			Driver	5	6,4
Prosperous	42	53,8	Self-employed	11	14,1
Fertile	36	46,2			

The distribution of respondents who closed their water reservoirs was 12 people (15.4%) and those who did not closed it was 66 people (84.6%). The distribution of respondents who buried their used items was 20 people (25.6%) and those who did not buried it were 58 people (74.4%). The distribution of respondents who carried out abatization was 24 people (30.8%) and those who did not carry out abatization were 55 people (69.2%). The distribution of mosquito larvae in respondents' water reservoirs was 61 people (78.2%) and there were no mosquito larvae in respondents' water reservoirs as many as 17 people (21.8%). The largest distribution of hamlets is Dusun Makmur with 42 people (53.8%) and the least is Dusun Subur with 36 people (46.2%). The largest distribution of age groups is 38 - 43 years old with 24 people (30.8%) and the least is 56 - 61 years old with 1 person (1.3%). The largest gender distribution was men, 64 people (82.1%) and the fewest were women, 14 people (17.9%). The highest distribution of education was a high school education of 52 people (66.7%) and the least was a D III education of 2 people (2.6%). The highest job distribution was as a farmer with 32 people (41.0%) and the fewest were as honorary workers and police with 2 people each (2.6%).

Table 2.

Relationship between draining water reservoirs, closing water reservoirs, burying used goods





and abatement with the presence of mosquito larvae in Liabuku Village, Bungi District, Baubau City

Research variable	The presence of mosquito larvae				Amount		p value
	There is		There isn't any		N	%	
	N	%	n	%			
Draining the landfill							
Drain	11	44,0	14	56,0	25	100	0,000
Not Draining	50	94,3	3	5,7	53	100	
Amount	61	78,2	17	21,8	78	100	
Closing the landfill							
Close	5	41,7	7	58,3	12	100	0,003
Not Closing	56	84,8	10	15,2	66	100	
Amount	61	78,2	17	21,8	78	100	
Bury Used Items							
Bury	9	45,0	11	55,0	20	100	0,000
Not Burying	52	89,7	6	10,3	58	100	
Amount	61	78,2	17	21,8	78	100	
Abatization							
Yes	11	45,8	13	54,2	24	100	0,000
No	50	92,6	4	7,4	54	100	
Amount	61	78,2	17	21,8	78	100	

Table 2 shows the results of the Chi Square statistical test on the variable draining water reservoirs, showing a p value = 0.000 < 0.05, which means that H₀ is rejected and H_a is accepted, so the statistical test shows that there is a relationship between draining water reservoirs and the presence of mosquito larvae. The Chi Square statistical test on the variable closing water reservoirs shows a p value = 0.003 < 0.05, which means that H₀ is rejected and H_a is accepted, so the statistical test shows that there is a relationship between closing water reservoirs and the presence of mosquito larvae. The Chi Square statistical test on the variable burying used goods shows a p value = 0.000 < 0.05, which means that H₀ is rejected and H_a is accepted, so the statistical test shows that there is a relationship between burying used goods and the presence of mosquito larvae. The Chi





Square statistical test on the abatization variable shows that the p value = $0.000 < 0.05$, which means that H_0 is rejected and H_a is accepted so that the statistical test shows that there is a relationship between abatization and the presence of mosquito larvae.

b. Discussion

- 1) The relationship between draining water reservoirs and the presence of mosquito larvae

There were 14 respondents (56.0%) who always drained their water reservoirs at least once a week. Respondents' habit of draining water reservoirs by brushing the inside of the container and re-filtering the water will make it difficult for mosquitoes to attach their eggs to the walls of the container because they become slippery and smooth after cleaning or draining.

There were 50 respondents (94.3%) who did not drain their water reservoir once a week, causing the container to become dirty, the walls of the container being rough due to plaque or dirt sticking to it. In fact, the walls of the container, which are rough because they are rarely drained, are a favorite place for mosquitoes to attach their eggs which will later hatch into mosquito larvae in the process of breeding.

Eradicating mosquito nests is carried out simultaneously and continuously to eradicate breeding places where mosquitoes do not breed, one of which is cleaning water storage areas by draining the water and brushing the walls once a week.

This research is in line with research by Ririh (2010) in the endemic area of Surabaya, stating that water reservoirs that are always cleaned or drained will reduce their potential as a habitat for mosquito larvae which will affect the level of health of humans who use the water.

- 2) The relationship between closing water reservoirs and the presence of mosquito larvae

According to WHO, the main source of mosquito breeding is water storage containers for household needs, which include clay, ceramic water barrels and





cement jugs. Water storage containers must be closed with a lid that fits tightly so that mosquitoes cannot enter to lay eggs which will later turn into mosquito larvae.

The results of this study also showed that of the 66 respondents who did not close their water reservoirs, 56 people (84.8%) had mosquito larvae and 10 people (15.2%) did not have mosquito larvae in their water reservoirs. This data shows that there are more respondents who have mosquito larvae compared to respondents who do not have mosquito larvae.

This is because most respondents did not close the water reservoir tightly so that mosquitoes could easily enter and exit the container to attach their eggs. Apart from that, most of the respondents do not have covers on their water reservoirs because there is still a lack of public knowledge and understanding about the importance of keeping water clean so as not to risk exposure to disease germs.

This research is in line with research by Mesigar (2009) in the Tunikamaseang Community Health Center Working Area, Bontoa District, Maros Regency, stating that there is a relationship between the habit of tightly closing water reservoirs and the presence of mosquito larvae which have the potential to spread dengue hemorrhagic fever. Therefore, all water reservoirs, both inside and outside the house, must have a cover and be closed tightly after use. So that mosquitoes cannot enter inside to lay eggs.

3) The relationship between burying used goods and the presence of mosquito larvae

The research results showed that there were more respondents who did not have mosquito larvae compared to respondents who had mosquito larvae in their water reservoirs. This is because respondents always bury their used items in the ground so that they do not become breeding grounds for mosquitoes to breed.

The results of this study also showed that of the 58 respondents who did not bury their used items, 52 people (89.7%) had mosquito larvae and 6 people (10.3%) had no mosquito larvae in their water reservoirs. This data shows that there are more respondents who have mosquito larvae compared to respondents who do not have mosquito larvae in their water reservoirs. This is because most





respondents do not bury their used items such as plastic or glass bottles and used cans so they are left scattered around their house. In fact, this is a potential breeding ground for mosquitoes because they like dirty and watery places.

One way to prevent and eradicate mosquitoes is to bury or get rid of used items and other rubbish that can collect rainwater so that they do not become breeding grounds for mosquitoes.

This research is in line with Rafiah's (2011) research in Medan Perjuangan District, Medan City, stating that used items such as plastic bottles, used cans, broken glass and so on must be buried in the ground because they have the potential to become breeding places. mosquitoes when it rains. Rainwater will pool on the used items so that mosquitoes can lay their eggs in the used items.

4) The relationship between abatization and the presence of mosquito larvae

The research results showed that there were more respondents who did not have mosquito larvae compared to respondents who had mosquito larvae in their water reservoirs. This is because respondents always sprinkle abate powder into their water reservoirs so that mosquito larvae will die and cannot reproduce into adult mosquitoes.

Abatization is a way of sprinkling abate into water reservoirs with the aim of killing/exterminating mosquito larvae in the tank so that mosquitoes do not reproduce into adults.

Most respondents did not understand the function of using abate powder in water reservoirs. Apart from that, some other people are still afraid and think that using abate powder in water will affect the taste of the water, making it very dangerous to consume this water. In fact, this assumption is very wrong because abate powder only functions to kill mosquito larvae and does not affect the quality of the water, so it is safe for humans to consume water containing abate powder.

This research is in line with research by Damyanti (2009) in Kepolorejo Village, Magetan Regency, showing that apart from implementing 3 M Plus practices such as draining the landfill, closing the landfill tightly and burying used goods, other activities such as abatement, the use of larvae-eating fish in the





landfill also have an effect. to the presence of mosquito larvae. Because the use of abatization and larvae-eating fish will reduce, kill or eliminate the larvae in the landfill.

4. Conclusion

Based on the results of the research presentation and discussion, the following conclusions can be drawn:

1. There is a relationship between draining water reservoirs and the presence of mosquito larvae in Liabuku Village, Bungi District, Baubau City.
2. There is a relationship between closing water reservoirs and the presence of mosquito larvae in Liabuku Village, Bungi District, Baubau City.
3. There is a relationship between burying used goods and the presence of mosquito larvae in Liabuku Village, Bungi District, Baubau City.
4. There is a relationship between abatization and the presence of mosquito larvae in Liabuku Village, Bungi District, Baubau City.

Compliance with ethical standards

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Disclosure of conflict of interest

This research collaboration is a positive thing for all researchers so that conflicts, problems and others are absolutely no problem for all writers.

Statement of informed consent

Every action we take as authors is a mutual agreement or consent.





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