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Analysis of Health Problem Factors with the Presence of Aedes Albopictus Mosquito Larvae in Water Reservoirs

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ABSTRACT

Aedes aegypti is a mosquito that can act as a vector for dengue fever. Aedes aegypti prefers stagnant water in a container, not stagnant water on the ground. Potential breeding places are water reservoirs used for daily needs such as drums, bathtubs, toilet bowls, jars, buckets and others. The purpose of this study was to determine what factors are related to the presence of aedes aegypti mosquito larvae in the Nusa Harapan Permai complex. This research method is explanatory research with a cross-sectional study with a random sampling technique, so that the number of samples is obtained. The instruments in this study were questionnaires and checklists using univariate and bivariate data analysis. From the research results, it was found that there is a relationship between the implementation of mosquito nest eradication (PSN) , there is a relationship between TPA, there is a relationship between the existence of solid waste and the existence of larvae and there is no relationship between the frequency of mosquito larvae visits and the existence of larvae. In conclusion, there is a relationship between the implementation of mosquito nest eradication (PSN), TPA, and the existence of solid waste with the presence of larvae, and there is no relationship between the frequency of mosquito larvae visits and the presence of larvae.

Keyword : Factor Analysis, Health Problems, Mosquito Larvae, Aedes Albopictus, Nusa Harapan Indah

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1. Introduction

Dengue Hemorrhagic Fever (DHF) is a disease caused by the dengue virus which is transmitted through the bite of the Aedes aegypti and Aedes albopictus mosquitoes. Dengue hemorrhagic fever (DHF) is an infectious disease caused by the dengue virus with clinical manifestations of fever for 2-7 days, muscle pain and/or joint pain accompanied by leukopenia, rash, lymphadenopathy, thrombocytopenia and hemorrhagic diathesis (Suhendro, Leonard & Melani, 2009) Dengue Hemorrhagic Fever (DHF) is an infectious disease caused by the Dengue Virus. The disease is a public health problem in Indonesia because of its high prevalence and increasingly widespread distribution. Dengue Hemorrhagic Fever (DHF), also known as Dengue Hemorrhagic Fever (DHF), was first reported in Indonesia in 1968. Until now, DHF is still one of the health problems in Indonesia because of its high prevalence and increasingly widespread distribution. Extraordinary Events (KLB) of DHF occur almost every year in several provinces, even a major KLB occurred in 1998 and 2004 where the number of cases reached 79,480 cases with a death toll of 800 people. (Kawiani, 2013).

The presence of mosquito larvae is influenced by several factors. According to Yulian Taviv, Akhmad Saikhu, and Hotnida Sitorus, the availability of mosquito larvae monitoring officers, types of water reservoirs such as artificial reservoirs, mosquito nest eradication (PSN) 3M plus including draining water reservoirs, closing water reservoirs, and burying used goods, the type of household landfill that is most commonly found with Aedes aegypti larvae or pupae is a landfill made of metal. The type of household landfill that is most commonly found with larvae or pupae is a landfill type of jar. There are 3 types of landfills that are found to be positive for larvae inside or outside the house, namely drums, bathtubs, and plastic buckets (Farid Setyo Nugroho, 2009).

DHF is transmitted by the Aedes aegypti mosquito. The dengue virus is transferred from one person to another with the mosquito's saliva when the mosquito sucks blood. The virus will be in the blood circulation for 4-7 days. The effects of infection with 9 viruses vary depending on a person's immunity, namely mild fever, dengue fever, (dengue fever) and dengue hemorrhagic fever (DHF / DHF), Asymptomatic

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patients and mild fever are effective sources of transmission, because they can go anywhere and spread the dengue virus. The only way to eradicate DHF that can be done at this time is to eradicate the mosquitoes that transmit it to break the chain of transmission because the vaccine to prevent DHF is still in the research stage and effective drugs against the virus have not been found . (Kawiani, 2013).

Not all those infected with the dengue virus will show severe DHF manifestations. Some only manifest mild fever that will heal on its own or some even have no symptoms at all (asymptomatic). Some others will suffer from dengue fever alone which does not cause plasma leakage and result in death. (Ministry of Health, 2012).

One of the tasks of mosquito larvae control in efforts to prevent dengue fever is to mobilize the community in eradicating dengue fever mosquito nests (PSN) continuously and sustainably. Mosquito nest eradication (PSN) for DHF is an activity to eradicate eggs, larvae, and pupae of mosquitoes that transmit DHF (Aedes aegypti) in their breeding places to control the population of Aedes aegypti mosquitoes, so that DHF transmission can be prevented or reduced. Mosquito nest eradication (PSN) activities can be carried out using the 3M plus method, namely:

1) Draining water reservoirs regularly, such as bathtubs and pools. Because it can reduce the breeding of mosquitoes themselves or put some small fish into the pool or bathtub, then sprinkle abate powder.
2) Covering water reservoirs, if after doing activities related to water, it should be closed so that mosquitoes cannot breed their eggs into the water reservoir. Dengue mosquitoes really like clear water.
3) Utilizing items that can turn standing water into useful items.
4) Sprinkle abate powder (larvicidation) in places that collect water, keep fish and prevent mosquito bites.
5) Using personal protective equipment (PPE): mosquito nets, wearing long-sleeved clothing, long pants, using mosquito repellent or spray, mosquito repellent lotion, maintaining cleanliness and tidiness.
6) Good and adequate lighting and ventilation.

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7) Fumigation or fogging is useful for killing adult Aedes mosquitoes to prevent the spread of dengue fever, although it cannot completely overcome it, because the eggs are still able to reproduce (Ministry of Health, 2012).

According to (Ministry of Health, 2012) the signs and symptoms of Dengue Hemorrhagic Fever (DHF) include the following:

a) Fever

Dengue fever is preceded by a sudden high fever that continues for 2-7 days. The fever will go down on the 3rd day and then rise again, and on the 6th or 7th day the fever suddenly goes down.

b) Bleeding manifestations

Bleeding in dengue fever sufferers can occur in all organs of the body and generally occurs 2-3 days after the fever. The form of bleeding that occurs can be:

1) Petechiae (blood spots on the surface of the skin).
2) Purpura.
3) Ecchymosis (blood spots under the skin).
4) Conjunctival hemorrhage.
5) Bleeding from the nose (nosebleed or epistaxis).
6) Bleeding gums.
7) Hematenesis (vomiting blood).
8) Bloody stools (bloody stools).
9) Hematuna (bloody urination).

c) Hepatomegaly or enlarged liver

The nature of liver enlargement experienced by dengue fever sufferers is experienced at the start of the disease transmission and feels painful when pressed.

d) Shock or Shock

Shock can occur when the patient has a high fever, which is between the 3rd and 7th day after the fever occurs. Shock occurs due to bleeding or leakage of blood plasma into the extravascular area through damaged capillaries. Signs of shock include cold skin on the tip of the nose, fingers and toes, restlessness, rapid and weak pulse,

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decreased pulse pressure (to 20 mmHg or less), decreased blood pressure (systolic pressure to 80 mmHg or less).

2. Research Methods

The type and design of the research must be arranged in such a way that it can guide the researcher to obtain answers to the researcher's questions (Sudigdo, 2002). In this study, the type of research used is explanatory research with a cross-sectional study, namely research conducted by observation or measurement of variables at a certain time, which means that all objects are observed precisely at the same time and only done once.

The measurement instrument in this study used a questionnaire and checklist. The questionnaire was used as an interview guide to collect data from research subjects or respondents regarding the identity of respondents and factors related to the presence of larvae, namely the method of implementing the eradication of mosquito nests (PSN).

Check list for checking the type of water reservoir, solid waste, and the presence of Aedes aegypti mosquito larvae. The check list is a list of variables for which data will be collected. If there are larvae on the broodstock, they will be given a tick and if there are no larvae, they will be given a dash (-).

Data collection techniques are by means of interviews, documentation and observation. Interviews are used to collect data, where the researcher obtains verbal information from the respondent, or has a conversation face to face with that person. So the data was obtained directly from respondents through a meeting (Soekidjo, 2005).

This documentation is used to find out the picture or obtain data on how to implement the eradication of mosquito nests (PSN) for DHF in each house, the frequency of mosquito larvae control officers, water reservoirs, and the presence of solid waste in the village. Observations are carried out to obtain data on the variables studied.

The statistical test used is the Chi Square test, because the variable scale used is categorical (ordinal and nominal), while the alternative test is the Fisher test.

3. Results and Discussion

a. Results

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Univariate analysis was conducted on each research result variable. This analysis shows the number and percentage of each data variable related to the implementation of mosquito nest eradication (PSN), mosquito larvae control visits, landfills, and the presence of solid waste.

Table 2.
The results of the analysis between the implementation the eradication of mosquito nests (PSN) DBD in households and the presence of Aedes aegypti larvae.

No	Variables	Category	The presence of larvae				Amount		P Value
			There is		There isn't any				
			N	%	N	%	N	%	
1	The existence of solid waste	There is	14	21.2	27	40.9	41	62.7	0.035
		There isn't any	2	3.1	23	34.8	25	37.9	
2	Frequency of Jumantik Visits	Seldom	10	15.1	30	45.5	40	60.6	1,000
		Often	6	9.1	20	30.3	26	39.4	
3	Implementation of PSN DBD	Bad	13	19.7	15	22.7	28	42.4	0.001
		Good	3	4.5	35	53.1	38	57.6	
4	Water Reservoir	There is	16	24.3	47	71.2	63	95.5	0.018
		There isn't any	0	0	3	4.5	3	4.5	

Based on the results of the Chi square test, the p value is 0.001 (p value <0.005), then Ho is rejected and Ha is accepted, thus the results obtained that there is a relationship between the implementation of mosquito nest eradication and the presence of Aedes Aegypti mosquito larvae. This can be seen from the results of the study where the respondents who behaved badly were 42.4 % and those found larvae were 19.7%. Thus the implementation of mosquito nest eradication is related to the presence of mosquito larvae. This result is in line with the results of the study by Farid Setyo Nugroho (2009) which obtained the results There is a Relationship between mosquito nest eradication (PSN) for Dengue Hemorrhagic Fever (DBD) and the presence of Aedes aegypti larvae (p = 0.039).

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Based on the results of the Fisher Exact table test, p 1,000 (p > 0.05) was obtained, then Ho was accepted and Ha was rejected, thus the results showed that there was no relationship between the frequency of visits by mosquito larvae monitoring officers and the presence of aedes aegypti larvae in Nusa Harapan Permai Makassar, more rarely checked for larvae in each house, the number of respondents who said that mosquito larvae monitoring officers rarely checked was 40 respondents, and from the data, 10 houses were found to have larvae and 30 houses were not found. In addition, the number of respondents who said that mosquito larvae monitoring officers often checked each house was 26 houses, and from that number, 6 houses were found to have larvae, and 20 were not found to have larvae.

Thus, the frequency of visits by mosquito larvae monitoring officers is not related to the presence of Aedes aegypti larvae. The results of this study are in line with the results of Djoko Suprijanto's (2004) study which obtained the result that there was no relationship between visits by mosquito larvae monitoring officers and the presence of Dengue Hemorrhagic Fever (DBD) mosquito larvae (p = 0.133).

4. Conclusion

Based on the results of the research and discussion, it can be concluded that there is a relationship between the Implementation of Mosquito Nest Eradication with a p value of 0.000 (p value <0.05), there is a relationship between water reservoirs and the presence of aedes aegypti larvae with a p value of 0.018 (p value> 0.05), with a p value of 0.035 (p value <0.05), and there is no relationship between the Frequency of Jumantik Officer Visits and the presence of aedes aegypti mosquito larvae, with a p value of 1.000 (p value> 0.05).

5. 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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