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THE RELATED FACTORS WITH THE EXISTENCE OF AEDES SP. LARVAE IN PREVENTION OF DENGUE HAEMORRAGHIC FEVER IN THE BUFFER AREA OF TELUK BAYUR PORT PADANG CITY IN 2019

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ABSTRACT

According to annual report of the Teluk Bayur Port Class II Padang in 2018, the working area that has a House Index (HI) 3,3% with the incidence of dengue. HI value> 1 indicates the presence of *Aedes sp.* larvae. The aim of this study was to determine what factors influence the presence of *Aedes sp*. larvae in the buffer area of Teluk Bayur Port, Padang City. The research of methodology used cross sectional study. This research was conducted from February to March 2019, data collection using a questionnaire. The population of this research was all households in the buffer area of Teluk Bayur Port, Padang City in 2019 with total sample of 83 households. Data were analyzed using univariate and bivariate analysis with Chi-Square statistical tests and logistic regression with a confidence degree of 95% (α = 0.05). The results showed that there were variables related to the presence of Aedes sp larvae, such as knowledge (p = 0.002), attitude (p = 0.000), draining water reservoir (p = 0.000), the presence of container caps (p = 0.000). For this reason, further research is needed for cooperation between Port Health Officers, Public Health Center's officers, in disseminating health information, especially Dengue Haemorraghic Fever (DHF) control, as well as cross-sector and cross-program cooperation in providing health education in implementing activities or programs in the village.

Keywords: Presence of *Aedes.sp* larvae, knowledge, attitude, water container draining practice, presence of container's cover

INTRODUCTION

Aedes aegypti vector is the major vector of urban dengue in tropical Asia. Aedes aegypti is a mosquito that can transmit, transmit or become a source of dengue fever, chikungunya and yellow fever virus carriers. The presence of Aedes aegypti larvae in particular area is an indicator showing that there is Aedes aegypti population that lives in that area (Ridha, 2013). Dengue Haemorraghic Fever (DHF) is one of the disease caused by Aedes aegypty larvae. DHF transmitted to humans through the bite of an Aedes sp. Mosquito infected with the dengue virus.

The data report of World Health Organization also shows that Asia is the region with the highest number of dengue sufferers (World Health Organization, 2016). In 2017, in Indonesia, there were 59,047 dengue cases with 444 deaths with Incident Rate (IR) 22.55 and Case Fatality Rate (CFR) 0.75% (Center of Data Indonesia, 2017). West Sumatra Province has seen an increase in the number of affected districts / cities, namely 19 districts / cities infected with DHF (2,470 cases) with the DHF morbidity rate in West Sumatra in 2017 which has increased from 2016, from 13th to 5th of all provinces in Indonesia with IR 46.42 and CFR 0.28% (Ministry of Health Indonesia, 2017).

The buffer area is a port land area 2 km from the outside of the port area which must be free from the risk of vector transmission. This area must be free from Aedes Aegypti infestation in both the larval and adult stages

(HI <1) (Ministry of Health Indonesia, 2007). The working area of Teluk Bayur port is one of the Port Health Office of port working areas in West Sumatra Province. The working area of Teluk Bayur Port carries out its duties and functions in the perimeter and Buffer area. Based on the profile data of the Class II Padang Port Health Office in 2017, the working area of Teluk Bayur Port ranks first in terms of House Index numbers that have not reached the stipulated requirements compared to other work areas. Where the House Index number is the highest at 3.3% in the Buffer area (Port Health Office Padang, 2017).

The presence of Aedes aegypty larvae is influenced by human and the environmental factors. The human factors related to the presence of Aedes aegypti larva are population, mobility, house spacing, light intensity and the source reduction practice. Meanwhile, the environmental factors related to the presence of Aedes aegypti larva are as following: the type of water container, annual rainfall. Air temperature, humidity, attitude, wind pattern, natural vegetation, and climate (Ministry of Health Indonesia, 2002). Based on research conducted by Nani (2017), it showed that there were relationship between knowledge and attitude with the presence of Aedes sp larvae (p = 0.004 and p = 0.024). Putri (2016) found that there was a relationship between practice of draining water container and the presence of Aedes sp larvae (p = 0.029). Wahyuni (2018) found that there was a relationship between the presence of container's cover and the presence of Aedes sp larvae (p = 0.000).

Based on the description above, the purpose of the study was to analyse the factors associated with the presence of Aedes sp. larvae in the prevention of dengue disease in the buffer area of Teluk Bayur harbor.

MATERIAL AND METHODS

This type of research was an observational study using a cross sectional design. The population of this research is households with the head of the family (father or mother) as respondents who are in the buffer area of Teluk Bayur Harbor, Padang City in 2018 as many as 801 households. The time of research and retrieval of data conducted in February-March 2019.

The variables used include the characteristics of respondents such as age, education, and occupation, but also there were independent variables (knowledge, attitude, water container draining practice, and availability of the container's cover) and dependent (presence of Aedes Sp larvae). Data and information that has been obtained through online surveys will then be analyzed using the analysis using univariate analysis by using a computer application. Univariate analysis was conducted on this study to calculate the frequency distribution of each of the variables studied. The Data that has been analyzed will be presented in the form of tables or images and is narrated to facilitate the delivery of information about the research results.

RESULTS

The results of the univariate analysis of the majority of respondents is 43.4% of the age range respondents ranging from 31-40 years. The most educational background is the educational background of senior high school as much as 65.1%. The most occupation was housewife as much as 83,1%. An overview of the respondent's characteristics are drawn in the following Table 1:

Table 1. Characteristic of Respondents

Characteristic Respondent	frequency	(%)
Age		
1. 20-30 age	25	30,1
2. 31-40 age	36	43,4
3. 41-50 age	16	19,3
4. 51-60 age	6	7,2
Education		
1. Graduated Elementary School	6	7,2
2. Graduated Junior High School	21	25,3
3. Graduated Senior High School	54	65,1
4. Graduated Bachelor	2	2,4
Occupation		
1. Laborer	1	1,2
2. Entrepeneur	12	14,5
3. Civil servant	1	1,2
4. Housewife	69	83,1
Total	83	100

Based on the results of the study, the frequency distribution of the presence of Aedes sp larvae can be seen in table 2:

Table 2. Analysis of Univariate

Variables	frequency	(%)
Presence of *Aedes sp*.larvae		
1. Presence	53	63,9
2. Not presence	30	36,1
Knowledge		
1. Low	31	37,3
2. High	52	62,7
Attitude		
1. Negative	45	54,2
2. Positive	38	45,8
Water container draining practice		
1. Do not do	43	51,8
2. Done	40	48,2
Availability of container's cover		
1. Not available	47	56,6
2. Available	36	43,4
Total	83	100

Based on table 2, the results of the univariate analysis showed that more than half of the respondents' home environments found the presence of Aedes sp larvae, namely as much as 63.9%. Furthermore, it was found that less than half of the respondents with low knowledge of the existence of Aedes sp larvae were 31 respondents (37.3%). In the attitude variable it was found that more than half of the respondents with negative attitudes about the presence of Aedes sp larvae were 45 respondents (54.2%). It can be seen that more than half of the respondents who did not drain the water container were 43 respondents (51.8%). In the variable of container's cover availability, it was found that more than half of the respondents who did not provide

container's cover were 47 respondents (56.6%).

Based on the research, the results of the bivariate analysis can be seen in the table 3:

Tabel 3. The Relationship between knowledge, attitudes, water container draining practice, and the availability of container lids with the presence of Aedes sp. Larvae

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No	Variable	Presence of Aedes sp. larvae				Jumlah		P-Value
		Presence		Not presence				
		f	%	F	%	F	%	
1.	**Knowledge**							
	Low	27	87,1	4	12,9	31	37,3	0,002*
	High	26	50,0	26	50,0	52	62,7	
2.	**Attitude**							
	Negative	41	91,1	4	8,9	45	54,2	0,000*
	Positive	12	31,6	26	68,4	38	45,8	
3.	**Water container draining practice**							
	Poor	39	90,7	4	9,3	43	51,8	0,000*
	Good	14	35,0	26	65,0	40	48,2	
4.	**Available of container's cover**							
	Available	44	93,6	3	6,4	47	56,6	0,000*
	Not available	9	25,0	27	75,0	36	43,4	
	total	53	63,9	30	36,1	83	100	

note: * (p<0,05)

The results of statistical tests with Chi-Square between the knowledge and the presence of Aedes.sp larvae obtained p-value = 0.002 (p <0.05), which means there was relationship between knowledge and the presence of Aedes.sp larvae in the home environment in the buffer zone of Teluk Bayur Port, Padang City in 2019. The results of statistical tests with Chi-Square between attitude variables and the presence of Aedes.sp larvae obtained p-value = 0.000 (p <0.05), which means that there was a relationship between attitudes and the presence of Aedes.sp larvae in the home environment in the buffer zone of Teluk Bayur Port, Padang City in 2019. The results of statistical tests with Chi-Square between the variable water container draining practice and the presence of Aedes.sp larvae obtained p-value = 0.000 (p <0.05), which means that there was a relationship between the behavior of water container draining practice and the presence of Aedes.sp larvae in the home environment in the buffer zone Teluk Bayur Port, Padang City in 2019. The results of statistical tests with Chi-Square between the variable that closed the container and the presence of Aedes.sp larvae obtained p-value = 0.000 (p <0.05), which means that there is a relationship between the presence container's cover and the presence of Aedes.sp larvae in the home environment in the buffer zone of Teluk Bayur Port, Padang City in 2019.

DISCUSSION

The Relationship between Knowledge with the Presence of Aedes.sp larvae

Based on the analysis, it shows that there is a relationship of knowledge (p-value = 0.002) with the presence of Aedes sp larvae in the home environment in the buffer area of Teluk Bayur Port, Padang City in 2019. The results of this study were comparable to research conducted by Nahdah (2013) regarding the Relationship between 3M Plus Behavior and Aedes aegypti Larvae Density in Birobuli Selatan Village, Palu City, Central Sulawesi, found that there was a relationship between knowledge and the presence of Aedes aegypti larvae (p value 0.001). The results of this study are also in line with research conducted by Nani (2017) concerning the Relationship between Water Container Draining Behavior and the

Existence of Aedes aegypti larvae at Pulang Pisau port, found that there was a relationship between knowledge level and the presence of Aedes aegypti larvae (p-value = 0,000).
Knowledge is a continuous formation by someone who at any time undergoes reorganization due to new understandings. Knowledge can be obtained by a person naturally or intervened either directly or indirectly (Budiman, 2013). According to Notoatmodjo (2012), cognitive knowledge is a very important domain for the formation of an action. The knowledge discussed in this study is about DHF. Knowledge is closely related to one's actions, in this case knowledge about dengue will greatly affect one's behavior. According to Green's theory, one of the factors that influence a person's health behavior is predisposing factors which include knowledge, beliefs, beliefs, values and one's perceptions of health behavior. Education is a factor that influences one's knowledge, attitudes, perceptions, beliefs and assessments of health, so it can be concluded that the higher a person's education level, the more aware and concerned about personal hygiene and the environment. According to the assumption of the researcher, the level of knowledge can be influenced by the education level of the respondent, where the majority of respondents have a high school education level or equivalent. In addition, public knowledge can be influenced by information from print and electronic media. Budiman (2013) states that the existence of new information about a matter provides a new cognitive foundation for the formation of knowledge about it.

The Relationship between Attitude with the Presence of Aedes.sp larvae

Based on the analysis, it shows that there is an attitude relationship (p-value = 0.000) with the presence of Aedes sp larvae in the home environment in the buffer area of Teluk Bayur Harbor, Padang City in 2019.

The results of this study were comparable to research conducted by Purnianto (2019) concerning the Relationship between Knowledge, Attitudes and behavior with existence of Aedes aegypti larvae in buffer are of Tanjung Intan Cilacap Port which states that attitudes were related to the presence of Aedes sp larvae with p-value <0.05 (p-value=0.010). The results of this study were also in line with research conducted by Nani (2017) concerning the Relationship between PSN Behavior and the Presence of Aedes aegypti larvae at Pulang Pisau Port, found that there is a relationship between attitudes with the existence of Aedes sp larvae (p-value=0.024). Research conducted by Arif Budiman (2016) also shows the same result, there rs a significant relationship between the attitude of PSN-DHF with the presence of Aedes sp. Larvae in Naunggulan District, Kulon Progo Regency with p-value =0,009.

Attitude is a person's readiness or willingness to act or respond to something both to positive stimuli and negative stimuli from the stimulation object. Attitude is not yet an action or activity but it is a predisposing factor for someone to behave. Attitudes are obtained from the socialization process, a person will react according to the stimuli they receive (Notoadmodjo, 2012). The results of the analysis of the relationship between attitudes towards the presence of Aedes sp larvae are in accordance with the existing theory. Respondents who have negative attitudes are more at risk of having Aedes sp larvae in their home environment, because attitudes about DHF and the presence of Aedes sp larvae can affect respondent actions in prevention through PSN. Respondents who have a positive attitude will have better preventive measures so that the risk of Aedes sp larvae is getting smaller.

According to the researchers' assumptions, the high number of negative attitudes from respondents about DHF prevention is influenced by the attitude of respondents who do not want to be involved and do not want to play an active role in efforts to eradicate the larvae of Aedes sp in the prevention of dengue disease, where this can be seen from the results of questionnaires answered by respondents about attitudes. in the prevention of DHF most of the negative questions were answered with low scores. In

accordance with the theory that the output of each individual's attitude can be different, if you like or agree with an object, it will approach, find out, and join, otherwise if you don't like it or don't agree, it will avoid or stay away.[11] Therefore, it is necessary to provide health education and distribution of leaflets, posters and billboards in order to form the attitudes of the community in the buffer area of Teluk Bayur Port, Padang City regarding the control and prevention of DHF. The dominant attitude of the respondents is due to the lack of public awareness of the importance of being supportive of DHF prevention due to daily activities and habits in life. In accordance with the theory which states that attitudes are a product of the socialization process, someone will react according to the stimuli they receive (Mar'at, 1984). The negative attitude of respondents is a reflection of the lack of public concern for the cleanliness of the surrounding environment which is one of the factors affecting the presence of Aedes sp larvae in the prevention of dengue in the buffer area of Teluk Bayur Harbor, Padang City in 2018. Therefore, the education program on DHF should be carried out by the Health Office Port.

The Relationship between Water Container Draining Practice with the Presence of Aedes.sp larvae

Based on the analysis, it showed that there was a relationship between water container draining practice (p-value = 0,000) with the presence of Aedes sp larvae in the home environment in the buffer area of Teluk Bayur Port, Padang City in 2019.

The results of this study were in line with research conducted by Nani (2017) concerning the Relationship between PSN Behavior with the Existence of Aedes aegypti larvae at Pulang Pisau port, which states that draining the landfill is related to the presence of Aedes sp larvae with p-value <0.05 (p-value=0.000). The results of this study were also comparable to the results of Putri's (2016) research on the relationship between mosquito breeding places and mosquito nest eradication behavior (PSN) with the presence of Aedes aegypti larvae in Benda Baru Village, South Tangerang City, which states that there is a relationship between water container drainage and the presence of Aedes sp larvae with p-value <0.05 (p-value=0.000). Other study conducted by Overgaard *et,al* (2017) found that the frequency of washing container associated with Aedes sp. Investation, never-washed container reported four times more likely to be infested than those washed every week.

Draining the water container is one of the physical methods of eradicating Aedes sp. Mosquito larvae. Draining can be done by brushing the walls of the water reservoir and using soap to keep it clean from Aedes sp's eggs (Ministry of Health Indonesia, 2013). Draining the landfill is one of the ways to prevent dengue fever, because draining the landfill will minimize the Aedes sp mosquito laying its eggs on the wall of the water storage and those that will hatch within a week, it is recommended to drain the landfill at least once a week by draining and brushing the walls of the water reservoir (Ministry of Health Indonesia, 2010).

According to the author's assumption, the number of respondents who did not drain the water container was due to the low positive attitude of the respondents in preventing DHF, so that the respondent did not have the desire to take control measures for Aedes sp larvae, one of which was to drain the water container. Therefore, it is better if the Port Health Office, as the person in charge of health status in the buffer area of Teluk Bayur Port, Padang City, can provide outreach programs to the community on an ongoing basis regarding proper landfill drainage and can motivate the community to apply it in their daily life.

The Relationship between Availability Container's Cover with the Presence of Aedes.sp larvae

Based on the analysis, it shows that there is a relationship between the availability of container caps and the presence of Aedes sp larvae in the home environment in the buffer area of Teluk Bayur Port, Padang City in 2019.

The results of this study are in line with research conducted by Wahyuni (2018) which showed that there is a statistically significant relationship between the presence of a cover in water container with the presence of Aedes sp larvae in the endemic area of Dengue Haemorrhagic Fever in East Jakarta in 2018 (p-value=0,000). Likewise, Rendy's research (2013) shows that there is a statistically significant relationship between the presence of container's cover with the presence of Aedes sp larvae (p-value<0,05) (Rendy, 2013). The availability of cover at the landfill is one of the environmental factors that can affect the presence of Aedes aegypti mosquito larvae. The existence of a lid on the landfill and its correct use has a significant impact on the presence of Aedes agypti larvae and pupae compared to an uncovered water reservoir.

In accordance with the theory that the existence of a water container/breeding place will create opportunities for Aedes aegypti mosquitoes to breed. This is because most of the life cycle of mosquitoes (eggs, larvae, pupa) occurs in water. Mosquitoes that breed around the house will be easier to reach humans (hosts), with this, the presence of water reservoirs around the house will increase the incidence of dengue fever.

According to the researchers' assumptions, the high number of respondents who did not provide a cover on the container was due to the negative attitude of the respondent, besides that it was also due to the number of containers / TPA owned by the respondent more than 1 for each household, so that the existence of this TPA was a potential for Aedes sp mosquitoes to breed. In accordance with the theory that the existence of a TPA / breeding place will create opportunities for Aedes aegypti mosquitoes to breed. This is because most of the life cycle of mosquitoes (eggs, larvae, pupa) occurs in water. Mosquitoes that breed around the house will find it easier to reach humans (hosts), with this the presence of water reservoirs around the house will increase the incidence of dengue fever (Nugrahaningsih, 2010).

CONCLUSION

It can be concluded that there were relationship between knowledge, attitudes, activities to drain the water reservoir, and the availability of container caps with the presence of Aedes sp. larvae in the buffer area of Teluk Bayur Port in Padang City in 2019. It is hoped that the officers of the Teluk Bayur Port Health Office will provide counseling continuously to the community (at least 2 times a year) abaout disease prevention behavior of DHF such as draining the water reservoir and motivating the community to apply it in their daily lives.

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