



Factors Related to Incident Dengue Hemorrhagic Fever (DHF)

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Abstract

At the present, the Dengue Hemorrhagic Fever (DHF) is one of health problem in Indonesia. In last three years in 2017, 2018, and 2019 the incident of DHF in Puskesmas Klagenserut has been significant increase of 17% cases. This research purpose is to know some factors related to with incident DHF in working area Puskesmas Klagenserut. In this research, the researcher uses descriptive quantitative research as approach. The method of research is analytical survey while the type of research is case control. In collecting the data, the researcher uses questionnaires. In analyzing the data, the researcher uses Chi-Square test and regresi logistic test. The sampling technique uses a Total Sampling. The population and samples is all sufferers of January – December 2020 period with 21 respondent cases and 21 respondent control. The result of bivariate test shows that there is a significant correlation between independent variable which is attitude (p-value = 0,045), perception (p-value = 0,022), health facilities (p-value = 0,008), and cadre support (p-value = 0,045), while variable that has no significant correlation is knowledge (p-value = 0,053). Multivariate test result got there is no related variable with incident DHF at working area Puskesmas Klagenserut. The conclusion represents that is related to the attitude, perception, health facility, and cadre support with incident of DHF at working area Puskesmas Klagenserut. Suggestions for further researchers are expected to be able to analyze other risk factors such as environmental conditions and the habit of hanging clothes against the incidence of DHF.

Keywords: Factors; DHF

INTRODUCTION

Dengue Hemorrhagic Fever (DHF) is a disease that can be transmitted by the *Aedes aegypti* mosquito. Dengue infection is caused by the dengue virus. Symptoms of DHF can be marked by bleeding in the nose, gums, mouth, pain in the heartburn continuously and there are red bruises on the skin (WHO, 2015). The *Aedes aegypti* mosquito is a mosquito that has a very fast development and makes 390 million people infected every year. Dengue virus is found in tropical and sub-tropical areas, mostly in urban and suburban areas.

In Indonesia with a tropical climate it is very suitable for the growth of animals or plants and is good for the development of various diseases,

especially diseases carried by vectors, namely organisms that spread pathogenic agents from host to host, such as mosquitoes which transmit many diseases (Kementerian Kesehatan RI, 2018).

Based on Indonesia's health profile data in 2018 there were 68,602 cases with 467 deaths, while in 2019 there were 138,127 dengue cases with 919 deaths. This number can be concluded that there was an increase in cases of dengue fever by 28% of cases. The dengue fever Incidence Rate (IR) in 2019 is 51.48 per 100,000 population. This figure shows an increase compared to the previous two years, namely 2016 and 2017 when the Incidence Rate was 26.1 and 24.75 per 100,000 population (Profil Kesehatan Indonesia, 2019).

In 2018 in East Java there were 9,452 cases of dengue fever and an increase in cases of dengue fever in 2019, which was 18,397, it can be concluded that there was an increase of 13.3% cases of dengue pain. The Incidence Rate (Incidence Rate) in 2018 was 24 per 100,000 population and increased in 2019, namely 47 per 100,000 population. The incidence rate is in accordance with the national target that has been set at ≤ 49 per 100,000 population. The case Fatality Rate (CFR) of dengue in 2019 is 1%, this shows that the death rate due to dengue fever in East Java is still above the target $< 1\%$ (Profil Kesehatan Provinsi Jawa Timur, 2019).

Based on DHF case data obtained from the Health profile data of Madiun Regency in 2016, there were 301 cases of dengue fever, in 2017 there were 78 cases and there was an increase in cases of dengue fever in 2018 by 124, thus an increase of 53% of cases of dengue fever was recorded. 1 person with dengue fever deaths is the same as in the previous year there were 1 cases of DHF deaths. The Incidence Rate (IR) in Madiun Regency in 2018 was 18 per 100,000 population, an increase compared to 2017, which was 11.5 per 100,000 population (Profil Kesehatan Kabupaten Madiun, 2018). The number of DHF cases at the Klagenserut Health Center in the last two years has increased compared to 25 other Puskesmas in the work area of Madiun Regency. In 2017, 10 cases of dengue fever were found, in 2018 there were 9 cases of dengue fever and in 2019 66 cases were found. dengue fever, it can be concluded that there was an increase of 17% of cases.

METHOD

This research is a type of quantitative research with an analytic survey method research design with a case control approach (Hidayat Alimul, 2012). The population in this study were all DHF sufferers and non-DHF sufferers recorded in medical records in the

working area of Puskesmas Klagenserut, Jiwan District, Madiun Regency, namely 42 respondents with a period of 1 (one) last year as many as 21 cases with a ratio of 1:1 consisting of a case population of 21 respondents and a control population of 21 respondents (Sugiyono, 2014). So, the population in this study were 42 respondents. The sampling technique was taken using a total sampling technique (Notoatmodjo, 2012).

The independent variables in this study were knowledge, attitudes, perceptions, health facilities, and cadres support, while the dependent variable in this study was the incident of DHF (Sugiyono, 2013). Data collection techniques using questionnaires with a total of 25 question items that have been validated before conducting research and direct interviews with respondents (Arikunto, 2013). The data analysis technique uses univariate analysis which aims to describe the characteristics of each research variable, bivariate analysis with the chi-square test aims to conclude whether there is a relationship between two categorical variables and multivariate analysis with logistic regression testing aims to determine which variable is most related to the dependent variable (Dahlan, 2017).

Research ethics in this study is not to include the identity of the respondent so that confidentiality is maintained. The urgency in this study is different from other studies due to different places and times and this study using the *case control* method and using *logistic regression* test.

RESULT AND DISCUSSION

1. Knowledge

Table 1. The Relationship between Knowledge and Incident of DHF in the Working Area of Puskesmas Klagenserut

Knowledge	Incident DHF		Total	P-Value
	Cases	Control		

	N	%	N	%	N	%	being able to predict someone's actions quickly
Good	17	63,0	10	37,0	27	100	0,053 because when someone's knowledge is good, the actions taken are not in accordance with the
Not Good	4	26,7	11	73,3	15	100	
Total	21	50,0	21	50,0	42	100	

Based on Table 1 above shows the results of the bivariate analysis using the Chi-Square test, it can be seen that the incidence of dengue fever in the case group is 17 respondents (63.0%) who have good knowledge and 4 respondents (26.7%) who have bad knowledge, while in the control group there were 10 respondents (37.0%) who had good knowledge and 11 respondents (73.3%) who had bad knowledge. And the p-value is obtained = $0.053 > (0.05)$ so that H_a is rejected, which means that there is no relationship between the respondent's knowledge and the incident of dengue fever in the working area of Puskesmas Klagenaserut.

The results of this study are not in line with Lawrence Green's theory which states that knowledge is a predisposing factor that can cause a person's behavior to occur. This is because people who are well-informed can also perform behaviors that are contrary to their own knowledge. The results of this study are not in line with the opinion (Notoatmodjo, 2012) which shows that knowledge is related to public health attitudes. Good knowledge can be influenced where a person knows things related to the incidence of dengue and whether or not the respondent has received information about the problem from social media, electronics, print media, and health workers (Taniansyah et al., 2020).

According to research conducted by (Waris L, 2013) it is stated that good knowledge cannot guarantee someone to be free from DHF because it could be that people who have good knowledge will take actions that are contrary to their knowledge. Good knowledge should be based on a high sense of awareness so that someone will act according to the knowledge they have. According to (Nugrahaningsih, Mardiyani., 2010) good knowledge does not mean

knowledge they have (Carundeng et al., 2015).

Based on the results of the research, it shows that respondents who have good knowledge in the case group are 17 respondents, this fairly good knowledge can be caused because when they have been exposed to or infected with dengue, these respondents have already had experience of counseling about dengue disease as well as methods of prevention and eradication of dengue that have been carried out by health workers and jumantik cadres in the region. Meanwhile, respondents who lack knowledge in the control group because these respondents have never had any experience of counseling or socialization about dengue and how to prevent and eradicate dengue.

2. Attitude

Table 2. The Relationship between Attitude and the Incident of DHF in the Working Area of Klagenaserut health center.

Attitude	Incident DHF				Total		P-Value
	Cases		Control		N	%	
	N	%	N	%			
Agree	18	62,1	11	37,9	29	100	0,045
Disagree	3	23,1	10	76,9	13	100	
Total	21	50,0	21	50,0	42	100	

Based on Table 2 above shows the results of the bivariate analysis using the Chi-Square test, it can be seen that the incidence of dengue fever in the case group was 18 respondents (62.1%) who had an agreeableness and 3 respondents (23.1%) who had a disagreement, while in the control group there were 11 respondents (37.9%) who had an agreeableness and 10 respondents (76.9%) who had a disagreement. And the p-value is obtained = $0.045 < (0.05)$ so that H_a is accepted, which means that there is a relationship between attitudes and the incident of DHF in the Klagenaserut health center.

This is in line with Lawrence Green's theory (Notoatmodjo, 2012) which says that attitude is a factor that exists in a person to behave. Attitude is related to individual or group motivation to do something. According to (Harisnal, 2019) attitude is the readiness or willingness to act, the better one's attitude, the better one's behavior will be. Respondents who have a positive attitude towards the incidence of DHF because these respondents have extensive knowledge and motivation (Sucipto & Raharjo, 2015). Meanwhile, respondents who have a negative attitude are due to the fact that many of the respondents have a low level of education so that it can affect the respondents' knowledge that is not broad and their motivation is still lacking (Taniansyah et al., 2020).

In research (Montung, 2012) states that the respondent's attitude is an open response and has been seen in real life so that it is reflected in the preventive actions they take better in accordance with their positive attitude towards eradication and prevention efforts themselves. Based on the results of the study, there were 18 respondents who had a positive attitude in the case group because when they had been exposed to or had contracted dengue, these respondents had already carried out good behavior towards the role and efforts of eradicating, handling, and preventing dengue disease who were accompanied and supported by health workers and cadres. Meanwhile, the negative attitude in the control group is because the respondent has not had any experience of counseling and assistance to carry out the role and efforts to eradicate, handle, and prevent DHF by health workers and cadres in the area so that with this negative attitude the respondent does not have good behavior.

3. Perception

Table 3. The relationship between Perceptions and the incident

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	N	%	N	%	N	%	
Good	18	64,3	10	35,7	2	10	0,022
Not Good	3	21,4	11	78,6	4	10	
Total	21	50,0	21	50,0	4	10	

Based on Table 3 above shows the results of the bivariate analysis using the Chi-Square test, it can be seen that the incidence of DHF in the case group is 18 respondents (64.3%) who have good perceptions and 3 respondents (21.4%) who have bad perceptions. while in the control group there were 10 respondents (35.7%) who had good perceptions and 11 respondents (78.6%) who had bad perceptions. And the p-value is obtained = 0.022 < (0.05) so that Ha is accepted, which means that there is a relationship between perceptions and the incident of DHF.

This is in line with Lawrence Green's theory (Notoatmodjo, 2012) which states that perception is a predisposing factor that can shape behavior, respondents who have high perceptions about the efforts to eradicate, treat, and prevent DHF, these respondents have high confidence in the efficacy of efforts to eradicate, treat, and prevention of dengue (Taniansyah et al., 2020).

According to (Sekuler R, 1997) knowledge can shape experience of perception. People who use perception without knowledge may be able to produce perceptions normally, but do not clearly define what they have perceived. Knowledge can help identify various stimuli that arise and then become perceptions (Herlina Susmaneli, 2018).

Based on the results of the study, it shows that respondents who have good perceptions in the case group are 18 respondents because these respondents have good knowledge so that good knowledge can influence a person's actions or behavior in responding to everything related to the incident of DHF in the Klagenserut health center. Meanwhile, the perception

Perceptions	Incident DHF		Total	P-Value
	Cases	Contro		
Good	18	10	28	0,022
Not Good	3	11	14	
Total	21	21	42	

that is not good in the control group is due to the fact that most respondents do not have good knowledge so that the respondent does not have a response or opinion on everything related to the incident of DHF in Klagenserut health center.

4. Health Facilities

Table 4. The relationship between the Health Facilities and the incident of DHF

Health Facilities	Incident DHF				Total		P-Value
	Cases		Control		N	%	
	N	%	N	%			
There are Health Facilities	11	84,6	2	15,4	13	100	0,008
No Health Facilities	10	34,5	19	65,5	29	100	
Total	21	50,0	21	50,0	42	100	

Based on Table 4 above shows the results of the bivariate analysis using the Chi-Square test, it can be seen that the incidence of dengue fever in the case group is 11 respondents (84.6.0%) who have health facilities and 10 respondents (34.5%) who do not have the existence of health facilities, while in the control group there were 2 respondents (15.4%) who had health facilities and 19 respondents (65.5%) who did not have health facilities. And the p-value is obtained = $0.008 < (0.05)$ so that H_a is accepted, which means that there is a relationship between the health facilities and the incident of DHF.

This is in line with Lawrence Green's theory (Notoatmodjo, 2012) which states that facilities and infrastructure are enabling factors that will enable or support someone to behave well in efforts to eradicate, handle, and prevent DHF. According to (Istiqomah, Syamsulhuda BM, 2017) there is a relationship between health policies and efforts to prevent dengue fever, this may be due to the sanctions imposed if larvae are detected positively for 3 consecutive days,

so that there is still a chance to eradicate mosquito larvae.

Based on the results of the study, there were 11 respondents who had the health facilities in the case group because when they were exposed to or infected with dengue, they had carried out Periodic Larva Inspection activities carried out by cadres, given abate powder, and carried out spraying activities (*fogging*). Whereas respondents who did not have the health facilities in the control group were due to the absence of periodic larva inspection activities in all circles of society and not given abate powder.

5. Cadre Support

Table 5. The Relationship between Cadre Support and the Incident of DHF

Cadre Support	Incident DHF				Total		P-Value
	Cases		Control		N	%	
	N	%	N	%			
Good	18	62,1	11	37,9	29	100	0,045
Not Good	3	23,1	10	76,9	13	100	
Total	21	50,0	21	50,0	42	100	

Based on table 5 above shows the results of the bivariate analysis using the Chi-Square test, it can be seen that the incidence of dengue fever in the case group was 18 respondents (62.1%) who had good cadre support and 3 respondents (21.4%) who had no cadre support. good, while in the control group there were 10 respondents (35.7%) who had good cadre support and 11 respondents (78.6%) who had poor cadre support. And the p-value is obtained = $0.045 < (0.05)$ so that H_a is accepted, which means that there is a relationship between cadre support and the incident of DHF.

This is in line with Lawrence Green's theory (Notoatmodjo, 2012) which states that cadre support is one of the reinforcing factors that can influence a person's behavior. This shows that the more active the role of health cadres in carrying out their duties such as conducting regular larva surveys for a certain period of time and conducting counseling on dengue

disease, the better the respondent will behave in eradicating mosquito nests. According to (Harisnal, 2019) there were some respondents who considered the support of cadres to be less active due to the lack of active cadres in visiting community homes to provide socialization or counseling, Periodic Larva Examination, and giving abate powder.

Based on the results of the study, it was shown that respondents who had good cadre support in the case group were 18 respondents due to the active role of cadres in the Periodic Larva Inspection activities carried out when the respondent had been exposed to or had dengue fever, there was counseling or socialization about DHF and how to prevent and eradicate DHF, as well as the role of cadres who are responsive and care about the incident. Meanwhile, respondents who had cadre support were not good in the control group due to the absence of Periodic Larva Inspection activities carried out during a certain period of time, as well as the absence of counseling or socialization about DHF and how to prevent and eradicate DHF that were carried out throughout the community.

6. Factors Most Related to the Incident of DHF

Table 6. Logistic Regression Test Results

Variable	B	aPOR	95% CI	P-Value
Attitude	21,627	2468	0,000	0,997
Perseptions	39,327	1,201	0,000	0,997
Health Facilities	37,614	2,165	0,000	0,997
Cadre Support	2,705	14,957	0,812 – 275,622	0,069
Constanta	-60,594	0,000		0,997

Based on table 6 above, the results of multivariate analysis using logistic regression test show that there are no variables that are most related to the incident of DHF in the Working Area of Puskesmas Klagenserut because all the variables have the same contribution as well as the variables of attitudes, perceptions, health facilities, and cadre support automatically eliminated from the process

using the Backward LR method in the logistic regression test.

In the multivariate analysis using logistic regression test showed that there was no variable that was most related to the incidence of dengue fever in the Working Area of Puskesmas Klagenserut because all the contribution variables were the same and the variables of attitudes, perceptions, availability of health infrastructure, and cadre support were automatically eliminated from the process using the Backward LR method in the logistic regression test. And supported by facts in the field that the respondent's knowledge is good so that the respondent has a positive attitude to behave and act well towards the role and efforts to eradicate, handle, and prevent DHF.

CONCLUSION

Based on the results of research and discussion of factors related to with incident of Dengue Hemorrhagic Fever (DHF) in the working area of Klagenserut health center, it can be concluded that from the multivariate analysis using logistic regression, it can be concluded that the variables of attitudes, perceptions, health facilities, and support from cadres show that there are no variables that are most related to the incident of DHF .

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