

The Occurrence Of Chikungunya Risk Factors in Kauman Health Center Ponorogo Regency in 2016

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Abstract-Chikungunya fever is a type of infection diseases caused by chikungunya virus (CHIKV) which is transmitted by *Aedes aegypti* and *Aedes albopictus* mosquito types with joint pain as an obvious symptom. In 2014 - 2015, the most happening chikungunya case was in Kauman Health Center Ponorogo Regency with 116 cases. This research is to analyze the risk factors of the occurrence of chikungunya in Kauman Health Center Ponorogo in 2016. This research is quantitative analysis with case control as research design. The samples used for case group and control group are 15 respondents each out of 116 population. Sampling technique used in this research is simple random sampling. Research result was analysed using Chi-Square Odd ratio to investigate how big the chance of its risks. Regarding to the result of this research, variables which become risk factors are larvae existance (OR=13), closing container (OR=7,562), draining habit of container (OR=7,429), plant existance (OR=5,5), air temperature (OR=1,833), and humidity (OR=1,33). While for protective factors, they are lightening variable (OR= 0,182) and hanging clothes (OR=0,103). Therefore, government and society must cooperate to eradicate mosquito larvae by repairing societies' habits in order to decrease the risk of the occurrence of chikungunya.

Keywords - risk factors, chikungunya, aedes albopictus, aedes

1. INTRODUCTION

Chikungunya fever is an infectious disease caused by chikungunya virus (CHIKV) is transmitted by mosquitoes (Arthropod- borne virus / masquito - borne virus). Chikungunya virus family Togaviridae including alphavirus genus (Kemenkes RI, 2012). In Asia mosquitos transmission occurs in human beings with mosquito vector *Aedes aegypti* and *Aedes albopictus* (WHO, 2009). Chikungunya fever is characterized by the appearance of symptoms similar with dengue fever. Distinctive and dominant symptom is joint pain. (RSPI 2007 in research Rumatora, 2011).

Data from the Health Service Ponorogo (2015) states that since 2013, the incidence of chikungunya continues to rise and is in the Kauman district area in Kauman Health Center which amounted to 51 cases which is the highest incidence rate in 2013. In the following year in the region of Kauman Health Center also become the highest incidence of cases of chikungunya is numbered 116 cases. Therefore do research with the aim of analyzing the risk factors of chikungunya in Kauman Health Center of Ponorogo 2016.

2. RESEARCH METHODS

This research is a quantitative analytic, with the case-control study design is to assess the magnitude of the risk of exposure to disease exposure causes chikungunya in Kauman Health Center Ponorogo in 2016. The research location is in Kauman Health Center area. The population in this study were 116 cases with samples of each case is 15 respondents and 15 respondents is in control groups. The research variables in this study consists of a variable physical environmental factors, biological environmental factors, and behavioral factors. Data was analyzed by Chi-square Odd Ratio

3. RESEARCH RESULT AND DISCUSSION

3.1 Physically Environmental Factors

3.1.1 Air temperature

Temperature is a one factor of chikungunya occurrence. It's related with the environment for mosquitos growth. When the environment has a bed temperature, its potentially the vector of chikungunya infected the human being.

Tabel 1. Air Temperature Cross Tabulation with The Occurrence of Chikungunya in Kauman Heath Center Ponorogo 2016

Air Temperature	Case	Control	OR (95% CI)
	Σ	Σ	
Not Qualified	9	11	1,833
Qualified	6	4	
Total	15	15	

Based on table 1, the statistical test by using chi - square, risk estimate values obtained Odd Ratio = 1.833, indicating that the air temperature inside the house is not qualified have 1.8 times greater risk of chikungunya occurred than air temperature in a qualified home.

Temperatures are not eligible to have 1.8 times greater risk of chikungunya occurs because the air temperature chikungunya vectors can still survive. This is supported by research Susanti, L, et al (2013), the temperature is not eligible may affect the development of the virus in the body of the mosquito. Measurements obtained a relatively high temperature is 29°C - 31°C. This is influenced by the time of measurement and at the time of the case, in kauman health center, the rainfall is relatively small (rare rain) even though it was the rainy season.

According to the epidemiological triangle approach, the imbalance between the environment, agent, and host can cause the appearance of a disease. Research Fischer, D, et al (2013) showed that the higher the temperature will speed up the external incubation period of chikungunya vectors. This means that make it faster the external incubation period. Its mean that transmission to the host will be faster.

The high temperature in endemic Chikungunya area, it caused by rainfall in those area so relatively small (rare rain) even though it was the rainy season. Countermeasures development of a vector for their climate change carried out by a climate mitigation strategy (Fischer, D, et al 2013).

The next factor that causes the temperature does not qualify with fewer maximize the function of the window. Besides the arrangement of rooms in the house that is less structured led to the house smells musty.

3.1.2 Air humidity

According to the epidemiological triangle approach, the imbalance between the environment, agent, and host can cause the appearance of a disease.

Tabel 2. Air Humadity Cross Tabulation with The Occurrence of Chikungunya in Kauman Heath Center Ponorogo 2016

Air Humadity	Case	Control	OR (95% CI)
	Σ	Σ	
Not Qualified	9	10	1,333
Qualified	6	5	
Total	15	15	

Based on table 2, the statistical test by using chi - square, risk estimate values obtained Odd Ratio = 1.333, indicating that the air humadity inside the house is not qualified have 1.3 times greater risk of chikungunya occurred than air humadity in a qualified home.

The humidity is not eligible of chi - square at risk 1.3 times greater than the humidity occur chikungunya eligible. This is because the humidity > 70% humidity are comfortable for mosquito development. Mosquitoes prefer to breed and survive in homes with high humidity > 70%. In addition, research Rumatora (2011), states that the humidity is not qualified can extend the life of the mosquito to become infective chikungunya because of a stomach virus mosquitoes have time to move to the salivary glands of mosquitoes.

3.1.3 Lightening

Tabel 3. Lightening Cross Tabulation with The Occurrence of Chikungunya in Kauman Heath Center Ponorogo 2016

Lightening	Case	Control	OR (95% CI)
	Σ	Σ	
Not Qualified	10	4	0,182
Qualified	5	11	
Total	15	15	

Based on table 3, the results of statistical test by using chi - square, risk estimate values obtained Odd Ratio = 0.182, indicates that the lightening was a protective factor that has the effect of preventing the occurrence of chikungunya.

The results of measurements of the chi - square showed that the lighting in Kauman health center Ponorogo in 2016 was a protective factor with OR = 0.182 where these factors can prevent the occurrence of new chikungunya if the lighting in a room in a condition to qualify. In harmony with the research Santoso (2011), the result of OR = 0.441 namely lighting as a protective factor.

3.2 Environmental Biological Factors

3.2.1 Plant Existance

Tabel 4. Plant Existance Cross Tabulation with The Occurrence of Chikungunya in Kauman Heath Center Ponorogo 2016

Plant Existance	Case	Control	OR (95% CI)
	Σ	Σ	
Not Exist	4	10	5,5
Exist	11	5	
Total	15	15	

Based on table 4, the results of statistical test by using chi - square, risk estimate values obtained Odd Ratio = 5.5, indicating that the existance of plants around the house has a 5.5 times greater risk of chikungunya occurred than not exist plants around the house.

Herbaceous plant that grows in the group of cases is not maintained so that the house looks closed by shrubs that block the sun's light into the house. The existence of plants around the home of Chi - square showed OR = 5.5 which shows that have 5.5 times greater risk of chikungunya occurred than not their plants around the house. Their plant shrubs or bushes around the house a risk of chikungunya. According to Santoso (2011), shrubs are the preferred place for mosquitoes to perch and rest.

3.2.2 Mosquitos Larvae Existance

Tabel 5. Mosquito Larvae Existance Cross Tabulation with The Occurrence of Chikungunya in Kauman Heath Center Ponorogo 2016

Larvae Existance	Case	Control	OR (95% CI)
	Σ	Σ	
Not Exist	5	13	13,00
Exist	10	2	
Total	15	15	

Based on table 5, the statistical test by using chi - square, risk estimate values obtained Odd Ratio = 13.00, indicating that the larvae existance have a 13 times greater risk of chikungunya occurred than not existance larvae.

The results of the chi-square statistic test obtained OR = 13, shows that the presence of larvae in the home of respondents had risk 13 times greater than the absence occurs chikungunya mosquito larvae in the home of respondents. From the behavior of respondents who do not have the habit of closing the drain and water reservoirs led to high rates of the existence of larva that were 13

times more likely happen is consistent with research chikungunya. N.Kunthi and Taliah (2011) research, the presence of larvae in the landfill in the house risky one, 4 times bigger occur chikungunya and presence of TPA outdoors 4.7 times greater risk of chikungunya occurred. This is because the Aedes mosquito breeding places have a main place - a place that provides clean water to spawn until it turns into a pupa and become adult mosquitoes, so that if the existence of this flick left to the risk of chikungunya back is huge.

3.3 Behavioral Factors

3.3.1 Drain Container Habit

Tabel 6. Drain Container Habit Cross Tabulation with The Occurrence of Chikungunya in Kauman Heath Center Ponorogo 2016

Drain Container Habit	Case	Control	OR (95% CI)
	Σ	Σ	
Tidak	8	2	7,429
Ya	7	13	
Total	15	15	

Based on table 6, the statistical test by using chi - square, risk estimate values obtained Odd Ratio = 7.429, indicating that the habit does not drain the container has a 7.4 times greater risk of chikungunya occurred than have a habit of draining container.

In this study, the chi-square statistic test, OR = 7.4 which indicates that respondents who do not have the habit of draining TPA 7.4 times greater risk of chikungunya occurred back than respondents who have a habit of draining water reservoirs. In harmony with the research Sari, WP (2015), does not have the habit of carrying out the drainage water reservoirs had 10.26 times greater risk of suffering from chikungunya than samples that did draining properly.

3.3.2 Closing Container Habit

Tabel 7. Closing The Container Habit Cross Tabulation with The Occurrence of Chikungunya in Kauman Heath Center Ponorogo 2016

Closing Container Habit	Case	Control	OR (95% CI)
	Σ	Σ	
No	11	4	7,562
Yes	4	11	
Total	15	15	

Based on table 7, the statistical test by using chi - square, risk estimate values obtained Odd Ratio = 7.562, indicating that the habit of not closing the

container had a 7.5 times greater risk of chikungunya occurred than have the habit of closing the container.

On the results of the statistical test Chi - Square obtained OR = 7.5 which indicates that respondents who have a habit of not closing the landfill had a 7.5 times greater risk of chikungunya occurred than respondents who have a habit of closing the landfill. This research is in line with research Santoso (2011), who obtained the results of a significant relationship between the habit of closing the water reservoir with an incidence of chikungunya with p value 0.003 (<0.005) and the value of OR = 4.167. This indicates that the sample is not in the habit of closing the water reservoirs have 4.16 times greater risk of suffering from chikungunya than samples which have a habit of closing the water reservoirs. Having the habit of interpreting their efforts to prevent the vector of chikungunya which will berhabitat and breed

3.3.3 Hanging Cloth Habit

Tabel 8. Hanging Cloth Habit Cross Tabulation with The Occurrence of Chikungunya in Kauman Heath Center Ponorogo 2016

Hanging Cloth Habit	Case	Control	OR (95% CI)
	Σ	Σ	
No	2	9	0,103
Yes	13	6	
Total	15	15	

Based on Table 8, the results of statistical test by using chi - square, risk estimate values obtained Odd Ratio = 0.103, indicating that the habit of hanging clothes was a protective factor which has the effect of preventing the occurrence of chikungunya.

The results of the statistical test Chi - Square obtained OR = 0.103 which shows that the habit of hanging clothes are protective factors that have an influence on the occurrence of chikungunya prevention. The habit of hanging clothes in this study included a protective factor. In the control group mostly not hang clothes after completion worn, but after wearing incorporated directly into the sink so that mosquitoes do not have the opportunity to rest on a clothes hanger. This is different from the cases that have a habit of hanging clothes.

4. CONCLUSION

The risk factors of chikungunya occurrence in Kauman Health Center Ponorogo 2016 from physical environmental factors are temperatures with OR = 1.833 and humidity with OR = 1.333. Lighting with

OR= 0.182 is a protective factor for the occurrence of chikungunya in Kauman Health Center Ponorogo 2016. From biological environmental factors are the existence of plants with OR = 5.5 and the mosquito larvae existence with OR = 13.00 . From behavioral habits, the habit of draining container with OR = 7.429, the habit of closing the container with OR = 7.562 are risk factor for chikungunya Kauman Health Center Ponorogo 2016. Hanging clothes habit with OR = 0.103 is a protective factor for the occurrence of chikungunya in Kauman Health Center Ponorogo 2016.

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