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Submission date: 15-Mar-2021 11:26PM (UTC-0700)
Submission ID: 1534356130
File name: Article.pdf (367.23K)
Word count: 2615
Character count: 14678

Proceeding of The 1st University of Muhammadiyah Purwokerto - Pharmacy International Conference
5-6 June 2015, Horison Hotel Purwokerto
ISBN 978-602-73538-0-0

Maps Practice Prevention, Environmental Conditions and Index Density Larvae Community of Endemic Dengue Hemorrhagic Fever

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ABSTRACT

Barrier to eradicate Dengue Hemorrhagic Fever (DHF) from the host factor (human), among others, is community participation in mosquito nest eradication has been not optimal. The research objective was mapping of community characteristics and environmental conditions in endemic communities. Population of the village of Bojongsari District as one of the endemic area of Dengue Hemorrhagic Fever (DHF) in Banyumas was choosed. This research use sample size of 62 respondents. Data Analysis used GIS (Geografical Information System) software tools. The results showed a map of the community in the endemic areas of dengue prevention practices and environmental conditions in the category is still not good, while the index larvae density in the category of risk of dengue transmission danger.

Key words: community, endemic, maps.

INTRODUCTION

Dengue fever is a disease of international concern since the incidence increases every year in some countries. World Health Organization (WHO) estimates that the number of cases of dengue fever worldwide reached 50 million per year. The disease is now endemic in more than 100 cities in Africa, America and Asia Pacific (Jahan, 2011). In Indonesia, the prevalence of dengue fever is still high, in 2013 cases of dengue fever occurred in 31 provinces with 48.900 inhabitants and 376 patients of whom died (Muhadir, 2013). In Central Java province, it was recorded 10.000 cases of dengue fever and around 48 people died in 2013 (Sugiharto, 2013).

Health Service data of Banyumas dengue cases increase over the previous year. As April 2014, it has been recorded 196 cases, whereas in 2013 there were only about 100 the cases (Anonymous, 2014). It's alarming, if in 2002, Banyumas become a pilot area of disease prevention program dengue hemorrhagic fever (DHF). DHF cases actually peaked now. This is due to, among others, there were many endemic areas, there were 41 endemic villages spread over 24 districts (Ayyubi, 2008). The results showed that in endemic areas more containers/shelters positive water *Aedes aegypti* compared to non-endemic areas (Hikmawati et al., 2009).

An increase in endemic areas in Banyumas was possible lack of effective mosquito vector control, as well as the wrong perspective in dealing with dengue. Most people consider the eradication of mosquitoes by fumigation or fogging is a major step to combat dengue. This is a wrong

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assumption, not a settlement fogging, fogging only as one way to kill the adult mosquitoes, however, could not break the chain of A. *aegypti* mosquito breeding. Place/container into place the eggs of mosquitoes if not done control, will be the spread of dengue vectors (Sarwosambodo, 2009). Results of this study illustrate maps dengue prevention practices, larva density index and environmental conditions endemic areas.

EXPERIMENTAL

2.1 Design Research

This research is descriptive which depicts a map of the characteristics of the community in dengue prevention practices, environmental conditions, and density of larvae.

2.2 Population

The population in this study are all the people in the village Bojongsari District of twins as one of the endemic villages based data District Health Office of Banyumas.

2.3 Samples

Large sample using the formula:

$$N = \frac{(Z\alpha)^2 PQ}{d^2}$$

Zά = Deviat raw alpha (defined error rate of 5%)

P = Proportion categories (based on a previous study of dengue prevalence of 20%).

Q = 1 - P

d = Precision (set at 10%)

Based on the above formula, then the sample size was set at:

Zά = 1.96, since 95%, mean error of 5%

P = 20% (0.20)

Q = 1-20% (0.80)

d = Defined 10%

$$N = \frac{(Z\alpha)^2 PQ}{d^2}$$

$$N = \frac{(1.96)^2 0.20x0.80}{0.102}$$

$$= 62$$

The sampling technique used was purposive sampling procedure.

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2.4 Instrument

Instruments in this study includes the observation sheet to assess the density of larvae/container indices and environmental conditions and questionnaire to obtain information practices in the prevention of dengue fever.

2.5 Data Analysis

Data analysis using GIS (Geografical Informastion System).

RESULTS AND DISCUSSION

Map of practice prevention is shown in Figure 1.

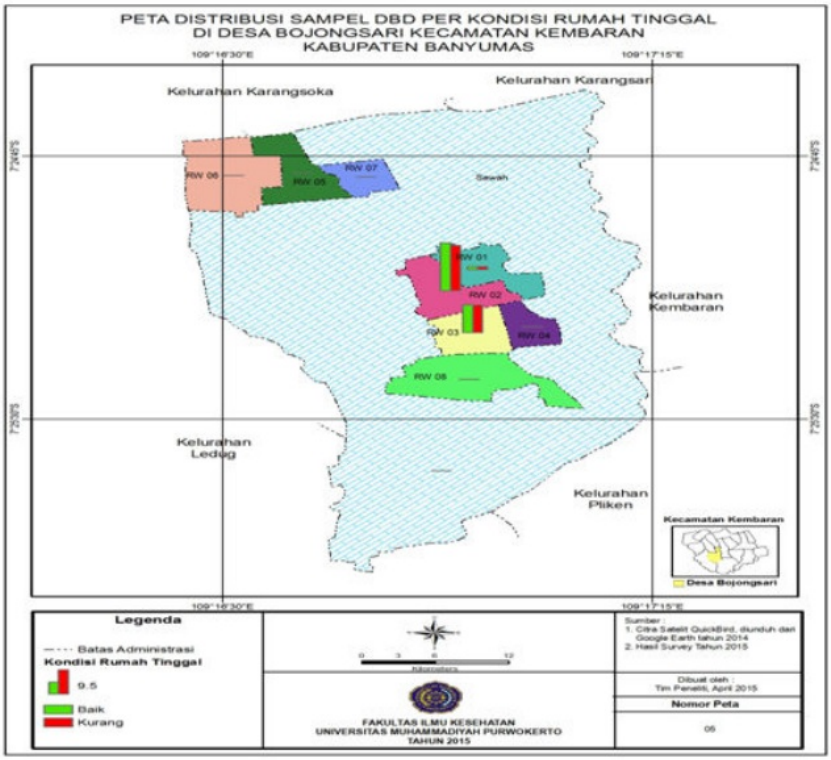

Fig 1. Map of practice prevention.

Based on Figure 1 above, practice prevention endemic communities most (57.4%) less catagory. Based on the results of the questionnaire, the lack of practice in terms of prevention include the provision of abate powder in shelters in the hard water drain only 10% of the people who do it. the second 50% of people have a habit of hanging clothes for days. This shows the potential

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behavior makes breeding place of mosquitoes become much. Results of other studies conclude that people have good knowledge about dengue prevention efforts will have a better (Syed et al., 2010).

DHF prevention practices can be optimized through mosquito nest eradication (PSN). PSN aims to eradicate larvae or prevent mosquitoes from breeding. It is needed an active role of community, through the role of the PKK as a jumantik (larva monitoring) at home and their respective communities. The study concluded that one of the obstacles to eradicate dengue from the aspect of the host, because of a lack of awareness in the participation of mosquito nest eradication (Hikmawati and Purwito, 2012).

To increase the active participation of the community in mosquito eradication need intensive counseling by health workers. Principles of the extension include the introduction of signs and symptoms of dengue, prevention methods and transmission. In addition, it should work with community leaders as agents of change. One is through the role of health cadres. The study concluded empowerment volunteer/kader. is an appropriate way in the activities of outbreak of dengue fever, because kader are driving community participation in monitoring activities larvae (Hikmawati et al,. 2009).

Map of environmental conditions is shown in Figure 2. Most of environmental conditions of endemic communities (55.7%) was in less category. Based on the results of questionnaires, environmental conditions that are less visible than waste management around the house is not good, so it could potentially be breeding place *A. aegypty*. In addition to the existing water storage container there are many larvae, indicating mosquito eradication is not optimal. The results showed that the incidence of DHF increases depending on the density of residents and homes with poor waste management.

Unfavorable environmental conditions is due to the high population growth, unplanned urbanization and uncontrolled, increase in transportation and no effective control of vector mosquitoes in endemic areas (Central Java Health Office, 2007). The results showed urbanization is associated with increased transmission, and the most dominant factor to the increase in transmission is a local slum conditions.

This is in line also with the CDC reports recently that the more rural areas an increase in outbreaks of dengue (CDC, 2011). In addition to the lack of control of mosquito breeding, continuous fumigation can leave pesticide residues that are not healthy for the environment (Sarwosambodo, 2009). Vector eradication using insecticides can cause resistance *A. aegypti*. For it is better done is routine monitoring of the place/container that became breeding places of mosquito eggs, so as not to be a spread of dengue vectors. Results of the research environment in order to improve the quality of the eradication of dengue in the Municipality of Sukabumi

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shows that environmental quality control consistently more effective than other interventions. Hause index reached 13.3, container index and Breteau index 1.0 and 13.4 (Sumengen, 1999). From the results of these studies environmental quality monitoring activities through the cleaning of mosquito breeding is an activity that is most effective for controlling dengue vectors.

Map of index density larvae is shown in Figure 3.

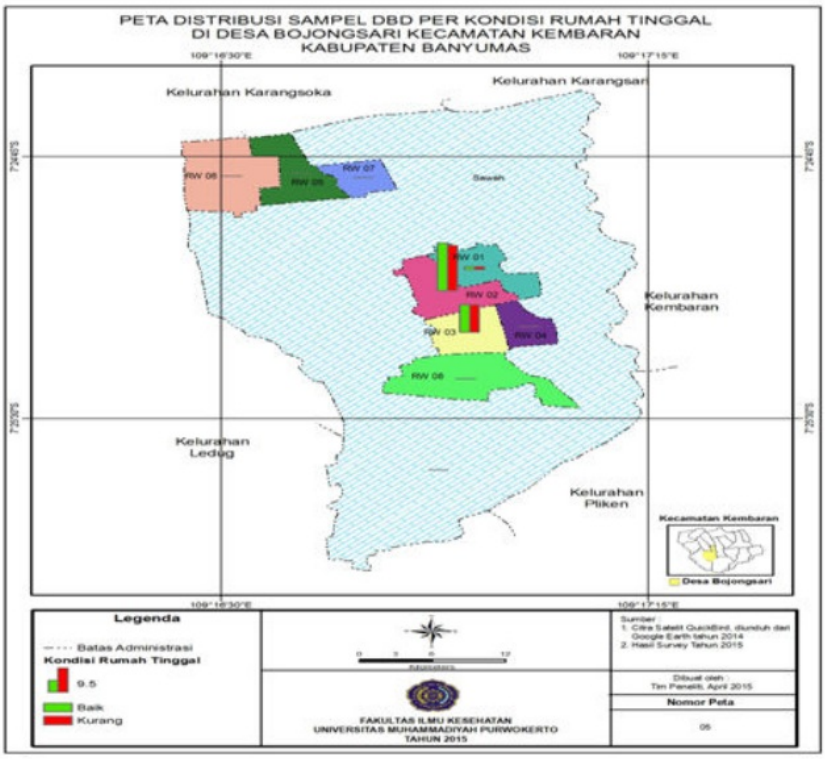

Fig 2. Map of environmental conditions.

Based on Figure 3, larva density index in endemic communities are still quite high, as seen in the container index of between 50-100 percentages of 50%. Container index is an indicator for measuring the numbers Breteau (Breteau Index/BI), the number of positive containers *A. aegipty* larvae in 100 homes, When the Breteau index <50. DHF will not be transmitted and if >50 area in danger of contagion.

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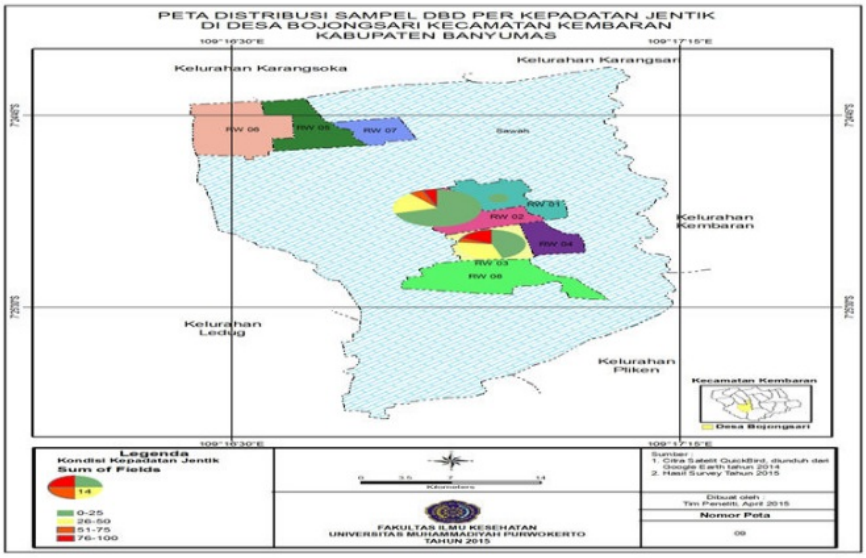

Fig 3. Map of index density larvae.

Vector control through the control of mosquito larvae density is the concept of deterrence to prevent the occurrence outbreaks of dengue fever. The concept of prevention is an effort aimed at preventing diseases through the efforts of how we take action before the incident with the operational measures based on data analysis, observation, and epidemiological studies (Hikmawati, 2010). To prevent and limit DHF, each family needs to do a mosquito eradication of dengue hemorrhagic fever (PSN-DBD) in a manner that is 3M (drain, close, burying) (WHO, 2000). Brushing the wall drain with water reservoirs (jars, drums, bathtub, etc.) or dusted abate/altosid if these places cannot be drained. Sealed water tanks so that mosquitoes cannot enter and multiply in it. Bury/dispose of used goods that can collect rain water for example used tires, tin cans, drinking places and other minerals. 3M movement if done simultaneously by the entire community, the chain of life (life cycle) of *A. aegypty* will be disconnected. *A. aegypti* mosquito's life cycle consists of eggs, larvae, pupae, and mosquitoes. Eggs, larvae, and pupae live in water that is not paved ground and will die if the water is removed. In order eggs, larvae and pupae of mosquitoes it is not necessary to do 3M regularly, at least once a week. With 3M motion, it is necessary for active community participation in the monitoring of mosquito larvae, if the program is run on a regular basis then predicted endemic areas and dengue fever attacks will decrease as a place to hide and multiply *A. aygepti*. The results showed that in endemic areas more positive containers *A. aegypti* compared to non-endemic areas, and the risk of disease transmission is higher dengue in endemic areas, in addition to the growing number of positive containers of *A. Larvae*, it will increase the area of endemicity (Hikmawati, 2009). This is in line

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with a report by Mashoedi et al. (2009), which said that in endemic areas virus detection results using immunohistochemistry test (IHC) showed the dengue virus in the eggs of Aedes species.

The results showed an increase in the numbers of container index (CI) improved its figures will house index (HI), where it would increase the risk of outbreaks of dengue hemorrhagic fever (Hayes et al., 2003). Other research shows that there are differences in average egg *A. aegypti* in dark container and the container was not dark, where the *A. aegypti* mosquito prefers to lay eggs in dark colored containers rather than laying eggs in the container is not dark (Setiyabudi and Hikmawati, 2006).

CONCLUSIONS

Maps of the community in the endemic areas of dengue prevention practices and environmental conditions in the category is still not good, while the index larvae density in the category there is a risk of dengue transmission danger.

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