

The Contextual Effect of Village on Health Preventive Behavior for Dengue Hemorrhagic Fever in Pati, Central Java

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ABSTRACT

Background: Dengue is a mosquito-borne infection that has emerged become major public health issue and can result in death. Various efforts have been made as an attempt to empower the community in dengue preventive behavior, but has not yet reached the optimal result. This study aimed to examine the effect of village on the health preventive behavior for dengue hemorrhagic fever in Pati, Central Java.

Subjects and Method: This was a case-control study conducted in Pati, Central Java, in November 2018. A sample of 225 household heads was selected by simple random sampling. The dependent variable was DHF preventive behavior. The independent variables were education, access to information, knowledge, attitude, self-efficacy, community health behavior, social capital, and villages. Data on DHF status was measured by medical record. The other data were collected by questionnaire. The data were analyzed by multilevel multiple logistic regression.

Results: DHF preventive behavior improved with high education (b= 0.86; 95% CI= 0.04 to 1.70; p= 0.040), good knowledge (b= 0.86; 95% CI= 0.06 to 1.67; p= 0.036), strong self efficacy (b= 0.87; 95 % CI= 0.06 to 1.68; p= 0.036), good access to information (b= 1.98; 95% CI= 1.06 to 2.87; p <0.001), positive attitude (b= 1.40; 95% CI= 0.55 to 2.25; p= 0.001), good community behavior in DHF prevention (b= 0.86; 95% CI= 0.02 to 1.70; p= 0.045), and strong social capital (b= 1.07; 95% CI= 0.26 to 1.89; p= 0.010). Village had strong contextual effect on DHF prevention behavior with ICC= 20.30%.

Conclusion: DHF preventive behavior improves with high education, good knowledge, strong self efficacy, good access to information, positive attitude, good community behavior in DHF prevention, and strong social capital. Village has strong contextual effect on DHF prevention behavior.

Keywords: dengue hemorrhagic fever, preventive behavior, village, multilevel analysis

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BACKGROUND

DHF (Dengue Hemorrhagic Fever) is a disease caused by dengue virus transmitted to humans through the bite of *Aedes aegypti* and *Aedes albopictus*. DHF has 4 different serotypes (DEN-1, DEN-2, DEN-3, and DEN-4) (Amin et al., 2018). Dengue hemorrhagic fever is an acute febrile disease, often accompanied by headaches, bone or

joint and muscle pain, rashes and leukopenia as symptoms. DHF is characterized by four main clinical manifestations of high fever, hemorrhagic phenomena, often with hepatomegaly and in severe cases, signs of circulatory failure, these patients can experience hypovolemic shock caused by plasma leakage (De Almeida et al., 2017).

Dengue hemorrhagic fever in Central Java occurred in 463 regencies, becoming a serious problem in the community (Ministry of Health of the Republic of Indonesia, 2016a). Pati Regency is one of the districts in the Central Java Province which is one of the endemic areas of DHF. The numbers of cases of dengue haemorrhagic fever in the last 3 years was increased. In 2014, there were 280 cases of dengue hemorrhagic fever. This figure increased in 2015 to 923 cases. In 2016 the increase in the number of cases of dengue hemorrhagic fever in Pati Regency nearly reached double that of the previous year, which reached a number of 1,403 cases. Regency of starch is ranked 2 in Central Java in the case of dengue hemorrhagic fever in 2016 (Central Java Provincial Health Office, 2017).

Based on these problems, the Study-ers were interested in taking the title "the contextual influence of the village on the behavior of prevention and control of dengue disease in Pati, East Java".

SUBJECTS AND METHOD

1. Study Design

This was an analytic observational study with a case control design. The study was conducted in Pati Regency, East Java, Indonesia in November 2018.

2. Population and Samples

The source population used in this study was all communities in Pati Regency. Samples were 225 Study subjects. The sampling uses simple random sampling technique.

3. Study Variables

The dependent variable was DHF prevention behavior. The independent variables were education, access to information, knowledge, attitude, self-efficacy, community health behavior, social capital, and villages.

4. Operational Definition of Variable

The level of education was the latest education level of the head of household taken by the respondent and has obtained a diploma. The measuring instrument was a questionnaire. The measurement scale was categorical and transformed into dichotomous, coded 0 for <Senior high school and 1 for ≥Senior high school.

Knowledge was knowledge possessed by the head of the family about things related to DHF such as understanding, signs of someone affected by DHF, characteristics of dengue-transmitting mosquitoes, time, place where mosquitoes breed and behavior to prevent and eradicate dengue disease. The measuring instrument was questionnaire. The measurement scale was continuous and transformed into dichotomous, coded 0 for poor and 1 for good.

Access to information was a source of information obtained by the head of the family about prevention and eradication of dengue disease. The measuring instrument was questionnaire. The measurement scale was continuous and transformed into dichotomous, coded 0 for lack of access to information and 1 for good access to information.

Attitude was the response to efforts to prevent and eradicate dengue hemorrhagic fever by means of 3M plus including: draining, closing, and reusing or recycling used goods. The pluses were sowing or larvicidal dripping, using anti-mosquito drugs, using clamps, nurturing mosquito larvae, planting mosquito repellent plants, regulating light and ventilation in the house, and avoiding hanging clothes inside the house. The measuring instrument was a questionnaire. The measurement scale was continuous and transformed into dichotomous, coded 0 for negative attitude and 1 for positive attitude.

Self-efficacy was ones self-confidence that he is able to carry out 3M plus's efforts include: draining, closing, and reusing or recycling used goods. The pluses include: sowing or larvicidal dripping, using mosquito repellent, using clamps, nurturing mosquito larvae, planting mosquito repellent plants, regulating light and ventilation in the house, and avoid hanging clothes inside the house. The measuring instrument used was questionnaire. The measurement scale was continuous and transformed into dichotomous, coded 0 for less self-efficacy and 1 for good self-efficacy.

Community behavior was the experience of success of others who have similarities with the study subject in the behavior of prevention and eradication of dengue disease. The measuring instrument was a questionnaire and the measurement scale was continuous and transformed into dichotomous, coded 0 for poor behavior and 1 for good behavior.

Social capital was the ability of the community to cooperate in the behavior of prevention and eradication of dengue disease. The measuring instrument was a questionnaire, and the measurement scale was continuous and transformed into dichotomous, coded 0 for weak social capital and 1 for strong social capital

Preventive behavior of dengue hemorrhagic fever was the effort that has been made by the head of the family in order to prevent the breeding of mosquito larvae and protect themselves from adult mosquito bites by 3M plus included draining, closing, and reusing or recycling used goods. The pluses include: sowing or larvicidal dripping, using mosquito repellent, using clamps, nurturing mosquito larvae, planting mosquito repellent plants, regulating light and ventilation in the house, and avoid hanging clothes inside the house. The measuring instrument was a question-

naire with a measurement scale was continuous and transformed into dichotomous, coded 0 for poor behavior and 1 for good behavior.

The village wasa village determined by the Ministry of Home Affairs based on a village index builds with a threshold value. The measurement scale was categorical coded 1 for disadvantaged, 2 for developing, and 3 for developed villages.

5. StudyInstrument

The Study instruments on the level of education variables, access to information, knowledge, attitudes, self-efficacy, other behavior, social capital and prevention and control of dengue disease data were obtained using questionnaires and village data were obtained based on annual reports in Pati Regency.

6. Data Analysis

Univariate analysis was performed to see the frequency distribution and the percentage of the characteristics of the Study subjects. Bivariate analysis was conducted to study the behavior of prevention and control of dengue disease with independent variables using ujichi-square. Multivariate analysis was carried out with a multiple logistic regression approach in STATA 13.

7. Study Ethics

Study ethics include informed consent, anonymity, confidentiality and ethical clearance. Ethical clearance in this study was conducted at the Faculty of Medicine, Universitas Sebelas Maret.

RESULTS

1. Sample Characteristics

Table 1 showed sample characteristics. Table 1 showed that as many as 113 study subjects (50.2%) had education \geq senior high school. As many as 115 study subjects (51.1%) had good knowledge on DHF prevention behavior. As many as 120 study subjects (53.3%) had strong self-efficacy. As

many as 113 study subjects (50.2%) had poor access to DHF prevention informa-

tion. As many as 114 study subjects (50.7%) had negative attitude.

Table 1. Sample Characteristics

Characteristics	n	%
Education		
Low (<senior high school)	112	49.8
High (≥senior high school)	113	50.2
Knowledge		
Poor	110	48.9
Good	115	51.1
Preventive Behavior		
Poor	114	55.5
Good	111	44.5
Self-Efficacy		
Poor	105	46.7
Good	120	53.3
Information Access		
Poor	113	50.2
Good	112	49.8
Attitude		
Poor	114	50.7
Good	111	49.3
Community Behavior		
Poor	97	43.1
Good	128	56.9
Social Capital		
Weak	113	50.2
Strong	112	49.8

Table 2. The Result of Multilevel Linear Regression

Independent Variables	b	95% CI		p
		Lower Limit	Upper Limit	
Fixed Effect				
High education	0.86	0.04	1.70	0.040
Good knowledge	0.86	0.06	1.67	0.036
Good self-efficacy	0.87	0.06	1.68	0.036
Good information access	1.98	1.06	2.87	< 0.001
Good attitude	1.40	0.55	2.25	0.001
Good community behavior	0.86	0.02	1.70	0.045
Good social capital	1.07	0.26	1.89	0.019
Random Effect				
Village				
Var (constants)	0.84	0.21	3.33	0.010
N observation = 225				
Log likelihood = - 92.50				
LR test vs. linier regression, p= 0.011				
ICC = 20.30%				

2. Multilevel Analysis

Table 2 showed that high level of education ($b= 0.86$; 95% CI= 0.04 to 1.70; $p= 0.040$), good knowledge ($b= 0.86$; 95% CI= 0.06 to 1.67; $p= 0.036$), good self-efficacy ($b= 0.87$; 95% CI= 0.06 to 1.68; $p= 0.036$), good access to information ($b= 1.98$; 95% CI= 1.06 to 2.87; $p < 0.001$), good attitude ($b= 1.40$; 95% CI= 0.55 to 2.25; $p= 0.001$), good community behavior ($b= 0.86$; 95% CI= 0.02 to 1.70; $p= 0.045$) and good social capital ($b= 1.07$; 95% CI= 0.26 to 1.89; $p= 0.010$) increase the preventive behavior of DHF.

Based on the result of data analysis, the score of ICC= 20.30%. This indicator showed that the variation of study subjects about preventive behavior of DHF was determined by village level.

DISCUSSION

1. The effect of education on DHF prevention behavior

The result of this study showed that there was a significant effect of education on prevention and eradication behavior of DHF.

The level of education was learning processes which mean that there was a process of growth, development or change towards a better and more mature in individuals, groups or communities. Some of the results of Study on the influence of education on personal development stated that generally, education enhanced the level of individual intelligence. Education can influence changes in the preventive behavior of DHF (Bakhsh, 2018).

2. The effect of information access on DHF prevention behavior

The result of this study showed that there was a significant effect of information access on prevention and eradication behavior of DHF.

Access to information can be done by providing information about how to achieve a healthy life, how to maintain health, how

to avoid illness, and so on that would increase public knowledge. Furthermore, that knowledge would rise their awareness, and eventually caused people to behave according to their knowledge. Good access to information possessed by someone can influence knowledge in the preventive behavior of DHF (Banneheke, 2016).

3. The effect of knowledge on DHF prevention behavior

The result of this study showed that there was a significant effect of knowledge on prevention and eradication behavior of DHF.

Knowledge was the result of knowing and this happened after people have sensed a certain object. Most human knowledge was obtained through the eyes and ears. Knowledge or cognitive was a very important domain in shaping someone's actions (Bandura, 2002). According to Isa et al. (2013), someone's knowledge can influence the preventive behavior of dengue hemorrhagic fever.

4. The effect of self-efficacy on DHF prevention behavior

The result of this study showed that there was a significant effect of self-efficacy on prevention and eradication behavior of DHF.

Self-efficacy was the level of individuals confidence in their ability to perform a behavior successfully. This behavior was the confidence of a person to control a behavior according to his/her wishes (Bandura, 1986).

Other people's behavior, which was the observation of the success of others with comparable abilities in doing a job would improve individual self-efficacy in doing the same task. Vice versa, observations of the failures of others would reduce the individual's assessment of their abilities and the individual would reduce the effort that would be made (Bandura, 2002).

Good self-efficacy can increase the preventive behavior of dengue hemorrhagic fever (Istiqomah, and Husodo, 2017).

5. The effect of community behavior on DHF prevention behavior

The result of this study showed that there was a significant effect of others behavior on prevention and eradication behavior of DHF.

Someone who suffers from dengue fever was very likely to use adaptation steps compared to respondents who did not suffer from dengue fever. The behavior of other people who have experienced pain would conduct the behavior of DHF prevention (Bakhsh, 2018).

6. The effect of attitude on DHF prevention behavior

The result of this study showed that there was a significant effect of attitude on prevention and eradication behavior of DHF.

Attitude was a syndrome or a collection of symptoms in response to a stimulus or object, so that the attitude involved other thoughts, feelings, attention and psychological symptoms. The attitude clearly showed the connotation of the suitability of the reaction to a particular stimulus which in everyday life was an emotional reaction to social stimulus (Bandura, 1986). Good individual attitudes can increase the preventive behavior of DHF (Saieda et al. 2015). Chanyasaha et al. (2015) also explained that age, education, knowledge, income, attitudes affected the preventive behavior of dengue fever.

7. The effect of social capital on DHF prevention behavior

The result of this study showed that there was a significant effect of social capital on prevention and eradication behavior of DHF.

A person's health behavior (DHF preventive behavior) was influenced by the social environment through a number of

causal mechanisms by forming norms, enforcing social control, enabling or not allowing people to participate in certain behaviors, reducing or generating stress and changing individual choices. The dimensions of social environment that influence behavior, namely support and social networks, socioeconomic position and income inequality, racial discrimination, environmental factors, social cohesion, and social capital (Kawachi et al., 2008).

Social capital was understood as all the resources that enable a person to mobilize and obtain profits as a result of his/her attachment to a network or to other people. Examples of social capital include the ability of a person to mobilize assistance or the collective ability to produce and utilize existing beliefs (Esser, 2008).

8. The effect of village on DHF prevention behavior

The result of this study showed that there was a significant effect of village on prevention and eradication behavior of DHF.

Village status was the determination of the status of village development and at the same time the recommendation of policy interventions needed. The village building index can be determined through classification of village status, namely very disadvantaged, underdeveloped, developing, developed, and independent villages. A good village status can make the community in the village have good health knowledge and behavior (Ministry of the village, 2015).

Based on the results of the study, it can be concluded that high education, high knowledge, high self-efficacy, high access to information, positive attitudes, high behavior of other people and high social capital improved the preventive behavior of DHF. Variations at the village level showed the contextual effects on the preventive and eradication behavior of DHF.

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