

MOSQUITO BREEDING SITES ERADICATION CADRES IN BANYUMAS, CENTRAL JAVA, INDONESIA

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ABSTRACT

Background: DHF and Chikungunya cases in Banyumas, Indonesia lead to mosquito breeding sites eradication program. However, District Health Office of Banyumas found incomplete report on recapitulation of mosquito breeding sites eradication village/sub district endemic dengue in 2014. It was one of low performance indicators of cadres in Banyumas. In order to maximize the success of their duties in guarding the program primarily to lower density of mosquito larva infected by dengue periodically and continuously, cadres' knowledge related mosquito breeding sites is the most important basic.

Materials and Methods: It is a quasi-experimental research using pre and post-test design. The population is active mosquito breeding sites eradication cadres in every sub district in Banyumas. The samples are 36 people. Analyses using Wilcoxon test.

Result: The test results showed knowledge differences between before and after be educated at 7.008%. The post-test scores showed that almost all respondents' knowledge increased right after given lecture and simulation, especially knowledge of the breeding places of *Aedes* sp. (41.7% to 75%), forms of *Aedes* sp. cocoon (pupa stage) (52.8% to 94.4%) and the frequency of larva monitoring activities (69.4% to 88.9%).

Conclusion: Increased cadres' knowledge on mosquito breeding sites eradication are expected to assist the government in preventing and combating disease transmitted by *Aedes* sp. mosquito. By giving lecture and simulation, basic knowledge can distribute to better report to get valid larva free index as a key indicator of dengue prevention program.

Keywords: Education, Training, Lecture, Simulation, Mosquito Breeding Sites

1.0 Introduction

Mosquito-borne diseases, such as Dengue Haemorrhagic Fever (DHF) and Chikungunya are still threats in Banyumas, Indonesia. Data from Banyumas District Health Office (DHO) (2014), dengue cases increased from 209 in 2014 to 226 in 2015; Chikungunya became outbreak in 2013 with 361 cases and 270 cases reported in 2014 (January-August).

Mosquito-borne diseases prevention key is in early reporting of vector density, so immediate action can be executed when case reported in outbreak areas. According to that, dengue prevention program launched mosquito breeding sites eradication activities with the core executor is cadre, tasked with monitoring of mosquito and larva population and reporting larva free index (the ratio of number of free-larva houses and buildings with the number of inspected houses and buildings and multiplied by 100%), an indicator of the spread of mosquito, especially the *Aedes sp.*, with national target of 95% (DoH RI, 2000).

Banyumas (2014) reported all villages/sub districts endemic dengue has larva free index of 90%, even those 97%. However, incomplete larva monitoring sheets from each village are still found. It indicates low performance of mosquito breeding sites eradication cadres. Further observation shows that small water containers (flower vases, water storage behind the refrigerator, water droplets container of air conditioner and dispenser) and water containers outside houses (gutters, water tanks, bottles, cans and plastic containers) often remain unchecked. Besides checking all water containers inside and outside living houses, cadres should also conduct surveillance on the empty lands like garden and cemetery, potential places for *Aedes sp.* breeding. Cadres also do not provide information to people about dengue and its prevention and rarely give motivation on doing mosquito breeding sites eradication behaviour. Actually, if the program is able to run properly, the people will have sufficient knowledge about DHF.

Most existing mosquito breeding sites eradication cadres in Banyumas is a housewife with varied educational background. It influences varied level of activity and knowledge of the cadres affected their duties and functions. Moreover, they are also expected to provide counselling and motivation to people about prevention and control of dengue. As stated by Pambudi (2009) that the education factor is one of the factors that affect the participation of mosquito breeding sites eradication cadres in eradicating dengue in the village of Ketitang, Nogosari Sub District, Boyolali. Similarly, the results of research by Siti (2007) who found that there was a significant correlation between the knowledge and performance of DHF working group in village level, Tasikmalaya.

Based on those data, cadres need to be educated and trained; moreover they never got guideline books to understand about their duty as mosquito breeding sites eradication cadres in order to maximize the success of his duties in guarding the dengue prevention program primarily to lower density of mosquito-borne dengue larva periodically and continuously.

The benefits of this activity is theoretically to provide the information and knowledge needed by mosquito breeding sites eradication cadres related to its strategic role in the success of mosquito eradication efforts. While the practical benefits, the results of this activity is expected to be used as an input, data sources, guidelines for Banyumas DHO in implementing the dengue prevention program and even can be adopted by other regions.

2.0 Materials and Methods

This research was conducted in Banyumas, Indonesia. This type of research is a quasi-experimental with pre and post-test design. Respondents were given a pre-test for 30 minutes, and then proceed with the provision of education in the form of lectures and simulations for three hours. Furthermore, respondents are given a post-test for 30 minutes. The study population was all mosquito breeding sites eradication active cadres in Banyumas, while the sample is mosquito breeding sites eradication cadres elected based on inclusion and exclusion criteria as many as 36 samples. The data were obtained from the questionnaire filling studies that have been validated by researchers. The data were analysed using Wilcoxon test to determine whether there is a difference of knowledge before and after activity.

3.0 Result

3.1 Characteristic of Respondents

Overview characteristics of respondents by age, education, and work are in Table 1.

No	Characteristics	Category	Count	%
1	Age (year)	Youngest: 28 Oldest: 58		
2	Education	Low (uneducated, elementary, junior high)	26	72.2%
		High (senior high, university)	10	27.8%
3	Occupation	Not work (housewife)	22	61,1 %
		Work (civil servants, army, police, employee, entrepreneur, farmer, labour)	14	38,9 %

Average age of respondents in this study is 41 years old. Mostly belong to the category of low education (72.2%) and not working (61.1%).

3.2 Knowledge

No	Statements	Pre-Test (True)		Post-Test (True)	
		n	%	n	%
DHF Cause					
1	DHF caused by virus	32	88.9	36	100
DHF Infection					
2	DHF infection through <i>Aedes aegypti</i> mosquito bite	36	100	36	100
3	<i>Aedes aegypti</i> bites at night*	34	94.4	35	97.2
DHF Symptoms					
4	Early symptoms of DHF generally are sudden fever to 40 ⁰ C, headache, joint or muscle pain and heartburn	30	83.3	34	94.4

No	Statements	Pre-Test (True)		Post-Test (True)	
		n	%	n	%
Vector Breeding and Morphology					
5	<i>Aedes aegypti</i> mosquito can breed in dirty water container such as sewers	15	41.7	27	75
6	Hanging clothes in the room can be the breeding sites of <i>Aedes aegypti</i>	32	88.9	32	88.9
7	<i>Aedes aegypti</i> larva are always active in the water and often staying near the walls of water containers	34	94.4	36	100
8	Larvae contained in the drum and others water container are not <i>Aedes aegypti</i> larvae*	32	88.9	36	100
9	Larvae contained in the vase, aquarium and old bottles are <i>Aedes aegypti</i> mosquito larvae	33	91.7	31	86.1
10	<i>Aedes aegypti</i> pupae is comma-shaped, slow movement and often located on the water surface	19	52.8	34	94.4
Mosquito Breeding Sites Eradication and Fogging					
11	Mosquito breeding sites eradication carried by draining, closing and burying	36	100	36	100
12	Fumigation or fogging activities aim to kill mosquito larvae*	34	94.4	34	94.4
13	Fogging is a dengue eradication more effective than the mosquito breeding sites eradication*	34	94.4	36	100
Larva free index					
14	One measure to determine the density of the <i>Aedes aegypti</i> mosquito is the larva free index	32	88.9	36	100
15	Larva free index is the percentage of positive larva building per all buildings inspected	19	52.8	3	8.3
Cadres' Duties					
16	Mosquito breeding sites eradication cadres task is to conduct home visits for periodic larva survey	34	94.4	36	100
17	Providing information or educating people about dengue and its prevention is not the task of mosquito breeding sites eradication cadres*	30	83.3	35	97.2
18	Larva examination results should be recorded after the examination	35	97.2	36	100
19	Coordinator of mosquito breeding sites eradication cadres shall report the larva monitoring results to health center officers periodically	36	100	34	94.4
20	Larva monitoring activities should not be carried out every week*	25	69.4	32	88.9

The pre-test results are 41.7% cadres do not know about *Aedes sp.* mosquito breeding sites, 52.8% do not know about forms of *Aedes sp.* cocoon, 52.8% do not know about larva free index and 69.4% do not know about the frequency of monitoring activities larva. The post-test result shows the increasing of percentage of cadres with good knowledge, especially about the

form of *Aedes sp.* pupa (94%). The research also shows that the average score of knowledge increase from 16.56 to 17.72 after training ($p=0.007$).

4.0 Discussion

Increasing mean score amounted to 7,004% and significant result indicates that lecture and simulation method is effective to improve the knowledge of cadres of mosquito breeding sites eradication. This study is in line with research conducted by Neperi (2013) on the effect of lectures as health education technique that can increase respondents' knowledge about leptospirosis in Bangalore. Veronica's (2009) research also said that giving health education using simulation can increase teachers' knowledge from 31.27 to 34. Retnawati *et.al.* (2014) research on companion cadre in regard to increase family awareness of nutrition showed that simulation can increase knowledge about 16 points. Lecture and simulation involving ears and eyes found to be effective to absorb knowledge (Notoatmojo, 2007).

According to Sanjaya (2010), lecture can present broad learning materials. It means cores of a lot of materials can be explained in a short time so participants can easily understand them and finally increasing their knowledge. Notoatmojo (2003) described that lecture method is often used for large groups (>15 people) because it is fun, interactive and using simple language.

Participants in this training are very enthusiastic showed by their activeness on raising questions during question and answer session and giving comments on lecturer explanation. They stated that the ability of the speaker when explaining strongly supported by a relatively adequate facilities and infrastructure so that the respondents did not feel bored. This method can be used for participants from various educational backgrounds and it is easy to be implemented.

The post-test scores showed that almost all the respondents' knowledge increased right after given lectures and simulations, especially knowledge of the breeding places of *Aedes sp.* (41.7% to 75%), forms a cocoon (pupa stage) of *Aedes sp.* (52.8% to 94.4%) and the frequency of monitoring activities larvae (69.4% to 88.9%).

Factors affect the successful methods of health education are materials, speakers, participants and current implementation situation elements (Notoatmojo, 2007). During the intervention overall these elements are very supportive in the implementation of the education and training of mosquito breeding sites eradication cadres. Although the majority of participants lectures are low educated (72.2%), but participants can easily understand the material provided.

Health education using lecture method is concluded to enhance the knowledge of health cadres in Banyumas. Mosquito breeding sites eradication cadre spread information to people so expect people who have good knowledge, is expected to implement that knowledge in life, for example, who will conduct mosquito larvae eradication (mosquito breeding sites eradication) if he knew the purpose and benefits for health or family, and what danger if he does not conduct mosquito breeding sites eradication (Notoatmojo, 2007).

5.0 Conclusion and recommendation

Respondents' average age in this study is 40.8 years (youngest is 22 years old), most of them working as housewives and having low education. Knowledge scores increase to 7.004% after training ($p < 0.05$).

We recommend Banyumas DHO to do education and training activity simply by having lecture and simulation in order to get good assessment on dengue prevention program which is larva free index. So that, the indicator could give valid measurement whether the running program leads to expected result; need to be maintained or upgraded.

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Declaration

Authors declare that there are no known conflicts of interest associated with this publication that could have influenced its outcome.

Authors' contribution

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