Comparison of Increased Knowledge and Existence of Larvae between Before and After Education in Primary School Guards in Mojokerto City

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A B S T R A C T

Introduction: Dengue fever is a tropical disease caused by *Dengue* virus that is still becoming one of the main health problems in Indonesia. Dengue fever patients are usually children with age ranging between 5-14 years old, that indicates a higher likelihood of infection at school compared to infection at home. The purpose of this study is to analyze the difference between knowledge and practice of DHF prevention and also the existence of larvae before and after education to the elementary school's guard in Mojokerto

Methods: The research method used in this study is a pre-experimental design method, which is a one group *pretest* and *posttest*study. The number of samples was 25 school guards from all elementary school in the urban villages with DHF cases in 2017.

Results: The average correct answer at pretest was 58.9% while in posttest it was 80.9%. From the results of the Wilcoxon test also obtained p-value 0.00 (<0.05). From observation before the education, one school was found positivewith larvae, and after the education was given, all schools were found negative.

Conclusion: There are differences in knowledge and practice prevention of dengue fever between before and after education in primary school guards in Mojokerto.

A R T I C L E   I N F O

Introduction

DHF or Dengue Hemorrhagic Fever is one of the tropical and subtropical diseases caused by the dengue virus and transmitted through mosquito vectors, mainly Aedes aegypti. The first epidemic of dengue cases was reported to occur in Manila, Philippines in 1953 which then spread to Southeast Asia 2 decades later and is still one of the major infectious diseases in the world. The incidence of this disease in the world continues to increase over the past few decades. Three WHO member countries reported an increase in cases of dengue fever in the world, which amounted to 2.2 million cases in 2010 and increased to 3.2 million cases in 2015. In 2016, they were still considered to have very high DHF cases, as evidenced by more than 2.38 million cases only from the United States, Brazil also reported an increase in cases up to three times compared to 2014[1].

In Indonesia, DHF is still one of the main problems of community health even though control efforts have been made. It was recorded that there were 100,347 cases of dengue fever in 2014 and increased to 126,675 cases in 2015 spread in 34 provinces in Indonesia[2]. The Head of the East Java Health Office also said that in 2015 there were Extraordinary Events (KLB) in 27 Kab / Kota in East Java, an increase in the number of sufferers in 10 Kab / Kota, and an increase in mortality in 25 Kab / Kota, one of which was Kota Mojokerto[3].

The city of Mojokerto itself has a population of 126,404 in 2017. In the same year, Mojokerto received reports of 65 cases resembling dengue fever, and 11 of them were positive for dengue hemorrhagic fever. This incident occurred in 6 out of a total of 18 urban villages in Mojokerto City, namely in the Gedongan, Balongsari, Meri, Wates, Miji, and Prajurit Kulon.

From the data released by the Indonesian Ministry of Health regarding Dengue Hemorrhagic Fever sufferers, the highest proportion is in school-age children, especially the 5-14 year age group with 42.72%[2]. This shows that there is a higher chance of infection in school compared to infection at home.

So far, many studies have been conducted on education and training for students and the public about knowledge and ways to prevent dengue. But no one has focused on educating school guards as the person most responsible for school hygiene and sanitation. Empowerment of school guards in larva monitoring is expected to reduce the number of infections in children in school. Therefore the researcher wanted to know the comparison of knowledge and existence of larvae between before and after the education of primary school guards in the Municipality of Mojokerto as an effort to prevent dengue infection in schools.

Methods

This research was a pre-experimental design method, which is a one group *pretest* and *posttest* study. The variables were education about dengue haemorrhagic fever and its prevention, while the other variable were knowledge of Primary School guards about DHF and its prevention. The population was total sampling from all elementary school guards in the urban villages with DHF cases in 2017, and had received approval of ethical clearance from ethics commission of Faculty of Medicine Universitas Airlangga. The research data are primary data obtained by using questionnaires in the form of pretest and posttest given to the school guards. And also through the results of larva surveys in elementary schools one week before and after given the education about DHF and ways to prevent it. The education was given with the lecture method, and participants were also given booklets. Data analysis uses the help of SPSS software. The data obtained will be analysed and presented in the form of table.

Results

Table 1. The characteristics of subjects.

	n = 25
Age	
21-30	3 (12%)
31-40	7 (28%)
41-50	8 (32%)
>50	7 (28%)
Sex	
Male	25 (100%)
Female	0 (0%)
Level of education	
SD	1 (4%)
SMP	7 (28%)
SMA	17 (68%)

The results of this study revealed that from 25 school guards, all respondents are male (100%), the majority of age is 41-50 years old (32%), and the majority of the their education level is SMA or high school (68%).

Table 2. Number of Pretest and Posttest Correct Answers

No.	Number of correct answers	*Pretest*	*Posttest*
1.	0-4	1 (4%)	2 (8%)
2.	5-9	18 (72%)	3 (12%)
3.	10-14	6 (24%)	20 (80%)
	Total	25 (100%)	25 (100%)

The results of this study shows the total correct answers at the pretest and posttest that have been done by the respondents. At the pretest, the highest frequency of the total correct answers was a group of total 5-9 correct answers (72%). Whereas in the posttest, the highest frequency was found in the total correct answer group between 10-14 (80%).

Table 3. Kolmogorov-Smirnov normality test

No.	Group	sig	Conclusion
1.	*Pretest*	0.173	Normal
2.	*Posttest*	0.003	Abnormal

Based on the table above, it can be seen that pretest data has a value of p> 0.05 which can be concluded that the data group is normally distributed. Whereas in the posttest data, the value of p <0.05 means that the data is not normally distributed.

Table 4. Wilcoxon test for *pretest* and *posttest*

Level of knowledge	N	Decrease	Fix	Increase
Pretest - Posttest	25	3	3	19
p Value		0,00 (<0,05)		

Based on the tabel above, we obtained a comparison of knowledge before education and after education, there were 19 respondents with improved results, 3 with fixed results, and 3 respondents with decreased results. It also shows that the Wilcoxon p-value test is smaller α (0.05) so it can be concluded that there is a difference in DHF knowledge in primary school guards between before (pretest) and after (posttest) education.

Table 5. DHF Prevention Practices by Looking at Larvae Before and After Education

Larvae exmination	Larvae +	Larvae -
Before education	1 / 4%	24 / 96%
After education	- / 0%	25 / 100%

The researcher examined all water shelters in each school, a week before and after the education of elementary school guards. Before the education was conducted, it was found that there was one elementary school that found positive larvae, while the other 24 schools or equal to 96% of the total samples were negative. While on examination a week after the education, all 25 schools (100%) are found negative.

Table 6. Correlation Between Age and Posttest Total Correct Answers

	Posttest		
Age	0 - 4	5 - 9	10-14
21-30	-	-	3
31-40	-	1	6
41-50	1	1	6
>50	-	2	5
Total	1	4	20
p-value Chi-square		0,725	

In the Pearson Chi Square table above, the Asimp. Sig value is 0.725. This can be interpreted that the age of the respondents did not have a correlation with the result of the posttest.

Table 7. Correlation Between Level of Education and Posttest Total Correct Answers

Level of Education	*Posttest*		
	0 - 4	5 - 9	10-14
SD	-	1	-
SMP	-	1	6
SMA	1	2	14
Total	1	4	20

p-value Chi-square	0,205

In the Pearson Chi Square table above, the Asimp. Sig value is 0.205. This can be interpreted that the level of educationn of the respondents did not have a correlation with the result of the posttest.

Discussion

Mojokerto City which is ± 22 meters above sea level, and has the slope about 0% - 3% is a relatively flat land surface which can trigger the slow flow of rivers or waterways. It can speed up the siltation and trigger the emergence of many puddles in various places when the rain arrives. High DHF distribution is also related with Indonesia's geographical condition which is a tropical climate with year-round rain that causes dengue vectors to easily multiply. Rain will cause an increase in air humidity which has an impact on increasing mosquito breeding spots.In addition, high population is also one of the biggest factors supporting the high incidence of DHF, because the more high populated an area, the easier it is for Aedes mosquitoes to spread the Dengue virus from one person to another. A study in Yogyakarta found similar result, that there is a positive and significant relationship between the incidence rates of dengue hemorrhagic fever and regional high population[4].

In this study the form of education used was the lecture method, namely an educational or teaching method that was carried out by conveying information and knowledge verbally, which was generally followed passively[5]. In addition, to improve the effectiveness of communication and interaction, educational media in the form of slides and pamphlets were chosen. The level of effectiveness of the lecture method has a great effect on increasing the knowledge of mothers in handling diarrhea[6].

Media in the form of modules are also given in the hope of helping the respondents to apply the knowledge that has been obtained in everyday life in their environment. Training using modules can improve the knowledge, attitudes and practices of respondents[7]. Based on another study, there is an influence of the use of pocket books on aspects of mother's knowledge and skills[8].

From the Wilcoxon test, the p-value is smaller than α (0.05) which is 0,00013 so that it can be concluded that there is a significant change in DHF knowledge in primary school guards between before (pretest) and after (posttest) education. In another study it was stated that educational programs proved effective as a method to increase knowledge and attitudes towards breastfeeding or breastfeeding[9]. Another study also fond a similar result, that health education was statistically influential in increasing knowledge[10].

From larvae observations after education, all schools were found negative. According to other studies it can be seen that DHF control interventions through health promotion or education in community groups accompanied by larvasidation contribute to decreasing larvae density more than the non-intervention group, although the decline

has not been to the level expected by vector control programs[11]. This is also in line with another study that state, community empowerment research accompanied by health promotion and environmental management that have a positive impact on the decline in larvae indexes in Brazil[12].

From the results of the Chi Square test conducted to determine whether there is a relationship between age and the total correct posttest answers, the Asimp. Sig value is 0.725. Because the value of Asimp. Sig 0.725> 0.05, it can be concluded that there is no significant relationship between age and posttest results. This is similar with another study which suggested that not all younger people have lower knowledge as well as vice versa older people do not necessarily have a higher level of knowledge[13]. This can happen because in addition to age, the level of knowledge of a person can also be influenced by several other factors such as the level of education and employment[14].

From the results of the Chi Square test, the Asimp. Sig value is 0.205. Because the value of Asimp. Sig 0.205> 0.05, it can be concluded that there is no significant relationship between the level of education and the results of the posttest.This is not in line with another study which showed that participants who had high school education or higher, got the right answer with a higher frequency compared to participants who had the last education lower than high school. In addition participants with higher levels of education also have more attitudes and practices that support DHF control, including not storing water in containers, attending community meetings, also educating family members and neighbors about DHF prevention measures[15]. The research is also similar with another study that stated,the level of knowledge influenced by education, for higher levels of education, the level of knowledge was also better[16].

Conclusion

There are differences in knowledge of DHF prevention and existence of larva in water shelters before and after education to the elementary school's guards in Mojokerto.

CONFLICT OF INTEREST

The author stated there is no conflict of interest.

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