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## Effectiveness of Larva Monitoring Training on Knowledge of Dengue Hemorrhagic Fever Control among Primary School Students in Sibolga, North Sumatera

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### ABSTRACT

**Background:** Dengue hemorrhagic fever (DHF) is one of the most important public health problems in tropical developing countries. It also has major economic and societal consequences. This study aimed to assess the effectiveness of larva monitoring training on knowledge of dengue hemorrhagic fever control among primary school students in Sibolga, North Sumatera.

**Subjects and Method:** This was a quasi-experiment before and after with no controlled design. The study was conducted in elementary school in Sibolga, North Sumatera, in 2018. A sample of 30 students was selected for this study and received training on DHF for four days. The training employed leaflet and video. The dependent variable was knowledge. The independent variable was training on DHF. The data were collected by questionnaire and tested by t-test.

**Results:** Knowledge on DHF among students increased by mean = 26.67 (SD = 14.51) after training, and it was statistically significant ( $p = 0.037$ ).

**Conclusion:** Knowledge on DHF among students increases after training, and it is statistically significant.

**Keywords:** training, knowledge, dengue hemorrhagic fever.

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### BACKGROUND

Dengue Hemorrhagic Fever (DHF) is a dangerous disease because it can cause death in a relatively short time. This disease is one of the public health problems in Indonesia which tends to increase the number of sufferers and the wider spread.

DHF can affect all people of all ages, can cause extraordinary events (KLB). Dengue outbreaks first occurred in 1653 at Frech West Indies (Caribbean Islands). The attacks of dengue were first reported in Australia in 1897, Italy and Taiwan in 1931. Outbreaks in the Philippines occurred in 1953 until 1954, since then this disease attack accompanied by a high death rate hit several countries in the Southeast Asia region including Indonesia. The increase in cases occurs over the next twenty years and

the area of distribution is extremely severe, and currently outbreaks occur annually in several countries in Southeast Asia (Ginanjari, 2007). DHF over the next three decades were found in Cambodia, China, India, Indonesia, the Society of the Lao Democratic Republic, Malaysia, Maldives, Myanmar, Singapore, Sri Lanka, Vietnam (Esther, 2014).

DBD cases in 2016, the number of dengue cases in Indonesia, there are four very high provinces, East Java (340 cases), West Java (270 cases), Central Java (213 cases) and East Kalimantan (103 cases). The lowest number of cases was reached by Papua (0 cases), NTT and West Sulawesi (2 cases) and Bangka Belitung Islands (3 cases). Cases of dying from DHF in each province in 2016 showed IR for every 100

thousand residents in each province in 2016, there were seven provinces having IR over one hundred or prone to occur in dengue cases. The provinces are Bali (484), East Kalimantan (306), DKI Jakarta (198.7), Yogyakarta (167.9), North Kalimantan (158.3), Southeast Sulawesi (123.3) and South Kalimantan (101.1). The lowest IR was achieved by the provinces of Papua (11.8) and West Kalimantan (12.1) (Director General of P2P Ministry of Health of Republic of Indonesia, 2015).

January to April 2016, the number of dengue sufferers in Sibolga that has been handled by the Health Office, reached 55 cases, with the number of sufferers, the majority among children and school age. IR in 2015, first place Sibolga was 163.6, followed by Tebing Tinggi as much as 125.3 and Binjai as much as 88.3. Whereas IR in 2016, Pakpak Bharat Regency was first place with 166.3, Tebing Tinggi 150.7, and Samosir Regency 130.0 (North Sumatra Provincial Health Office, 2016). In 2016, dengue cases in Sibolga City amounted to 105 cases and in 2017 increased by 111 cases (Sibolga District Health Office, 2017).

School children are spread in all regions of Indonesia, both urban and rural. School children are among the vulnerable groups of dengue fever, especially in the hours of learning in the morning. The uniforms used by elementary school children are short pants/skirts that have a high probability of having more DBD than adults. The understanding of PSN for school children plays a role in instilling PSN behavior at the earliest possible age, which will be used as a basis for thinking and behavior in the future. In addition, mobilizing school children is easier than adults in implementing PSN. Therefore students need to be trained to become young jumantik or larva monitors.

Training for prospective Jumantik School Children in Sibolga is a school child from the basic education level who will be trained and trained as a Jumantik in his school. A preliminary survey at SDN 085115 was obtained, namely the condition of a clean school environment, no garbage scattered on the school grounds, good condition of toilet facilities, no larvae found in the bath tub, but in the room many depend on student craft results that sticks to the classroom wall. During the survey, the researchers also tried to explore students' knowledge about DHF, the *Aedes Aegypti* mosquito by interviewing 10 fifth graders (5) and the results from ten (10) students were ignorant of DHF and *Aedes Aegypti* mosquitoes.

Junior High School number 085115 in Sibolga is one of the reference schools in the city of Kota Baringin, Sibolga City. Therefore, it is expected that the formation and implementation of the School Children Jumantik-PSN is intended to participate in supporting the Sibolga City government program in an effort to eradicate dengue-transmitting mosquito nests and as an effort to foster PHBS from an early age in Sibolga City. In addition to educating them as Jumantik PSN DBD cadres at SDN 085115 in Sibolga City, it also aims to instill a sense of responsibility towards themselves and the surrounding environment, so that school children who become jumantik cadres can also become cadres in their neighborhoods, resulting in a significant impact cases and deaths of DHF.

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## **SUBJECTS AND METHOD**

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This was a quasi experiment study. This study used a four-day lecture method with flyers and video. A sample of 30 fifth grade elementary school students was selected for this study. The dependent variable was knowledge. The independent variable was

training on DHF. The data were collected by questionnaire. The data were analyzed by Wilcoxon.

## RESULTS

### 1. Knowledge before and after training

**Table 1. Students knowledge before and after training**

Knowledge	Before		After	
	n	%	n	%
Good	6	20.0	28	93.3
Fair	17	56.7	2	6.7
Lacking	7	23.3	0	0

Table 1 states that before training, students who had less knowledge consist of

**Table 2. The effect of training of DHF prevention on student knowledge**

Variable	Mean	SD	p
Knowledge Before	65.00	14.51	0.037
After	91.67		

## DISCUSSION

### The effect of training of DHF prevention on Knowledge

The results of the research conducted before the training, the knowledge of the majority of students was 17 people (56.7%). The results of knowledge from the pretest given to students before the training found that most students knew about the meaning of DHF, signs and symptoms of DHF, characteristics of dengue fever mosquitoes, breeding grounds, time and duration of bath drainage or water reservoirs and how to find out the existence of mosquito larvae.

The assumption of researchers caused by dengue was not a new disease known in the community. There was a lot of information about dengue fever that they have heard from schools, their environment, electronic media and there were also some students who have had DHF directly.

SDN 085115 was one of the referral elementary schools in Sibolga City so the

23.3%. However, after being given training, there was an increase in knowledge where no more students had less knowledge. 56.7% students who have sufficient knowledge have decreased to 6.7% after being given training and students who have good knowledge have increased from 20% to 93.3%.

The effect of training of DHF prevention on student knowledge can be seen in Table 2. Table 2 showed that knowledge level after intervention (mean=91.67) was higher than before (mean 65.0) and it was statistically significant (p=0.037).

health center program that target elementary school students always prioritized the implementation of activities in this elementary school, so that it can be an example for other elementary schools in the work area from the health center. Activities carried out such as small doctor, health promotion program activities in the health center were very active in providing health education to schools, even in previous years there have been *jumantik* cadres who have been formed at SDN 085115, but the program has not been continued due to the budget accommodated. Researchers assumed that this activity provided information about health to students.

The results of this study found that there was a significant difference in student knowledge before and after training in prevention of dengue fever at SDN 085115 in Sibolga City in 2018.

The author assumed that after being trained in the topic of dengue fever, the

concept of *jumantik*, introduction of dengue mosquitoes and the concept of eradicating mosquito nests using the 4-day lecture method, using good tools (pictorial leaflets, photocopies of materials, OHP) and accompanied by DBD video playback so students can easily receive information about preventing dengue properly. Students felt interested in participating in the training.

This study was in accordance with the opinion of Notoadmojo, 2016 which stated that most of a person's knowledge was obtained through the hearing (ear), and senses of sight (eyes). Knowledge was the result of human sensing, or the result of someone knowing objects through the senses (eyes, nose, ears and so on). Therefore, the knowledge produced was strongly influenced by the intensity of attention and perception of objects.

This research was also in accordance with Rogers, 1983 arguing that communication channels were one of the main elements in the diffusion process of innovation. A communication channel was a set of tools for conveying messages of innovation from source to recipient. If communication was intended to introduce an innovation to a large and widespread audience, then a more appropriate, fast and efficient communication channel was the mass media. But if communication was intended to change the attitude or behavior of the recipient personally, then the most appropriate communication channel was the interpersonal channel.

Researchers assumed that by filtering videos for prospective larval students, students can see firsthand how DHF, symptoms of dengue, the consequences and how to prevent it. Notoadmojo (2016) stated that there were 3 levels of knowledge change, namely: knowledge of diseases and diseases, knowledge of health care methods

and healthy ways of life and knowledge of environmental health. Student awareness has been formed on the dangers of DHF. Students already know and realize that there was innovation so that there was awareness of it. During training, the students were very diligent in listening and paying attention to all the material given. At the posttest, most students answered correctly and there was no lack of knowledge (0%). The results of the study after the training showed that most students had good knowledge who were 28 people (93.3%).

This study was in accordance with the research conducted by Indrayani (2010), where young *jumantik* were given training to increase their knowledge about the prevention of dengue hemorrhagic fever. The result showed that there were differences in the knowledge and attitude of young *jumantik* before and after giving dengue fever prevention training at Ketintang Islamic Primary School. The results of the study was in accordance with Fachrizal et al (2006) who stated that students who monitored larvae who conducted larva monitoring in their houses. The study sample came from students from grade 4 to grade 6 in two schools. The results of this study showed that there was a significant relationship between the level of knowledge of students before and after given larva monitoring student education. The 7 percent larva free rate can be increased to 96 percent at the end of health training.

The author expected that students' knowledge about the prevention of dengue disease can contribute greatly in improving health status, especially for elementary school students of 085115 in Sibolga City. Students can be agents of change in the school environment and the environment in which they live. Students who have been trained can provide good examples to other

students in terms of eradicating mosquito nests

Based on the results of this study, it can conclude that there were differences in the average knowledge before and after the training in the prevention of Dengue Hemorrhagic Fever. There was an effect of the training of prospective larvae monitors on students' knowledge in the prevention of dengue fever

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