

Effectiveness of Health Education on First Aid of Dengue Haemorrhagic Fever on School Teachers in North Jakarta, 2011

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Abstract

North Jakarta has high incidence of dengue haemorrhagic fever (DHF). To reduce DHF mortality and morbidity, teachers need to be educated on DHF first aid. The purpose of this research is to determine the effectiveness of health education on DHF first aid on private teachers in North Jakarta. Research design was pre-post study and data was taken on September 22nd, 2011. Teachers who attended the session were taken as subjects. Data was taken by questionnaires consisting of 5 questions about DHF first aid, and was tested before and after the education. Data was processed using SPSS version 11.5 and tested with marginal homogeneity. Out of 82 respondents, 34 (41.5%) were female teachers and 48 (58.5%) were male teachers. Pretest results showed level of knowledge as follows: 3 (3.7%) were good, 13 (15.9%) were moderate, and 66 (80.5%) were poor. After the education, it was as follows: 5 (6.1%) were good, 26 (31.7%) were moderate, and 51 (62.2%) were poor. Marginal homogeneity showed significant difference on knowledge before and after the education ($p < 0.01$). To conclude, health education is effective to increase knowledge on DHF first aid.

Keywords: knowledge, teacher, health education, DHF, first aid.

Efektivitas Penyuluhan Mengenai Pertolongan Pertama DBD pada Guru Sekolah Swasta di Jakarta Utara, 2011

Abstrak

Jakarta Utara merupakan daerah dengan insidens demam berdarah dengue (DBD) tinggi di Provinsi DKI Jakarta. Untuk mengurangi mortalitas dan morbiditas akibat DBD masyarakat khususnya guru sekolah perlu diberikan pengetahuan mengenai pertolongan pertama pada DBD. Tujuan penelitian ini adalah mengetahui efektivitas penyuluhan mengenai pertolongan pertama DBD pada guru swasta di Jakarta Utara. Desain penelitian ini adalah pre-post study dan data diambil pada tanggal 22 September 2011. Semua guru yang hadir saat penyuluhan dijadikan subyek penelitian. Data diambil dengan kuesioner yang berisi lima pertanyaan mengenai pertolongan pertama sebelum dan sesudah penyuluhan. Data diproses dengan SPSS versi 11,5 dan diuji dengan marginal homogeneity. Hasilnya menunjukkan dari 82 responden, guru perempuan 34 orang (41,5%) dan laki-laki 48 orang (58,5%). Hasil pre-test, guru yang memiliki tingkat pengetahuan baik adalah 3 orang (3,7%), cukup 13 orang (15,9%), dan kurang 66 orang (80,5%). Pada post-test jumlah guru dengan pengetahuan baik menjadi 5 orang (6,1%), cukup 26 orang (31,7%), dan kurang 51 orang (62,2%). Uji marginal homogeneity menunjukkan perbedaan bermakna pada tingkat pengetahuan sebelum dan sesudah penyuluhan ($p < 0,01$). Disimpulkan penyuluhan efektif meningkatkan pengetahuan guru mengenai pertolongan pertama DBD.

Kata kunci: pengetahuan, guru sekolah, penyuluhan, DBD, pertolongan pertama.

Introduction

Dengue haemorrhagic fever (DHF) is one of the major health problems in Indonesia, especially in major cities. Indonesia has one of the highest incidence of DHF in South East Asia (SEA). In fact, WHO has declared that DHF is the main cause of mortality and morbidity of children in SEA.¹ It was estimated that in 2007, there were 50-100 million cases and 500 000 were hospitalized. In SEA, there was 15% increase of mortality due to DHF compared to the previous year including Indonesia. The number of DHF cases in SEA occurred in Indonesia was 57%, in 2005 was 95270 cases and 1298 deaths occurred with the CFR of 1.4%. The number decreased as it reached 27964 cases in 2009 with 32 deaths.^{1,2}

By 2008, the incidence of DHF in Indonesia is 60 per 100000 people with the case fatality rate (CFR) 0.86%. DKI Jakarta is one of the capital cities in Indonesia with the highest incidence of DHF.³ By 2009, the third highest region of dengue haemorrhagic fever in Jakarta is North Jakarta with the number of cases was 5571 which was mostly found on the age group of 15-55.⁴

DHF can decrease the productivity, increase the number of absentees, and cause higher cost of health care. Thus, we have to be prepared on dealing with DHF by knowing its clinical symptoms so that we can do early detection and the right first aid. So, it is very important to educate people on DHF especially teachers, because teachers can deliver the knowledge to the students and it is expected that the students will transfer the knowledge to their families at home. Health education given was about DHF's clinical symptoms, first aid, its vector, prevention and promotion. Due to the limitation of the study, this research focused on the knowledge of first aid of DHF. By knowing the first aid of DHF, it is expected that people will manage DHF with the proper first aid. Thus, we may reduce the mortality and morbidity of DHF. To know the effectiveness of the health education, survey was conducted before and after the intervention.

Methods

This research used pre - post study design with health education as the intervention to find out the improvement of knowledge level about first aid of DHF. Research was done from September 2011 to February 2013. Data collection was conducted in North Jakarta at 22 September 2011. In this research, private teachers in North Jakarta are the target

population. Furthermore, the accessible population was private teachers in North Jakarta who came to the health education at 22 September 2011, fulfilled the inclusion criteria, and did not meet the exclusion criteria. Sample size of the research was measured by total population method, which makes all of the teachers came to the health education as the research subjects. In this research, the dependent variable is defined as the level of knowledge on first aid of DHF before and after the health education was delivered. Meanwhile, the independent variable is health education on first aid of DHF. The dependent variables include the gender, education, occupation, and history of dengue infection. In the health education, researcher asked for informed consent by explaining to the subjects about the research. Subjects have the right to refuse if they do not want to be involved in the research. If the subject agreed, the researcher would give the questionnaires before and after the health education. The health education was given by two resource persons who were professor of parasitology and doctor from community medicine department for 1 hour. While the subjects were filling the questionnaires, they were accompanied by researcher to ensure that they had filled in the questionnaires correctly. Confidentiality would be ensured upon the data obtained from the questionnaires. Souvenirs would be given after the data collection as a token of gratitude.

Data of the subjects from the questionnaire would be kept confidential. In the end of the event, souvenirs were given for each subject. Data verification was done after the subjects finished completing the questionnaires given to assure that the questions were filled correctly and completely. Data obtained was processed using SPSS version 11.5. Data analysis was done using marginal homogeneity test as well as descriptive methods and analytic methods for significant relationship between two variables using Kolmogorov-Smirnov. The level of knowledge was scored through questionnaires previously validated. It consisted 5 questions regarding first aid of DHF with maximum score of 5 for each questions. Total of the scores will be classified into good knowledge if it is 80% more, moderate if it is between 60%-79%, and poor knowledge if the score is less than 60%. Education is the last formal study of the respondent. Occupation is the level of teaching of the respondents. History of dengue infection is whether or not the respondent had exposed to dengue infection before.

Results

Health education is important to be given to teachers as it is expected that teachers will transfer the knowledge to the students as well as other people. The result of the study shows from 82 teachers joined the study, 48 of them was male (58.5%) and

34 of them was female (41.5%). The education level varies among these teachers. Most of them graduated from undergraduate program, followed by postgraduate, diploma, and high school. Most of these teachers were junior high school teachers and never had dengue infection before (Table 1).

Tabel 1. Demographic Characteristic of Teachers in North Jakarta, 2011

| Variable | Category | Frequency | | % |
|-----------------|--------------------|-----------|----|------|
| Gender | Male | 448 | 48 | 58.5 |
| | Female | 34 | | 41.5 |
| Education Level | High School | 4 | | 4.9 |
| | Diploma | 7 | | 8.5 |
| | S1 | 62 | | 75.6 |
| | S2 | 9 | | 11 |
| Teaching Level | Kindergarten | 3 | | 3.7 |
| | Elementary School | 22 | | 26.8 |
| | Junior High School | 39 | | 47.6 |
| | High School | 18 | | 22 |
| History | Yes | 27 | | 32.9 |
| | No | 55 | | 67.1 |

The Table 2 represents the respondent's pretest level of knowledge first aid of DHF with other influence factors. According to the education level, S1 graduates got most of the good scores. However, most of the respondents got the poor level of knowledge. It was found that both gender mostly got poor results. On teacher's occupation, it was found that more of the high school teachers

got average results, followed by junior high school teachers, elementary school teachers, and kindergarten teachers. Kolmogorov-Smirnov test proves that education level, gender, teacher's occupation, and history of the exposure of DHF do not have relations to the level of knowledge about pathophysiology and first aid of DHF.

Table 2. Respondent Pretest Level of Knowledge on First Aid of DHF and its Related Factors

| Variables | Category | Knowledge | | | p |
|------------------------|--------------------|-----------|----------|------|-------|
| | | Poor | Moderate | Good | |
| Education Level | High School | 4 | 0 | 0 | 0.999 |
| | Diploma | 6 | 1 | 0 | |
| | S1 | 49 | 10 | 3 | |
| | S2 | 7 | 2 | 0 | |
| Gender | Male | 41 | 5 | 2 | 0.941 |
| | Female | 25 | 8 | 1 | |
| Teaching Level | Kindergarten | 3 | 0 | 0 | 0.987 |
| | Elementary School | 19 | 2 | 1 | |
| | Junior High School | 30 | 8 | 1 | |
| | High School | 14 | 3 | 1 | |
| History | Yes | 23 | 4 | 0 | 1.000 |
| | No | 43 | 9 | 3 | |

As it is presented in Table 3, there was significant difference between the knowledge about first aid of

DHF before and after the health education. Thus, in this study the health education is proven to be effective.

Table 3. Knowledge on First Aid of DHF Before and After the Health Education

| Variables | Level of Knowledge | | | Test |
|-----------|--------------------|------------|------------|----------------------|
| | Good | Moderate | Poor | |
| Pre-test | 3 (3.7%) | 13 (15.9%) | 66 (80.5%) | Marginal homogeneity |
| Post-test | 5 (6.1%) | 26 (31.7%) | 51 (62.2%) | p<0,01 |

Based on Table 4, it was found that before the health education, the question which was mostly understood by the respondent was the question on what is the most proper first aid to be done to DHF patients in which 85.4% respondents answered correctly. The question that was mostly misunderstood by the patient was the question on when to refer DHF patients to the doctor or hospital in which none of the respondents got full score of

the question. After given the health education, more respondents answered the question on the proper first aid to be done to DHF patient correctly as 97.6% of the respondents got full score. However, the question on when to refer DHF patients to doctor or hospital was still the least understood question but the scores of the respondents were improved as 1.2% of the respondent finally got full score.

Table 4. Proportion of Question Answered to the Question Regarding the Knowledge on First Aid of DHF

| No | Pretest Score | Total | Posttest Score | Total |
|----|---------------|------------|----------------|------------|
| 1 | 0 | 12 (14.6%) | 0 | 2 (2.4%) |
| | 5 | 70 (85.4%) | 5 | 80 (97.6%) |
| 2 | 0 | 57 (69.5%) | 0 | 58 (70.7%) |
| | 5 | 25 (30.5%) | 5 | 24 (29.3%) |
| 3 | 0 | 27 (32.9%) | 0 | 5 (6.1%) |
| | 5 | 55 (67.1%) | 5 | 77 (93.9%) |
| 4 | 0 | 0 (0 %) | 0 | 3 (3.7%) |
| | 1 | 5 (6.1%) | 1 | 47 (57.3%) |
| | 2 | 26 (31.7%) | 2 | 24 (29.3%) |
| | 3 | 51 (62.2%) | 3 | 1 (1.2%) |
| | | | 4 | 6 (7.3%) |
| 5 | | | 5 | 1 (1.2%) |
| | 0 | 75 (91.5%) | 0 | 68 (82.9%) |
| | 5 | 7 (8.5%) | 5 | 14 (17.1%) |

Discussion

Indonesia is one of the countries in South East Asia with the high incidence of DHF. One of the cities with highest incidence of DHF in Indonesia is Jakarta. The region which is usually affected by DHF is North Jakarta. Thus, health education is needed to reduce the mortality and morbidity rate of DHF. Important aspect needs to be delivered is the first aid of DHF. In this research, we gave questionnaires that needed to be filled by the private teachers in North Jakarta.

Association between Knowledge on First Aid of DHF and Demographic Characteristic of the Respondents

From 82 respondents, 58.5% of the respondents were male and 34% of the respondents were female. Both gender mostly got poor results in pre-test. It was found that there was no relationship between gender and level of knowledge. This is probably due to gender equality in which everyone has the same rights to obtain their rights no matter what the gender is. This includes knowledge regarding first aid of DHF

in which gender does not determine the exposure of someone to the information. Previous study done by Setiawan⁵ supports this finding as it was also found that there was no association between gender and level of knowledge on first aid of DHF.

Education is an important stage throughout a person's life and it will certainly be a qualification in the employment process. Being a teacher requires people to pass certain stage of education. If he or she fails to do so, he or she will not be recruited as teachers.

Most of the respondents graduated from undergraduate program with the percentage of 75.6%. The rest of the respondents came from various education level which includes high school, diploma and postgraduate study. In the pre-test, it was found out that only S1 graduates had good level of knowledge on first aid of DHF.

It was found that there was no relationship between education and level of knowledge on first aid of DHF. However, several studies suggest otherwise. A study suggests that with higher education, people will more likely to have more knowledge on first aid as well as prevention and behavior.⁶ Higher educational level was also proven to associate with level of knowledge of dengue in Jamaica.⁷ Previous study by Syed et al⁸ also proves significant relationship is found between knowledge and education.

This can be due to many reasons. First, the respondents had never been exposed to knowledge on first aid of DHF during their education deeply. Most of the teachers came from the same education level which may also be a reason on why there was no relationship between education and level of knowledge on first aid of DHF.

All of our respondents were teachers. However, the level in which they teach varied from kindergarten to high school. No relationship between occupation and knowledge on first aid of DHF was found. It may be due to lack of exposure to information about first aid of DHF. There was no specific topic or field in the level of education which they taught about this.

Most of the respondents had never had history of dengue infection. Only 32.9% of the respondents had ever encountered dengue infection previously. In fact, 3 respondents who had good knowledge prior to the health education had never had history of dengue infection. On the contrary, none of the respondents who had history of dengue infection had good knowledge. It was found that there is no relationship between history of the infection

and the level of knowledge on first aid of DHF. Respondents who had history of dengue infection might not have applied proper first aid when they faced dengue infection. Most patients with dengue infection would be admitted to the hospital and be treated parenterally. Not only that, doctors rarely explains about the proper first aid needs to be done when the patients re-encounter dengue infection. Thus, they are lacking of knowledge towards first aid of DHF. Using the health education, the level of knowledge may be improved and it is expected that the respondents will transfer the knowledge to others and apply the knowledge in their daily activities.

The Effectiveness of Health Education on First Aid of DHF

Knowledge is a very important determinant in someone's behavior towards certain diseases. DHF is one of the examples of this; studies have shown that higher level of knowledge towards DHF will lead to better preventive methods towards DHF.⁹⁻¹¹ It was also proven that health education can improve knowledge, attitude, and behavior towards DHF.¹²⁻¹⁴ Not only that, study done by Kooenradt et al¹⁵ also supports this theory by stating that there association between knowledge and the effort of vector control. With proper knowledge on first aid of DHF, mortality and morbidity caused by DHF can be decreased.

In this research it was found that before the health education, 80.5% of the respondents had poor level of knowledge and only 3.7% of the respondents had good level of knowledge. Hence, before the health education, the knowledge on first aid of DHF was lacking because more than half of the respondents had poor knowledge. Poor knowledge had by the respondents may be caused by lack of information source to the respondents. All this time, the government effort emphasizes to control DHF vector which were given through health education and promotion using various media. There was lack of information circulating in public as to how we can give proper first aid to the DHF patients. This is very important to be given because proper first aid to the DHF patients may reduce the morbidity and mortality of DHF.

Health education on first aid of DHF can be given using various media and promotion. Newspaper, radio, or television is few of the possible ways in which knowledge on first aid of DHF can be given to people. Not to mention, health education and workshops can also be done in effort of doing so. Best ways to educate people about this topic is

using television and health education by doctors. Study by Khynn et al¹⁶ proves that people who are exposed to various mass media, for example posters, television, newspaper, and journals, will have deeper knowledge of DHF compared to people who are not exposed. This is also supported by Itrat et al¹⁷ who stated that the most influential media to transfer the knowledge of DHF is through television.

In this research, it was found that health education is effective to improve the knowledge on first aid of DHF. This result is also supported by previous study done by Setiawan⁵ which also proved that health education is effective to improve the knowledge of DHF. Another study done in Jeddah also proves that health education can improve knowledge significantly compared to knowledge before the education.¹⁸ Effectiveness of the health education itself is affected by multiple factors, some of them are the resource person of the education and also people who attend.

Resource persons of this health education are undoubtedly experts in their fields. They are also experienced in giving health education in several occasions before. The materials of the presentations were given in interactive, simple, and interesting ways as well as using presentation slides which could emphasize on the importance of the materials. Not only that, the respondents were teachers, they had passed several educational stages that need to be fulfilled as teachers. They were also enthusiastic in listening to the health education and involved actively in question and answer session of the health education.

Proportion of the Question Answered to the Question regarding the Knowledge on First Aid of DHF

There were 5 questions about the first aid of DHF. Before the health education was delivered, questionnaires were distributed as pre-test. After the health education, questionnaires were distributed as post-test. As it was mentioned above, the level of knowledge on first aid of DHF before the health education was generally poor.

The first question was regarding the proper first aid of the DHF. Options given were to drink a lot, to eat a lot, to rest, unknown, or others. The correct answer is to drink a lot. In this question, 85.4% of the respondents answered correctly in the pre-test. After the health education was given, the percentage increases to 97.6%. Nearly all of the respondents answered correctly which indicates that the content of the health education

regarding this question was clearly understood by the respondents.

The second question was regarding the proper management to lower the fever in DHF patients. Options given were cold compress, warm compress, alcohol compress, unknown, or others. The correct answer was warm compress. In the pre-test, it was found that 30.5% of the respondents answered warm compress. However, in the post-test it was found that the percentage declined to 29.3%. This may be due to the beliefs that cold compress should always be given in cases of fever. On the contrary of the beliefs, warm compress should be given. Other possibility is that the material of the health education regarding this topic was too difficult to be understood by the respondents.

The third question was the correct drug to lower the fever in DHF patients. The choices of answer were paracetamol, aspirin, antibiotic, unknown, or others. In this question, the correct answer was paracetamol. It was found in the pre-test that 67.1% of the respondents answered correctly. The percentage rose to 93.9%. In this question, we can say that people have known what drug should be given in case they face DHF cases. Materials regarding this topic was also clearly understood which can be seen in the percentage that almost all respondents answered this correctly.

The fourth question was when to refer DHF patients to the doctor or hospital. In this question, respondents could answer more than one correct answer. Before the health education, none of the respondents answered this correctly. After the health education was given, only 1.2% of the respondents answered this using correct answer. However, improvement could be found as more respondents got higher score for this question, although not perfect, in the post-test. The correct answers were persistent high fever, patient feels sleepy and continuously sleeps, and cold sweat. The answers were signs of shock. We want to prevent the occurrence of shock. This indicates low knowledge on shock and the danger of it. This may be due to lack of information regarding shock. Furthermore, difficult question and difficult materials regarding this can be also the causes.

Last question was about the correct fluid to be administered to DHF patients. In the pre-test, almost all respondents with the percentage of 91.5% answered incorrectly. It means that only 8.5% respondents answered it correctly. The percentage of respondents who answered correctly doubled in post-test to 17.1%. However, the percentage of respondents who answered

this question incorrectly was still high, 82.9%. The incorrect answers that were chosen were guava juice and *angkak*. *Angkak* is the result of red rice fermentation by mold, *Monascus sp.* The correct answer was *oralit*. It is believed that guava and *angkak* can increase the level of thrombocyte. However, this has never been proven scientifically. Guava is recommended to be given due to its rich electrolyte content. DHF patients should be given fluid replacement therapy as soon as possible to avoid shock.

Conclusion

Prior to the health education, 3 teachers had good knowledge towards first aid of DHF, 13 teachers had average, and 66 teachers had poor level of knowledge. After the health education, the teachers who had good knowledge increased to 5 teachers and the number of teachers who had average increased to 26 people and the number of teachers with poor level of knowledge decreased to 51 people. In addition, the knowledge on first aid of DHF has no association with gender, education level, occupation, and history DHF exposure. Based on this study, we can conclude that health education is proven effective to increase the level of knowledge on first aid of DHF.

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