

Factors Related To The Successful Implementation Of The Battle Against Dengue Hemorrhagic Fever Mosquito Lair (PSN DBD) At The Primary Schools In Malalayang District Of Manado City

Mareyke Moningka^{1*}, Dantje Tarore¹ and Ellen Togas¹

¹Department of Plant Pests and Diseases , Faculty of Agriculture University of Sam Ratulangi,
Manado, Indonesia

(Corresponding author)E-mail: moningkamareike@yahoo.co.id

Abstract

Factors Related to the Successful Implementation of the battle against Dengue Hemorrhagic Fever mosquito lair (PSN DBD) at the Primary Schools in Malalayang District of Manado City. Dengue Hemorrhagic Fever disease is one of the community health problems in Indonesia that is currently widely spread, along with the increase of mobility and density of population. Vaccine and medicine of this disease have not found yet, so that the most appropriate treatment system of the disease is by killing the vector, which is mosquito (*Aedes aegypti*), by eradicating its larvae and removing all its breeding place. The research used an observational research by using a cross-sectional study design. The technique was collecting the data through questionnaire where the question were listed in a list of question. This information that was collected from every school

Keywords: eradication of mosquito breeding, dengue haemorrhagic fever, primary school

1. INTRODUCTION

In order to achieve Healthy of Indonesia 2010, the mission of the health development, that is activated health-minded to the national development, encouraging self-reliance of society to live healthier, maintaining and improve health care quality, equitable and affordable, as well as maintaining and improving the health of individuals, families and communities, including the environment (Anonymous, 2003b)

Dengue Haemorrhagic Fever (DHF) is one of the Indonesian public health problems, which tend to be more widespread distribution in line with the increasing mobility and population density. The disease is transmitted by the *Aedes aegypti* mosquito which breeds in shelters such as bath, jars, drums and secondhand stuff that can collect rain water in the yard, schools and other public places.

Medicine and vaccines is not available yet, so the proper way of handling this disease is to eradicate the infecting agent of the mosquitoes . One way to combat the *Ae.aegypti* mosquito by eradicating *aegypti* larvae by means destroy the breeding places of *Ae . aegypti* . The effort is known as the mosquito nest eradication efforts Dengue Hemorrhagic Fever (DHF PSN) . PSN DBD done in various ways such as by draining , shut the water reservoir (TPA) , sprinkle poison larvae (Abatization) on water reservoirs , fish or sprinkled on water reservoirs , and get rid of items that allow stagnant water , such as old tires , cans , bottles , coconut shells, plastic and so on .

Aedes aegypti mosquitoes bite during the day , where children of school age are in school during the day . If there is *Ae.Aegypti* mosquitos in school is , the child can be infected with dengue in schools . At school there are usually places that can become breeding places of *Ae . aegypti* , such as bathtub shower room / wc , flower vase , plastic waste , is also used goods that can hold water , so the PSN DBD efforts need to be done at school .

The survey of larvae conducted in Manado , Bitung, Minahasa and Bolaang Bolaang 2002 showed that 30.2% of schools found larvae of *Ae. aegypti* and is expected to increase steadily in the following years (Anonymous, 2003). In Manado City Health Office under the profile Dati II of 2004, the number of 121 cases with 3 deaths. Malalayang districts is one of the districts in the city of Manado with the highest number of dengue cases. Number of dengue in the district in 2001-2005 Malalayang hose shown in Table 1 below:

Table 1 . Number of dengue cases in the district of the city of Manado Malalayang Year 2001-2005

No.	KELURAHAN	2001		2002		2003		2004		2005	
		P	M	P	M	P	M	P	M	P	M
1.	Malalayang I	39	0	78	1	49	1	31	0	2	0
2.	Malalayang II	20	0	24	0	6	0	2	0	3	0
3.	Malalayang I Timur	-	-	0	0	2	0	1	0	1	0
4.	Malalayang I Barat	-	-	0	0	2	0	2	1	2	0
5.	Winangun I	47	0	37	0	13	0	8	0	0	0
6.	Winangun II	-	-	0	0	4	0	3	0	0	0
7.	Bahu	34	3	31	0	23	0	15	1	6	0
8.	Kleak	25	1	57	2	25	0	14	0	7	1
9.	Batu Kota	-	-	0	0	10	1	4	0	1	0
TOTAL		165	4	227	3	134	2	80	2	22	1

Note: P (patient) , M (Deceased)

Based on table 1 in the year of 2002 there are 230 cases reported and 162 cases under the age of 15 years. In this case the role of teachers, health workers and students in the school caretaker PSN DBD success in school is very potential. Larvae survey in the school of district Malalayang showed still quite high in the number of schools that contain larvae. This is evident from the data supervision of health workers in April 2004 found a positive larvae in District 7 elementary schools Malalayang Manado City. Incidence Rate of DHF in school age children is also high relatif. In 2002, health centers in the District Malalayang, reported 227 dengue cases with 3 deaths. Highest in the case of the Village Malalayang I (78 cases and 1 death).

Considering the transmission of dengue disease can occur at home and at school, so prevention of this disease needs to be implemented in both places. In this case DBD mobilizing PSN implemented in schools, it is necessary for efforts to instill healthy attitudes and behaviors of teachers and students as well as school guards, so that schools are free of mosquito-borne diseases.

Under the above circumstances, the implementation of the PSN DBD in Schools District Malalayang of Manado City important to note. The success of efforts to PSN DBD influenced by the participation of teachers, students and health care workers. This study was conducted to examine the factors related to the implementation and success of PSN PSN DBD DBD in elementary schools district Malalayang Manado City.

2. METHODS

Place and Research Time

Place of research conducted in schools in the District Malalayang of Manado City with reasons and considerations researchers that the area is the location with the highest dengue cases in the city of Manado. The study was conducted from March 2006 until early June 2006.

Data Collection Method

1 . Primary data is data obtained from the results of the examination and direct observation in the field and the results of the questionnaire.

2 . Secondary data is data obtained from relevant agencies that have anything to do with this study is the North Sulawesi Provincial Health Office, City Health Office of Manado, Manado City Department of Education, District Malalayang Department of Education , and Bahu Public Health Center.

Population and Sample

1 . Population : Based on data from the National Education Department Office of Manado City in 2005 that the

number of elementary schools in the District Malalayang as many as 24 schools with 5181 as the number of students, number of teachers 280, number of school guard 24, the number of little doctors 86 people.

2. Research sample : In this study, all primary schools are located in the District of Malalayang taken from various samples. Each school were taken as sampled and as information resource are : a) supervision of health workers : the principal (1 person), b) knowledge of teachers : teachers (4), c) knowledge of students : students (4 people), d) implementation PSN : school guard (1 person).

Processing Techniques and Data Analysis

1. Data Processing Techniques

Data processing is done after all the data is collected, then performed the editing, coding, weighting and assessment (value).

2. Data analysis

Statistically using a set of computer tools with Epi Info 2000 program SPSS version 11.5.

Variables and Operationalization

1. Independent Variable

This research uses four independent variables consist of variables supervise health workers, teachers' knowledge, knowledge of students, and the school guard practice.

2. Dependent Variable

The dependent variable in this research is the successful carrying out of activities in school DBD PSN. The success in question is the result of the implementation of the PSN DBD conducted by teachers, pupils and the school guard, as indicated by the presence or absence of larvae of *Ae. aegypti* in the school environment, through direct observation and examination conducted jointly by the City Health Department officials along with Public Health Center Bahu Manado and witnessed by the principal / teacher at the school, using the tool as well as a flashlight and magnifying glass and writing equipment.

Research Design

The study design was a cross sectional study, where all variables are measured at the same time. The approach used in the study is a quantitative approach (Umar, 1997), data collection was conducted through a questionnaire or questionnaires (Nasir, 1998). This research is explanatory research. According Singarimbun and Efendi (1987) that explanatory research is a study that explains the relationship and influence between independent variables and dependent variable by way of presentation of the hypothesis.

3. RESULTS AND DISCUSSION

Results Univariate Analysis

1. Supervision of the Health Officer

Supervision of health workers is one of the independent variables in this study were measured using several indicators, namely: how many times health workers visited schools in order to PSN DBD during June 2005 s/d in July 2006, education about mosquito nest eradication (PSN) on DHF schools including mosquito larvae inspection in school.

Table 2. Frequency distribution by category of health personnel supervision activities to elementary school district Malalayang in the year of 2005/2006

No.	Frequency	Category	Total	Percent
1.	9	High	13	54,2
2.	5 – 8	Low	11	45,8
Total			24	100

Based on Table 2 can be explained that the results of the supervision of health workers belonging to a high school that is 13 schools (54.2 %) and low categories are 11 schools (45.8 %). The data indicate that the supervision of health workers to include high school mostly.

2 . Variable Knowledge Teachers

Knowledge of teachers is one of the independent variables in this study were measured using several indicators, namely: dengue fever, symptoms, transmission, first aid before being taken to a doctor or a health center, the breeding place of *Ae. aegypti* and disease prevention through PSN DBD.

Table 3 . Frequency distribution by category Teacher Knowledge

No.	Frequency	Category	Total	Percent
1.	29,5 – 30,0	High	15	62,5
2.	25,5 – 29,0	Low	9	37,5
Total			24	100

The data in Table 3 can be explained in a row from a high to a low. Of the 24 schools that were respondents in this study there were 15 respondents (62.5%) teachers 'knowledge about dengue PSN is high, as many as 9 respondents (37.5%) teachers' knowledge about dengue PSN is low. The data above shows that the teacher's knowledge of DBD PSN most respondents is high.

3 . Variable Pupil Knowledge

The meaning of student knowledge is the score obtained by students based on the correct answers to a series of questions about the disease and how to prevent dengue fever include: symptoms, mode of transmission, first aid before being taken to a doctor or a health center, where the breeding of *Ae. aegypti* and disease prevention through PSN DBD.

Table 4 . Frequency distribution by category Pupil Knowledge about dengue PSN

No.	Frequency	Category	Total	Percent
1.	28,5 – 29,75	High	13	54,2
2.	25,75 – 28,00	Low	11	45,8
Total			24	100

The data in Table 4 can be explained in a row starting from the low to the high, that of the 24 schools who were respondents in this study, it appears as many as 13 respondents (54.2%) students knowledge about dengue PSN is high, as many as 11 respondents (45.8%). The data above shows that the pupils knowledge about dengue PSN most are high.

4 . Practice School Guard

Practice school guard is one of the independent variables in this study were measured using several indicators, namely: cleaning the school environment, drain tub bathroom / wc in school, the action taken against the school caretaker cans or objects which can accommodate water in the yard / around the school.

Table 5 . Frequency distribution by category Guard Training School on PSN DBD

No.	Frequency	Category	Total	Percent
1.	20,00 – 21,00	High	15	62,5
2.	16,00 – 19,00	Low	9	37,5
Total			24	100

The data in Table 5 can be explained that of the 24 schools who were respondents in this study it appears that the practice of school guards in an attempt PSN DBD there were 15 respondents (62.5 %) were classified as high, 9 respondents (37.5 %) is low . The data above shows that the practice of school guards in an attempt PSN DHF is largely considered high.

5 . The successful implementation of PSN DBD in Schools

Successful implementation of PSN dengue in schools is the dependent variable in this study, measured by the results of DHF in PSN activities conducted by school teachers, students and school guards, as indicated by the presence or absence of larvae of *Ae. aegypti* in the school environment through direct observation and examination conducted jointly by the Health Department and Community Health Center officials Shoulder shelters on the water both inside and outside the building, witnessed by the principal/teacher at the school using the magnifying glass tool, a flashlight and a notebook.

Table 6 . Distribution of Schools According PSN DBD Successful Implementation in Elementary School District Malalayang.

No.	PSN DBD success in school	Total sample	Percent
1.	Good (not found larvae of <i>Ae. aegypti</i>)	14	58,3
2	Bad (found larvae <i>Ae. aegypti</i>)	10	41,7
Total		24	100

From Table 6, it can be said that as many as 14 elementary schools in District Malalayang (58.3 %) contained no larvae of *Ae . aegypti* in the environment , as many as 10 or 41 schools , 7 % found larvae of *Ae . aegypti* in the school environment .

Logistic Regression Analysis Results

Table 7 . Var . Independent : Supervision of Health Personnel

<i>Independent Variables</i>	<i>Odds Ratio</i>	<i>P-Value</i>
Larvae	0,3214	0,1952
Teacher knowledge	0,2500	0,1211
Student knowledge	0,5208	0,4328
School guard practice	0,5333	0,4612

From table 7 is not visible relationship between the presence or absence of larvae supervision, teacher knowledge, student knowledge, and practice caretaker. This indirectly strengthen the observation that despite the UKS activity, yet many larva in water shelters in schools and dengue outbreaks still occur.

Table 8 . Var . Independent : No / No larvae

<i>Independent Variable</i>	<i>Odds Ratio</i>	<i>P-Value</i>
Supervision of the health officer	0,3214	0,1952
Teacher knowledge	1,7500	0,5231
Student knowledge	0,1714	0,0523
School guard practice	1,7500	0,5231

From bivariate logistic regression based on table 8 shows that only students who have a knowledge of variable significance in the odds ratio .

Table 9 . Var . Independent : No / No larvae

<i>Independent Variable</i>	<i>Odds Ratio</i>	<i>P-Value</i>
Teacher knowledge	3,4778	0,2538
Student knowledge	10,7062	0,0328
School guard practice	3,4778	0,2538

Best model' is also only contain var. independent student knowledge , but here are categorized based on the median score of students knowledge. Here the ' odds ratio' knowledge of pupils = 10.0 means the odds for a free larva in the half of the schools with the knowledge of pupils' better' is 10 times than the ' odds ' for free larva in the half of the schools with the knowledge of pupils' poor'.

Discussion

The research was only conducted in one district area, which is very narrow in scope so that the results of this study can only be applied in circumstances similar to the current situation.

In this section in order to discuss about 1) the relationship with the supervision of health workers between the variables: teachers, students, school guard for the successful implementation of DHF in primary school, 2) knowledge of the relationship with the successful implementation of civil service teachers in elementary school, 3) the relationship of the students and the successful implementation of PNS DHF in primary schools, 4) relationship between the practice school guard and the successful implementation of PSN DHF in primary schools, as follows:

1. Relationship Between Health Officer Supervis with Knowledge of the teacher, student and Practices of School Guard in Primary Schools at District Malalayang.

Results of bivariate analysis whether there is a relationship between the supervision of health workers with knowledge of teachers, students knowledge and practice of school guard, in Table 2 shows no significant relationship between supervision and the three independent factors, because even if there are school health activities but still only contained mosquito larvae in places containing water at school. Supervision is carried out by health workers to Malalayang District elementary schools four or more times in one school year (table 2) was not effective, and does not guarantee the achievement of supervision to improve the knowledge, attitudes and behavior in team builder UKS elementary schools Malalayang districts.

Sarwono (1984) revealed that individual behavior begins with compliance stage, identification, and internalization can be achieved, if the health worker is a figure who can be trusted and there is willingness of individuals / communities targeted for change according to the new values. Health care workers need to change the mental attitude, not just a duty but must be followed with a full sense of responsibility, so that the purpose of supervision to improve the knowledge, attitudes and behaviors and skills of team coaches in fostering the implementation of PSN UKs dengue in schools reached (Anonymous, 1993a).

2 . Relationship Between Teacher Knowledge with DBD PSN Successful Implementation in Schools

Results of bivariate analyzes between teacher knowledge with the successful implementation PSN DBD in elementary schools in Malalayang district showed there is no substantial relationship because both of that factors. That is possible occured because the teachers in that school did not do the job directly but these activities are fully implemented by the school guard and students, while teachers could act as a motivator or a supervisor in the school.

According to Rosenstock (1982) says that there are five factors are possible causes: 1) the individual's perception of the possibility of disease, 2) individual views about the severity of the disease, 3) the magnitude of the threat of the disease so as to encourage individuals to take precautions, 4) the individual's desire to or just avoid doing the recommended alternative health care, and 5) precipitating factors that can come from inside or outside.

3 . Relationship Between Knowledge Students with Successful Implementation in the DBD PSN Elementary School District Malalayang.

Based on the results of the analysis using logistic regression to determine the relationship between the variables of student knowledge with the successful implementation of PSN dengue in schools according to table 7, 8, and 9, shows that there is statistically significant relationship between students' basic knowledge with the successful implementation of PSN dengue in Elementary School District Malalayang..

This happens because of the activity and contribution of students in every activity such as voluntary work related to the cleanliness of the school environment. The eradication of dengue mosquito breeding which is a program of prevention and control of dengue fever, the role of the public may have occurred as a result of their knowledge (Green, 1980).

Amri (1996) states that there is a significant relationship between the knowledge of the students with their behavior in creating a clean and healthy environment. Where the knowledge of students about the eradication of dengue mosquito breeding has been good enough, but in reality there are real mosquito larvae. This is might be due to a lack of teacher involvement and control when carrying out voluntary work so that students only carry out the cleanliness of the building only, while in the particular building water storage tanks are not implemented or are there other factors that need to be further investigated.

4 . Relationship Between Practice School guard with DBD PSN Successful Implementation in Elementary School District Malalayang.

Bivriat analysis results between school guard practices with the successful implementation of mosquito nest eradication of dengue hemorrhagic fever in the school, the statistics show that there is no significant correlation between the two factors.

4.CONCLUSIONS

1. There is no significant relationship between the supervision of health workers with variable knowledge of teachers, students and guardians of school knowledge in an effort to eradicate the dengue mosquito breeding in elementary school in the District Malalayang.
2. Knowledge belong to the teacher is not associated with the successful implementation of PSN DBD in elementary schools in District Malalayang.
3. There is a significant relationship between student knowledge with PSN DBD success in elementary schools in District Malalayang.
4. School guard practices not related to the successful implementation of PSN DBD in elementary schools in District Malalayang.
5. From the results of research carried out in 24 primary schools in the District Malalayang turned out as many as 10 schools that still contained mosquito larvae.

REFERENCES

Amri., 1996. Student Knowledge and Behavior of Clean and Healthy Environment in East Jakarta Sub Cinnamon . Indonesian Medical Magazine 1997 p. 438-442 . Jakarta.

Anonymous , 1993 (a) . Implementation Guidance Technical Guidance mosquito nest eradication of Dengue Hemorrhagic Fever (DHF PSN) at the School . Team coach UKS Center , Jakarta .

Anonymous , 2003 (b) . Technical Guidelines for mosquito nest eradication of Dengue Hemorrhagic Fever (DHF PSN) in Schools Through UKS . Team coach UKS Center , Jakarta .

Anonymous , 2003. Indicators of Healthy Indonesia 2010 & Guidelines for Determination of Indicators Indonesia & District Health / Healthy Cities . Department of Health ; Jakarta .

Effendi , N. , 1998. Basics of Public Health Nursing . Book Medical Publishers EGC , Jakarta .

Green, L. , H. Wolter . , G. Bruce. 1980. Health Education Planning . Mayfield Publishing Co . , John University , California USA .

Nasir , M. , 1990. Research Methods . Gallic Indonesia, Jakarta .

Rosenstock and M. Irwin . 1982. The Health Belief Model and Personal Health Behavior , Health Education Monography . Charles B. Inc .

Sarwono , S. , 1984. Public Health Education . PT . Scholastic Widiararana Indonesia, Jakarta .

Umar , H. , 1997. Research Methodology , Applications in Marketing . Gramedia Pustaka Utama , Jakarta .

This academic article was published by The International Institute for Science, Technology and Education (IISTE). The IISTE is a pioneer in the Open Access Publishing service based in the U.S. and Europe. The aim of the institute is Accelerating Global Knowledge Sharing.

More information about the publisher can be found in the IISTE's homepage:

<http://www.iiste.org>

CALL FOR JOURNAL PAPERS

The IISTE is currently hosting more than 30 peer-reviewed academic journals and collaborating with academic institutions around the world. There's no deadline for submission. **Prospective authors of IISTE journals can find the submission instruction on the following page:** <http://www.iiste.org/journals/> The IISTE editorial team promises to review and publish all the qualified submissions in a **fast** manner. All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Printed version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: <http://www.iiste.org/book/>

Recent conferences: <http://www.iiste.org/conference/>

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digital Library, NewJour, Google Scholar

