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The Effectiveness of 3M Focused Group Discussion and Focus Fogging in Decreasing The Density of *Aedes aegypti* Larvae

Ashari Rasjid[1], Samuel Layuk[2], Zaenab[3]
[1&3]Health Polytechnic of Ministry of Health in Makassar, Indonesia
[2]Health Polytechnic of Ministry of Health in Manado, Indonesia

Abstract
DHF is a contagious disease caused by dengue virus that is transmitted from one person to another by Aedes aegypty (Ae). Aedes aegypti is the most important epidemic vector, while Aedes albopictus as a secondary vector. This research aimed to analyze the effectiveness of Focused Group Discussion "3M" on change of knowledge and behavior in Makassar City, Maros District and Tana Toraja Districts, by using the quasi experimental design. This research was covering families in the area of endemic with the criteria of family members of his family had been infected with DHF and families whose family members had never contracted DHF with the criteria of living close to the family who had contracted with a maximum of 100 m selected by simple random sampling of 40 families, consisting of 120 families from each district. Data that has been prepared in tabular form was analyzed statistically to prove differences of behavior, public knowledge and number of positive households of larvae before and after treatment (Fogging Focus, 3M FGD). Data analyzed by using Mc Nemar Test. The results showed that 3M FGD had not been effective to increase knowledge and behavior of people in controlling DHF. On the other hand, 3M FGD and focus fogging were effective in decreasing density of larvae.

Keywords: *3M, density of larvae, PSN, Aedes aegypti, DHF*

I. INTRODUCTION

Dengue haemorrhagic fever known as dengue is one of the major health problems globally, with over 100 countries and 2.5-3 billion people (40%) of the world's population at risk of developing the disease. DHF is a contagious disease caused by dengue virus that is transsmitted from one person to another by *Aedes aegypty* (Ae) from *Aedes aegypti* is the most important epidemic vector, while *Aedes albopictus* as a secondary vector.

Dengue Hemorrhagic Fever (DHF) is one of the serious health problems in Indonesia to date. The spread of cases of trends is widespread, in line with increasing mobility and population density. Almost all areas of Indonesia have the risk of contracting DHF, because infectious agents are everywhere. On the other hand, dengue fever disease (vector) *Aedes aegypti* is widespread in almost all corners of Indonesia both in elite residential areas and slum areas as well as in public places.

DHF incidence occurred in Makassar City consisting of 14 districts each year can not be separated from the case of dengue, in 2011 there are 85 cases 2 of them died, in 2012 there were 86 cases 2 of them died, in 2013 there were 168 cases 1 of them died (Dinkes Kota Makassar, 2013). Dengue cases spread in 14 sub-districts in Makassar, but 5 sub-districts are designated as districts that are prone to the spread of dengue cases such as sub-district Mariso, Panakkukang, Tamalanrea, Ujung Tanah and Rappocini (Dinkes Kota Makassar, 2013).

In addition to the city of Makassar, Maros regency is also an endemic area of DHF. The number of patients with DHF in Maros Regency continues to increase every month. During January 2016, there were 93 dengue fever patients treated in intensive care at RSUD Salewangang Maros. This figure is much higher than the DHF patients in October to December 2015 ago, Increased DHF incidence increased dramatically in January 2016 which almost reached 100 people. In October 2015 to December 2015 ago, people with DBD within three months reached 119 people (Celebes Online). Tana Toraja Regency is also prone to DHF attacks especially in Makalepada in January of 2015 ago, the number of DHF patients in Tana Toraja district is only two cases. While in January 2016 or in the same period in the following year, the number of cases increased many times over. Until February 2016, the number of DHF patients recorded by Health Department reached 31 cases (rakyatsulsel.com)

If we look at the development of DHF patients from year to year tends to increase, one cause is the uneven public awareness of the importance of environmental health in general, especially keeping at home and around the house free from Aedes aegypty mosquito nest. DHF is an infectious disease that is affected by environmental conditions, population mobility, population density, artificial or natural containers in landfill (TPA) or in other waste bins,

Community knowledge about vector and dengue fever is a fundamental problem in the prevention of DHF in Maros, Tana Toraja and Makassar districts where the prevention efforts will be successful if supported by all levels of society, so as to prevent the outbreak). But until now the participation of the community in the practice

of prevention of DHF is still not optimal. Various efforts were conducted to reduce *Aedes aegypti* density, among others, for adult mosquitoes with fogging While for larvae was abatization with Abate (Temephos) and Mosquito Nest Eradication (PSN), but not yet can significantly reduce the number of morbidity every year and still widespread endemic areas in some cities, so it is still a health problem.

DHF causes many losses, among others, the loss of working days and high mortality (EHP, 2008; Ong et al, 2007), while the appropriate drugs and vaccines for dengue fever are not present, therefore an understanding of the above epidemiological aspects is needed prevention and prevention of outbreaks or DHF outbreaks. This will be useful for the implementation of early vigilance system (SKD) or Early Warning System (Angelet al, 2008; Biswas et al, 2007).

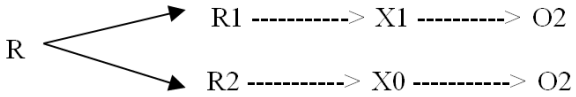
In this connection, the researcher tries to do a research to know how the effectiveness of 3M Focus Group Discussion (FGD) in improving the public knowledge about DHF disease so that it can change the behavior of the society into healthy behavior in hopes can have an impact on decreasing density of *Aedes aegypti* larvae in Makassar City, Maros Regency and Tana Toraja Regency.

II. METHODS

A. Type of Research

The research study used was Quasi Experiment, which aimed to find out a symptom or influence arising as a result of a certain treatment in the field (Notoatmodjo, 2005). The treatment in question was Dengue Hemorrhagic Fever Control (P2DBD) to dengue vector density on endemic areas by exploring community knowledge and behavior regarding 3M implementation (drain, closing, burying) to water reservoirs (TPA). The first measurement in this study was conducted to see the initial condition of Aedes aegypty larvae or negative Aedes aegypty larvae before the treatment was done. The treatment in this research was Fogging Focus 1 cycle and Focus Group Discussion (FGD).

Research design scheme Pre and Post Test Control Group



R: Respondents
O2: Post test in the group after treatment
X1: Trial / intervention in treatment groups according to protocol
X0: Control group with standard intervention or no intervention

B. Time and Location Research

This research was conducted from April to September 2016 with locations in districts considered to be DHF located in the area of Makassar City, Maros Regency and Tana Toraja Regency.

C. Population and Sample

The population of this study was all the existing households in the area of endemic Climates located within the area of Makassar City, Maros Regency and Tana Toraja Regency. Sample was covering families that exist in endemic Clinic area with criteria of family whose family member have been infected by DHF and family whose family member has not been infected by DHF with criterion to live close to the family that had been infected with 100 m spacing selected randomly (simple random sampling) of 40 families, consisting of 120 families from each district.

Focus Group Discussion 3M was done by selecting participants in the area to be interfered. The informant group of the population was divided into two groups. The variation of group of informants was adjusted to the research objective of decreasing the density of larvae of Aedes aegypty larvae in DHF endemic areas, therefore the discussion participants were chosen based on the relevance to the problems encountered, namely: Father / Housewife, local government, teenagers, cadres of PKK, and local community leaders. The discussion was conducted by the house of the RT head or the house of the sanitation worker.

C. Procedure

a. Examination of larvae / Aedes aegypty larvae on the container in each group (RW) and filling out the questionnaires to explore the knowledge and behavior of the community, prior to the 3M FGD activity in the

endemic sub-districts within Makassar City, Maros Regency and Tana Toraja Regency. For treatment in each region divided into several groups namely Group A as a group with 3M FGD treatment, Group B as a group with Focus Fogging and Group C treatment as a comparison without treatment at all, each group taken at different kelurahan in one kecamatanyang in the area of City Makassar, Maros Regency and Tana Toraja Rengency.

b. Treatment with 3M FGD activities (group A) conducted by dividing 4 discussion groups, each group with a total of 10 members. Discussion activities were held between 14.00-21.00 (adjusted to the availability of community time) at the time of the activity, so that each discussion group used ± 90 minutes.
c. In Group B, it was carried out a one-time incubation in each designated area.
d. In group C as control without any treatment.
e. Examination of larvae / Aedes aegypty larvae and filling the questionnaire was performed again 7 days after 3M FG treatment in groups A, B, and larvae examination in group C as control by filling out the questionnaire.

D. Data Collection and Analysis

a. Primary data obtained through the results of the examination conducted in the field and conducted larva survey using larva examination form on each house that became the sample or object of research by counting the number of positive home larva, which then performed the calculation of index number (House Index) with the following formula:

$$HI = \frac{\text{Number of houses / buildings found larvae}}{\text{Number of Houses / floors examined}} \times 100\ \%$$

b. Secondary Data
Obtained through literature searches include research journals, and data from relevant agencies such as documents / reports of District Health Program managers and local health centers.
c. Data analysis
Data that has been prepared in tabular form was analyzed statistically to prove differences of behavior, public knowledge and number of positive households of larvae before and after treatment (Focus Fogging, 3M FGD). To see the significance of changes in the research conducted then used the method Mc Nemar Test.

III. RESULTS

A. Makassar city

Effectiveness analysis was aimed to see the difference before and after 3M FGD treatment, focus fogging, on the decrease of Aedes aegypti mosquito larvae, the change of knowledge and behavior in Makassar City area endemic Dengue Hemorrhagic Fever in 2016. Analysis of larvae effectiveness of Aedes aegypti was done by using MC Nemar statistical test.

Knowledge Level of Respondents in Makassar City

Tabel 1. Knowledge Level (Before & After)

			Knowledge (after)		
			Good	Less	Total
Knowledge (before)	Good	Count	28	4	32
		Expected Count	25.6	6.4	32.0
	Less	Count	4	4	8
		Expected Count	6.4	1.6	8.0
Total		Count	32	8	40
		Expected Count	32.0	8.0	40.0

Chi-Square Tests

	Value	Exact Sig. (2-sided)
McNemar Test		1.000[a]
N of Valid Cases	40	
a. Binomial distribution used.		

Table 1 shows that there were different levels of knowledge before and after 3M FGD was implemented in the area of Makassar City, but after a statistical test using Mc Nemar Test obtained p value = 1.0 (>0.05) this indicated that there was not influence of 3M FGD treatment on the knowledge of people in the region of Makassar

Behavior of Respondents in Makassar City 2016

Tabel 2. Behavior (Before & After)

			Behavior (after)		
			Good	Less	Total
Behavior (before)	Good	Count	26	5	31
		Expected Count	23.3	7.8	31.0
	Less	Count	4	5	9
		Expected Count	6.8	2.3	9.0
Total		Count	32	30	10
		Expected Count	32.0	30.0	10.0

Chi-Square Tests

	Value	Exact Sig. (2-sided)
McNemar Test		1.000[a]
N of Valid Cases	40	
a. Binomial distribution used.		

Table 2 shows that there were differences of behavior before and after 3M FGD implemented in Makassar City, but after the statistical test using Mc Nemar Test obtained p value = 1.0 (>0.05) this indicated that there was no effect of 3M FGD treatment in changing the behavior of people in Makassar city.

Density of larvae at Respondent Home of 3M FGD Group in Makassar City 2016

Tabel 3. Density of larvae (Before & After)

			Density of larvae (after)		
			Negative	Positive	Total
Density of larvae (before)	Negative	Count	5	2	7
		Expected Count	4.4	2.6	7.0
	Positive	Count	20	13	33
		Expected Count	20.6	12.4	33.0
Total		Count	32	25	15
		Expected Count	32.0	25.0	15.0

Chi-Square Tests

	Value	Exact Sig. (2-sided)
McNemar Test		0.000[a]
N of Valid Cases	40	
a. Binomial distribution used.		

Table 3 shows that there were differences in density before and after 3M FGD in Makassar City, and after the statistical test using Mc Nemar Test obtained p value = 0.000 (<0.05) this indicated that there was influence of 3M FGD treatment in decreasing density of larvae in the region of Makassar.

Density of larvae at Respondent Home of Focuse Fogging in Makassar City 2016

Tabel 4. Density of larvae (Before & After)

			Density of larvae (after)		
			Negative	Positive	Total
Density of larvae (before)	Negative	Count	13	1	14
		Expected Count	10.9	3.2	14.0
	Positive	Count	18	8	26
		Expected Count	20.2	5.9	26.0
Total		Count	32	31	9
		Expected Count	32.0	31.0	9.0

Chi-Square Tests

	Value	Exact Sig. (2-sided)

McNemar Test		0.000[a]
N of Valid Cases	40	
a. Binomial distribution used.		

Table 4 shows that there were differences in density before and after fogging focus in Makassar City area, and after the statistical test using Mc Nemar Test obtained p value = 0.000 (<0.05) it indicated that there was influence of fogging focus treatment in density larvae at respondent's house in Makassar city area.

Table 5. Distribution of larvae density index before and after treatment in Makassar City Area 2016

Intervention	Larvae density index					
	Larvae Free Rate (%)		House Index (%)		Container Index (%)	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
3M FGD	10	75	90	25	34.2	4.9
Focus Fogging	55	87.5	45	12.5	18.6	3.3
Control	55	55	45	45	20.9	20

In Table 5 we can see that the highest House Index before treatment (pre-test) is present in the 3M FGD Treatment Area (90%), as well as the Container Index (34.2%). House Index was in the treatment area for fogging focus (45%), and for control area (45%), the lowest container index was in fogging treatment area of focus (18.6%) and for highest larvae rate in fogging focus and control (55%), the lowest in the FGD treatment area (10%). As for the House Index after the lowest treatment (postes) was in the Fogging focus area (12.5%) and the highest in the control area (45%), the lowest Container Index on the focus fogging treatment (3.3%) and Larvae Free Rate was found in the focusing fogging treatment area (87.5).

Table 6. Rate of percentage decline House Index before and after treatment in Makassar City 2016

Intervention	Before	After	Decrease	Percentage of Decrease
3M FGD	90	25	65	72%
Focus Fogging	45	12.5	32.5	72%
Control	45	45	0	0

Table 6 shows that the percentage decrease percentage of House Index after 3M FGD treatment was 72% fogging focus down by 72%, and control does not show any decrease at all.

b. Maros District

Knowledge Level of Respondents in Maros Regency

Tabel 7. Knowledge Level (Before & After)

			Knowledge (after)		Total
			Good	Less	
Knowledge (before)	Good	Count	12	11	23
		Expected Count	12.7	10.4	23.0
	Less	Count	10	7	17
		Expected Count	9.4	7.7	17.0
Total		Count	32	22	18
		Expected Count	32.0	22.0	18.0

Chi-Square Tests

	Value	Exact Sig. (2-sided)
McNemar Test		1.000[a]
N of Valid Cases	40	
a. Binomial distribution used.		

Table 7 shows that there were difference of knowledge before and after the 3M FGD implemented in the Maros Regency, but after a statistical test using Mc Nemar Test obtained p value = 1.000 (>0.05) this indicated that there was no effect of 3M FGD treatment in improving knowledge of society in the region of Maros regency.

Behavior of Respondents in Maros Regency 2016

Tabel 8. Behavior (Before & After)

			Behavior (after)		Total
			Good	Less	
Behavior (before)	Good	Count	24	9	33
		Expected Count	23.9	9.1	33.0
	Less	Count	5	2	7
		Expected Count	5.1	1.9	7.0
Total		Count	32	29	11
		Expected Count	32.0	29.0	11.0

Chi-Square Tests

	Value	Exact Sig. (2-sided)
McNemar Test		0.424[a]
N of Valid Cases	40	
a. Binomial distribution used.		

Table 8 shows that there were differences in behavior before and after the 3M FGD was implemented in the Maros, but after a statistical test using Mc Nemar Test obtained values of 0.424 (>0.05) this indicated that there was no effect of 3M FGD treatment in changing the behavior of people in the region of Maros.

Density of larvae at Respondent Home of 3M FGD Group in Maros Regency 2016

Tabel 9. Density of larvae (Before & After)

			Density of larvae (after)		Total
			Negative	Positive	
Density of larvae (before)	Negative	Count	7	0	7
		Expected Count	5.4	1.6	7.0
	Positive	Count	24	9	33
		Expected Count	25.6	7.4	33.0
Total		Count	32	31	9
		Expected Count	32.0	25.0	15.0

Chi-Square Tests

	Value	Exact Sig. (2-sided)
McNemar Test		0.000[a]
N of Valid Cases	40	
a. Binomial distribution used.		

Table 9 shows that there were differences in density of pre and post in Maros, and after a statistical test using Mc Nemar Test obtained a value of 0.000 (<0.05). This indicated that there was influence 3M FGD treatment in reducing density of larvae in the region of Maros.

Density of larvae at Respondent Home of Focuse Fogging in Maros Regency 2016

Tabel 10. Density of larvae (Before & After)

			Density of larvae (after)		Total
			Negative	Positive	
Density of larvae (before)	Negative	Count	18	0	18
		Expected Count	14.4	3.6	18.0
	Positive	Count	14	8	22
		Expected Count	17.6	4.4	22.0
Total		Count	32	32	8
		Expected Count	32.0	32.0	8.0

Chi-Square Tests

	Value	Exact Sig. (2-sided)

McNemar Test		0.000[a]
N of Valid Cases	40	
a. Binomial distribution used.		

Table 10 shows that there was a difference of density before and after fogging in Maros, and after the statistical test using Mc Nemar Test obtained value 0.000 (<0.05). It indicated that there was influence of fogging treatment of focus in density of larvae at respondent's house in region of Maros.

Table 11. Distribution of larvae density index before and after treatment in Maros Regency Area 2016

Intervention	Larvae density index					
	Larvae Free Rate (%)		House Index (%)		Container Index (%)	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
3M FGD	35	85	65	15	34,2	3.1
Focus Fogging	55	85	45	15	15.8	3.4
Control	55	55	45	45	18.4	18.4

In Table 11 we can see that the highest House Index before treatment (pretest) was present in the 3M FGD treatment Area (65%), as well as Container Index (34.2%). The lowest Index Index was in the focus fogging treatment area (15.8%) and for the highest larva-free rate in the fogging focus and control areas (45%), (55%), the lowest in the DHO treatment area (35%). The House Index after the lowest (postes) treatment was in the Fogging focus and 3M (3%) FGD and the highest in the control area (45%), the lowest Container Index in 3M DHT treatment (3.1%) and ABJ tertitngng in the focus fogging treatment area and 3M DKT (85%).

Table 12. Rate of percentage decrease House Index before and after treatment in Makassar City 2016

Intervention	Before	After	Decrease	Percentage of Decrease
3M FGD	65	15	50	77%
Focus Fogging	45	15	30	66.6%
Control	45	45	0	0

Table 12 shows that the percentage decrease percentage of House Index after 3M FGD treatment as much as 77% fogging focus down by 66,6%, and control did not show any decrease at all.

C. Tana Toraja Regency

Knowledge Level of Respondents in Tana Toraja Regency

Tabel 13. Knowledge Level (Before & After)

			Knowledge (after)		Total
			Good	Less	
Knowledge (before)	Good	Count	21	5	26
		Expected Count	16.9	9.1	26.0
	Less	Count	5	9	14
		Expected Count	9.1	4.9	14.0
Total		Count	32	26	14
		Expected Count	32.0	26.0	14.0

Chi-Square Tests

	Value	Exact Sig. (2-sided)
McNemar Test		1.000[a]
N of Valid Cases	40	
a. Binomial distribution used.		

Table 13 shows that there were different levels of knowledge before and after the 3M FGD implemented in the Tana Toraja, but after a statistical test using Mc Nemar Test obtained p value = 1.000 (>0.05). This indicated that there was no effect of 3M FGD treatment in improving the knowledge of the people in the region of Tana Toraja.

Behavior of Respondents in Tana Toraja Regency 2016

Tabel 14. Behavior (Before & After)

			Behavior (after)		
			Good	Less	Total
Behavior (before)	Good	Count	25	2	27
		Expected Count	20.3	6.8	27.0
	Less	Count	5	8	13
		Expected Count	9.8	3.3	13.0
Total		Count	32	30	10
		Expected Count	32.0	30.0	10.0

Chi-Square Tests

	Value	Exact Sig. (2-sided)
McNemar Test		0.453[a]
N of Valid Cases	40	
a. Binomial distribution used.		

Table 14 shows that there were differences of behavior before and after 3M FGD was implemented in the region of Tana Toaja, but after a statistical test using Mc Nemar Test obtained value of 0.453 (>0.05) this indicated that there was no effect of 3M FGD treatment in increasing the knowledge of the community in the region of Tana Toraja.

Density of larvae at Respondent Home of 3M FGD Group in Tana Toraja Regency 2016

Tabel 15. Density of larvae (Before & After)

			Density of larvae (after)		
			Negative	Positive	Total
Density of larvae (before)	Negative	Count	17	6	23
		Expected Count	17.8	5.2	23.0
	Positive	Count	14	3	17
		Expected Count	13.2	3.8	17.0
Total		Count	32	31	9
		Expected Count	32.0	31.0	9.0

Chi-Square Tests

	Value	Exact Sig. (2-sided)
McNemar Test		0.115[a]
N of Valid Cases	40	
a. Binomial distribution used.		

Table 15 shows that there was a difference of density before and after 3M FGD implemented in Tana Toraja, and after a statistical test using Mc Nemar Test obtained value of 0.115 (>0.05). This shows that there was no effect of 3M FGD treatment in reducing density of larvae in the region of Tana Toraja.

Density of larvae at Respondent Home of Focuse Fogging in Tana Toraja Regency 2016

Tabel 16. Density of larvae (Before & After)

			Density of larvae (after)		
			Negative	Positive	Total
Density of larvae (before)	Negative	Count	10	4	14
		Expected Count	11.2	2.8	14.0
	Positive	Count	22	4	26
		Expected Count	20.8	5.2	26.0
Total		Count	32	32	8
		Expected Count	32.0	32.0	8.0

Chi-Square Tests

	Value	Exact Sig. (2-sided)
McNemar Test		0.001[a]

N of Valid Cases	40	
a. Binomial distribution used.		

Table 16 shows that there were differences in density false before and after the Fogging Focus was implemented in the Tana Toraja, and after a statistical test using Mc Nemar Test obtained value 0.001 (<0.05) this indicated that there was influence Fogging Focus treatment in reducing density of larvae in the region of Tana Toraja.

Table 17. Distribution of larvae density index before and after treatment in Tana Toraja Regency Area 2016

Intervention	Larvae density index					
	Larvae Free Rate (%)		House Index (%)		Container Index (%)	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
3M FGD	70	92.5	30	7.5	14.8	2.1
Focus Fogging	55	80	45	20	21.8	5.4
Control	47.5	30	52.5	52.5	23.2	27.3

In Table 17 we can see that the highest House Index before treatment (pretest) was present in the Control Area (52.5%), as well as the Container Index (23.2%). The lowest Index Container was in the 3M treatment area of 3M (14.8%) and for the highest larva-free rate in the 3M FGD treatment area (45%), the lowest Container index was found in the 3M FGM area (30%), 70%), lowest in Control area (47.5%). The House Index after the lowest (postes) treatment was in the 3M FGD treatment area (7.5%) and the highest in the control area (52.5%), the lowest Container Index in 3M DGT treatment (2.1%) and highest of Larvae free rate was present in the 3M FGD treatment area (92.5%).

Table 18. Rate of percentage decrease House Index before and after treatment in Makassar City 2016

Intervention	Before	After	Decrease	Percentage of Decrease
3M FGD	30	7.5	22.5	75%
Focus Fogging	45	20	25	55.5%
Control	52.5	52.5	0	0

Table 18 shows that the decrease percentage of House Index after 3M FGD treatment as much as 75% fogging focus decreased by 55,5%, and control did not show any decrease at all.

IV. DISCUSSION

Dengue Hemorrhagic Fever (DHF) is one of the public health problems in Indonesia, which tends to increase the number of sufferers as well as the widespread spreading in line with the increasing mobility and population density. This research was conducted in the endemic region of dengue hemorrhagic disease (DHF). Termination of the chain of transmission of DHF diseases based on the existing theory that eliminates viruses, isolation of patients, avoid bites and the last is vector control. In this study discussed about vector control which is the main way of control, while the way is divided into two that is by chemistry that is done with fogging focus and environmental management which implemented by Mosquito Nest Eradication (PSN) through Focus Group Discussion about 3M.

A. Limitations

This research can lead to information bias in the form of recall bias where respondents can not answer exactly the questions asked because the respondent must recall what was past. In addition there can be intervierwer bias (interviewer bias) due to the subjectivity or suggestion of the interviewer in the process of data collection. The resulting information is also influenced by the honesty of the respondents, the lack of ability of the interviewer to establish trust with the respondents to make the answers given are not as expected. Another obstacle that is also found during the research is because the majority of respondents' livelihoods of civil servants / farmers and farmers will then examine, the respondents who are elected to represent the research sample are not in place. Another weakness of this research lies in the research method used, so to obtain the constructive indicators of each observed variable has not been met ideally.

B. The Impact of 3M FGD on Knowledge and Behavior

The results showed that 3M FGD did not affect the knowledge and behavior of people in Makassar, Maros, and Tana Toraja. Human behavior is determined by knowledge, attitude and action. In this case, knowledge includes an understanding of aedes mosquitoes, the spread and proliferation of DHF, mosquito bites, infectious diseases,

febrile diseases and lethal diseases, disease symptoms, disease causes, vectors, breeding, prevention activities, biting time and mosquito breeding through 3M.

In this case, behaviors include concrete actions in anticipating the occurrence of DHF such as eliminating any potential associated with mosquito larvae, cleaning water reservoirs, draining long-disused bath tubs, and disposing of used goods. While the action in handling DHF is doing fogging, following the counseling, conduct discussions with community leaders and the government on the prevention of DHF.

The best prevention for DHF can be done through fogging, larvasidation, and mosquito nest eradication (PSN) by 3M ie 1) draining the water reservoirs, 2) closing the water reservoirs tightly, and 3) burying used goods can hold water such as used tin, plastic used, and others. Prevention through 3M is the easiest, cheapest, and safer type of vector prevention and has a high success rate that people can get.

Respondents' knowledge on how to eradicate DHF by 3M is in very good category. This high level of community knowledge allows them to clean the house from mosquito nests. However, the role of formal figures such as health workers and non-formal leaders such as health cadres, and information from the mass media is necessary to ensure continuous sustainability of PSN activities.

Behavior is the reaction of an individual to the stimulus that comes from outside or from within himself. This response can be passive (no action) nor active (with action). Family actions within PSN include their participation in PSN activities that are 3M (drain, close, and bury), participate in the success of prevention and control of DHF disease through mutual assistance to clean up the environment from mosquito breeding and participate in extension activities.

Implementation of 3M FGD activities in Makassar, Maros and Tana Toraja provide encouragement and motivation to the community to do 3M in an appropriate way that is to close, drain and bury / get rid of water reservoir to avoid mosquito breeding. Implementation of 3M which has been less precise, has now turned into the right 3M implementation, namely: 1) Drain the bath / wc and other water reservoirs regularly at least once a week, scrub the inner walls of the bath and all the water containers to get rid of the mosquito eggs, 2) Closing tightly to the water reservoir (jars / buckets, drums, etc.) so that mosquitoes can not get into it, 3) Cleaning the home yard from cans, bottles, used tires, shell, used plastics that potentially become a mosquito breeding.

C. The Impact of 3M FGD on Density of Larvae

The results showed that 3M FGD can decrease the density of larvae in Maros. From 3M FGD it is found that sometimes closing of the water closure is not tight, even some are not closed, whereas the loose bucket / bucket is preferred by mosquitoes to lay eggs because the room is darker. In addition, it also obtained information that there are still people who are less than maximum in cleaning the water reservoir, for example, just replace the water without brushing the walls of the reservoir of water, so that the mosquito eggs remain attached and can continue the life cycle even though the water reservoir is drained at least once in a week. Rough water containment walls can absorb water and dark. This condition is favored by mosquitoes as a place to lay eggs. Mosquito eggs can survive for up to 6 months (Cussi Lestari, 2005), then 3M activities should be done regularly at least once a week. Dewatering is not only done on the bath, but the most important is to brush the inner wall of the bathtub to get rid of mosquito eggs.

D. The Impact of Focuse Fogging on Density of Larvae

Vector control through fogging using malathion is able to lower the House Index. This suggests that fogging focus is effective in lowering the density of Aedes aegipty mosquito larvae. Hasyimi, et al. (2006) states that Malathion is an insecticide that has the most effective effect on reducing larvae. Spraying with malathion may decrease CI by 7.3; HI at 5.8% and BI at 11.2. Winarko (2005) reported that two-cycle fogging at one week intervals was effective in lowering House Index numbers from 56% to 4%. Associated with the results of the above-mentioned research, the control of adult mosquitoes can be done by fogging using insecticides. Insecticides that can be used are from organophosphate groups such as malathion, tenitrathion, synthetic pyretroid groups such as lamda sikalotrin, permethrin and carbamate groups.

Arif widiyanto (2006) said that the DHF vector control program chemically such as fogging and larval control should be done selectively means that it is only used for fogging focus that is fumigation is only done if:

1) House Index at patient's residence location >10% or more than one patient in RW area within one month. Fogging is done throughout the region.
2) In an RW area there are two or more patients with a distance of less than four weeks or a month.

3) In one village area within a week there is an increase in the number of patients twice or more compared to the previous week, it is necessary to fog in all RW areas where there are sufferers in the previous week and ongoing week (last 2 weeks).
4) In a village area within one month there was an increase in the number of patients twice or more compared to the same month of the previous year. Fumigation is done in the existing RW areas of the patient in the past month and ongoing months.
5) In school where the patient is found in school Aedes aegypti, then required fogging in school (if necessary also the houses around it).

Fogging using insecticides can eradicate DHF vectors in a short time, but they need to be followed by mosquito control so that the population can be kept as low as possible so that if there is a DHF sufferer or a person with viremia then it can not be transmitted to others (Arif Widyanto, 2006). In addition to fogging or fumigating insecticides to kill adult mosquitoes, the most effective effort is by destruction / destruction of mosquito nests by 3M (Umar Firdaus, 2005).

The enthusiasm of the community to Makassar, Maros and Tana Toraja to fogging is very high even the heads of RW and RT expect that every time done fogging with notes done for free. But on the other hand, there are also people who like to fogging with the reason difficult to clean residual residue. This illustrates that some people still need to be given an understanding / knowledge of DHF disease and the proper way of handling that is by implementing PSN, in this case is 3M correctly and regularly.

V. CONCLUSIONS

Based on the results of the study it could be concluded that 3M FGD had not been effective to increase knowledge and behavior of people in controlling DHF. On the other hand, 3M FGD and focus fogging were effective in decreasing density of larvae.

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