The Existence of a Relationship Flick Mosquitoes of Aedes aegipty and Implementation with Enhanced Genesis "3M Plus" Dengue Haemoragic Fever in Health Centre of Tigo Baleh Bukittinggi – West Sumatera Indonesia

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Abstract

Background : Dengue Haemorrhagic Fever (DHF) is an infectious disease caused by the dengue virus and transmitted through the bite of the mosquito Aedes aegyptyh. This disease can affect all people and can lead to death. Bukittinggi is not endemic regions, but in almost every year increase in the incidence of dengue, the most widely District of dengue cases is Tigo Baleh, in addition to the smallest area of the region there are also environmental factors that affect dengue cases. This purpose of this study was to determine the relationship of the presence of larvae of Aedes aegypty and implementation "3M Plus" with increased incidence of DHF in Health Centre of Tigo Baleh - Bukittinggi.

Method : This research is an analytical survey with the case-control study design and using the chi square test. Research sites in the District of Tigo Baleh. The independent variables in this study is the presence of mosquito larvae of Aedes Aegipty, and implementation "3M Plus", and the dependent variable is incidence of dengue fever. The research instrument used in this research is questionaire and check-list which is based on the concept of research and the data analysis is bivariate analysis using the Chi-Square test and the degree of confidence (CI) 95% (a = 0.05).

Result : The result of this study found the presence of larvae in the home and 61.5% of DHF patients, who are not suffering from larvae of dengue and by 38.5%. Value of House Index (HI) was 43.6%, Container Index (CI) was 17.9%. "3M Plus" poor implementation and suffering from dengue was 69.2%, while the implementation of good "3M Plus" and suffering from dengue at 30.8%. From the research we have found of p value = 0.003 (p <0.05), there is a relationship between mosquito larvae with increased incidence of DHF, and the value of pvalue = 0.040 (p <0.05), there is a relationship between Implementation of "3M Plus" with an increased incidence of dengue disease.

Conclution: The presence of mosquito larvae are more common in cases than controls in Health Centre of Tigo Baleh - Bukittinggi. The implementation of "3M Plus" much more poorly than the control in the case of Health Centre of Tigo Baleh - Bukittinggi. The incidence of DHF in cases comparable to controls in Health Centre of Tigo Baleh Bukittinggi. It is recommended that the City Health Department and the Health Centre of Tigo Baleh socializing and empowering people to participate and perform Aedes aegypty mosquito nest eradication or eradication of dengue mosquito breeding sites on a regular basis so as to reduce the incidence of dengue disease.

Keywords : *Flick mosquitoes, Aedes Aegipty, Dangue Haemoragic Fever, Health Centre*

Introduction

The progress of national development for decades in Indonesia have an impact on the health sector, despite recent years of economic crisis. The decription of Indonesian society in the future to be achieved through the development of public health, the nation and the state characterized by a population living in a healthy environment, have the ability to maintain, and has a medical degree the highest degree throughout the territory of the Republic of Indonesia[1]. Health optimal for society, organized effort to approach health maintenance, health improvement (promotion), disease prevention (preventive), cure (curative), restoration of health (rehabilitative), and traditional health care efforts are fully implemented, integrated and sustainable effecfive[2].

To achieve an optimal degree of public health Disease Eradication Program activities focused on preventing infectious diseases, reduce morbidity and mortality and reduce the harmful effects of infectious and non-communicable diseases. Infectious diseases remains a priority issue in the development of public health in Indonesia. In the list of Communicable Disease Surveillance (CDS), (SK Menkes. No.145710 October 2003) a number of infectious diseases that must be included as a matter of priority by the region. Infectious disease problems are still a concern, even some types of diseases has been increasing and has not managed to overcome such as pulmonary tuberculosis, malaria, and dengue fever dengue[3].

Dengue Haemorrhagic Fever (DHF) is an infectious disease caused by the dengue virus and transmitted through the bite of the mosquito Aedes aegipty. This disease can affect all people and can lead to death[4] . Generally affects children under the age of 15 years, but can also affect adults, and often lead to Extraordinary Events[5].

Data from around the world suggests that Asia ranks first in the number of dengue fever each year. Meanwhile, starting from 1968 to 2009, WHO noted that Indonesia as the country with the highest dengue cases in Southeast Asia and the second highest in the world after Indonesia is Thailand[6]. At the outbreak of dengue fever occur for the first time found in Surabaya in 1968[7]. The Ministry of Health said Indonesia is still a hotbed of cases of dengue fever or already endemic. Until the middle of this year, cases of dengue fever occurred in 31 provinces with the 48,905 patients, 376 were died. The number of patients with dengue fever in the first half of the year showed an increase compared to the last year[8].

DHF is endemic in almost all provinces in Indonesia[9]. Within the last 5 years the number of cases and the affected area continues to increase and spread. It is estimated that each year there are 300 million cases in Indonesia, 500,000 cases of DHF require hospitalization and at least 12,000 of them died, especially children[10].

DHF prevention and eradication programs have lasted approximately 43 years and succeeded in reducing the death rate from 41.3% to 0.87% in 2010, but has not been successful in reducing the amount kesakitan[11]. Tends to increase, the more widely spread, attacking not only the child ren but also older age groups. In the year 2011 until August recorded 24 362 cases with 196 deaths (CFR: 0.80%)[6]. In 2012 the number of dengue patients reported in Indonesia as many as 90,245 cases with 816 deaths (Inciden Rate = 37.11 per 100,000 population and CFR = 0.90%). An increasing number of cases in 2012 than in 2011, which amounted to 65,725 cases with IR 27.67. In line with the increase in the number / amount of morbidity District / City of dengue disease in 2012 also increase from 374 (75.25%) into 417 districts / cities (83.9%)[11].

To overcome the problem of dengue in Indonesia since 2004 the Ministry of Health has been working closely with the Provincial Health Office and District Health Office / City to implement a national program of dengue prevention. The program includes epidemiological surveillance / early warning systems and prevention of outbreaks, counseling, vector eradication by spraying for adult mosquitoes, focus and larvae periodic inspection, land vector surveys. It also made cooperation between programs through National Working Group of DHF and devotion months 3M movement, treatment / case management, including procurement of training and advice to doctors buffer stock outbreaks of DHF[12].

Based on the Health Profile of West Sumatra in 2012, there are some districts / cities in West Sumatra are included in the endemic area of the city of Padang with a number of 1,626 cases per 100,000 population (868 male cases and 758 cases of Women), South Coastal District with number of 634 cases per 100,000 population (305 male cases and 329 cases of Women), Bukittinggi the number of 107 cases per 100,000 population (men and Women 54 cases 53 cases)[13].

Bukittinggi into third place in the rise in cases of dengue fever which consists of 3 sub-district village is divided into 24 sub-district is a district Mandiangin Koto Selayan widest (12.16 km2), w Aur Birugo hich consists of 9 wards. Subdistrict Guguk length of 6.83 km2 consists of 8 villages. While the District Tigo Baleh is the smallest which has an area of 6.25 km2, consists of 8 wards. Bukittinggi is not predicted endemic area since geographically height of more than 900 m above the sea water level[14]. Where at the height of Aedes aegipty mosquitoes can not breed. But because of the high population mobility, globalization changes also affect this case. In Bukittingg during the year 2010-2013 has been recorded dengue cases has increased from year to year which means it can be seen in the following graph:

Graph 1.1
The Number of DHF Cases in Bukittinggi
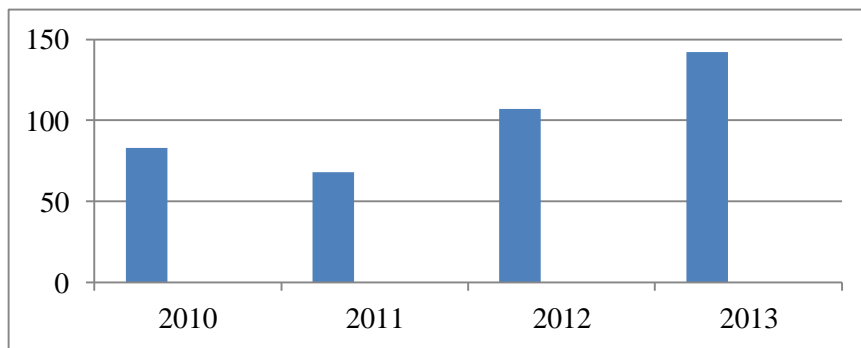
Source: Bukittinggi's Health Office Profile 2010 – 2013

Based on the chart above in 2010, dengue cases 83 cases, decreased in 2012 to 68 cases in 2012 and 107 cases rise again, so that by the year 2013 has not decreased 142 cases reported from the respective health centers found in Bukittinggi.

7 health centre annual report data in 2013 the number of dengue cases can be seen in the following graph:

Graph 1.2
The Number of DHF Cases in Bukittinggi in 2013
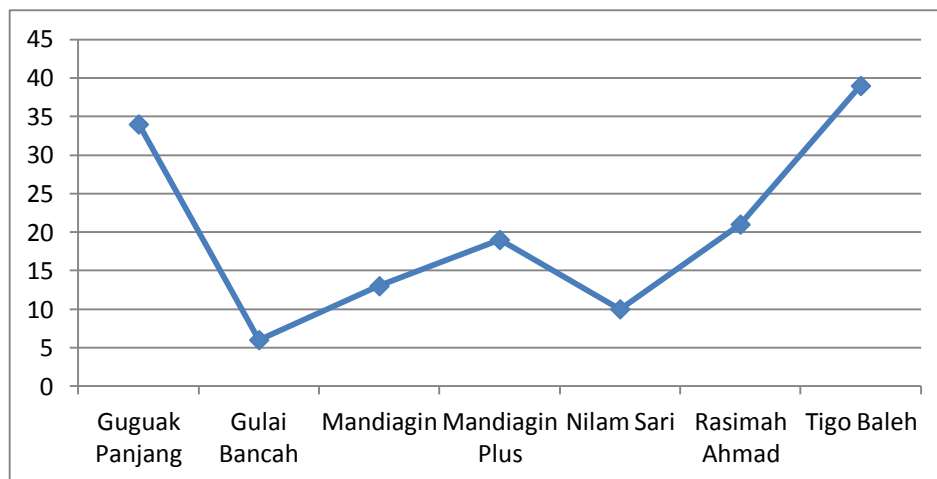
Source : Annual Health Centre reports in 2013

Based on the chart above that the health centre has the highest dengue cases by 39 case is Tigo Baleh Health Centre. In this case, if viewed geographical circumstances Bukittinggi comprising, among others, the Tigo Baleh District is the smallest 6,25km2 who have extensive, consisting of 8 villages which became the Health Centre of Tigo Baleh. During the 2013 dengue cases were recorded in health centers spread across 8 villages can be seen in the following table:

Table 1.1
DHF Cases in Health Centre of Tigo Baleh during 2013

No	Villages	M+F	Month													Amount
			1	2	3	4	5	6	7	8	9	10	11	12	
1	Belakang Balok	2	0	0	0	0	0	0	0	1	0	0	0	1	2
2	Sapiran	14	2	2	2	2	1	3	1	1	0	0	0	0	14
3	Birugo	15	1	0	0	1	5	5	0	1	0	0	1	1	15
4	Aur Kuning	2	0	0	0	0	0	1	0	0	0	0	0	1	2
5	Pakan Labuah	2	0	0	0	0	0	0	0	0	0	1	1	0	2
6	Parit Antang	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	Ladang Cakiah	2	0	0	0	0	0	0	1	0	0	1	0	0	2
8	Kubu Tanjung	2	0	0	0	0	0	1	0	0	0	1	0	0	2
	Total														39

Source : Monthly Health Centre of Tigo Baleh From Holder DHF Surveillance Program

Based on table 1.1 above it can be concluded that the village Birugo is the highest dengue cases. The Health Centre of Tigo Baleh supported by the local government made various efforts to cope with the rise of dengue cases is to hold a variety of counseling about the dangers, prevention and control of Aedes aegipty mosquitoes through mosquito nest eradication program. The main effort, easy and cheap focused on community is doing in a way that the management of the physical environment with "3M plus". Larvae periodic monitoring activities are also regularly conducted through interpreter looking for larvae cadres who have been trained, as well as selective abatization activity is the provision of abate powder in schools, public places and houses with positive larvae.

However, until now, the efforts to eradicate dengue vector that has been done has not shown that the optimal results of dengue cases and still high and increasing every year in the Health Centre of Tigo Baleh. Interviews and observation in the community showed that they rarely perform activities of mutual aid to clean up the environment, there are still visible chunks places the cans into a puddle of water and become mosquito breeding places.

In connection with the discovery of drugs that have not been able to kill the dengue virus, and the lack of an effective vaccine to prevent it, the prevention of the spread of the disease is more aimed at the eradication of vector[15]. The most appropriate way to eradicate the mosquito Aedes aegipty is to eliminate mosquito larvae breeding place. Dengue mosquito nest eradication can be done with "3M methods" and techniques of abatization. The "3M program" that consists of: bathtub drain once a week, closed water reservoirs both inside and outside the home and bury secondhand items that can collect rain water and allow stagnant water in it[16].

Method
This research is an analytical survey with the case-control study design and using the chi square test. Research sites in the District of Tigo Baleh. The independent variables in this study is the presence of mosquito larvae of Aedes aegipty, and implementation "3M Plus", and the dependent variable is incidence of dengue fever. The research instrument used in this research is questionaire and check-list which is based on the concept of research and the data analysis is bivariate analysis using the Chi-Square test and the degree of confidence (CI) 95% (a = 0.05).

Result – Origional Research
a. The existence of a relationship Flick Aedes aegipty with Increased incidence of DHF
Based on the research results obtained, known relationship Aedes aegipty mosquito larvae presence with an increased incidence of DHF can be seen in table 1.2 below:

Table 1.2
The existence of Relationship Flick Aedes Aegipty with Increase of DHF at
Health Centre of Tigo Baleh

Existence of Larvae	DHF				*P* value	Odds Ratio (OR)	CI 95%
	Cases		Control				
	f	%	*f*	%			
Larvae	24	61,5	10	25,6			1,766
No Larvae	15	38,5	29	74,4	0,003	4,640	–
Total	39	100	39	100			12,189

Based on Table 1.2 above it can be seen that the presence of there is alarvae and suffering from dengue was 61.5%, whereas larvae and while not suffering from dengue was 25.6%. From the statistical result obtained p value = 0.003 (p <0.05), its mean that there is a relationship between the Aedes aegipty mosquito larvae with an increased incidence of DHF and Odds Ratio (OR) = 4.64 means that the risk of mosquito larvae found 4.64 times suffer from dengue fever compared with homes that are not found mosquito larvae.

b. The Implementation of "3M Plus" and relationship with Increased incidence of DHF

Based on the research results obtained, The Implementation of 3M Plus and relationship with the increased incidence of DHF can be seen in Table 1.3 below:

Table 1.3
Implementation of 3M Plus and Relationship With Increased incidence of DHF in Health Centre of Tigo Baleh Baleh

Implementation 3M Plus	DHF				*P* value	Odds Ratio (OR)	CI 95%
	Cases		Control				
	f	%	*f*	%			
Not good	27	69,2	17	43,6			1,150 – 7,272
Good	12	30,8	22	56,4	0,040	2,912	
Total	39	100	39	100			

Based on Table 1.3 shows that the respondents with 3M Plus not good implementation by 27 (69.2%) cases, while respondents are not good by control implementation 3M Plus by 17 (43.6%) to obtain a p-value of 0.04 (p <0.05), meaning that the implementation of 3M Plus has a relationship with an increased incidence of DHF and Odds Ratio (OR) = 2.912 means that people who are less good implementation Plus 3M would risk 2,912 times dengue disease compared with people who either implementation of 3M Plus.

Discussion

Bukittinggi into third place in the rise in cases of dengue fever which is spread over 3 district and the district of Tigo Baleh is the smallest sub-district has an area of 6.25 km2, the number of people in this district in 2013 was 25,311 spread over 8 villages and recorded highest dengue cases in Bukittingg, the demographic and geographic conditions unfavorable as: a very dense settlement, the distance between the houses with each other quite a meeting, and generally around the districts inhabited have a pool. In addition, there is a less clean environment is also a lot of junk like old tires, buckets bottles, and jars former. This can lead to an increase in the number of mosquito breeding places of Aedes aegpytyi which may result in an increased incidence of dengue disease.

The existence of a relationship Flick Aedes aegipty with Increased incidence of DHF

Based on the research that has been done can be seen that respondents who larvae of 24 cases (61.5%), while respondents larvae controls 10 (25.6%). So that the p-value of 0.003 was obtained (p <0.05), means the existence of Aedes aegypti mosquito larvae have a relationship with an increased incidence of DHF and Odds Ratio (OR) = 4.64 means that the risk of mosquito larvae were found to suffer from the disease of 4.64 times DBD is compared with homes that are not found mosquito larvae. Based on observations can be concluded that the predicted of Bukittinggi not due to dengue endemic areas geographically height of more than 900 m above sea level, where the height of the mosquito Aedes aegipty can not reproduce. But the reality on the ground is still found in the environment where larvae therefore district of Tigo Baleh not belong to free mosquitoes number so that the larvae become positive factors driving the increasing incidence of dengue in Bukittinggi.

This shows that there are still people in the this district who have not done in the form of dengue disease prevention, which is to prevent DHF, mosquito transmission must be eradicated, because there is no vaccine to prevent it. The proper way to eradicate the mosquito Aedes aegppty is to eliminate the larvae in the breeding.

Based on this research that has been done by Sulina, 2012 in line with the results of the study investigators obtained using the Fisher Exact test p-value of 0.002 (p <0.005) which means that the presence of larvae has a significant relationship with the occurrence of dengue disease in Environmental of Binjai village. According to the researchers assumed that the relationship where the Aedes aegipty mosquito larvae with an increased incidence of dengue disease, because of mosquito vectors of dengue disease, and the presence of mosquito larvae are found to have a great chance of occurrence of dengue disease in environment.

The Implementation of 3M Plus and Relationship with Increased Incidence of Dengue fever

Based on the research that has been conducted with results indicating unfavorable cases respondents of 3M Plus implementation by 27 (69.2%), while respondents are less good control implementation of 3M Plus by 17 (43.6%) in order to obtain the p-value of 0.04 (p <0.05), means that the implementation of 3M Plus has a relationship with an increased incidence of DHF and Odds Ratio (OR) = 2.912 means the poor implementation of the 3M Plus will be at risk of suffering from DHF 2,912 times compared to the good implementation of the 3M Plus.

To prevent DHF right way to eradicate the Aedes aegipty mosquito, namely: 1) with insecticide, 2) without insecticides is the most important in the vector control is environmental management with a view to prevent or reduce the development of vector and human contact, vectors, pathogens. Eradication of the larvae (larvae) Aedes aegipty is known as eradication of mosquitoes breading places is done with (chemical, biological, and physical / Movement 3M Plus), each family must implement regularly at least once a week.

The results of this study are consistent with the results of the research that has been done by Sulina, 2012 that stated there is a connection with the implementation 3M Plus incidence of dengue disease in Environmental Binjai village, which analyzes the results obtained using the Fisher Exact test p value of 0.047 (p-value <0.005) . According to the researchers assumptions are by and large implementation of 3M Plus included in either category, but there are 27 respondents who are still in the unfavorable category. This can have an impact on the increasing number of shelters water potential breeding places so as to boost the occurrence of dengue cases. 3M Plus implementation actions are still not good this shows that there is still a lack of public awareness of the importance of maintaining the cleanliness of the environment or residence in order to prevent the occurrence of dengue disease. So it is necessary to increase the motivation to make the public more effectively through the provision of counseling 3M Plus mutual help clean up the environment provided by the local government officials, such a the local health center and counseling. In addition to

increased motivation, coaching also needs to be done to community groups, such as youth clubs, adolescents mosque in order to improve the implementation of preventive measures such as regular 3M Plus.

Conclusion

From this study it can be concluded that the existence of mosquito larvae are more common in cases than in controls in this Health Centre of Tigo Baleh, the Implementation of 3M Plus much more unfavorable in cases than in controls in this health centre, and the incidence of DHF in cases comparable to controls in this health centre. Advisable to the health centre to conduct a more intensive counseling and sustainable and health promotion regarding dengue disease and invidu both groups when visiting health centre as an effort to improve behavior and increase the eradication of breading places of DHF larvae periodic monitoring activities for once a week.

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