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The Effect of The Implementation of The Key Environmental Health System With The Event of Dengue Hemorrhagic Fever (DHF)

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Abstract- Dengue Hemorrhagic Fever (DHF) is one of the major public health problems around the world. Malaria is still endemic in certain areas, especially in tropical countries such as Asia and Africa. This disease is also one of the biggest killers, 86% of deaths occurred in groups with high risk factors such as infants, children under five and pregnant women. The purpose of this study was to assess environmental management of the incidence of DHF in Banjar Regency, South Kalimantan.

Index Terms- *Dengue Hemorrhagic Fever (DHF), Environmental Health, Banjarbaru*

I. INTRODUCTION

Dengue Hemorrhagic Fever (DHF) is one of the major public health problems around the world. Malaria is still endemic in certain areas, especially in tropical countries such as Asia and Africa. This disease is also one of the biggest killers, 86% of deaths occurred in groups with high risk factors such as infants, children under five and pregnant women (Kemenkes RI, 2011).

Children under 5 years and pregnant women are the most affected population groups. Dengue Hemorrhagic Fever (DHF) can cause serious disorders and anemia in pregnancy which can cause maternal death, low birth weight (LBW) which is a risk factor for infant mortality. Besides death, Dengue Hemorrhagic Fever (DHF) causes pain such as fever, weakness, malnutrition, anemia, abnormalities in the spleen, and susceptibility to other diseases. According to Bremen in Pattanayak (2003), people with dengue hemorrhagic fever (DHF) experience asymptomatic parasitemia, acute fever, chronic debility, and complications in pregnancy.

According to WHO reports, around 250 million new cases of Dengue Hemorrhagic Fever (DHF) are found every year with nearly 880,000 death cases. The incidence of Dengue

Hemorrhagic Fever (DHF) throughout Indonesia tends to decrease from 4.10% (in 2005) to 1.38% (in 2013), but has not reached the target yet that set at 1.25%. In addition to the progress that has been made, there are still many obstacles that must be faced, including the access to services in remote areas, considered as neglected diseases, epidemiological disparities, management weaknesses, especially limited in competent resources, inadequate funding, weak cross-sectoral cooperation and community independence in controlling Hemorrhagic DHF (DHF).

DHF in Indonesia tends to increase the number of sufferers and is increasingly widespread. In 1968 the disease was only infected in Jakarta and Surabaya. Twenty years later, DHF has plagued 2011 Dati II throughout Indonesia. The increase in the number of sufferers occurs periodically every 5 years. The last extraordinary incident was in 1988 with the number of patients hospitalized for 47,573 people, with the number who died was 1,527 (CFR 3.2%). Initially it was thought that DHF only occurs in urban areas but it this assumption is wrong, because now it is found in many rural areas.

There are 424 districts in Indonesia that are endemic to Dengue Hemorrhagic Fever (DHF) from 576 existing districts, it is estimated that 45% of Indonesia's population is at risk of contracting Dengue Hemorrhagic Fever (DHF). The number in 2009 was 1,143,024 clinical Dengue Hemorrhagic Fever (DHF), 200,000 were examined with confirmation. This number may be smaller than the actual situation because malaria endemic locations are remote villages with difficult transportation facilities and low access to health services (Kemenkes RI, 2010).

Based on the data, if compared to 2016, the trend of dengue cases has decreased. Because, in January 2016, there were 1,890 cases of DHF in South Kalimantan, which took 14 people dead. Then, February 2017 there were 1,358 cases with 5 fatalities. It was recorded that until early April 2016, the number of dengue cases that occurred had reached 3,359 cases, with the death toll increasing to 22 people.

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The number of DHF sufferers rose sharply by 1,350 cases when it is compared to the previous month. The areas where DHF are most affected include Banjarbaru, Banjar Regency, Tabalong, Tanah Bumbu, Hulu Sungai Selatan, and Hulu Sungai Tengah. In 2015, the number of dengue cases was 3,668 with the deaths case reaching 40 people. Apart from DHF, South Kalimantan is also an area prone to malaria attacks. The Health Office of South Kalimantan noted that there were 155 villages and sub-districts or about 10 percent of the number of villages / kelurahan prone to or in the red category of malaria.

Increased attack Dengue Hemorrhagic Fever (DHF) in South Kalimantan it is quite confusing to the public, the problem is this region constantly taking control of contagious diseases even spent a billion rupiah to eradicate the contagious diseases. Another confusion grew again after seeing the attack of Dengue Hemorrhagic Fever (DHF) now it is not only in rural communities but is spreading in urban areas. A comprehensive approach to the incidence of DHF in South Kalimantan, especially in Banjarbaru needs to pay attention to aspects of the physical environment, social environment and aspects of management consisting of programs or policies, regulations, technical operations and public awareness as an effort to reduce the incidence of DHF.

II. RESEARCH METHOD

Research design

This research is an observational study with a case control study design, while the type is explanatory that is to explain the causal relationship between variables through hypothesis testing and by using a survey method, when the researcher takes a sample from population data and uses a questionnaire as a tool for collecting the data through on line.

Population and Sample

The population in this study were the people of Banjar Regency which were spread over 19 Districts, There are Aluh-Aluh District, Beruntung Baru District, Gambut District, Kertak Hanyar District, Tatak Makmur District, Sungai Tabuk District, Martapura Barat District, Martapura Timur District, Martapura Kota District, Karang Intan District, Astambul District, Mataraman District, Simpang Empat District, Pangaron District, Sambung Makmur District, District Sungai Pinang, Telaga Bauntung District, Aranio District, and Peramasan District. 19 districts details are divided into 284 kelurahan / villages. The smallest population unit is the households (KK). The number of households in Banjar Regency is 170,859 households (KK), with a total population of 542,204 people.

The sample of this study were households in endemic areas, non-endemic areas and officers who handled DHF prevention at the Banjar District Health Office. The minimum sample size is calculated based on the formula:

$$n = N Z^2 p (1-p) / N d^2 + z^2 p (1 - p)$$

Information :

n = Sample size

N = population size

Z = Standard Value (1.96 = $\alpha = 5\%$)

d = the deviation that can be tolerated (0.1)

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P = probability of an event (0.5)

By using this formula, the sample size is 96 samples.

Research variable

The independent variable in this study is a variable density of inhabitants, humidity, breeding places, resting places, the presence of larvae, the habit of draining the landfill, the habit of closing the landfill tightly, the habit of getting rid or recycling used items, putting up wire netting, the habit of hanging clothes, the habit of sleeping using mosquito nets, the habit of using anti mosquitoes, napping habits, yard cleaning habits, and environmental management. Meanwhile, the dependent variable in this study was the incidence of DHF.

Research Tools and Data Collection Methods

The tools and materials used in this study were stationery, computers to process data, and questionnaire sheets. The questionnaire is a list of questions arranged in a structured manner based on the variables studied. The data collected is secondary data by conducting a document study / archive of routine Puskesmas reports in the working area of the Banjar District Health Office. Meanwhile, primary data is obtained by means of observation / observation.

Interviewers who have been trained to take measurements using a questionnaire to determine habits and a hygrometer to measure temperature and humidity against the condition of the respondent's house by visiting each respondent's house and also by making observations or observations. Interviewers who have been trained to take measurements using a questionnaire to determine habits and a hygrometer to measure temperature and humidity against the condition of the respondent's house by visiting each respondent's house and also by making observations or observations on line and through health center officers.

Data Processing and Analysis Techniques

Existing data were analyzed using:

1. Univariate analysis to determine the description of the research variables.
2. Bivariate analysis to determine the significance of the relationship (P) and the amount of risk (OR) as well as to select the variables to be analyzed Multivariate (P <0.05).

III. FINDINGS

A. Univariate Analysis

This analysis aims to obtain an overview of the frequency distribution data for each variable, there are the dependent variable (incidence of DHF) and the independent variable (occupancy density, humidity, breeding places, resting places, the presence of larvae, habit of draining the landfill, habit of closing the landfill, habit of getting rid or recycling used items, putting gauze, hanging clothes, sleeping using mosquito nets, using mosquito repellent habits, napping habits, cleaning the yard, and environmental management). The description of the independent and dependent variables is as follows:

1. **Distribution of the frequency of DHF incidence and the characteristics of respondents and the variables in Banjar Regency**

DHF incidence	Frequency (Person)	Percentage (%)
Yes	30	100
Not	0	0
amount	30	100

Age	Frequency (Person)	Percentage (%)
10-15	3	10
16-20	2	6.6
21-25	6	20
26-30	2	6.6
31-35	7	23.3
36-40	5	16.7
41-45	4	13.4
46-50	1	3.3
amount	30	100

Profession	Frequency (Person)	Percentage (%)
Housewife	10	33.3
Civil servants	3	10
Student	6	20
College student	2	6.7
General employees	3	10
Entrepreneur	6	20
amount	30	100

Occupancy Density	Frequency (Person)	Percentage (%)
Qualify	25	83.3
Not qualify	5	16.7
Amount	30	100

Humidity	Frequency (Person)	Percentage (%)
Moist	5	16.7
Not Moist	25	83.3
Amount	30	100

Missing Mosquitoes	Frequency (Person)	Percentage (%)
Yes	26	86.7
Not	4	13.3
Amount	30	100

Mosquito Rest	Frequency (Person)	Percentage (%)
Yes	27	90
Not	3	10
Amount	30	100

The existence of larva	Frequency (Person)	Percentage (%)
Yes	22	73.3
Not	8	26.7
Amount	30	100

The existence of larva	Frequency (Person)	Percentage (%)
Yes	22	73.3
Not	8	26.7
Amount	30	100

The habit of draining the landfill	Frequency (Person)	Percentage (%)
Yes	26	86.7
Not	4	13.3
Amount	30	100

Habit of Closing TPA Meetings	Frequency (Person)	Percentage (%)
Yes	26	86.7
Not	4	13.3
Amount	30	100

The habit of getting rid of / recycling used goods	Frequency (Person)	Percentage (%)
Yes	11	36.7
Not	19	63.3
Amount	30	100

Installing Wire Mesh	Frequency (Person)	Percentage (%)
Yes	16	53.3
Not	14	46.7
Amount	30	100

Hanging clothes	Frequency (Person)	Percentage (%)
Yes	26	86.7
Not	4	13.3
Amount	30	100

Sleeping Habits Using a Mosquito Net	Frequency (Person)	Percentage (%)
Yes	14	46.7
Not	16	53.3
Amount	30	100

Habit of Using Anti Mosquito Drugs	Frequency (Person)	Percentage (%)
Yes	29	96.7
Not	1	3.3
Amount	30	100

Nap Habits	Frequency (Person)	Percentage (%)
Yes	20	66.7

Nap Habits	Frequency (Person)	Percentage (%)
Not	10	33.3
Amount	30	100

Page Cleaning Habits	Frequency (Person)	Percentage (%)
Yes	23	76.7
Not	7	23.3
Amount	30	100

Environmental Management	Frequency (Number of Selects)	Percentage (%)
Fogging	18	40
Extension	6	13.3
Larva Inquiry	7	15.6
Giving Abate Powder	11	24.4
There is no	3	6.7
Amount	45	100

B. Bivariate Analysis

This analysis is needed to examine the relationship of the dependent variable, there are the incidence of DHF with each of the independent variables, namely occupancy density, humidity, breeding places, resting places, the presence of larvae, the habit of draining the landfill, the habit of closing the landfill, the habit of getting rid of or recycling used goods, putting gauze, the habit of hanging clothes, the habit of sleeping using a mosquito net, the habit of using mosquito repellent, the habit of taking a nap, the habit of cleaning the yard, and environmental management.

1. The relationship between the incidence of DHF and the variables

DHF incidence	Occupancy Density				Total		p-value
	Qualify		Not eligible		N	%	
Yes	14	93.3	1	6.7	15	100	0.330
Not	11	73.3	4	26.7	15	100	

DHF incidence	Moisture				Total		p-value
	Moist		Not Moist		N	%	
Yes	1	6.7	14	93.3	15	100	0.330
Not	4	26.7	11	73.3	15	100	

DHF incidence	Missing Mosquitoes				Total		p-value
	Yes		Not		N	%	
Yes	13	86.7	2	13.3	15	100	1,000
Not	13	86.7	2	13.3	15	100	

DHF incidence	Mosquito Rest		Total		p-value		
	Yes	Not	N	%			
Yes	14	93.3	1	6.7	15	100	1,000
Not	1	6.7	14	93.3	15	100	

	N	%	N	%	N	%	p-value
Yes	15	100	0	0	15	100	
Not	12	80	3	20	15	100	

DHF incidence	The existence of larva				Total		p-value
	Yes		Not		N	%	
Yes	11	73.3	4	26.7	15	100	1,000
Not	11	73.3	4	26.7	15	100	

DHF incidence	The habit of draining the landfill				Total		p-value
	Yes		Not		N	%	
Yes	13	86.7	2	13.3	15	100	0.651
Not	11	73.3	4	26.7	15	100	

DHF incidence	Habits of Closing the landfill				Total		p-value
	Yes		Not		N	%	
Yes	13	86.7	2	13.3	15	100	0.651
Not	11	73.3	4	26.7	15	100	

DHF incidence	The habit of getting rid of / recycling used goods				Total		p-value
	Yes		Not		N	%	
Yes	6	40	9	60	15	100	0.705
Not	5	33.3	10	66.7	15	100	

DHF incidence	Installing Steel Wire				Total		p-value
	Yes		Not		N	%	
Yes	8	53.3	7	46.7	15	100	1,000
Not	8	53.3	7	46.7	15	100	

DHF incidence	The Habit Of Hanging Clothes				Total		p-value
	Yes		Not		N	%	
Yes	13	86.7	2	13.3	15	100	1,000
Not	13	86.7	2	13.3	15	100	

DHF incidence	Sleeping Habits Using a Mosquito Net				Total		p-value
	Yes		Not		N	%	
Yes	7	46.7	8	53.3	15	100	1,000
Not	7	46.7	8	53.3	15	100	

DHF incidence	Habit of Using Anti Mosquito Drugs				Total		p-value
	Yes		Not		N	%	
Yes	14	93.3	1	6.7	15	100	1,000
Not	1	6.7	14	93.3	15	100	

Not	15	100	0	0	15	100
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DHF incidence	Nap Habits				Total		p-value
	Yes		Not		N	%	
	n	%	n	%			
Yes	9	60	6	40	15	100	0.439
Not	11	73.3	4	26.7	15	100	

DHF incidence	Home Page Cleaning Habit				Total		p-value
	Yes		Not		N	%	
	N	%	n	%			
Yes	11	73.3	4	26.7	15	100	1,000
Not	12	80	3	20	15	100	

IV. CONCLUSION

Based on the results of research that has been conducted in the Banjar Regency area on "The Effect of Key Environmental Health Systems with the Incidence of Dengue Hemorrhagic Fever (DHF)" it can be concluded that:

1. There is no relationship between the incidence of DHF and occupancy density (p-value: 0.330)
2. There is no relationship between the incidence of DHF and humidity (p-value: 0.330)
3. There is no relationship between the incidence of DHF and mosquito breeding sites (p-value: 1,000)
4. There is no relationship between the incidence of DHF and mosquito resting places (p-value: 0.224)
5. There is no relationship between the incidence of DHF and the presence of larvae (p-value: 1,000)
6. There is no relationship between the incidence of DHF and the habit of draining the landfill (p-value: 0.651)
7. There is no relationship between the incidence of DHF and the habit of closing TPA (p-value: 0.651)
8. There is no relationship between the incidence of DHF with the habit of getting rid of or recycling used goods (p-value: 0.705)
9. There is no relationship between the incidence of DHF and installing wire mesh (p-value: 1,000)
10. There is no relationship between the incidence of DHF and the habit of hanging clothes (p-value: 1,000)
11. There is no relationship between the incidence of DHF and the habit of sleeping between the incidence of DHF and the habit of sleeping using a mosquito net (p-value: 1,000)
12. There is no relationship between the incidence of DHF and the habit of using mosquito repellent (p-value: 1,000)
13. There is no relationship between the incidence of DHF and napping habits (p-value: 0.439)
14. There is no relationship between the incidence of DHF and the habit of cleaning the house yard (p-value: 1,000)

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