

Endemicity of Lymphatic Filariasis in Belitung Regency Post Elimination

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Abstract—Elimination of filariasis was launched in 2002 in South Sumatra with the target in 2020 elimination has been done in all endemic regencies. This study aims to obtain factors that cause treatment failure in the prevention of filariasis as well as community based filariasis control efforts. This research has been conducted in Belitung Regency. The research activities included interviews, finger blood surveys of 671 residents, focus group discussions and in-depth interviews. Finger blood surveys in two villages in Belitung Regency obtained a microfilaria rate in Lasar Village, Membalong Sub District of 5.1% (16 of 311) and Suak Gual Village, Selat Nasik Sub District for 2.2% (8 of 360). The population who had received drugs in the filariasis MDA activity in Lasar Village was 62.4% and SuakGual Village was 57.7%. The results of in-depth interviews with cadres and community leaders revealed that some residents did not take filariasis prevention medication because of the side effects of the drug and felt they did not need the drug. The results of an environmental survey found a pool of water overgrown with water plants around the residential areas in Lasar Village and SuakGual Village that have the potential to breed habitat for *Mansonia* sp. as the main vector filariasis of *Brugia malayi*.

Keywords: *filariasis, endemic, mansonia breeding place.*

I. INTRODUCTION

Lymphatic filariasis, commonly known as elephant foot disease and is a neglected tropical disease. Infections can occur in humans with mosquito as vectors. In 2018, a total of 893 million people in 49 countries lived in areas that carried out preventive medicine activities to stop transmission [1].

Indonesia is one of the countries that are conducting elimination filariasis activities. The number of chronic filariasis in Indonesia is 10,846 spread in 380 districts in 34 provinces. The number of districts endemic to 236 from 514 districts in Indonesia. The activities of mass drug administration (MDA) filariasis in Indonesia has been conducted since 2006, with treatment coverage ranging from 15.40% (year 2006) to 78% (year 2019). The minimum Target coverage of MDA filariasis per year is at least 65% of the county's total population. A total of 118 districts have finished doing MDA for 5 years round and 30 districts have been declared elimination of filariasis [2], [3].

Belitung Regency is one of the districts that have completed the MDA 5-year round and have received a certificate of elimination filariasis from the Ministry of Health of the Republic of Indonesia in 2017. Based on the results of the 2017 research in Belitung district is still found a new case with *Microfilaria* rate (Mf rate) of 1.3% [4] so it is necessary to do further research to evaluate the implementation of the program filariasis elimination in Belitung Regency. The purpose of this research is to evaluate the implementation of MDA filariasis resulting in the failure of treatment that has been done so that there is still a new filariasis sufferer.

II. METHOD

A. Study area

The design of this study is a cross section with survey methods. The research was conducted in two villages in Belitung regency for eight months (April-

November 2019). The chosen village is a village reporting a chronic case. The number of samples for finger blood surveys per village revered by Ministry of Health [5].

The population criteria interviewed were people over 17 years old and those examined in blood were over five years old and willing to be involved in the study by signing informed consent. Sample criteria for blood tests are residents aged over 5 years.

B. Interview of the population

Before finger blood survey at night, the first visit to a resident's home for interviews in adult populations (over 17 years old). The interview was conducted by a trained officer. Questions posed in the questionnaire include the knowledge and behaviour of the community in connection with the program of the filariasis in the research site. Questions about the behavior of subjects aged less than 17 years are represented by parents or family subjects.

C. Blood Surveys

Blood screening is done at the Village Office, Public Health Center, or location that is easily accessible by residents. The residents who came to register and were given explanations about the intent and purpose of the research activities. People who are willing to be involved will sign informed consent, and do a finger blood sampling as much as 60µL. Blood samples were made of three lines of thick blood, each with a volume of 20µL[5].

Blood samples were left in room temperature for 24 hours, and then carried out dehemoglobination by soaking in aquades for 10-20 minutes. Then the slide is arranged on the coloring rack until it dries. After the slide is dry, dipped in methanol absolute for 1 second, and is given coloration with a 3% giemsa. The colored slides are read under the microscope with 10x magnification for the identification of Microfilaria. When a Microfilarian is found in a slide, further examination is performed with a magnification of 40x to identify the species and density of microfilaria per slide [6].

III. RESULTS

The study was conducted in two villages, namely the villages of Suak Gual and Lassar. The results of the analysis of knowledge and behavior about filariasis are presented in tables 1-3

Table 1. Knowledge level about filariasis

Village	Knowledge level		Total	P value	95% CI
	Low	High			
Lassar	238 (83.8%)	46 (16.2%)	284 (100%)	0,035	1.049- 2.427
Suak Gual	214 (76.4%)	66 (23.6%)	280 (100%)		
Total	452 (80.1%)	112 (19.9%)	564 (100%)		

Table 2. The Proportion of people who get drugs filariasis

Village	Following mass treatment		Total
	Yes	No	
Lassar	168 (59.2%)	116 (40.8%)	284 (100%)
Suak Gual	165 (58.9%)	115 (41.1%)	280 (100%)
Total	333 (59.0%)	231 (41.0%)	564 (100%)

Table 3. Behavior towards filariasis mass treatment

Village	Medication behavior			Total
	Yes, all	Yes, in part	No	
Lassar	139 (82.7%)	15 (8.9%)	14 (8.3%)	168 (100%)
Suak Gual	144 (87.3%)	12 (7.3%)	9 (5.5%)	165 (100%)
Total	283 (85.0%)	27 (8.1%)	23 (6.9%)	333 (100%)

The level of public knowledge about the filariasis of Lassar and Suak Gual villages is still low. The results of the bivariate analysis found differences in the level of community knowledge in the villages of Lassar and Suak Gual (p = 0.35). Low public knowledge about the causes of filariasis is also found in other regions, such as Northeastern Brazil, which found that the population who knew about filariasis transmission was only 7.8% [7].

The number of people tested for blood was 671. The results obtained were 24 positive microfilariae (Table 4).

Tabel 4. Blood survey results

Characteristics	Test result		Total (N/%)
	Negatif (n/%)	Positif (n/%)	
<u>Villages:</u>			
- Lassar	295/94.9	16/5.1	311/100
- Suak Gual	352/97.8	8/2.2	360/100
<u>Gender:</u>			
- Male	288/95.4	14/4.6	302/100
- Female	359/97.3	10/2.7	369/100
<u>Education:</u>			
- Uneducated	23/95.8	1/4.2	24/100
- Did not finish primary school	133/95.0	7/5.0	140/100
- Primary school	142/97.3	4/2.7	146/100
- Junior high school	273/95.8	12/4.2	285/100
- Senior high school	61/100	0/0.0	61/100
- Academy/College	15/100	0/0.0	15/100
<u>Age (years):</u>			
- 5-9	47/100	0/0.0	47/100
- 10-16	120/99.2	1/0.8	121/100
- 17-25	80/97.6	2/2.4	82/100
- 26-58	324/95.0	17/5.0	341/100
- >58	76/95.0	4/5.0	80/100
Total	647/96.4	24/3.6	671/100

Based on table 4, it is known that in Belitung Regency there are still microfilaremia sufferers found despite mass treatment to prevent filariasis. Surveillance activities after elimination still need to be done to prevent the re-transmission of filariasis. There is a need for support from relevant parties, especially health workers, so that they continue to carry out active surveillance to maintain the elimination status of filariasis[8].

IV. DISCUSSION

Low public knowledge about filariasis is due to lack of information about this disease in the community and the existence of other perceptions about this disease. Filariasis or elephant foot disease in some areas of Indonesia is known for a number of terms, including "untut, ular-ularan, or kelenjaran" [9] with special symptoms of bone marrow [10], [11].

Public behavior towards the prevention of filariasis is also still low. The level of community compliance with filariasis prevention medicine is still below the

standards set by the Ministry of Health. The minimum mass treatment coverage that must be achieved should be 65% of the total population. The survey results show that the coverage of the population taking drugs is still below 65%, which is 50.2%. The effects of drugs cause people not to take the drugs that have been given. This happens due to lack of information about these treatment activities. The distribution of drugs carried out by health cadres without being equipped with sufficient knowledge, especially about the reaction of these drugs can cause public distrust of the effectiveness of the MDA filariasis that has been done [12] [13].

The prevalence rate of microfilaremia cases is still relatively high because it is more than 1%. This indicates that the Regency of Belitung still has filariasis transmission. The high prevalence rate is likely due to the low coverage of the population participating in MDA activities, which is less than 60%. Coverage of people who take medicine should be 65% of the total population or 80% of the target population who must take medicine[14].

Some of the problems faced in controlling filariasis are problems of access that are difficult to reach, low public education, and lack of public awareness to play a role in controlling filariasis. Routine outreach activities need to be carried out especially in remote areas so that community knowledge and participation in increasing filariasis control activities[15]. High population mobility is also one of the challenges in controlling infectious diseases, especially filariasis. Monitoring needs to be done continuously by involving community leaders and health cadres so that the filariasis elimination program can run well[16].

The role of policy makers is very influential on the success of the filariasis control program. This relates to the implementation of the MDA filariasis which is carried out within five years so that it requires financial support and the officer implementing the activity[17].

One of the filariasis surveillance activities that can be done is to search for patients by active means, namely blood tests on residents who experience clinical symptoms of filariasis. The discovery of active patients with follow-up treatment if found positive patients will reduce the risk of further transmission of filariasis, so that the status of elimination of filariasis that has been obtained can be maintained[18].

Filariasis surveillance activities also need to be carried out by involving health cadres, community leaders, and the whole community. Filariasis elimination activities are strongly influenced by community support in MDA activities and protecting the environment to reduce mosquito habitat as a vector of filariasis. Monitoring of vectors also needs to be done to identify vectors that have the potential to transmit filariasis. [19], [20]

V. CONCLUSION

Knowledge, attitudes and behavior of people towards the prevention of filariasis are still low. Belitung Regency is still a filariasis endemic area with an Mf rate of 5.1%. There needs to be an increase in public knowledge and awareness in order to be willing to participate in filariasis elimination activities

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