

## ORIGINAL ARTICLE

# Lack of Changes in Community Behavior and Environmental Factors after Filariasis Elimination Program in Kodi Balaghar District, Southwest Sumba Regency: A Qualitative Studies

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## ABSTRACT

**Introduction:** Filariasis is a tropical disease that is very common in several regions in Indonesia and is caused by the transmission of microorganisms through mosquito bites. The causes of filariasis in Indonesia are three filarial species, namely *Wucherria bancrofti*, *Brugaria malayi*, and *Brugaria timori*. One of the efforts to eliminate filariasis in Indonesia has been carried out through the provision of preventive mass drugs administration (MDA) in endemic districts / cities since 2013. Treatment is carried out once a year for five consecutive years. MDA has entered its fifth year in Kodi Balaghar District, Southwest Sumba Regency, East Nusa Tenggara (NTT). The research objective was to evaluate knowledge, behavior change and environmental changes in the community after the implementation of the MDA program for 5 years. **Methods:** In-depth interviews were conducted with 10 informants (Public health center nurse, program holder, head of Public health center, and head of Malando village and head of Kahale village and community members). The factors studied were public knowledge, daily behavior and control of the living environment as awareness efforts to prevent filariasis. **Results:** The results of the study are summarized in 3 categories; increased knowledge and adherence to taking medication, found no change in daily life behavior, no change in the environment. It is feared that filariasis cases will increase after 2020 because the elimination program is not followed by changes in community behavior and also changes in the environment for filariasis prevention. **Conclusion:** The success of filariasis elimination is strongly influenced by community participation in the form of attitudes and concrete actions against filariasis.

**Keywords:** Filariasis, Behavior change, Environmental change

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## INTRODUCTION

Filariasis is an infectious disease that still causes serious problems in Indonesia and the Province of NTT in particular (1,2). Filariasis causes long suffering pain, physical disability which cause poverty in the family because the sufferer can no longer be productive and also cause the emergence of psychosocial problems in the community (3,4). Disability due to filariasis experienced by sufferers at productive age causes dependence on other people as it will greatly harm the sufferer's family both socially and economically and lead to community poverty (4,5). Filariasis can have

physical, social and economic impacts (6). The physical impact is swelling caused by damage to the lymphatic system, resulting in swelling of the motor organs, breasts and testicles (4), while the social impact is in the form of disruption of social interaction and interruption in social activities, as well as minimal opportunities for entertainment (7). In addition, sufferers and their families will experience a financial decline because medical costs are not proportional to productivity during the treatment process (8,9).

Since 2000, the World Health Organization (World Health Organization) has declared "The global goal of elimination of lymphatic filariasis as a public health problem by the year 2020" (10,11). Indonesia agreed to this global agreement by declaring the start of the elimination of filariasis since 2002. The declaration was implemented in Musi Banyuasin Regency and

established the filariasis elimination programs for eradicating infectious diseases in Indonesia (12,13,14). There are more than 120 million people suffering from filariasis infection in the world and 40 million of them suffer from chronic filariasis which causes disability (15). It is estimated that 856 million people in 52 countries are at risk for filariasis infection (16). Genitals (scrotal hydrocele) of about 25 million men have been affected and more than 15 million have lymphodema (17). According to reports of Ministry of Health's (2019), the number of filariasis cases in Indonesia until 2018 was 10,681 cases. This figure decreased compared to the previous year 2017 (12,677 cases), this was due to the fact that several cases were reported to have died and there was a change in diagnosis. The five provinces with the highest chronic filariasis cases in 2018 were Papua (3,615 cases), East Nusa Tenggara (1,542 cases), West Java (781 cases), West Papua (622 cases), and Aceh (578 cases) (18,19,20).

NTT is the second largest contributor to filariasis cases after Papua (Indonesian Ministry of Health, 2019) (21). These cases are spread in almost all cities / districts in NTT, including 4 districts in the island of Sumba. About 311 cases were reported from 3 districts, namely Central Sumba, Southwest Sumba and West Sumba (22,23).

In 2011 in Southwest Sumba District, it was reported that the number of chronic cases was 90 people, while the microfilaria rate (Mf) was >1%. The value of the Mf rate was determined based on the results of a survey of blood sample collection (SDJ) conducted in Buru Kaghu and Mata Kapore villages in 2009 (1). The SDJ survey results helped in implementation of mass treatment in Southwest Sumba Regency in 2011 for the first time (24). Year 2020 is the fifth period for the implementation of mass filariasis treatment in Southwest Sumba Regency but is the fourth period for the mass treatment of filariasis in Kodi Balaghar District (8,24,25). In 2016, Yunarko reported that Kodi Balaghar sub-district has an Mf of 4.2% based on the results of SDJ in 2012 with a sample size of 500 people (25).

Filariasis elimination is the achievement of a condition where the transmission of filariasis is so low that the disease does not become a public health problem. There are 18 districts in the Province of NTT that are still endemic for filariasis and 14 districts are still implementing MDA for filariasis. The success of the filariasis elimination program is influenced by community participation. The magnitude of community participation is influenced by knowledge, attitudes and actions towards filariasis (1,2,17,26). Many studies have reported that the risk factors for filariasis are physical factors, environmental factors, mosquito breeding grounds, biological and social environmental factors. Behavioral factors, such as the habit of going out at night, hanging a mosquito net while sleeping, using gauze at home, and other such precautions (2,4,27).

This study aims to evaluate knowledge, behavior change and environmental changes in the community of Kodi Balaghar sub-district, Southwest Sumba district after the filariasis elimination program which is in its fifth year of MDA. The decrease in filariasis cases is expected not only because of mass treatment but because of changes in knowledge levels that have an impact on behavior and environmental changes.

## MATERIALS AND METHODS

This type of research is a qualitative research. The research was conducted in Malando village and Kahale village, Kodi Balaghar sub-district, Southwest Sumba Regency for 10 days from 9th to 19th November 2020. The number of informants was 10 people (mentioned as P1-P10 respondents as their identity is not revealed) consisting of the main informant, namely 1 nurse at the Public health center Panenggo Ede, 1 holder of the District Health Office Program Southwest Sumba, the head of the Panenggo Ede Community Health Center and the triangulation consisting of the Head of Malando Village and the Head of Kahale Village, 3 members of the Malando Village community, 2 members of the Kahale Village community. The data collected was analyzed by interactive analysis techniques that refer to the theory of Miles and Huberman (1984), which suggests that the data would be analyzed continuously until it is complete, so that data was saturated (28). That is, the data would be processed until no new information was obtained. The research instrument was the researcher himself and assisted by data collection tools, namely in-depth interview guides, focus group discussion (FGD) guides, observation guides, recording devices (Cellphone), laptops and cameras. The research data analysis was carried out during data collection and after data collection, which consisted of data reduction (1).

This research has received research ethics permission from the Health Research Ethics Commission of the Ministry of Health, Kupang with the registration number LB.02.03/I/0075/2020, dated 20 October 2020. All respondents signed the informed consent form as a sign of willingness to take part in the research.

## RESULTS

### Implementation of the Filariasis Elimination Program in Kodi Balaghar District after 2016-2020 Filariasis Elimination Program

According to the informant, the series of drug administration activities were the same for each period and were summarized below:

1. Treatment is given in October each year. The target is all people aged 2 to 70 years, except those experiencing hypertension and pregnant women. Data collection was carried by health workers around the house by measuring height, weight, and blood pressure.

People who experience chronic disease have been recorded and are not included in the data for drug recipients.

2. Each public health centre establishes a Medicine Post in every village, open from 10 am till evening. The health centre had sent an invitation to the community of the village in advance to gather at the medicine post. In one village there can be 4 posts depending on the population. Community people take medicine, in front of health workers. The health worker is assisted by the village head and health centre cadres.

3. Drug administration is also carried out in schools. People who have received are given a finger mark as in the regional head election. House-to-house sweeps were conducted for people who did not come to the post to take medicine.

4. Two drugs Albendasol and Methylwere given to the community. In adults, 1 Albendasol and 2 Methyl is given.

5. No serious side effects were reported by the population. The side effects of taking the drug were nausea, dizziness, and headaches. If the patient experience side effects, then the person is taken to the health center and given treatment. Mild symptoms are not treated in the health centre.

According to the informants the people of Kodi Balaghar sub-district obey the government's recommendation to follow the treatment program. The MDA program has also been running in accordance with the guidelines prepared by the government.

*"If they are not present, we will go to the houses to provide services. The number of drugs is adjusted to the number of people based on data. The level of community attendance is 50%, if they don't attend we go door to door in the village".(P3)*

#### **Changes in Community Knowledge of Kodi Balaghar Sub district regarding Filariasis after the Implementation of 2016-2020 Filariasis Elimination Program**

Public knowledge are increased through health promotion, counseling, house-to-house counseling done by health centre. Extension involved cross-sectoral from religious leaders, traditional leaders, sub-district officials, village heads, and health centre cadres.

*"They are the beginning of our milestone because we cannot walk alone, the sub-district head instructs the village head to oblige the community to take part in drug administration activities. The village head then mobilizes by Integrated Healthcare Center cadres, these cadres helps us convey information as well as collect community data."(P4)*

The Ministry of Health, the Director General of P2P, together with the regent, have been directly involved in providing initial outreach training to doctors, nurses and health workers at Public health center in SBD Regency,

this activity has been carried out 3 times.

*"Many of them said that they did not have worms so they did not need to take medicine. For this group, they were still given education about prevention. But there are also those who say that after taking the medicine they think the worms do not come out during defecation but come out through the nose and even when vomiting there are worms". (P1)*

*"There are still people who complain about the amount of medicine and its large size, there are 3 items, 4 items, 6 items depending on age. In principle, people are happy because they are helped to recover, and they report that the worms are coming out during defecation". (P5).*

#### **Changes in Community Behavior in Kodi Balaghar Sub district after the Implementation of 2016-2020 Filariasis Elimination Program**

There has not been any significant change in behavior in the context of preventing the transmission of filariasis in Kodi Balaghar District even though it has entered its 5th year. The use of mosquito nets, hanging clothes, the habit of wearing clothes / trousers outside the house at night is still lacking.

*"Until now, when we went down to the village, what we saw was that people's behavior was still far from good. Even in the city itself, the use of mosquito nets is still rare even though the distribution of mosquito nets is carried out regularly every year, both from the health office and from the village. Public awareness of using mosquito nets to prevent mosquito bites is still lacking. People complain that they feel hot when using the mosquito net. It is very rare to see people who sleep in trousers while sleeping in the day. Moreover, few people raise pig in their house which is ideal place for mosquito breeding".(P6)*

#### **Environmental Changes in Kodi Balaghar Sub district after Implementation of the 2016-2020 Filariasis Elimination Program**

There were no significant environmental changes found in Kodi Balaghar District even though knowledge and compliance with taking medication had increased. The information obtained shows the low level of public awareness to clean the surroundings in which they live as an effort to prevent the development of mosquito breeding.

*"The condition of the community's environment is still not maximally clean, especially for those whose houses are in the forest and the coast. The environmental condition of the community is still far from healthy. This causes people to be susceptible to diseases such as malaria and dengue fever ". (P1)*

*"The living environment of the community is also not considered slum, but it is still not clean, such as grass*

*that is not cleaned and they throw the used coconut near to the house as a result rain water are trapped in the coconut shell and it becomes a nest for mosquitoes. There are still puddles of swamps, bushes". (P8)*

## DISCUSSION

Southwest Sumba Regency is one of the endemic areas for filariasis in NTT with 90 chronic cases in 2011, while the microfilaria rate Mf rate >1% based on the results of a survey on blood sample collection (SDJ) by the Ministry of Health in 2009 (1).

According to the informants, the success of the mass drug administration program was influenced by the community's compliance to attend the medication post. Overall, it can be judged that the people of Kodi Balaghar sub-district obey the government's recommendation to follow the treatment program. Another factor that is considered important by the health workers themselves, is when they come down to the community to explain regarding the good effect of the medicine and benefit if they take it in a positive way. Cross-sectoral cooperation between village officials, security forces, village heads, members of the police, Tentara Nasional Indonesia (Indonesian National Military TNI), and officials from the sub-districts are also considered very important to support the achievement success based on the program. In 2019 it was reported that the five provinces had highest cases but they had also implemented MDA well, the name of the provinces are Papua (29), East Nusa Tenggara (3), West Java (30,31) West Papua (32) and Aceh (Indonesian Ministry of Health, 2019).

The Ministry of Health, the Director General of P2P, together with the regent, have been directly involved in providing initial outreach training to doctors, nurses and health workers at Public health center in SBD Regency, this activity has been carried out 3 times. The success of the elimination of the disease is closely related to the level of public knowledge, good knowledge and high awareness of infection prevention (33). Non-compliance with taking medication can be caused by lack of knowledge and also because of the vulnerability of negative self-perceptions, people already feel safe and feel that they do not need preventive action (34,35). Overall the results of interviews with informants have shown that the people of Kodi Balaghar sub-district already have good knowledge, this can be accessed from their compliance with the program.

There has not been any significant change in behavior in the context of preventing the transmission of filariasis even though it has entered its 5th year. The habit of using mosquito nets, and wearing clothes / trousers outside the house at night is still lacking. Several studies have reported that the behavior of the control group and the case group of filariasis has a significant effect on the incidence of filariasis (36,2). Adherence to good

behavior such as using mosquito repellent lotion, using mosquito nets, wearing clothes and trousers, using gauze as an effort to prevent mosquito bites were also reported to reduce the incidence of filariasis infection (37,38). Based on the results of the interview, it was concluded that the behavior of preventing mosquito bites had not been demonstrated by the people of Kodi Balaghar sub-district. This is an important finding in our research, the local government, especially the health officers, health centre cadres and village officials are likely to pay attention to this finding.

The information obtained shows the low level of public awareness to clean the environment in which they live as an effort to prevent mosquito breeding. Environment is one of the most reported risk factors for filariasis. Environmental factors greatly affect the density of the filariasis vector. The ideal environment for mosquito breeding is ground water where they can rest and density of mosquitoes will increase (11). The suitable physical and biological environment for a filariasis vector will increase the density of the filariasis vector (39). The biological environment includes the presence of aquatic plants, predatory fish, bushes and livestock. The physical environment includes standing water, ponds, trenches, rice fields and swamps. Mosquitoes usually breed in polluted waterways, drains, sewers and stagnant water that are directly connected to the soil (35). Windiastuti reports that environmental factors that are a risk factor for filariasis development are the presence of mosquito breeding and resting places near the house (38).

After the filariasis elimination program in Kodi Balaghar sub-district, our main finding is that the environmental conditions which will support the elimination of filariasis incidents is very important. We recommend the local government to take quick and appropriate steps in handling the environment. Even though the MDA program has been completed but it is not followed by proper environmental handling, there is a big chance that new cases will emerge in the coming year.

## CONCLUSION

Based on the research conducted, it can be concluded that the implementation of the filariasis elimination program in Kodi Balaghar sub-district, especially Malindo and Kahale villages, has been good and is in accordance with applicable regulations. The behavioral aspect for filariasis prevention practice in society has changed the knowledge and behavior of taking filariasis medicine. Aspects of community behavior and environmental changes have not altered. If this is the case in Public health center then it is feared that filariasis cases will reappear after 2020 because the elimination program is not properly followed by the community and changes in the environment are also not appropriately implemented.

## ACKNOWLEDGMENT

We thank Dr. RH Kristina SKM, M.Kes, Director of Poltekkes Kemenkes Kupang. Thus, we would like to thank the head of Kahale Village and Radda Malando Village, head of Puskesmas Panenggo Ede. We also express our deepest gratitude to all subjects for their participation in this study who were willing to be interviewed. This research was supported together with a research grant from the Health Polytechnic of the Ministry of Health of the Republic of Indonesia (Top Higher Education Research) 2020 No. KN.01.03 / 2/3420/2020 for logistics and sample collection.

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