

Risk Factor Analysis: Filariasis Events in Sembawa Public Health Center Area at Banyuasin District in 2019

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Abstract---*Banyuasin is the district with the highest number of filariasis sufferers in South Sumatra. Nearly all of the areas here are filariasis endemic, with an mfRate greater than 1.5%. The purpose of this research, therefore, is to analyze what risk factors may contribute to increased filariasis events in the work area near the Banyuasin district's health center. Furthermore, this research covers cases reported in 2019. Observational analytic research with case control design was used in the preparation of this report. Overall, 33 samples from 11 cases and 22 controls were used in this research. Data analysis was done on both a univariate and bivariate basis using a Chi-Square Test. The overall results of this study were the majority of the control group (66.7%). Gender p-value = 0,124, occupation p-value = 1,000, habit of going out from home p-value = 0,050, habit of using mosquito nets p-value = 0,469, habit of using mosquito drugs p-value = 0,524, The habit of using clothes and trousers p-value = 0,643, the habit of hanging clothes p-value = 0,031. Poor SPAL condition p-value = 1,000, Use of wire mesh p-value = 0,475, Poor ceiling conditions p-value = 1,000. The conclusion of this research was that there is a distinct relationship between filariasis, the habit of going out at night, and the habit of using long clothes.*

Keywords: *infection, Banyuasin District, Sembawa Public Health Center, risk of filariasis events*

I. INTRODUCTION

Filariasis, or elephantiasis, is a disease that infects the lymph nodes and blood of the subject. This disease is caused by adult filarial worms that are transmitted through the bite of infected mosquitoes. This disease is chronic and causes permanent disability in the form of swelling of the feet, arms, breasts, and genitals of both women and men. The impact of this disease is prominent around Indonesia. In many cases, those afflicted suffer decreased productivity and significant hardship due to job loss¹. Filariasis in Indonesia is caused by

three species of filarial worms, namely *Wuchereria bancrofti*, *Brugia malayi*, and *Brugia timori*. Both these worms and the resulting spread of filariasis are common in almost all regions of Indonesia³. Furthermore, there are 23 known species of mosquito that assist in the transmission of the filariasis, namely those of the genus *Aedes*, *Anopheles*, *Culex*, and *Mansonia*. If the mf rate is more than 1% in one survey location, the regency or city is declared an endemic area, and it is suggested that a filariasis elimination program be implemented⁴.

South Sumatra Province is one of the endemic areas, with Banyuasin being the district with the highest number of Filariasis patients. Nearly all sub-districts in Banyuasin are also endemic areas, with an average mf rate of 1.92%. Filariasis in Sembawa District, Banyuasin Regency is closely related to the presence of mosquitoes as well as the habits of the locals. The habits associated with infection include: gender, job, the habit of going out, the habit of using mosquito nets, the habit of using mosquito repellent, and the habit of wearing clothes and long pants. There are also physical factors affecting the rate of infection. These include: the conditions of the Wastewater Reservoir, the use of wire net, conditions of the subject's house ceiling, and the habit of hanging clothes. As we'll see, any of combination of the above factors can leave subjects at risk of contracting filariasis in the work area of Sembawa Public Health Center, Banyuasin District

II. METHOD

This research implemented a case-control design. The sampling method used is simple random sampling. The case population is comprised of those who have tested positive for clinical/chronic filariasis in Sembawa

Public Health Center. The control population is comprised of those who reside in the area and have tested negative for filariasis. The case population totaled 11 individuals, while the control population was made up of 22. This data was analyzed through a gradual procedure, namely univariate and bivariate analysis (chi-square test)

III. RESULTS

Univariate Analysis

This research involved 36 respondents or residents living in the area of Sembawa Public Health Center. The univariate table of frequency distribution in the Filariasis Event can be seen in the following table:

Table 1.
Frequency Distribution of Respondents Based on Variables in Filariasis Events

Filariasis Events	Frequency	Percentage (%)
Case	11	30,6
Control	25	69,4
Total	36	100

Table 1 shows the control group was more dominant than the case group, with 38.8% more frequency.

Table 2
Variable Frequency Distribution Characteristics of the Host, their Habits, and their Physical Environment

Host Characteristics Variable	N	%
Gender		
Male	12	33,3
Female	24	66,7
Job		
Risky	23	63,9
Not risky	13	36,1
Going Out Habits		
Yes	11	30,6
No	25	69,4
Habit of Using Mosquito Nets		
Yes	18	50
No	18	50
Habit of Using Mosquito Repellent		
No	2	5,6
Yes	34	94,4
Habit of Wearing Clothes and Long Pants		
No	30	83,3
Yes	6	16,7

Physical Variable Houses	N	%
Conditions of the Wastewater Reservoir		
Bad	32	88,9
Good	4	11,1
The Use of Wire Netting		
No	23	63,9
Yes	13	36,1
Conditions of House Ceiling		
Bad	31	86,1
Good	5	13,9
Habit of Hanging Clothes		
Yes	23	63,9
No	13	36,1

Based on table 2, it was determined that the majority of the control group (66.7%) had the following characteristics: Female Gender (66.7%), Job Risk (63.9%), Were not likely to leave home (69.4%), Had a habit of using a mosquito net (50.0%), Had a habit of using mosquito repellent (94.4%), Did not have a habit of wearing clothes/long pants (83.3%), Had the habit of hanging clothes (63.9%), Poor wastewater reservoir condition (88.9%), Did not use wire netting (63.9%), Had ceilings in poor condition (86.1%)

Bivariate Analysis

This analysis was used to determine the relationship between host characteristics, physical factors of the house, and the incidence of Filariasis in the working area in Sembawa Public Health Center, Banyuasin District. The results of the analysis can be seen in the following table:

Table 3
The Relationship Between Host Characteristics, the Physical Environment of the House, and Filariasis Occurrence in the Sembawa Public Health Center in Banyuasin District 2019

Variable	Case	Control	p-value	OR (CI 95%)
Gender				
Male	6	6	0,124	3,800
Female	5	19		(0,848-17,036)
Job				
Risky	7	16	1,000	0,984
Not risky	4	9		(0,225-4,303)
Going Out Habits				
Yes	6	5	0,050	4,800
No	5	20		(1,030-22,370)

Variable	Case	Control	p-value	OR (CI 95%)
Habit of Using Mosquito Nets				
Yes	4	14	0,469	0,449
No	7	11		(0,104-1,934)
Habit of Using Mosquito Repellent				
No	1	1	0,524	2,400
Yes	10	24		(0,136-42,257)
Habit of Wearing Clothes and Long Pants				
No	10	20	0,643	2,500
Yes	1	5		(0,256-24,375)
Conditions of the Wastewater Reservoir				
Bad	10	22	1,000	1,364
Good	1	3		(0,126-14,784)
The Use of Wire Netting				
No	6	17	0,475	0,565
Yes	5	8		(0,132-2,418)
Conditions of House Ceiling				
Bad	10	21	1,000	1,905
Good	1	4		(0,188-19,326)
Habit of Hanging Clothes				
Yes	10	13	0,031	9,231
No	11	12		(1,023-83,331)

Based on Table 3, two variables were identified as having a significant relationship (p-value <0.05) to infection with **filariasis**, namely the following: The habit of going out at night (p-value = 0.050) and the habit of hanging clothes inside the home (p-value = 0.031). Meanwhile, the other eight variables do not appear to have a clear relationship (p-value > 0.05) with filariasis infection. These

include: The gender variable (0.124) Job (1,000), Mosquito net habits (0.469), mosquito repellent habits (0.524), The habit of wearing clothes and trousers (0,643), Wastewater reservoir conditions (1,000), The use of wire netting (0.475), Ceiling conditions (1,000)

IV. DISCUSSION

The Relationship between Gender and Genesis Filariasis

Based on the results of the chi-square test, there appears to be no relationship between gender and the incidence of filariasis. The majority of those infected with filariasis are male, which seems to correlate with this gender's increased activities outside the home, which can result in an increased risk of contracting the disease¹¹. Overall, it can be stated that the potential for men to come into contact with filariasis is greater than that of women. This research, therefore, is in line with that conducted by Garjito (2013), which stated that there is no relationship between Gender and the incidence of filariasis in Pekalongan. According to the Indonesian Ministry of Health (2005), filariasis transmission can occur if there are three elements in place: the source of transmission, vectors, and susceptible humans. Susceptible humans are those living in endemic areas as well as transmigrants from non-endemic areas to endemic areas, who can also have a greater risk of infection than the original population.

Relationship between Employment and Filariasis

Based on the results of the chi-square test analysis, there appears to be no relationship between work and the incidence of filariasis. This is regardless of the fact that risky jobs do increase the likelihood of workers getting multiple bites from filariasis infectious vectors. Before being diagnosed with filariasis, some sufferers of filariasis had risky jobs, such as working as laborers

and farmers. This type of work often includes activities in the afternoon and evening outside the home. This research is in line with Ardias's (2012) research in Sambas District, which stated that risky jobs do not affect filariasis. Despite this information, it remains possible for multiple bites to occur in the house if the house does not have protection from mosquito bites.

Relationship between the Habit of Going Out at Night and Filariasis

Based on the results of the chi-square test, there is a clear relationship between the habit of going out at night and the incidence of filariasis. The results of this research, therefore, are in line with the research of Putri (2015), which stated that the habit of going out at night is a factor of the incidence of filariasis in Tangerang District. In theory, the habit of leaving the home at night is one of the risk factors for the incidence of filariasis because the activity of biting insects like the *Culex* and *Mansonia* mosquitoes increases at night⁸. Almost all respondents of this research were residents who often leave the home at night to work, or to visit socially before being diagnosed with filariasis. Activities outside the home can increase the potential for contact with vector filariasis.

Relationship Between the Habit Using Mosquito Nets and Filariasis

Based on the results of the chi-square test, there appears to be no relationship between the habit of using mosquito nets with the incidence of filariasis. Mosquito nets are a good way for a person to protect themselves from mosquito bites and filariasis⁹. This is recommended by WHO (2015). This research, therefore, is in line with that conducted by Nasrin (2008), which stated that the use of mosquito nets has no relationship with the incidence of filariasis in West Bangka. There is no relationship for this variable as it is heavily influenced by the condition of the mosquito nets of respondents. Although mosquito nets may

be in use, respondents may have broken, torn, or otherwise ineffective nets in place.

The Relationship between the Habit of Using Mosquito Repellent and Filariasis

Based on the results of the chi-square test, there appears to be no relationship between the habit of using mosquito repellent and infection with filariasis. The use of mosquito repellent is a risk factor for the incidence of filariasis according to both Windiastuti (2013) and Putri (2015), while the results of our research are in line with research conducted by Uloli (2008), which stated that there is no relationship between using mosquito repellent and the incidence of filariasis. This habit is not a risk factor because almost all respondents from the case group and the control group had the habit of using mosquito repellent at home. Furthermore, some of the respondents who did not use mosquito repellents have participated in self-protection from mosquito bites that transmit filariasis by using long pants and mosquito nets.

The Relationship Between the Habit of Wearing Clothes/Long Pants and Filariasis

Based on the results of the chi-square test, there appears to be no relationship between the habit of wearing clothes and long pants and the incidence of filariasis. The use of clothes and trousers that cover the arms and legs can reduce the frequency of mosquito bites¹². This research is in line with that conducted by Nasrin (2008) in West Bangka Regency, who stated that there is no relationship between the use of clothes and trousers and the incidence of filariasis. The reason for this is that many respondents who do not have the habit of wearing clothes and trousers protect themselves in other ways, including mosquito repellent and mosquito nets.

Relationship Between Wastewater Reservoir Conditions and Filariasis

Based on the results of the chi-square test, there appears to be no relationship between

wastewater reservoir conditions and the incidence of filariasis. If the soil is not water permeable, but water use/house density is high, the wastewater disposal method meets the conditional requirements. If the reservoir area is flooded, it can become a breeding ground for mosquitoes¹⁹. This research is not in line with that conducted by Pramono (2014), which stated that houses without open sewers affect the incidence of filariasis. According to Mardiana, et al (2007), those living with poor or open wastewater reservoir conditions, have a 2.56 times greater risk of being affected by filariasis than closed. Almost all wastewater reservoirs in respondents' homes have bad conditions or are in an open state. This means they can be a place where potential vectors live and multiply.

The Relationship Between the Habit of Using Wire Nets and Filariasis

Based on the results of the chi-square test, there appeared to be no relationship between wire net installation and the incidence of filariasis. Preventing filariasis can be done with the installation of wire mesh in sections of ventilation. This can reduce the risk of mosquito contact, as it makes it difficult for mosquitoes to enter the house¹⁵. The results of this research are in line with that conducted by Anindita (2016), which stated that the use of wire netting is not related to the incidence of filariasis in the Pukalongan city of Padukuhan. The allegation that there is no relationship between these factors is based on the fact that only a few respondents use wire netting their home ventilation. As these respondents have taken precautions in another way, they feel no need to use wire netting in their homes.

Relationship Between House Ceiling Conditions and Filariasis

Based on the results of the chi-square test, there appears to be no relationship between the condition of a resident's ceiling and the incidence of filariasis. One of the

requirements for a healthy house in Indonesia is to have a ceiling made of plywood¹⁵. This research is not in line with that conducted by Iriati (2013), which states that poor ceiling conditions are directly associated with an increased incidence of filariasis. Allegations proving the lack of such a relationship rely on the fact that only a few respondents had a roof/ceiling barrier at home. The reason for the respondents not having a ceiling was because of limited costs and the fact that they had made efforts to prevent/protect themselves in other ways.

The Relationship Between the Habit of Hanging Clothes in The House and Filariasis

Based on the results of the chi-square test, there does appear to be a relationship between the habit of hanging clothes and the increased incidence of filariasis. *Culex* mosquito resting places are usually in the house, including places like under beds, near hanging clothes, and other places that are dirty and dark¹³. This research is in line with research conducted by Kamarudin (2013). Clothes hanging inside the house can become a sanctuary for the mosquitos after they feed on the residents. Almost all case respondents and control respondents had the habit of hanging their clothes in the house. Mosquitoes prefer dark and dirty places and will often rest inside of hanging clothes. This behavior makes humans more likely to be affected by mosquito bites, as they are actually creating a habitat for mosquitos inside their homes.

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