

Original Research

## KNOWLEDGE AND ACTIONS OF LEPROSY PATIENTS ON THE INCIDENCE OF LEPROSY IN BRENGKOK VILLAGE, BRONDONG PUBLIC HEALTH CARE OF LAMONGAN REGENCY, INDONESIA

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### ABSTRACT

**Background:** Leprosy is an infectious disease that can cause physical disability, as well as social, economic, and cultural problems. The prevalence of leprosy in Indonesia is still high.

**Objective:** The purpose of this study was to determine patients' behavioral factors that influence the incidence of leprosy.

**Methods:** An ex-post-facto analysis with a case-control approach was used. The population of the study was the entire Brengkok Village community. The sampling technique is a fixed-disease sampling method, in which the all cases (34 persons) are clinically proven leprosy sufferers and the controls (34 persons) are the comparable neighbors of the sufferers. Data analysis was done using a chi-square test, and the risk of disease was measured by the odd ratio (OR).

**Results:** Testing for differences between the case and the control group resulted in  $p = 0.000$  for knowledge about the cause of leprosy,  $p = 0.005$  for detecting an early sign of leprosy,  $p = 0.000$  for knowledge about the transmission of leprosy, and  $p = 0.000$  for affecting the incidence of leprosy. The results showed that there was a relationship between the level of knowledge and the incidence of leprosy ( $p = 0.002$ ), while the OR value obtained is 7.50 (CI: 2,168 - 25,946). Furthermore, testing for differences between the case and the control group yielded  $p = 1.000$  for the use of different clothes;  $p = 0.000$  for the use of different bathing tools;  $p = 0.000$  for the use of different towels, which means there is a connection between the use of towels and the incidence of leprosy; and  $p = 0.003$  for the use of different footwear. In addition, there is a relationship between the actions of people and the incidence of leprosy ( $p = 0.000$ ), while the OR value obtained was 59,933 (CI: 13.131 - 273,557).

**Conclusion:** The knowledge and actions of people affected by leprosy are predisposing factors associated with the incidence of leprosy and are risk factors for the disease. Knowledge about the transmission of leprosy and the activity of using different towels are the most important factors influencing the incidence of leprosy.

**Keywords:** knowledge, actions, leprosy, Indonesia

### BACKGROUND

Leprosy disease is a contagious and infectious disease that can cause medical, social, economic, and cultural problems (Reibel, Cambau, & Aubry, 2015). Leprosy can attack the skin, peripheral nerves, and other organs,

causing the body to not function normally (Talhari, Talhari, & Penna, 2015).

In 2016, there were 11,755 new recorded cases of leprosy, with East Java ranking first in the

number of leprosy sufferers in Indonesia ([Blok, De Vlas, & Richardus, 2015](#)). Lamongan Regency is one of the areas in East Java that face new cases of leprosy every year. The prevalence rate in Lamongan Regency has increased from 0.85 to 0.92 per 10,000 ([Dinas Kesehatan Kabupaten Lamongan, 2018](#)). In the data of the Brondong Public Health Center, the prevalence rate in Brondong Subdistrict was recorded to decrease from 1.95 to 1.33 per 10,000, with 37 leprosy sufferers in 2013, 35 in 2014, 20 in 2015, 18 in 2016, and 14 in 2017 ([Puskesmas Brondong, 2018](#)). Brengkok Village is one of the villages with the highest leprosy incidence among other villages in Brondong Subdistrict, with 34 patients in total, of whom 15 with dry leprosy and 19 with wet leprosy ([Dinas Kesehatan Kabupaten Lamongan, 2018](#); [Puskesmas Brondong, 2018](#)).

Environment and behavior, as well as health and hereditary factors, are factors that can influence health status ([Asyary & Mahendradhata, 2019](#); [Asyary, Purwastyastuti, & Junadi, 2017](#)). Health behavior can be influenced by three kinds of factors: (1) predisposing factors, such as knowledge that can affect the behavior of patients, giving rise to a relationship between knowledge and the process of leprosy transmission; (2) enabling factors, such as the use of infrastructure, including bath soap and towels, and even the handling of products, which can all be a source of transmission; and (3) driving factors, either reinforcing or weakening, in the form of counseling, encouragement from health workers, and family support ([Asyary, 2018](#); [Asyary, Prasetyo, Eryando, & Mahendradhata, 2019](#); [Blok et al., 2015](#); [Tosepu, Effendy, Imran, & Asfian, 2015](#)). This study determined the behavior of patients, especially predisposing factors, that influence the incidence of leprosy in the Village of Brengkok, Brondong Subdistrict, Lamongan Regency.

## METHODS

### *Study Design*

The study is an observational analytic study with a case-control design. Data collection took

place from February to April 2018. Sampling was done using the 1:1 (case:control) of fixed-disease sampling method. Samples consisted of all 34 leprosy cases that were clinically proven over the last 5 years. For the controls, we used 34 non-sufferers who were characteristically comparable and lived around the patients' houses in Brengkok Village, Brondong Subdistrict, Lamongan Regency, and who were likely to be infected. The independent variable is the predisposing factor, including the level of knowledge and action. The dependent variable is the incidence of leprosy.

### *Data Analysis*

Data analysis was done by means of a chi-square test, and the magnitude of risk was expressed as an odd ratio (OR).

### *Ethical Consideration*

To fulfill research ethics, the researchers obtained a letter of application for research permission to conduct research at the local government from the National and Political Unity Agency (Kesbangpol) of Lamongan Regency review: 070/134/413.20/2018. Before conducting data collections with respondents, researchers always read the guidelines for data collections with respondents to obtain informed consent. The data was confidential and only researchers can access the data. This study also passed the Ethics Review from the Health Polytechnic of Surabaya, Ministry of Health, Magetan, Indonesia.

## RESULTS

Table 1 shows the characteristics of the respondents in the case and control groups in Brengkok Village, Brondong Subdistrict, Lamongan Regency. By age, most of the respondents (38.2%) were between 56 and 65 years old, while by gender, most of the respondents was 67.6% male. By occupational status, most of the respondents (44.1%) worked as farmers; by educational status, most respondents (76.5%) had an elementary education.

**Table 1** Characteristics of Respondents

Characteristics of Respondents	n (%)
Age	
12-16 years old	2.9
17-25 years old	17.6
26-35 years old	17.6
36-45 years old	8.8
46-55 years old	8.8
56-65 years old	38.2
> 65 years old	5.9
Gender	
Male	67.6
Female	32.4
Work	
Civil servant	.0
Private employee	5.9
Fisherman	14.7
Farmer	44.1
Does not work	35.3
Education	
Elementary school	76.5
Junior high school	2.9
High school	20.6
College	.0

Table 2 shows that there was a significant difference ( $p = 0.000$ ) in the distribution of knowledge of respondents between the case and the control group, which means that there is a relationship between the respondents' knowledge about the causes of leprosy and the incidence of leprosy. The respondents' knowledge about the initial signs of leprosy is also significantly different ( $p = 0.005$ ) between the two groups, which indicates a relationship between the respondents' knowledge about the initial signs of leprosy and the incidence of leprosy.

Likewise, the respondents' knowledge about leprosy transmission is different between the two groups ( $p = 0.000$ ), implying that there is a relationship between the respondents'

knowledge about leprosy disease and the incidence of leprosy. The same is true for the respondents' knowledge about the consequences of the occurrence of leprosy ( $p = 0.000$ ), indicating a relationship between the knowledge about the consequences of leprosy and the incidence of leprosy.

**Table 2** Distribution of Predisposing Factors

Predisposing Factors	X <sup>2</sup>	p
Knowledge		
The cause of leprosy	16.667	0.000
Early signs of leprosy	10.733	0.005
Transmission of leprosy	45.149	0.000
The consequences of leprosy	31.400	0.000
Action		
Use of different clothes	0.000	1.000
Use of different bathing tools	19.419	0.000
Use of different towels	27.495	0.000
Use of different footwear	8.658	0.003

Table 2 shows that the distribution of respondents' actions regarding the use of clothes does not differ ( $p = 1.000$ ) between the case and the control group, which means there is no relationship between the use of different clothes and the incidence of leprosy.

For the use of different bathing tools,  $p = 0.000$  was obtained, implying a relationship between the use of bathing tools and the incidence of leprosy. For the use of different towels, we obtained  $p = 0.000$ , indicating a relationship between the use of different towels and the incidence of leprosy. Regarding the use of different footwear, we obtained  $p = 0.003$ , which means that there is a relationship between the use of different footwear and the incidence of leprosy.

**Table 3** Relationship between the Level of Knowledge and Actions and the Incidence of Leprosy

Variables	The Incidence of Leprosy		OR	95% CI	p
	Case	Control			
Knowledge			7.50	2.168-25.946	0.002
Poor	17	4			
Fair	17	30			
Action			59.933	13.131-273.557	0.000
Poor	29	3			
Fair	5	31			

Table 3 shows that for the relationship between the level of knowledge and the incidence of leprosy we obtained  $p = 0.002$ , which means

that there is a connection between both, while the OR value is 7.50 (CI: 2,168 - 25,946), so respondents with a poor knowledge have a 7.50

times higher risk of attracting leprosy than respondents with a fair knowledge.

For the action,  $p = 0.000$  was obtained, which means that there is a relationship between action and the incidence of leprosy, while the OR value is 59,933 (CI: 13,131 - 273,557), so respondents with bad actions have a 59,933 times higher risk of attracting leprosy than respondents whose actions are good.

## DISCUSSIONS

The results of this study show that for the knowledge of leprosy sufferers (cases), 17 respondents (50%) had little knowledge and 17 respondents (50%) had good knowledge. For the knowledge of non-leprosy sufferers (controls), it was found that four respondents (11.8%) had little knowledge and 30 respondents (88.2%) had good knowledge. The results showed that knowledge about the causes of leprosy, the initial signs of leprosy, and the transmission of leprosy are all related to the incidence of leprosy. The most relevant one is knowledge about the transmission of leprosy ([Rachmani et al., 2019](#); [Rahmawati, 2017](#)). Most respondents did not know the method of transmission and thought that leprosy is transmitted through the air.

In the event of an illness, behavior is influenced by one's knowledge. Knowledge about a disease is crucial in shaping a person's actions. Therefore, knowledge is one of the predisposing factors of a person's behavior that can affect the incidence and severity of leprosy.

A study on disease knowledge in related setting showed that most respondents had little knowledge about leprosy ([Lusli, Peters, Bunders, Irwanto, & Zweckhorst, 2017](#)). This situation causes respondents not to have sufficient access to the community ([Lusli et al., 2017](#); [Peters, 2015](#)). In addition, lack of knowledge affects the regularity of treatment and influences the transmission process through direct contact with patients.

The low level of knowledge about leprosy can have a negative impact on the development of

leprosy, such as physical disability and other bad consequences ([Tosepu, Gunawan, Effendy, & Fadmi, 2018](#)). Good knowledge, on the other hand, can support good practice in order to minimize the incidence of leprosy ([Indow, Pongtiku, Rantetampang, & Mallongi, 2019](#)). Better knowledge about leprosy can be achieved by counseling with the aim to change the behavior of people affected by leprosy ([Amelia, Amiruddin, Arsin, Bahar, & Palutturi, 2018](#); [Rachmani, Lin, Hsu, Shidik, & Noersasongko, 2018](#)).

Most respondents who were not sick were well-informed, so it may be concluded that the lower the level of knowledge of the respondents, the greater the chance of attracting leprosy. In this case, the leprosy sufferers' lack of knowledge concerned mainly the way in which leprosy is transmitted.

The results of the study show that for the actions of people affected by leprosy (cases), 29 respondents (85.3%) had bad actions and five respondents (14.7%) had good actions. For non-leprosy patients (controls), three respondents (8.8%) had bad actions and 31 respondents (91.2%) had good actions. The questionnaire results were obtained from four questions about the use of different clothes, the use of different bathing tools, the use of different towels, and the use of different footwear. Of these four aspects, the use of different towels is most strongly related to leprosy transmission; most leprosy patients use the same towels as their family members.

The action factor concerns the activities that are directly carried out in response to the disease, and they are predisposing factors for the development of leprosy ([Susanti, Mahardita, Alfianto, Sujana, & Susanto, 2018](#)). Action is a factor that facilitates the entry of various diseases into the body if a person does not maintain his or her cleanliness ([Lusli et al., 2017](#); [Peters, 2015](#)). On the other hand, if someone is able to maintain cleanliness, he or she can prevent the entry of various diseases ([Aprizal, Lazuardi, & Soebono, 2017](#)). Bad actions can increase the risk of leprosy ([Astutik & Gayatri, 2018](#); [Mallongi, Selomo, Rahman,](#)

[Mattangang, & Muhith, 2018](#)). Good actions are taken to protect health in order to prevent the occurrence of leprosy.

## CONCLUSION

Knowledge and actions of people affected by leprosy are predisposing factors associated with the incidence of leprosy and are risk factors for the incidence of leprosy. Knowledge about the transmission of leprosy and the action of using different towels are the two most important factors influencing the incidence of leprosy.

### Declaration of Conflicting Interest

All authors have declared that there is no conflict of interest for this study.

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