



## The Relationship between The Level of Knowledge and Stigma Towards Leprosy Patients among Healthcare Workers

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### ABSTRACT

**Background:** Leprosy is currently one of the most common health problems in the world. Because leprosy is contagious and chronic, most people fear those who suffer from it, and leading to mindless creation of various negative stigmas. **Purpose:** This research aimed to determine the relationship between the level of knowledge and the stigma towards leprosy. **Methods:** This study used an analytical observational design with a cross-sectional approach, conducted from January to March 2024 at Pungging Health Community Center, Mojokerto Regency, East Java, Indonesia, using the total sampling method. We collected the data for this study using a questionnaire that included questions relevant to the variables under investigation. Processing and analyzing data used Microsoft Office Word 2019, Microsoft Office Excel 2019, and IBM SPSS Statistic 26. We used bivariate analysis the Spearman statistical test to determine the relationship between the dependent and independent variables. **Result:** Health workers with sufficient knowledge had the highest good stigma presentation (14%), and there is a significant relationship between the level of healthcare workers' knowledge of leprosy and stigma towards leprosy patients ( $p=0.025$ ). **Conclusion:** A significant correlation exists between healthcare workers' understanding of the stigma associated with leprosy. To reach the program's target, health workers need additional training about leprosy to eliminate the negative stigma of healthcare workers towards leprosy.

**Keywords:** Leprosy, stigma, health workers, knowledge.

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| Article info |

Submitted: 04-05-2024, Accepted: 16-07-2024, Published: 30-11-2024

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### BACKGROUND

Leprosy, or Morbus Hansen, is an infectious disease caused by *Mycobacterium leprae*, commonly called leprosy. This disease attacks the peripheral nerves of the skin, oral mucosa, upper respiratory tract, reticuloendothelial muscular system, eyes, muscles, bones, testicles, and other organs except the central nervous system. The leprosy prevalence in Indonesia was about 0.55 per 10,000 people in 2022. Compared to the previous year, the prevalence increased by about 0.5 per 100,000 people. Not receiving proper and complete treatment for this disease can cause developmental problems, physical, psychological, and social disabilities, and even a decrease in quality of life.<sup>1,2</sup>

Leprosy is currently one of the most common health problems in the world. Because leprosy is contagious and chronic, most people fear those who suffer from it, leading to the mindless creation of various negative stigmas. Labels and stereotypes, along with discrimination, create a social phenomenon known as stigma. Stigma does not only come from leprosy sufferers, their families, neighbors, work bosses, classmates, and fellow believers in places of worship; it can also come from healthcare workers.<sup>3</sup> There are various factors that contribute to the appearance of health workers' stigma, such as poor knowledge, belief, inability to manage clinical conditions, and institutional policies.<sup>4</sup> The stigma that has emerged in society and among health workers towards leprosy patients can cause leprosy patients to

be increasingly reluctant to come to health facilities for treatment or seek support to maintain their quality of life. Suboptimal treatment and late diagnosis can ultimately impact disease progression and disability levels, causing the number of leprosy cases to increase.<sup>5</sup> Therefore, researchers want to examine further the relationship between the level of knowledge and the stigma of health workers towards leprosy sufferers.

## METHODS

This study used an analytical observational design with a cross-sectional approach and conducted from January to March 2024 at Pungging Health Community Center, Mojokerto Regency, East Java, Indonesia. This study aimed to determine the relationship between the level of knowledge and stigma towards leprosy patients among healthcare workers. The Health Research Ethical Committee of the Faculty of Dental Medicine, Universitas Airlangga, has ethically approved this study's protocol (Number: 0330/HRECC.FODM/IV/2024).

The sample consisted of healthcare workers at Pungging Health Community Center who met the following criteria: (1) Healthcare workers at Pungging Health Community Center with a minimum of 1 year work experience; (2) Healthcare workers with a minimum education at diploma level; (3) Healthcare workers who consented to complete the questionnaire; and (4) Individual who did not suffer from leprosy. Healthcare workers who had worked for less than a year at Pungging Health Community Center, had an education history below the diploma level, and did not consent were excluded from participating in this study. People with illnesses that made answering research questions difficult and uncooperative were excluded. The samples were collected using a total sampling technique performed at Pungging Health Community Center, Mojokerto Regency, East Java, Indonesia. The total samples consisted of 43 healthcare workers who fulfilled the inclusion and exclusion criteria.

The respondents filled out the questionnaire that was given. The knowledge questionnaire, which developed based on the leprosy knowledge questionnaire and paper of Pedoman Nasional Pelayanan Kedokteran Tata Laksana Kusta, was used to assess the level of knowledge of healthcare workers about leprosy.<sup>6,7</sup> The level of knowledge was quantified using the knowledge score. There were 12 true or false questions about leprosy, which had 1 point for true and 0 point for false answers. The knowledge questionnaire addresses various aspects of leprosy,

including its definition, causes, routes of transmission, symptoms, diagnostic procedures, treatments, and prevention of the disease. The knowledge score system was calculated based on (the total point)/12 x 100%. The knowledge results were classified into four levels as follows: (1) poor knowledge (<56%), (2) sufficient knowledge (56-75%), and (3) good knowledge (76-100%).

The dependent variable was a healthcare workers' stigma towards leprosy patients. We utilized a stigma questionnaire developed by Ardianti.<sup>8</sup> This questionnaire was adapted and modified from one about healthcare workers' stigma towards HIV patients.<sup>9,10</sup> The previous researcher assessed the adapted questionnaire's validity and reliability with regard to leprosy patients in Surabaya's public health center.<sup>8</sup> The stigma was quantified using stigma score. The stigma questionnaire addresses the concepts of labelling, stereotyping, separation, and discrimination related to leprosy. There were 16 favorable questions which had some answers as follows: (4) strongly agree, (3) agree, (2) disagree, and (1) strongly disagree. Meanwhile, the answers for unfavorable questions were as follows: (1) strongly agree, (2) agree, (3) disagree, and (4) strongly disagree. The stigma score system was calculated based on (mean = total score/16). The stigma results were classified into two levels, as follows: (1) Good/Low stigma ( $x \geq \text{mean}$ ) (2) Bad/High stigma ( $x < \text{mean}$ ).

The following data were collected, namely characteristics of samples, knowledge, and stigma score of healthcare workers. Data of this study was collected through a questionnaire that contained questions related to the variables studied. Processing and analyzing data used Microsoft Office Word 2019, Microsoft Office Excel 2019, and IBM SPSS Statistic 26. Bivariate analysis has been used to determine the relationship between the dependent variable and the independent variable using Spearman statistical test, with significance indicated by a p-value of <0,05.

## RESULT

Analytical observational research about the relationship between the level of knowledge and stigma towards leprosy patients among healthcare workers has been done from January until March 2024. The primary data was obtained using questionnaires distributed to healthcare workers who fulfilled the inclusion and exclusion criteria at the Pungging Community Health Center, Mojokerto. The study did not discard any data.

The characteristics of the samples are shown in Table 1. Almost all patients were female (88.4%). The mean age of the samples was 46 - 55 years old (44.2%). The majority of educational history levels were dominated by diplomas (69.76%), with midwifery being the most common profession (48.9%). The majority of the samples have been working for more than 10 years (74.4%), according to the length of work.

**Table 1.** The characteristics of the study subjects

Respondent characteristics	N	%
<b>Gender</b>		
Male	5	11.6%
Female	38	88.4%
<b>Age Group</b>		
26 - 35	10	23.3%
36 - 45	14	32.5%
46 – 55	19	44.2%
<b>Education</b>		
Diploma	30	69.76%
Bachelor	13	30.24%
<b>Profession</b>		
Healthcare analyst	2	4.6%
Midwife	21	48.9%
Dentist	1	2.3%
General practitioner	2	4.6%
Nurse	16	37.2%
Pharmaceutical staff	1	2.3%
<b>Length working</b>		
<6 years	7	16.3%
6 - 10 years	4	9.3%
>10 years	32	74.4%

Based on the data obtained in Table 2, the majority of respondents had sufficient knowledge (55.8%) about leprosy, followed by good knowledge (30.2%) and a poor knowledge (14%). Despite understanding the definition and etiology of leprosy, the respondents were unaware of its clinical manifestations, transmission, or treatment

**Table 2.** Summary of healthcare workers' knowledge towards leprosy

Knowledge	N	%
Poor	6	14%
Sufficient	24	55.8%
Good	13	30.2%
Total	43	100%

Most respondents (53.5%) harbored a bad stigma, as shown in Table 3. Despite being entirely treatable and curable with medications readily available at health centers, leprosy remains a symbol of stigma and is still seen more as a social issue than just a medical condition. This significant social burden is largely due to infectious, persistent, and long-standing stereotypes, often exacerbated by visible symptoms such as deformities, impairments, and disabilities. Visible signs of leprosy, such as wet wounds, ulcers, and skin reactions during treatment, have been identified as contributing factors to this stigma.

**Table 3.** Summary of healthcare workers' stigma towards leprosy

Stigma	N	%
Good	20	46.5%
Bad	23	53.5%
Total	43	100%

The level of knowledge was measured by the knowledge score. Meanwhile, the stigma score was used to measure it. We analyzed the data using the Chi-square method, as shown in Table 4. According to Table 4, we found that healthcare workers with sufficient knowledge had the highest good stigma presentation (14%) and a p-value of 0.025 ( $p < 0.05$ ). The findings indicate a noteworthy correlation between the healthcare workers' understanding of leprosy and their stigma against it.

**Table 4.** The relationship between the level of knowledge and stigma towards leprosy patients among healthcare workers

Knowledge	Stigma				Total		P
	Good		Bad		N	%	
	N	%	N	%			
Poor	4	4	2	2	6	6	0.025
Sufficient	14	14	10	10	24	24	
Good	2	2	11	11	13	13	
Total	20	20	23	23	43	43	

## DISCUSSION

Leprosy, also known as Hansen's disease or Morbus Hansen, is a neglected infectious illness caused by *Mycobacterium leprae* and *Mycobacterium lepromatosis*. It primarily affects the skin and then advances to a secondary stage, leading to peripheral neuropathy and potential long-term disabilities. Unlike other high-mortality diseases, leprosy is a slowly progressing chronic condition that can result in lasting disabilities. Approximately two million people currently live with leprosy-related disabilities, contributing significantly to the stigma surrounding the disease. This societal stigma, particularly among healthcare workers, can significantly impact patients' lives and their treatment. Much of this stigma stems from a lack of knowledge about the disease.<sup>11</sup> Therefore, this research aims to determine the significance of the relationship between the level of knowledge and the stigma surrounding leprosy.

The majority of respondents had sufficient knowledge about leprosy (55.8%), followed by those with good knowledge (30.2%), and those with poor knowledge (14%). The data obtained from the questionnaire showed that most of the respondents understood the definition and etiology of leprosy, but not its clinical manifestations, transmission, or treatment of leprosy. Individuals who lacked information about leprosy would perceive a stigma compared to those who had good knowledge about the disease. Even though the majority of healthcare workers at Pungging Community Health Center had sufficient knowledge, another study conducted by Van'T Noordende et al. showed that healthcare workers from Indonesia had significantly better ( $p = 0.001$ ) knowledge than healthcare workers from India on almost all aspects.<sup>12</sup>

Lower levels of knowledge about leprosy were linked to greater social distance, which serves as a measure of community fear and stigma. A lack of understanding about leprosy is often associated with negative stigma toward those affected by the disease. For example, misconceptions like the belief that leprosy spreads through touch, a common belief among healthcare workers at Pungging Community Health Center, could intensify stigma. These misconceptions are frequently connected to fears about the disease and its transmission. Addressing and correcting these misconceptions, as well as increasing knowledge, is essential to reduce stigma and improve early case detection, as insufficient knowledge is a significant factor in delayed diagnoses.<sup>13-18</sup>

The majority of respondents (53.5%) held bad stigmas about leprosy. Although leprosy is completely treatable and curable with medications available at health centers, it continues to be associated with stigma and is perceived more as a social issue than merely a medical one. This significant social burden is largely due to persistent stereotypes and visible symptoms such as deformities, impairments, and disabilities, which are often exacerbated by the disease's visible signs, including wet wounds, ulcers, and skin reactions during treatment.

This result agreed with a study conducted by Tosepu R et al., which demonstrated that in Southeast Sulawesi, Indonesia, stigma related to leprosy remains prevalent and strong.<sup>19</sup> It is often thought to be inherited and linked to notions of impure blood, which is regarded as shameful and socially unacceptable. This stigma profoundly impacts the lives of those affected by leprosy, obstructing their access to treatment and potentially leading to the progression of the disease, which can cause irreversible damage to the skin, nerves, limbs, and eyes.

Goffman defines stigma as a characteristic that significantly undermines a person's social standing, resulting in a lack of acceptance and respect from others. A stigmatized individual is one who is excluded from full social acceptance.<sup>20</sup> Stigma was categorized into three main types, with physical deformities, particularly facial ones, being the most prominent. This classification is particularly relevant to leprosy, where the common portrayal of facial changes in neglected lepromatous patients represents a universal image of the disease. Other deformities, such as facial plaques in non-lepromatous patients (especially during reactions), facial paralysis, claw hand deformity, foot drop, or hypopigmented spots on dark skin, also contribute to this perception. The general belief is that leprosy, in all

its forms, is infectious, and that those who carry it deserve to be discriminated against.<sup>21</sup> Stigma has an impact on an individual's mental and social well-being, causing feelings of fear or shame that can lead to anxiety and depression. This anxiety and depression, in turn, can lead to reduced social engagement and social exclusion.<sup>3</sup>

Statistical analysis using Spearman's rho correlation between level of knowledge and stigma among healthcare workers towards leprosy demonstrated a significant correlation, with a Spearman's  $\rho$ -value of 0.025 ( $p < 0.05$ ). These results were appropriate, as research conducted by Adhikari B et al. demonstrated that there was a significant correlation between knowledge of leprosy causes and stigma ( $p = 0.02$ ), as well as a significant correlation between knowledge on transmission and stigma ( $p = 0.046$ ).<sup>3</sup> The questionnaire data in this study revealed that, while most respondents understood the definition and causes of leprosy, they were less informed about its clinical manifestations, transmission, and treatment. People with limited knowledge about leprosy were more likely to perceive stigma compared to those who had a thorough understanding of the disease. For instance, misconceptions such as the belief that leprosy is transmitted through touch—common among healthcare workers at Pungging Community Health Center—can exacerbate stigma. These misconceptions are often linked to fears about the disease and how it spreads. Correcting these misunderstandings and enhancing knowledge are crucial for reducing stigma and improving early diagnosis, as inadequate knowledge significantly contributes to delays in diagnosis.<sup>13–18</sup>

Furthermore, Feyissa et al. demonstrated that knowledge has a significant relationship with the stigma among healthcare workers.<sup>22</sup> Knowledge has an important role in determining a person's attitude. Knowledge can influence how a person acts and makes decisions when dealing with something.<sup>23</sup> Knowledge about leprosy starts with definition, cause, mode of transmission, clinical manifestations, diagnostic examination, medication, and leprosy prevention. The most important thing that can eliminate the stigma is real education and information about leprosy. Other research from Erni said that the negative stigma would be 1.66 times greater for people who had less or were poor.<sup>24</sup> The negative stigma appeared especially about the deformity and disability in the leprosy patients.<sup>25</sup> This study demonstrated that most respondents (53.5%) harbored a bad stigma. This condition

influenced their ability to treat leprosy at the community health center. Poor knowledge about the mode of transmission and prevention creates wrong perceptions. Many people still believe that leprosy is transmitted through activities shared with sufferers. From this condition, some additional training about leprosy was needed to increase the level of healthcare workers' knowledge. Because they were the first spearheads in handling leprosy cases, if stigma was already formed among healthcare workers, the eradication program of leprosy would be difficult to achieve. Apart from training healthcare workers, multidisciplinary treatment was needed with a social approach that involved the community. In this way, it was not only healthcare workers who were targeted but also the community in general. It was hoped that the stigma related to leprosy could decrease among various groups.<sup>26</sup>

There were some limitations in this study. First, this was a single-center study, thus sample size was small at Pungging Health Community Center, Mojokerto Regency. Due to the limited sample size, the study's conclusions may not accurately reflect the entire population. Secondly, the researchers only analyzed the correlation between knowledge level and stigma, while other variables could possibly influence healthcare workers' stigma towards leprosy patients. This study revealed a significant relationship between knowledge level and stigma among healthcare workers towards leprosy. To eliminate the negative stigma of health workers towards leprosy and achieve the program's target, additional training on leprosy is necessary.

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