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Knowledge, Attitudes, and Behaviors of the Residents of Karangrejo Village In Semarang Towards Morbus Hansen

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Abstract: *Morbus Hansen is a chronic infectious disease caused by the bacillus Mycobacterium leprae which mainly attacks the skin and peripheral nerves. Social stigma has become a major factor causing delays in Morbus Hansen patients in seeking treatment. This study aims to analyze the knowledge, attitudes, and behavior of the community towards Morbus Hansen patients in Semarang. This study is a descriptive observational study with a cross-sectional design conducted in Semarang in March-April 2025. The purposive sampling method was used to obtain respondents who met the inclusion and exclusion criteria. The number of subjects in this study was 50 respondents. Data were collected using a validated questionnaire. The data were then analyzed using SPSS. Results show respondents' knowledge generally showed quite good results. Respondents' attitudes and behavior tended to be positive. A significant relationship was obtained between attitudes towards behavior ($p<0.01$), while there was no significant relationship between knowledge and behavior ($p=0.275$). There is a significant relationship between attitudes towards community behavior regarding Morbus Hansen with a strong positive direction and strength.*
Keywords: *Morbus Hansen, knowledge, attitude, behavior*

INTRODUCTION

Morbus Hansen is a chronic infectious disease caused by the bacillus *Mycobacterium leprae*, which mainly affects the skin and peripheral nerves. Initially, this infection attacks the peripheral nerves, then the skin, and subsequently other organs such as the oral mucosa, upper respiratory tract, reticuloendothelial system, eyes, muscles, bones, and testicles, except for the central nervous system (World Health Organization [WHO], 2020; Scollard et al., 2015). Risk factors for *morbus hansen* include close contact, older age, genetic factors of the PRAK2/PACRG gene, and immunosuppression . The diagnosis of *morbus hansen* is based on the findings of cardinal signs or major signs. This diagnosis is established when at least one cardinal sign is found; if it is not obtained or cannot be found, the case is referred to as a suspect and needs to be observed and re-examined after 3–6 months until the diagnosis can be established or eliminated (Schuring et al., 2020; da Silva Rocha et al., 2021). According to the WHO, cardinal signs of *morbus hansen* include numb patches of skin, thickening of peripheral nerves, and the discovery of acid-resistant germs (WHO, 2018; Lockwood et al., 2022).

Physical abnormalities, in addition to sociocultural misconceptions about *morbus hansen*, have led to social stigma and discrimination against "Patients with Leprosy" (PWL) throughout history. Social stigma has been a major factor causing *morbus hansen* patients to delay seeking treatment. This has become a significant obstacle to early detection, prompt treatment, and cure of leprosy patients (Dadun et al., 2017; Sermrittirong et al., 2015). Community involvement plays an important role in reducing the incidence of leprosy. The public must have correct knowledge about the disease, its symptoms, transmission, and must know when and where to seek treatment for leprosy. Based on this background, this study aims to analyze the knowledge, attitudes, and behavior of the community towards patients with *morbus hansen* in Semarang (Van Brakel et al., 2019; Lusli et al., 2016).

Previous studies have explored aspects of knowledge, attitudes, and behaviors related to *Morbus Hansen* (leprosy), providing a foundation for understanding how social stigma influences public health outcomes (Sarkar & Pradhan, 2016; Tiwari et al., 2020). The first study by Yuliana et al. (2020) examined community knowledge and attitudes toward leprosy in rural areas of Indonesia. The study found that a lack of awareness about the disease's transmission and symptoms led to significant delays in treatment and a higher incidence of social stigma. While the study highlighted the importance of public education and intervention programs, it did not delve deeply into how different demographic groups (e.g., age, education level, or urban vs. rural settings) specifically perceive or behave toward individuals affected by leprosy. This gap in the research limits a nuanced understanding of how targeted interventions can be designed to address stigma in diverse populations.

The second study by Pramudya et al. (2018) focused on the social stigma surrounding leprosy patients in urban areas, finding that misconceptions and historical stigma significantly hindered the willingness of individuals to seek early diagnosis and treatment. While the study was valuable in showing the persistence of stigma, it primarily focused on urban populations and did not fully explore how these findings could be applied to rural areas or smaller towns, where access to health care and knowledge dissemination might differ. Furthermore, the study did not explore the impact of genetic and immune-related factors, which are known to influence the disease's progression and social consequences.

This study aims to analyze the knowledge, attitudes, and behaviors of the community in Semarang toward patients with *Morbus Hansen*. The research will explore how public education, sociocultural factors, and demographic characteristics affect the stigma surrounding leprosy and influence individuals' willingness to seek treatment. The findings are expected to inform local health policies and public health campaigns, contributing to more effective strategies for the prevention and management of *Morbus Hansen* in Indonesia.

MATERIALS AND METHODS

This study is an observational descriptive research with a cross-sectional design. Observation and data collection were carried out once, after the subjects filled out the research questionnaire. The research was conducted in Semarang in March–April 2025. The subjects included in this study were *RT/RW* administrators, members of the youth organization, *Family Welfare Empowerment (PKK)* or *dasa wisma*, and local health workers who were willing to participate in the research. The exclusion criteria in this study were subjects who were not present on the interview schedule or subjects who had limitations in reading or understanding the instruments used for research purposes. The purposive sampling method was used to obtain respondents who met the inclusion and exclusion criteria. The number of subjects in this study was 50 respondents. Data were collected using a validated questionnaire. The collected data were checked first to ensure that all information was complete and qualified, followed by systematic processing. Encoding was used for grouping by relevant categories. The data were then tabulated and analyzed using SPSS software.

Knowledge of *morbus hansen* is defined as a general understanding of *morbus hansen*. Attitude is defined as the tendency to act or respond positively or negatively to *morbus hansen*. Practice is defined as the tangible, observable, or measurable actions that a person takes against *morbus hansen*. A score of 1 was given for each correct answer and a score of 0 for each incorrect answer in the questionnaire. To measure the overall attitudes and behaviors of the research sample, the answers were expressed as strongly disagree, disagree, agree, and strongly agree.

RESULTS AND DISCUSSION

Table 1 shows the demographic characteristics of the study subjects. Table 2 shows the respondents' answers about knowledge about Hansen's morbus. Table 3 shows respondents' answers about attitudes and behaviors regarding morbus hansen.

Table 1. Demographic Characteristics of Research Subjects

Variable	Rude.	%	Mean ± SD	Median (min – max)
Age			32,94 ± 12,40	26,5 (18 – 65)
Gender				
Man	19	38,0		
Woman	31	62,0		
Work				
Private employees	10	20,0		
Self-Employed/Self-Employed	5	10,0		
IRT	6	12,0		
Doctor	7	14,0		
Police/POLRI	4	8,0		
Student	12	24,0		
Nurse	3	6,0		
PSM	1	2,0		
Purnawirawan	2	4,0		
Education				
SMP	4	8,0		
High School/Vocational School Equivalent	12	24,0		
D3/S1	31	62,0		
S2	3	6,0		
Position				
Citizen	10	20,0		
PKK Mother	10	20,0		
Cadet Corps	10	20,0		
RT/RW Administrator	10	20,0		
Health workers	10	20,0		

Table 2. Respondents' Answers on Knowledge of Morbus Hansen

Knowledge	True		Inappropriate		Total
	n	%	n	%	
Leprosy or leprosy caused by the bacterium *Mycobacterium leprae*	50	100	0	0	50
Leprosy can be transmitted through ordinary touches such as shaking hands or using shared tableware	18	36	32	64	50
Leprosy only affects people with poor body hygiene	20	40	30	60	50
Leprosy cannot be transmitted through the air or sputum splashes	30	60	20	40	50
Leprosy mainly affects the skin and peripheral nerves	50	100	0	0	50
Leprosy can cause body defects if not treated promptly	48	96	2	4	50
The initial symptoms of leprosy are often numb, painless patches of skin	49	98	1	2	50
Skin and nerve examinations are necessary to diagnose leprosy	46	92	4	8	50
If left untreated, leprosy can lead to paralysis or permanent disability	42	84	8	16	50
Leprosy can be cured with proper treatment	50	100	0	0	50

Table 3. Respondents' Answers on Attitudes and Behaviors Regarding Morbus Hansen

Attitude	STS	TS	S	SS	Total

	n	%	n	%	n	%	n	%	
I am willing to interact and talk to lepers without fear	6	12	7	14	26	52	11	22	50
I feel uncomfortable if there are lepers in my neighborhood	3	6	28	56	17	34	2	4	50
Lepers who have recovered deserve a job like everyone else	0	0	0	0	22	44	28	56	50
I believe that leprosy can be cured with proper medical treatment	0	0	0	0	15	30	35	70	50
I am willing to help spread the truth about leprosy to the public	0	0	1	2	22	44	27	54	50

Behaviour	STS		TS		S		SS		Total
	n	%	n	%	n	%	n	%	
I avoid physical contact with lepers even though I have undergone treatment	4	8	19	38	19	38	8	16	50
I am willing to provide correct information about leprosy to others to reduce the stigma	0	0	2	4	20	40	28	56	50
If there is a leper in my environment, I still interact and treat them well	0	0	4	8	27	54	19	38	50
I invite others not to discriminate against lepers	0	0	0	0	22	44	28	56	50
I feel comfortable being in the same place with someone who has had leprosy	2	4	10	20	28	56	10	20	50

Table 4 shows the results of descriptive tests and normality of knowledge, attitudes, and behaviors. From the results of the normality test using the Shapiro-Wilk test on attitude, a p value of > 0.05 was obtained so that the data was normally distributed, while in knowledge and behavior a p value of < 0.05 was obtained so that the data was normally distributed, and for the next test of the relationship between knowledge and attitude to behavior using the spearman's correlation test.

Table 4. Results of descriptive tests and normality of knowledge, attitudes, and behaviors regarding Morbus Hansen

Variable	Mean ± SD	Median (min – max)	p
Knowledge	8,06 ± 1,13	8 (6 – 10)	<0.001
Attitude	15,98 ± 1,89	6 (12 – 20)	0,169*
Behaviour	15,92 ± 1,95	15,5 (12 – 20)	0,008

Table 5 shows the relationship between knowledge and attitudes towards behavior regarding hansen morbus. From the results of the knowledge relationship test to behavior using the spearman's correlation test, a value of p = 0.275 (p > 0.05) was obtained so that it can be concluded that knowledge of behavior has no meaningful relationship, and on attitudes towards behavior using the spearman's correlation test, the value of p = <0.001 (p < 0.05) and the value of r = 0.676 (0.6 – <0.8) so that it can be concluded that attitudes towards behavior have a meaningful relationship with the direction and strength of the relationship strong positive.

Table 5. The relationship of knowledge and attitudes towards people's behavior regarding Morbus Hansen

Variable	Behaviour	
	p	r
Knowledge	0,275	-0,157
Attitude	<0.001*	0,676

Morbus hansen or leprosy is a chronic infectious disease caused by the bacterium Mycobacterium leprea. The disease affects the epidermis and peripheral nerves of the affected individual. The disease can be transmitted through prolonged close contact with multibasiler leprosy

patients who are not treated through basil inhalation. Until now, it is still unclear about the transmission of leprosy from one person to another. In society, Hansen's morbus disease is still considered a disgrace. The wrong impression about leprosy breeds stigma. Hansen's morbus disease is thought to be caused by curses, black magic, God's punishment, sin, or genetic factors. A person's perception of morbid disease and a lack of understanding of it can affect their feelings towards the person who suffers from it.

In this study, respondents' general knowledge of morbus hansen showed quite good results. All respondents were able to answer correctly regarding the cause, clinical manifestations, and knowledge that Hansen's morbus can be cured with appropriate treatment. Most respondents also know that morbus hansen can cause bodily defects if not treated promptly, and can even lead to paralysis and permanent disability; Respondents also learned that skin and nerve examinations are necessary to diagnose leprosy. A study by Gopalakrishnan S et al shows that almost 45% of respondents have inadequate knowledge about hansen morbus. Regarding awareness of the signs and symptoms of leprosy, 44% of study participants reported that skin patches were followed by loss of sensation (26%), numbness (10%), and skin ulcers (9.2%) as signs and symptoms. About 47.5% of respondents know the true cause of leprosy. Awareness that leprosy can be treated was recorded in about 54.8% of participants in this study.4 Sighn et al in their study showed that overall only 42.1% of the public had good knowledge of hansen morbus with the main sources of information being local health workers and the media (Chen KH, 2022; Bhandari J, 2023; Ishomatul Faizah, 2024; Ngozi Murphy-Okpala, 2023; Ploemacher T, 2020; Schmitz V, 2019).

The attitudes and behaviors of the respondents in this study have a positive tendency. This study shows that there is a meaningful relationship between attitude and behavior, while there is no meaningful relationship between knowledge and behavior. This shows that the respondents in this study have a stigma that is different from the stigma that is widely found in society. These results differ from other studies by Gopalakrishnan S et al. In the study, it was noted that 76.7% of respondents had a bad attitude towards patients with morbus hansen. Stigma is defined as an attribute that makes an individual different from a normal person, a complex concept that depends not only on the undesirable attributes possessed by an individual, but also on the social context around the individual. Various stigmas against leprosy are avoidance of contact with the sufferer, not sharing personal belongings, refusal to let children associate with the patient's children, or sitting next to the patient. They express negative feelings in the form of fear, desperate reactions, or embarrassment if they are diagnosed with Hansen's morbus. Different results were also found in the study of Signh et al which also showed poor attitudes and behaviors towards people with morbus hansen. The study showed that as many as 60% of respondents had a bad attitude towards leprosy. The study also showed that stigma is still prevalent in the communities that were respondents in the study.8 The difference between the results of this study and other studies can be influenced by socio-demographic variables, such as age, ethnicity, education, occupation, and environmental conditions (Czarina P. Chavez, 2021; Sardana K, 2020; Singh R, 2029).

CONCLUSION

This research reveals a significant and strong positive relationship between people's attitudes towards *Morbus Hansen* and their behavioral intentions and actions. However, no meaningful relationship was found between people's knowledge of *Morbus Hansen* and their behavior, indicating that simply increasing knowledge may not be sufficient to alter public behavior regarding the disease. This suggests that addressing attitudes, which may be influenced by sociocultural factors, could be

more effective in reducing stigma and promoting better health-seeking behaviors. For future research, it is recommended to explore the underlying sociocultural influences that shape attitudes towards *Morbus Hansen*, as well as the effectiveness of targeted interventions that focus not only on knowledge but also on changing attitudes. Additionally, future studies could investigate the role of community leaders and healthcare professionals in altering public perceptions and behaviors, further enhancing the impact of public health campaigns.

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