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LITERATURE REVIEW HOME PHYSICAL ENVIRONMENT, INDIVIDUAL CHARACTERISTICS, AND PERSONAL HYGIENE WITH THE INCIDENCE OF LEPROSY

Irene Silitonga *, Nurjazuli, Sulistiyani
Program Studi Magister Kesehatan Lingkungan, Fakultas Kesehatan Masyarakat, Universitas Diponegoro
Jl. Prof. Soedarto, Tembalang, Kec. Tembalang, Kota Semarang, Jawa Tengah 50275, Indonesia
Email: silitongairene30@gmail.com

Abstract

Leprosy is a chronic infectious disease caused by Mycobacterium leprae, which affects the skin, peripheral nerves, upper respiratory tract and eyes. According to the Ministry of Health report, in 2022 the prevalence of leprosy in Indonesia increased to 0.55 per 10,000 population. This rise in cases was influenced by various factors that contributed to the higher incidence rate across the country, Indonesia. Purpose of study: The aim of this study was to determine the association of the physical environment of the house, individual characteristics, and personal hygiene with the incidence of leprosy. Method: The method employed in this study is a literature review, with references derived from research articles published in scientific journals within the period of 2019 to 2024. Results: As a result of the literature search, ten journals were selected based on the established inclusion criteria. While case-control designs dominated the research methodologies, a few studies employed cross-sectional approaches. The outcomes reflected certain consistencies as well as differences; nonetheless, every study documented occurrences of leprosy. Conculsion: Based on the results of the review of 10 journal articles, it can be concluded that there is a relationship between physical home environment factors, knowledge, attitudes and personal hygiene with the incidence of leprosy.

Keywords: Act, Knowladge, Leprosy, Personal Hygiene, Physical Enviroment

INTRODUCTION

Leprosy, also commonly known as Hansen's disease, is a type of chronic infection caused by the bacterium Mycobacterium leprae. This disease initially attacks the peripheral nerves and skin, then can spread to the mucous membranes of the respiratory tract as well as other organs of the body, although it does not affect the central nervous system (World Health Organitation, n.d.). Leprosy is generally recognized through damage to the peripheral nerves, the appearance of spots or lesions on the skin, and laboratory results for acid-fast bacilli (AFB) indicating a bacterial infection. If not treated early and properly, leprosy can progress further and cause gradual damage to the skin, nervous system, limbs, and vision. Inadequate management carries the risk of worsening the condition and leading to permanent damage to these parts of the body (Tuturop et al., 2023).

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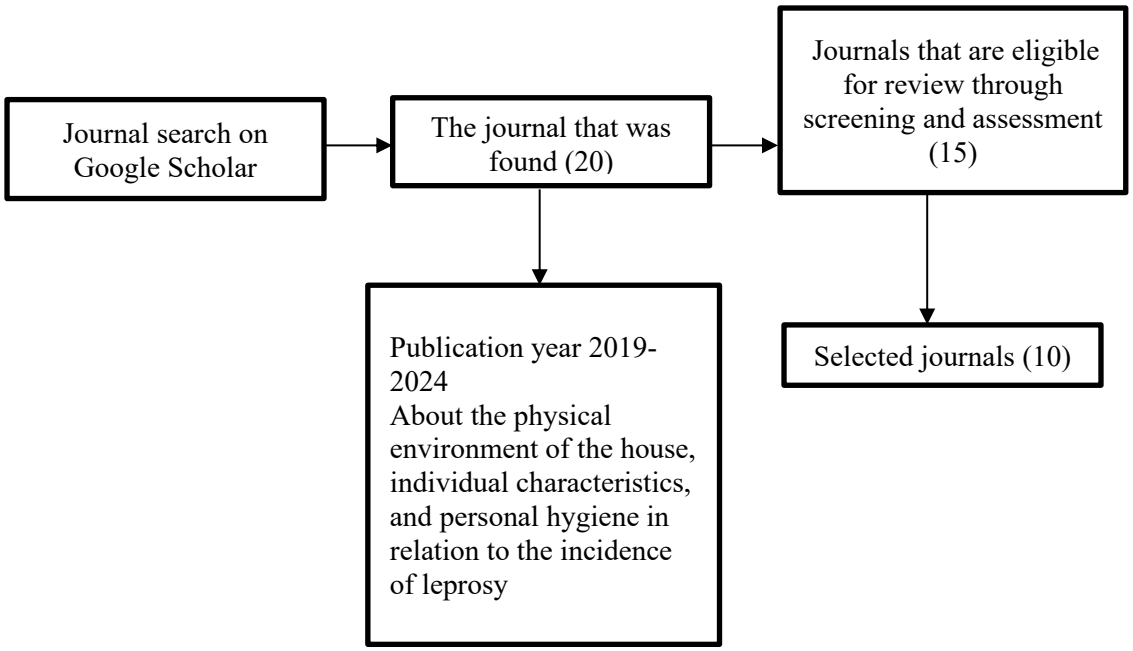
Leprosy remains a significant health issue, both globally and in Indonesia. According to data from the World Health Organization (WHO), Indonesia ranks third in the number of leprosy cases worldwide, behind India and Brazil. Throughout 2021, 7,146 new cases were reported, and about 11% of them occurred in children (based on data as of January 24, 2022). Meanwhile, the Ministry of Health recorded a total of 12,288 leprosy cases in Indonesia in the same year, with the provinces of Banten, West Java, and Papua being the areas with the highest number of patients. This number increased in 2022 to 15,052 cases (Ahmad et al., 2021). The Ministry of Health also reported that the prevalence of leprosy in 2022 reached 0.55 per 10,000 population, up from 0.5 per 10,000 in the previous year (Kementrian Kesehatan, 2022). Although there is a national target to eliminate leprosy by 2024, the increasing trend of cases indicates the need for more serious attention to the risk factors that trigger the spread of leprosy in Indonesia. Efforts to identify and address these risk factors are crucial to achieve the goal of leprosy elimination as planned.

IMPLEMENTATION METHOD

This study uses a literature review approach by applying a systematic method, including searching for articles through various scientific journal databases, online searches, and reviewing relevant publications. Articles were collected through electronic search platforms with a publication year range between 2019 and 2024. From the search results, 20 articles were obtained, then selected, and 10 of the most relevant articles that met the criteria were chosen as the main reference sources. The search process was conducted using keywords such as “house physical environment,” “knowledge,” “attitude,” and “personal hygiene.” The collected articles were then grouped based on similar findings to address the main research question regarding the relationship between the condition of the home physical environment, individual characteristics, and personal hygiene behaviors with the incidence of leprosy in Indonesia.



RESULTS AND DISCUSSION

The results of the literature review analysis on the relationship between the physical home environment, individual characteristics, and personal hygiene with the incidence of leprosy are presented in the following table.

Table 1. Review Results

No	Researcher	Research Design	Research Design
1	(Marsanti & Ardiani, 2020)	This research is a quantitative study with a case-control design. The sampling technique used was simple random sampling. The number of respondents in this study was 60 people, evenly divided into two groups, namely 30 people in the case group and 30 people in the control group.	The research results indicate that there is a relationship between personal hygiene and the incidence of leprosy, demonstrated by a p-value of 0.026 (95% CI = 1.320 – 14.504)
2	(Romdhani & Sulistyorini, 2020)	This research is an analytical observational study with a case-control design. The sample consisted of 25 respondents in the case group and 25 respondents in the control group, selected through simple random sampling. Data collection was conducted using an observation sheet. The chi-square method was used in the data analysis process.	The findings of this study indicate that there is a statistically significant relationship between the ventilation variable (p=0.03) and natural lighting (p=0.04).
3	(Prakoeswa et al., 2020)	This study uses a case-control study with a sample of 74 respondents selected using a consecutive sampling technique. This study uses the chi-square test.	The research results indicate a significant relationship between the physical home environment, access to clean water, availability of toilets, personal hygiene, wastewater disposal facilities, and nutritional status with the incidence of leprosy.
4	(Nurwahyuni, Nurjazuli, 2021)	This research is an observational study with a case-control study design consisting of 49 case samples and 98 controls. Data analysis was performed using the chi-square test and logistic regression.	Factors such as ventilation area, presence of windows, type of flooring, room partitioning, type of wall materials, occupancy density, individual knowledge and attitudes, shared use of towels, frequency of changing bedding, as well as floor cleaning habits are known to be associated with the occurrence of leprosy.
5	(Wahyuni et al., 2021)	This study applied an analytical observational design with a case-control approach. Data were collected through interviews and observations using an observation sheet instrument. The population	Research results indicate that there is a correlation between ventilation conditions, humidity levels, indoor lighting, the number of occupants in a dwelling, and a history of contact with patients,

		studied consisted of 20 individuals suffering from leprosy, and from that number, 19 leprosy patients were selected as samples, along with 19 individuals without leprosy as the control group. The data successfully collected were then analyzed analytically using the chi-square statistical test. Bivariate analysis was used to assess the relationship between the variables studied.	with the emergence of leprosy cases.
6	(Evi et al., 2022)	This study adopts an analytical observational design with a case-control approach. The study sample consisted of 200 subjects, divided into 100 cases and 100 controls. The case sampling technique was used. The analysis in this study employed bivariate tests, namely the chi-square test.	Personal hygiene, such as bathing habits, nail-cutting habits, bed-cleaning habits, and clothes-changing habits, is related to the occurrence of leprosy.
7	(Edi & Azizah, 2023)	This research design uses an analytical observational study with a case-control design.	Based on the research results, there is a relationship between the physical environment, namely humidity and occupancy density, as well as personal hygiene, with the incidence of leprosy.
8	(Liana Novita1*, Retno Widiarini2**, 2023)	This research design uses a case-control approach with analytical observational methods. The sample consisted of 26 case respondents and 26 control respondents. Data collection was carried out using a questionnaire, and data analysis was performed using the chi-square test.	There is a significant relationship between personal hygiene, namely bathing habits, towel-sharing habits, and hand and foot washing habits, and the incidence of leprosy.
9	(Tuturop et al., 2023)	Sampling in this study was carried out using the total sampling method, where the number of respondents in the case and control groups was 44 each with a ratio of 1:1. Data analysis included univariate analysis, bivariate analysis using the chi-square test, and multivariate analysis using logistic regression.	There is a relationship between the occurrence of leprosy and factors such as contact history, handwashing habits, borrowing clothes, and cleaning the house floor.
10	(Rini et al., 2023)	This study applied a case-control design with an analytical observational approach. Sampling was conducted in a balanced manner with a 1:1 ratio, consisting of 21 respondents in the case group and 21 respondents in the control group.	A correlation was found between personal hygiene, the density of living spaces, the condition of latrines, and house ventilation with leprosy cases.

Physical Enviroment

The influence of the environment on human health is very significant, considering that various factors causing diseases are closely related to the condition of the environment in which humans live. The environment can be defined as the entirety of physical, biological, social, and cultural elements surrounding humans and having a reciprocal relationship with their survival (Saepudin M, 2020).

Leprosy prevention can be carried out by improving the quality of the physical living environment. Housing conditions that do not meet health standards have the potential to worsen the occurrence of leprosy cases, as an unhealthy physical environment can support the optimal growth and development of the bacteria that cause leprosy.

Tabel 2. Discussion on the Physical Environment of the House

Researcher	Odds Ratio (OR)	Meaning
(Romdhani et al, 2020)	Ventilation = 4,13 Lighting =3,69	From the analysis conducted, it was found that the ventilation and lighting inside the house do not meet healthy home standards. Under these conditions, the likelihood of leprosy increases, being 4.13 times and 3.69 times higher, respectively, compared to houses with adequate ventilation and lighting.
(Ramona et al, 2020)	0,104	Based on the analysis results, it was found that a physical home environment that does not meet health standards has a 0.104 times higher risk of leprosy cases occurring.
(Nurwahyuni et al, 2021)	Ventilation Area = 2,603 Presence of Windows = 3,022 Floor Type = 2,610 Rooming = 4,611 Number of Occupants = 3,022	The analysis results indicate that several physical aspects of the house, such as inadequate ventilation area, absence of windows, non-standard flooring types, suboptimal room division, and high occupant density, do not meet the criteria for a healthy house. These conditions respectively increase the risk of leprosy by 2.602 times, 3.022 times, 4.611 times, and 3.022 times higher compared to houses that meet health standards.
(Nur indah et al, 2021)	Ventilation = 11.55 Humidity = 18.41 Lighting = 96 Occupancy density = 53.22	Data analysis revealed that ventilation, humidity, lighting, and residential density that do not meet healthy housing criteria increase the risk of leprosy by 11.55 times, 18.41 times, 96 times, and 53.22 times, respectively.

(Novita eka et al, 2023)	The analysis results show the values for the variables as follows: floor type at 0.171; ventilation at 0.094; humidity at 1.875; and occupancy density at 0.065.	The study results indicate that housing conditions that do not meet health standards—such as the type of flooring used, inadequate ventilation size, high humidity levels, and overcrowding—can be factors contributing to health risks, with each posing an increased risk of leprosy by 0.171 times, 0.094 times, 1.875 times, and 0.065 times respectively.

Personal Hygiene

Personal hygiene is the act of self-care aimed at maintaining the health of the body, both physically and mentally. Personal hygiene factors play an important role in the transmission of leprosy. Some habits that increase the risk include not bathing regularly (less than once every two days), frequently sharing clothes with siblings or friends, and using personal items such as towels, soap, or combs together within a family. The risk also increases if someone shares a toothbrush with others, does not cover their mouth and nose when coughing or sneezing, does not habitually wash hands before and after eating or after using the toilet, rarely trims their nails (less than once a week), and does not wash their hair regularly at least twice a week. This practice is important for every individual, not only for those who are healthy but also for those who are sick (Kemenkes, 2024). In the context of leprosy prevention, the implementation of good personal hygiene is highly recommended, such as maintaining skin cleanliness, caring for hair, washing hands regularly, and keeping clothing and bedding clean. These measures can help reduce the risk of leprosy transmission through direct contact with sufferers (Amiruddin, 2019).

Tabel 3. Discussion on the Personal Hygiene

Researcher	OR	Meaning
(Marsanti et al, 2020)(Marsanti & Ardiani, 2020)	4,375	The figure indicates that respondents with poor personal hygiene habits have a 4.375 times higher risk of contracting leprosy compared to those who maintain good personal hygiene. Furthermore, the OR value of 4.375 (greater than 1) shows that personal hygiene is one of the risk factors contributing to the spread of leprosy in the area where the study was conducted.
(Evi et al, 2022)(Evi et al., 2022)	Bathing habit = 24.18 Nail-cutting habit = 5.52 Clothing-changing habit = 3.30 Bed-cleaning habit = 3.91	Based on the results of statistical analysis, it was found that bathing habits, nail-cutting habits, and bed-cleaning habits are associated with poor personal hygiene and are at risk of being exposed to leprosy by 24.18 times, 5.52 times, 3.30 times, and 3.91 times higher, respectively.
(Novita et al, 2023)	Bathing habit = 4.34 Hand and foot washing habit = 5.12 Towel borrowing habit = 6.10	Based on the analysis results, it was found that bathing habits, hand and foot washing habits, and towel-sharing habits are poor personal

		hygiene practices among respondents, with risks of 4.34 times, 5.12 times, and 6.10 times higher of being exposed to leprosy compared to respondents with good personal hygiene.
(Tutorop et al, 2023)	Handwashing habit = 4.91 Habit of borrowing clothes = 12.00 Habit of cleaning the house floor = 16.88	The analysis results indicate that several habits reflecting low levels of personal hygiene, such as rarely washing hands, frequently borrowing other people's clothes, and not regularly cleaning the house floor, contribute to an increased risk of contracting leprosy. Each of these habits significantly increases the risk, being 4.91 times, 12 times, and 16.88 times higher, respectively, compared to respondents who maintain clean and healthy living habits.

Knowledge

Low levels of knowledge have a significant impact on public health conditions in a region. Several studies have proven that individual knowledge plays an important role in efforts to prevent and manage leprosy. The lack of information about leprosy among the community, as well as limited access to healthcare services for patients in certain areas, are the main factors causing delays in the diagnostic process. This condition has the potential to cause physical disabilities and decreased productivity in patients. Therefore, efforts in early detection and treatment through Multi-Drug Therapy (MDT) are crucial steps to break the chain of transmission and prevent delayed diagnoses that can lead to deformities and disabilities. Understanding the risk factors of leprosy is also very helpful in the early identification of cases (Firda Safira et al., 2020).

Tabel 4. Discussion on the Knowledge

Nama Peneliti	OR	Arti
Ahmad Zaelani et al, 2021	3,63	The results of the statistical analysis indicate that there is a correlation between a person's level of knowledge and the incidence of leprosy. An Odds Ratio (OR) of 3.636 suggests that individuals with low knowledge have a 3.636 times higher likelihood of being exposed to leprosy compared to those with better knowledge.

CONCLUSION

Based on the results and discussion of the literature review above, it can be concluded that the physical environment of the house, knowledge, and personal hygiene are factors that influence and pose a risk for the occurrence of leprosy. Personal hygiene is the greatest risk factor affecting the incidence of leprosy, with OR values ranging from 3.60 to 24.18 (Marsanti et al., 2020; Evi et al., 2022; Novita et al., 2023; Tutorop et al., 2023). The physical environment of the house is a risk factor influencing the occurrence of leprosy, with OR values ranging from 0.104 to 96.00 (Romdhani et al., 2020; Ramona et al., 2020; Nurwahyuni et al.,

2021; Nur indah et al., 2021; Nur indah et al., 2021).

The community is expected to improve the physical condition of their living environment as an effort to prevent the transmission of leprosy. In addition, healthcare workers in Indonesia need to increase the intensity of education to the public regarding leprosy, covering aspects from prevention to treatment, in order to support the achievement of leprosy elimination targets in Indonesia by 2024**.**

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