



Original Research Article

A study of knowledge and attitude regarding leprosy among undergraduates and interns of a medical college and hospital

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Abstract

Background: Leprosy is an infectious disease, caused by *Mycobacterium leprae*. The clinical spectrum of the disease varies from mild to severe cutaneous forms with extensive nerve and systemic involvement. India has the largest number of leprosy cases in the world. Since 1985, there has been a fall in the prevalence of leprosy, and successful treatment has been given to 14.5 million patients with multidrug therapy (WHO 2006). An early recognition and prompt therapeutic intervention is necessary to halt the progress of the disease. The magnitude of stigma associated with leprosy is quite high. Therefore, sufficient knowledge of leprosy is required among future medical graduates of the society.

Aim: To study the knowledge and attitude regarding leprosy patients among undergraduates and interns of a medical college and hospital.

Methods and Materials: It is a descriptive cross-sectional study which was conducted between the period of August to November 2024, at a medical college and hospital in Pondicherry. The sample size was calculated as 323. The study was approved by ethics committee (IEC approval number was RC/2023/146). After obtaining consent for participation in the study, the study participants comprising the undergraduates (third and fourth year) and interns, were requested to fill in a pre-designed and pre-structured questionnaire. The questionnaire was in English and it contained 40 questions. The questionnaire was structured based on the questionnaire by Ahmed et al, S Gopalakrishnan et al. Statistical analysis was done with SPSS.

Results: The study included 153 (47.3%) male participants, 170 (52.6%) female participants of whom 73(22.6%) were interns and 250 (77.3%) identified as undergraduates. The finding revealed that 96.6% of the participants recognized the causative agent of leprosy, while only 78.9 % understood the mode of transmission. Additionally, 72.5% could identify the cardinal signs of leprosy and 85.8% were informed about the drugs in multidrug therapy (MDT). However, awareness regarding the duration of treatment was lower, with only 58.2% recognizing the length of pauci-bacillary and 52.6 % for multi-bacillary therapy. In terms of attitude towards leprosy, 46.8 % believed that individuals with leprosy should not marry, while 76.5 % were open to sharing a workspace with leprosy patients. Furthermore, 43.3% felt that MDT should be discontinued during pregnancy and 60% considered leprosy to be a highly infectious disease. Notably, 62.23% were unaware of any available leprosy vaccine, and 40% believed that all leprosy patients ultimately experienced deformities.

Conclusion: As undergraduates and interns are young doctors encountering patients in the community and in initial screening, timely recognition and appropriate knowledge can make a huge difference in reducing the burden of leprosy. The study shows the need for knowledge on symptoms over which the students should suspect leprosy in a patient and also the lack of knowledge over proper management and duration of management. This demands us to improvise methods of education on leprosy and conduct more innovative and interesting campaigns for better understanding and remembering of Hansen's disease.

Keywords: Knowledge, Attitude, Leprosy, Awareness.

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1. Introduction

Leprosy, an infectious disease caused by the bacterium *Mycobacterium leprae*, presents a complex clinical spectrum that can range from mild dermatological manifestations to severe forms that involve extensive nerve damage and broader systemic complications. The average incubation

period for this disease is notably long, typically spanning between 5 to 7 years, which poses challenges for early detection and timely therapeutic response.¹⁻⁵ The early identification of leprosy and the initiation of appropriate treatment are critical to arrest the progression of the disease and prevent permanent disability.^{3,6-9} Despite significant advances in medical science, leprosy continues to be one of

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the primary infectious conditions leading to disabilities worldwide. Efforts to eliminate this disease have faced numerous hurdles, indicating that the challenges associated with leprosy extend beyond mere medical treatment.¹⁰⁻¹²

A significant factor contributing to the persistent prevalence of leprosy is the stigma associated with the disease, which mirrors the societal perceptions surrounding other conditions like HIV/AIDS. This stigma is often exacerbated by misinformation and a lack of understanding of the disease among the general population as well as healthcare professionals.^{10,12,14} The fear and misconceptions surrounding leprosy not only deter individuals from seeking treatment but also hinder collective efforts to combat the disease effectively. Therefore, it is essential to cultivate accurate and comprehensive knowledge about leprosy's clinical features, epidemiology, and diagnostic methods, particularly among future healthcare providers and medical graduates.^{3,4,15,16}

Currently, there exists a substantial gap in awareness regarding leprosy among young doctors, which can impair their ability to identify and treat patients effectively. This study is structured to assess the levels of knowledge and the social attitudes of junior medical graduates towards individuals affected by leprosy. Understanding how new generations of medical professionals perceive and respond to leprosy patients can inform educational strategies, improve health outcomes, and mitigate stigma.^{3,16,17}

Compounding the urgency of this research is the recent emergence of drug-resistant strains of *Mycobacterium leprae*, which poses a significant threat to global leprosy control efforts. The rise of antibiotic resistance not only complicates treatment protocols but also heightens the need for ongoing education and awareness among healthcare providers, ensuring that they are equipped with the necessary knowledge to recognize and manage this evolving challenge. In light of these dynamics, this study aims to illuminate the current state of understanding about leprosy among medical graduates and highlight the social attitudes that prevail concerning affected individuals.^{2,3,5,6,17}

By doing so, we aspire to advocate for enhanced educational interventions that will empower young doctors with the critical knowledge required to address leprosy effectively. Addressing misconceptions and enhancing empathy towards patients can significantly influence the trajectory of leprosy management in the healthcare system. In summary, the intersection of knowledge, social attitudes, and antibiotic resistance underscores the importance of this inquiry into the perceptions of future medical professionals regarding leprosy, aiming towards a comprehensive strategy that contributes to the disease's alleviation and the reduction of stigma within society.

2. Materials and Methods

A cross-sectional study was conducted between the period of August to November 2024, at a medical college and hospital in Pondicherry. Approval from the Institute Research Committee and Ethics Committee was obtained. IEC approval number was RC/2023/146. With a precision of 5%, a proportion of 7% and a confidence interval of 95% sample size was calculated as 323. All undergraduate students in the 3rd, 4th years and interns who were willing to participate in the study and have given informed consent have been included in the study. Consecutive sampling was followed. After obtaining consent, the participants were requested to fill in a pre-designed and pre-structured validated questionnaire. The questionnaire was in English and it contained 40 questions. Of the 40 questions 28 questions were to assess the knowledge and 12 questions were to assess the attitude towards leprosy patients. In the questions to assess the knowledge 20 were given as multiple-choice and 8 were given as yes or no questions, the questionnaire was structured based on the questionnaire by Ahmed et al and the study by S Gopalakrishnan et al.^{1,6} A total of 12 questions were used to assess attitude with subjective "yes or no" as answers, the questionnaire was based from a study by Ahmed et al. The respondents were asked to mark the appropriate answer.

Statistical analysis: The results were statistically analysed and Proportions were calculated using SPSS (software version 29.0).

3. Results

The study included 153 (47.3%) male participants, 170 (52.6%) female participants of whom 73(22.6%) were interns and 250 (77.3%) were undergraduates, demographic details of the participants are shown in **Table 1**. Among the study participants, 96.6% knew the causative agent of leprosy, only 78.9 % knew the mode of transmission, 72.5% were able to find the cardinal signs of leprosy, 85.8% were aware of the drugs in MDT, only 58.2% and 52.6 % were mindful of the duration of pauci-bacillary and multi-bacillary therapy. On attitude towards leprosy, 46.8 % have marked leprosy patients should not marry, 76.5 % were willing to share workspace with leprosy patients, 43.3% thought MDT should be stopped in pregnancy, 60% consider leprosy to be a highly infectious disease, 62.23 % were not aware of vaccine available of leprosy, 40% marked all patients of leprosy end up with deformities.

The analysed results are shown in **Table 2** and **3**.

Table 1: Demographic details of study participants:

Gender	No. of participants (%)
Male	153 (47.3%)
Female	170 (52.6%)
Designation	No. of participants (%)
Interns	73 (22.6%)
Undergraduates	250 (77.3%)

Table 2: Knowledge about leprosy among undergraduates and interns

S.No	Questions	No. of correct response (%)
1.	Other name for leprosy	317 (98.14%)
2.	Cause of leprosy	312 (96.59%)
3.	Duration between acquiring infection and manifestation of disease	207 (64.09%)
4.	Mode of transmission	255 (78.95%)
5.	Hallmark of the cutaneous lesions of leprosy	286 (88.54%)
6.	Cardinal sign of leprosy	234 (72.45%)
7.	Feature of leprosy	179 (55.45%)
8.	The chiefly involved structure in leprosy	290 (89.78%)
9.	Severe type of leprosy	262 (81.11%)
10.	Most frequently affected nerve in leprosy	222 (68.73%)
11.	Cause of medical emergency in leprosy	210 (65.02%)
12.	Type of leprosy which is most contagious	217 (67.18%)
13.	Most commonly employed diagnostic test	277 (85.76%)
14.	Components of multidrug therapy of leprosy	249 (77.09%)
15.	Period of paucibacillary multidrug therapy	188 (58.2%)
16.	The period of multibacillary multidrug therapy	170 (52.63%)
17.	The nation with highest leprosy problem	175 (54.18%)
18.	Deformities in leprosy occur mainly due to damage of which structure	267 (82.66%)
19.	Deformities of leprosy	145 (44.89%)
20.	Do leprosy patient need to be confined	120(24.15%)
21.	Are there various forms of leprosy	282 (87.31%)
22.	Is leprosy transmittable from parents to children	176 (54.49%)
23.	Is multidrug therapy safe during pregnancy and lactation for mother and baby	183 (56.66%)
24.	Is there any vaccine available against leprosy	122 (37.77%)
25.	Are you aware of National Leprosy Eradication Programme	273 (84.52%)
26.	Is leprosy a curable disease	241 (74.61%)
27.	Do all patients with leprosy land up in deformities	129 (39.945)
28.	Can leprosy be prevented	279 (86.38%)

Table 3: Attitude about leprosy among undergraduates and interns:

S.No	Questions	No of positive response (%)
1.	Are you scared of leprosy	145 (44.89%)
2.	Is it all right to use the term Leper	89 (27.55%)
3.	Is it ok to send a leprosy patient to leprosy sanatorium	161 (49%)
4.	Is it fine for an individual without leprosy to marry a leprosy patient	171 (52.94%)
5.	Is it ok if normal people touch leprosy patient	242 (74.92%)
6.	Is it acceptable for you to treat a leprosy patient	287 (88.85%)
7.	Are you willing to share workplace with leprosy patients	247 (76.47%)
8.	Is it necessary to confine leprosy patients during treatment	208 (64.4%)
9.	Should the close contacts of leprosy patients be examined	272 (84.21%)
10.	Are the leprosy medications available free of charge to the patients in India	248 (76.78%)
11.	Do you think that leprosy is a highly infectious disease	194 (60.06%)
12.	Is leprosy a public health problem in India	266 (82.35%)

Table 4: Comparison between various studies:

	Madhavi J Mankar et al ⁴	SS Ahmed et al ¹	Doulat Rai Bajaj et al ³	P A Giri et al ²
Etiology of leprosy	43.13 %	84.7 %	-	-
Symptoms of leprosy	68.62%	91.3 %	76%	40%
Route of transmission	15%	-	56%	80%
Is leprosy a curable disease	88%	92%	73%	-

4. Discussion

Leprosy is an infectious disease caused by *Mycobacterium*. Man is the only natural reservoir of *M. leprae* and the only source of infection is an untreated case of leprosy.^{1,4,5}

M. leprae, widely prevalent in India for centuries, India has always been the country with the largest number of leprosy cases in the world.^{1,10,11} The latter form of the disease is attended by various mutilating deformities and disabilities with disability index as high as 55%.^{1,2,5,16} The magnitude of stigma to leprosy is quite high often paralleling to AIDS. A person is defined to have leprosy when he has one or more of the following features, which include hypopigmented or reddish skin lesions with definite loss of sensation, nerve thickening with sensory impairment and skin smear positive for acid-fast bacilli and who is yet to complete the full course of treatment. The respiratory route is the major portal of entry for the lepra bacilli.¹⁻⁵ The possibility of infection by entry through skin, particularly broken skin cannot be ruled out.

This study has assessed the knowledge and attitude among interns and undergraduates towards Leprosy. A study conducted by SS Ahmed et al and Giri et al showed that 97% and 80% of interns knew the causative organism which was similar to our study^(1,2,3,15). 89% of interns were aware of complications in a study by SS Ahmet et al which was in contradiction to our study^(1,2). 50% and 43.13% of the participants in a study by Giri et al and Madhavi J Mankar et al knew the cardinal features of leprosy compared to slightly higher proportion in our study.^{2,4-6} The Proportion of participants with knowledge of the route of transmission was only 15% in a study done by Madhavi J Mankar where knowledge of leprosy was assessed among leprosy patients and community members.⁴ Only 56% of the general practitioners knew the route of transmission in a study conducted by Doulat Rai Bajaj et al which is a striking knowledge gap.^{3,5} The proportion of participants with knowledge of duration of multi-drug therapy in paucibacillary and multi-bacillary patients, deformities of leprosy and prevention were similar to other studies^(6,16). On evaluating the attitude towards leprosy, 68% in the study by Giri et al and only 32% in the study by SS Ahmed et al said it is safe to marry a person with leprosy which is almost similar to our study.^{1,2,5,7} 87% in a study by Giri et al, were willing to share the workspace with leprosy patients.² 39.9% marked all the patients with leprosy will end up with deformities. 8% in study by SS Ahmed.¹ The above results were similar to our study. **Table 4** shows the comparison between various studies. Hence, the study has pointed out a major vacuole in knowledge among the participants and has brought forth the prevailing stigma in attitude towards leprosy patients. We henceforth imply raising awareness among the undergraduates and interns by conducting various educational programs, poster competitions and campaigns for the budding doctors of the society. They may help to

recognize cases at a very early stage, thereby by interrupting the transmission and preventing disability and deformities in the leprosy patients.

4.1. Strengths

The study targets budding doctors who are open to gaining knowledge and changing attitudes. Hence, impacting the future of society. This can be used as a basis for further studies which can be carried out at the national level to assess the knowledge and attitude of medical students towards leprosy patients and may pave for modifications in the pattern of medical education.

4.2. Limitations

As we have done a short-term study, the evolving knowledge on leprosy among students with their successive semesters could not be recorded.

5. Conclusions

Leprosy is a chronic infectious disease; early diagnosis of leprosy is vital as the early treatment can prevent deformities and disabilities. As undergraduates and interns are the young doctors encountering patients in community and in initial screening, timely recognition and appropriate knowledge can make a huge difference in reducing the burden of leprosy. The study shows the need for knowledge on symptoms over which the students should suspect leprosy in a patient and also the lack in knowledge over proper management and duration of management. On taking into account the results of the study, there is vast need in knowledge on leprosy, this demands us to improvise methods of education on leprosy and conduct more innovative and interesting campaign for better understanding and remembering of the Hansen's disease.

6. Ethical Approval

This study was approved by Institutional ethical approval committee with IEC: REC/2023/146

7. Conflict of Interest

None.

8. Source of Funding

None.

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