

# Comparative Study of Knowledge and Awareness about Leprosy among Medical College Students Pre and Post State Leprosy Sensitisation Program in Mewat, Haryana, India

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## ABSTRACT

**Introduction:** Leprosy is a chronic infectious disease which still remains a serious public health problem causing various disabilities. The prevention of leprosy ultimately lies in the early diagnosis and awareness about the disease. Changing leprosy scenario has led to requirement of leprosy education among the health workers and health care providers. However, the knowledge of medical college students on leprosy remains unknown.

**Aim:** To assess the knowledge and awareness about leprosy among medical students pre and post state leprosy sensitisation program.

**Materials and Methods:** A questionnaire based, cross-sectional study was conducted among 135 medical students before the sensitisation and 107 medical students after sensitisation program, of different years starting from second year and onwards in the month of July 2017.

**Results:** Among the medical students, who participated in the study, 67% (90) of pre sensitisation students were male and 33% (45) of them were females and 65% (70) of post sensitisation students were male and 35% (37) of them were females. Increase in knowledge and awareness about leprosy was found among medical students of all years from SHKM Government Medical College post sensitisation program as compared to previous knowledge and awareness before sensitisation program.

**Conclusion:** These observations suggest that the basic and in-depth knowledge of medical students' pre and post sensitisation program shows significant difference in their knowledge and awareness about leprosy owing part of their curriculum and sensitisation program. However, there is still a need to organise sensitisation programs for health care providers at regular intervals for early diagnosis, prevention and better management.

**Keywords:** Awareness, Multidrug therapy, Social stigma

## INTRODUCTION

Leprosy caused by *Mycobacterium leprae*, is one of the oldest chronic infectious diseases with permanent and progressive disability. Leprosy often results in intense stigma and social discrimination of patients and their families and is associated with psychological trauma too [1]. Leprosy is still prevalent in certain parts of the world, particularly India and South America [2]. In India, it has been known to people since the Vedic period. However, a clear diagnostic criterion was established only about half a century back [3].

In 2012-13, the prevalence rate was 0.73 per 10,000, and the total number of registered leprosy cases in India was 92,000. Annual New Case Detection Rate (ANCDR) stood at 10.78 per 10,000 populations [4]. In Haryana state the prevalence rate is 0.23 per 10,000 population and annual new case detection ratio is 1.57 [5].

It is believed that proper control and elimination of leprosy is possible only by considering long- term planning and control of leprosy as a chronic disease and providing sustainable care for leprosy patients [6]. Leprosy is also associated with social stigma due to reasons like mystery around its transmission, lack of knowledge and awareness of available treatment, deformities and religious views [7].

In view of the changing Leprosy scenario worldwide as well as an arising debate on revision of current leprosy program to encompass preventive aspects for effective elimination a change in teaching of leprosy has been felt [8]. Prejudices and lack of knowledge about leprosy exist even among medical practitioners and healthcare professionals around the world. This also holds good for the

medical curriculum [3]. The present study is intended to assess the knowledge and awareness of medical students about leprosy pre and post sensitisation program to incorporate any such sensitisation program to meet the future needs.

## MATERIALS AND METHODS

A cross-sectional survey was conducted by Department of Biochemistry and Dermatology, among undergraduate - medical students of different years of Shaheed Hasan Khan Mewati Government Medical College (SHKM GMC) Mewat in India. The study was conducted in month of July 2017. Reason for choosing students as the study group was their susceptibility to change in awareness and knowledge due to which the studies conducted in adult clinicians may not necessarily confirm the awareness and knowledge of the students. Study protocol was approved by Institutional ethical Board.

**Inclusion criteria:** One hundred fifty medical students from second year to final year participated in this study and first year medical students had university examination on the day of study so they were not included.

**Exclusion criteria:** Students who had attended any such kind of sensitisation program earlier.

A semi-structured self administered questionnaire was prepared by the Dermatology department and other faculties involved in the study. The questionnaire having 10 multiple choice questions with four options each was discussed among the faculty of Department of Biochemistry and Dermatology, SHKM Medical College Nuh, Haryana, and it was also shared with the zonal officers of the district

dealing with leprosy. The schedule was then pretested in the field to rule out operational constraints.

The questionnaire was prepared in English in order to maintain consistency and uniformity with the medium of instruction for medical students in India. The questions were based on studies conducted in other health professionals under similar setting [3]. The language of the questions was modified according to Indian context and some questions were added to assess the knowledge and awareness regarding medical aspects of the disease. The questionnaire was translated in Hindi followed by a reverse translation according to Guidelines by Beaton DE for cross cultural adaptation of self report measures [9]. Required changes were suitably incorporated. Questions related to knowledge and awareness were designed to cover basic knowledge and in-depth knowledge that included questions related to aetiology, clinical features, diagnosis, multidrug therapy, pathology etc., (questionnaire attached, Annexure).

**Standardization of questionnaire:** Face validity of the questionnaire was determined by administering the questionnaire to five experts from the field of medicine and dermatology. Demographic variables were kept bare minimum in order to reduce prestige bias among the respondents.

A pilot study was conducted on 10 participants who were medical students from different years of MBBS of SHKM Medical College, Mewat, Haryana to determine the internal consistency/reliability of the questionnaire. The questionnaire was re-administered to the same participants after an interval of 10 days. The value of Cronbach's alpha was 0.837. The questionnaire was scored by a single examiner on basis of an answer key; therefore, inter-examiner variability was eliminated while scoring the questionnaire. These 10 participants were later not enrolled in the study.

The finalized questionnaire consisted of 10 questions out of which five questions were related to the basic knowledge and five were related to in-depth knowledge. The scoring was done based on the percentage of students knowing the right answer.

**Data collection:** Sensitisation about leprosy epidemiology, cause, clinical features, prevention and treatment etc., was done for about an hour by state representative for Leprosy sensitisation program. The study was done pre and post sensitisation program in the form of questionnaire. Data collection was done from students of different years of SHKM medical college, Mewat, Haryana on 21 July 2017 in a single day. The questionnaire was administered to the students who gave verbal consent for participation. The participants filled the questionnaire in front of the researcher after an introduction and specific instructions were given to them. The participants were encouraged to ask the researcher in case of any doubt about the questions in the questionnaire. On the days of study, total 135 students participated in pre sensitisation study and 107 students were in post sensitisation study. Before sensitisation 26, 37 and 72 students participated from second year to final year, respectively and post sensitisation 41, 43 and 23 students attempted the questionnaire from second year to final year, respectively. Questionnaire sheets were collected before and after the sensitisation program and data was analysed by researchers.

## RESULTS

Pre sensitised 150 students participated in study and 135 completed the questionnaire. Approximately 67% of participants were males (n=90) and 33% (n=45) were females [Table/Fig-1].

Post sensitise approximately 65% of participants were males (n=70) and 35% (n=37) were females. Forty-one (38%) students were of second year, 43 (40%) of third year and 23 (22%) from final year respectively [Table/Fig-2].

Five basic and relevant questions about leprosy as decided by panel of experts were put in questionnaire to assess basic knowledge

and awareness about leprosy [Table/Fig-3]. Each question of basic knowledge had four objective options. Students marked only single option as a correct answer. Number and percentage of only those students were considered who gave correct answer,

Variable	Frequency (n)	%
<b>Gender</b>		
Male	90	67
Female	45	33
<b>Year of medical training</b>		
Second year	26	20
Third year	37	27
Final year	72	53

**[Table/Fig-1]:** Pre sensitisation: Distribution of medical students according to demographic characteristics.

Variable	Frequency (n)	%
<b>Gender</b>		
Male	70	65
Female	37	35
<b>Year of medical training</b>		
Second year	41	38
Third year	43	40
Final year	23	22

**[Table/Fig-2]:** Post sensitisation: Distribution of medical students according to demographic characteristics.

Basic Knowledge Awareness Categories of Medical students						
	Second year n=72 No. %		Third Year n= 37 No. %		Final Year n= 26 No. %	
Cause of Leprosy	66	92	37	100	26	100
Features of Leprosy	53	74	25	68	20	77
Other Name of Leprosy	63	88	29	78	26	100
Staining of bacilli	60	83	27	73	24	92
Mode of Spread of bacteria	43	60	30	81	15	58

**[Table/Fig-3]:** Pre sensitisation-Basic-knowledge and awareness of medical students- with regard to leprosy.

like features of leprosy are except -numbness, nerve enlargement, hypopigmentation and pain. (See in questionnaire attached after the references Annexure)).

In- depth Knowledge Awareness Categories of Medical students						
	Second Year n=72 No. %		Third Year n=37 No. %		Final Year n=26 No. %	
MDT of Leprosy	57	79	34	92	26	100
Diagnosis of Leprosy	65	90	35	95	25	96
Reaction in Leprosy	36	50	13	35	10	38
Pathology of Leprosy	35	49	21	57	24	92
Type of bacilli	32	44	16	43	20	77

**[Table/Fig-4]:** Pre Sensitisation: In-depth-knowledge and awareness of medical students-with regard to leprosy.

\*MDT: Multidrug therapy

Like the basic knowledge and awareness, in-depth knowledge was also assessed by five questions, each having four multiple choice options and one correct answer [Table/Fig-4-6].

## DISCUSSION

This study is the first to assess the knowledge and awareness of medical students about leprosy including various pathological, clinical and social aspects of the disease in Mewat region of Haryana. In the present study 67% and 65% male and 33% and 35% female students participated in pre and post sensitisation

Basic Knowledge Awareness Categories of Medical students						
	Second Year n=41 No. %		Third Year n=43 No. %		Final Year n=23 No. %	
Cause of Leprosy	41	100	43	100	23	100
Features of Leprosy	41	100	43	100	22	96
Other Name of Leprosy	41	100	43	100	23	100
Staining of bacilli	41	100	43	100	23	100
Mode of Spread of bacteria	35	85	41	95	10	43

**[Table/Fig-5]:** Post sensitisation: Basic knowledge and awareness of medical students with- regard to leprosy.

In-depth Knowledge Awareness Categories of Medical students						
	Second year n=41 No. %		Third Year n=43 No. %		Final Year n=23 No. %	
MDT of Leprosy	41	100	43	100	23	100
Diagnosis of Leprosy	29	71	42	98	23	100
Reaction in Leprosy	34	83	25	58	13	57
Pathology of Leprosy	41	100	31	72	23	100
Type of bacilli	26	63	26	60	20	87

**[Table/Fig-6]:** Post sensitization: In- depth knowledge and awareness of medical students -with regard to leprosy.

\*MDT: Multidrug therapy

program respectively which was conducted in SHKM GMC, Mewat, on awareness about leprosy among medical students of different years which revealed a diverse yet good knowledge and awareness towards leprosy.

In a study from Hyderabad city, conducted at Government Health Services dispensaries in Hyderabad in order to assess knowledge and attitude and some operational parameters, medical officers consistently demonstrated higher knowledge about leprosy, followed by nursing staff and paramedical workers. More than half of the study subjects did not have specific training in leprosy [2].

An investigation into the attitudes, beliefs and behavior of 730 Primary Healthcare (PHC) workers with regard to Multidrug Therapy (MDT) was carried out in Yangzhou and Dongtai districts of China, which revealed that only half of the PHC workers had a basic knowledge of MDT and a desire to participate in MDT implementation [10].

Final year medical students consistently demonstrated higher knowledge about leprosy in comparison with medical students of second and third year. This study was undertaken as part of sensitisation program by government of Haryana to medical students, to assess the level of knowledge and awareness about leprosy among medical students of tertiary health care centre.

A study was undertaken as part of operational research by the Ministry of Health and Family Welfare, Government of India, to assess the level of integration of leprosy services into general healthcare system in 24 low or moderately endemic states/ union territories [11]. A study conducted by the Regional Leprosy Training and Research Institute, Lalpur, Raipur, Chhattisgarh, India, revealed that 45% of medical officers, 71% of health supervisors and 75% of multipurpose workers were trained in leprosy [12].

The data in this study include basic knowledge and in-depth knowledge and awareness about leprosy among medical students in SHKM GMC, Mewat, Haryana, India.

Presensitized large number of medical students had correct basic knowledge about cause, features, other name and mode of spread of leprosy and about staining of lepra bacilli. The cause of leprosy was known to 100% of third year and final year students while 92% of second year medical students correctly knew the cause of

leprosy. The clinical features of leprosy were known to 74% second year, 68% third year and 77% of final year medical students. As far as other name of leprosy is concerned, 100% of final year students were knowing it while only 88% of second year and 78% of third year had correct knowledge about it.

The staining of *Mycobacterium leprae* bacilli was correctly known to 92% of final year, 73% third year and 83% of second year medical students. The different routes of mode of spread of leprosy were rightly answered by 58% of final year and 60% of second year medical students whereas, 81% of third year medical students had correct knowledge about leprosy [Table/Fig-3].

A large number of medical students had correct in-depth knowledge about treatment, diagnosis, reaction and pathology of leprosy, and virulence of lepra bacilli. Regarding MDT of leprosy 100% of final year medical students were totally aware about it whereas 92% third year and 79% second year medical students had correct knowledge about leprosy treatment. Most of the medical students had correct knowledge about diagnosis of leprosy viz., 96% final year, 95% third year and 90% second year medical students.

Inadequate knowledge about reaction in leprosy was observed among all years of medical students- only 38% final year, 35% third year and 50% second year medical students had correct knowledge about leprosy reaction.

Knowledge about pathology of leprosy was found to be in increasing trend among Mewat medical students viz., 49% second year, 57% third year and 92% final year medical students. The awareness about virulence of lepra bacilli was not adequate among medical students as only 44% second year and 43% third year medical students had knowledge about it. On the other hand 77% of final year medical students in SHKM GMC were having accurate information on lepra bacilli virulence [Table/Fig-4].

Post sensitised large number of medical students had correct basic knowledge about cause, features, other name and mode of spread of leprosy and about staining of lepra bacilli. The cause of leprosy was known to 100% of second year, third year and final year medical students. The clinical features of leprosy were known to 100% second year and third year medical students and 96% of final year medical students. As far as other name of leprosy is concerned, 100% of second year, third year and final year students knew it.

The staining of lepra bacilli was correctly known to 100% of final year, third year and second year medical students. The different routes of mode of spread of leprosy were rightly answered by 43% of final year and 85% of second year medical students whereas 95% of third year medical students had correct knowledge about it [Table/Fig-5].

The knowledge and attitude of health workers in northwestern Botswana with regard to leprosy were determined by interviewing 99 health workers from various health institutions. Knowledge on causation of leprosy was generally lacking. Although majority of respondents knew that the disease is curable, less than half knew the correct duration of treatment [13].

A large number of medical students had correct in-depth knowledge about treatment, diagnosis, reaction and pathology of leprosy and virulence of lepra bacilli. Regarding MDT of leprosy 100% of final year, third year and second year medical students were totally aware about it. Most of the medical students correctly knew about diagnosis of leprosy viz., 100% final year, 98% third year and 71% second year medical students.

Inadequate knowledge about reaction in leprosy was observed among all years of medical students: only 57% final year, 58% third year and 83% second year medical students correctly knew about leprosy reaction.

Knowledge about pathology of leprosy was found to be adequate

in 100% second year, 72% third year and 100% final year medical students. The awareness about virulence of lepra bacilli was not adequate among medical students as only 63% second year and 60% third year medical students had knowledge about it. On the other hand 87% of final year medical students in SHKM GMC had accurate information on lepra bacilli virulence [Table/Fig-6].

The district hospital, PHCs and Community Health Centre (CHCs) under Government of Haryana frequently undergo such sensitisation program on leprosy. The training and awareness about leprosy among medical students was done for the first time at tertiary level health care centre i.e., SHKM GMC Mewat.

## LIMITATION

This study also has limitation of use of self-reported questionnaires that may cause several biases including recall and social desirability bias. However, it was ensured that social desirability and prestige bias is minimized through keeping confidentiality of the students as name or other identity of the student was not asked anywhere in the questionnaire. Further, demographic data was kept minimum, to ensure confidentiality of the participants. It is suggested that in future studies more comprehensive variables are recruited for better understanding.

## CONCLUSION

The knowledge and awareness of medical students from SHKM Government Medical College, Nalhar, Haryana about leprosy is fairly good. Still, there is need for well-organised, specifically targeted educational programs in leprosy for medical trainees and their integration in national health program. However such kind of awareness program do not access the contemporary knowledge but also provide better platform to give the insight about the whole scenario of the disease. This type of study will help to set priorities for Continuing Medical Education (CME) programs and refresher courses for the medical students and the medical fraternity in general. Therefore, this type of study is important for making health policy decisions also.

## REFERENCES

- [1] Monika P, Wijeratne T. Knowledge, attitudes and practices relating to leprosy among public health care providers in Colombo, Sri Lanka. *Lepr Rev.* 2017;88:75–84.
- [2] Sumit K, Ahmed S. Current knowledge attitudes, and practices of healthcare providers about - leprosy in Assam, India. *J Glob Infect Dis.* 2010;2(3):212–15.
- [3] Meena J, Ankur S. Knowledge and attitude about leprosy among Indian dental students in Faridabad. *J Clin Diagn Res.* 2016;10(3):ZC48–ZC52.
- [4] Government of India. NLEP – Progress Report for the year 2012-13. GOI, New Delhi, GOI/DGHS/CLD/2013, p1.
- [5] Government of Haryana. NLEP. Progress report for year 2016-17. rev.pdf; 2016-17: Pp-5-6,
- [6] Lockwood DMJ, Suneetha S. Leprosy: too complex a disease for a simple elimination paradigm. *World Health Organisation.* 2005;83(3):230–35.

- [7] Dogra S, Narang T, Kumar B. Leprosy - evolution of the path to eradication. *Indian J Med Res.* 2013;137(1):15–35.
- [8] Alves CRP, Ribeiro MMF, Melo EM. Teaching of leprosy: current challenges. *An Bras Dermatol.* 2014;89(3):454–59.
- [9] Beaton DE, Bombardier C, Guillemin F. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine.* 2000;25(24):3186–91.
- [10] Chen XS, Ye GY, Jiang C, Li WZ, Bian J, Wang H, et al. An investigation of attitudes, beliefs and behaviour of leprosy patients, family members and PHC workers towards multidrug therapy in Yangzhou and Dongtai Districts of China. *Lepr Rev.* 1997;68:155–61.
- [11] Pandey A, Patel R. Integration of leprosy control into general health care system: Observations from a state with low endemicity. *Indian J Lepr.* 2005;77:229–38.
- [12] Pandey A, Patel R, Uddin MJ. Leprosy control activities in India: Integration into general health system. *Lepr Rev.* 2006;77:210–18.
- [13] Kumaresan JA, Maganu ET. Knowledge and attitude of health workers towards leprosy in north-western Botswana. *East Afr Med J.* 1994;71:366–67.

## ANNEXURE

### Questionnaire for state leprosy sensitisation program

#### Question 1-5 are to assess the basic knowledge and awareness

- 1 Leprosy is caused by:
  - a) Bacteria b) Virus c) Fungi d) Genetic
- 2 Leprosy has following features except:
  - a) Numbness b) Nerve enlargement c) Hypopigmentation d) Pain
- 3 Treatment of leprosy contains all except:
  - a) Dapsone b) Rifampicin c) Levofloxacin d) Clofazamine
- 4 Other name of Leprosy is:
  - a) Hansen disease b) Koch,s disease c) Madcow disease d) Ranikhet disease
- 5 Confirmation of leprosy is by :
  - a) CBC b) LFT c) Skin biopsy d) Hair testing

#### Question 6-10 are to assess the in-depth knowledge and awareness:

- 6 Type 1 reaction seen in:
  - a) TT b) LL c) BB d) none
- 7 Skin reaction in Leprosy showed:
  - a) Granuloma b) T cells c) B cells d) Interferon
- 8 Staining used for Leprae bacilli:
  - a) Z- N staining b) KOH mount c) Gram staining d) None
- 9 Leprae bacilli disseminated by:
  - a) Urine b) Feces c) Aerosol route d) Blood
- 10 Leprae bacilli is a type of:
  - a) Weak b) Strong c) Very strong d) none

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