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Dentistry Section

Knowledge and Attitude about Leprosy among Indian Dental Students in Faridabad

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ABSTRACT

Introduction: Role of dentists in prevention and sustainable care of leprosy is known. Changing leprosy scenario has led to requirement of change in leprosy education. However, knowledge and attitude of dental students on leprosy remains unknown.

Aim: Hence a study was conducted to assess knowledge and attitude of dental students about Leprosy.

Materials and Methods: A questionnaire based, cross-sectional survey was conducted among 350 undergraduate and the postgraduate dental students of two dental colleges in Faridabad, India. The score for knowledge ranged from 0 to 16 and scores for attitude ranged from 0 to 26. These scores were further coded as poor, fair and good.

Results: Mean knowledge score for the sample was 7.64±3.23. A total of 32.29% participants were under poor knowledge category; 57.42% had fair knowledge about Leprosy while 10.29% had good knowledge. Mean attitude score was 15.5 ± 5.98. A total of 30.57% had poor attitude scores, 42.57% had fair scores while 26.86% had good attitude scores. Univariate analysis showed year of training to be a significant predictor for knowledge level (t=7.12; p<0.001).

Conclusion: The results indicate need for three important changes towards Leprosy in Dentistry. These changes are need for incorporation of leprosy education in Dentistry, need for incorporation of problem based as well as evidence based learning in Dentistry integrated with general health and need for reestablishing public health programs for Leprosy utilizing dental workforce.

Keywords: Communicable disease control, Dental education, Data collection, Public health professionals education, Social stigma

INTRODUCTION

Leprosy has been known to the Indians since the Vedic period [1]. However, a clear diagnostic criterion was established only about half a century back [2]. A WHO study group recommended Multi Drug Therapy (MDT) for Leprosy control programs in 1982 [3]. The success of MDT led the World Health Assembly in 1991 to set a target for the elimination of Leprosy as a public health problem by the year 2000 [4]. The goal for elimination of Leprosy was set at achieving a prevalence rate of less than 1 per 10,000 population. India achieved this goal in December 2005 [5].

However, in year 2012-13, at a prevalence rate of 0.73 per 10,000; the total number of registered leprosy cases in India was 0.92 lac. Annual New Case Detection Rate (ANCDR) stood at 10.78 per 10,000 population. Significant amount of disability was detected among the new Leprosy patients [6]. 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 [4]. Leprosy is also synonymous with social stigma due to reasons like mystery around its transmission, lack of knowledge on available treatment, deformities and religious views [7]. Prejudices and lack of knowledge about leprosy exist even among medical practitioners and healthcare professionals around the world [8-10].

Oral mucosa is the key area for entry and exit of Lepra bacilli [11]. A significant number of Leprosy patients show oro-facial manifestations. These lesions form an important source of transmission of *Lepra* bacilli in the community [12]. Recent literature has shown that the existence of oral infections is known to exacerbate acute inflammatory reactions in Leprosy patients [13,14]. Hence, dental professionals have a major role to play in prevention of leprosy and care of the Leprosy patients [15].

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 [16]. This also holds good for the dental curriculum.

Considering the role of dentists in providing sustainable care for patients suffering from Leprosy, lack of knowledge and proper attitude can be a major deterrent. Studies have been conducted worldwide to assess the knowledge and attitude of physicians, medical students, physiotherapists and healthcare workers [8-10,17]. Hence, it is important to assess dental students' existing knowledge and attitude about Leprosy. No such study has been conducted in dental students.

AIM

The aim of this study was to assess knowledge and attitude of dental students about Leprosy so that the health resources are suitably directed to meet the future needs in this field.

MATERIALS AND METHODS

A cross-sectional survey was conducted among undergraduate and postgraduate dental students of two dental colleges in Faridabad, India. Reason for choosing students as the study group was their susceptibility to change in attitudes due to which the studies conducted in adult clinicians may not necessarily confirm to the attitude of the students [18,19]. Study protocol was approved by Institutional Review Board of Manav Rachna Dental College, Faridabad, India.

Instrument Generation: A semi structured self administered questionnaire was prepared by the researchers. The questionnaire was prepared in English in order to maintain consistency as well as in confirmation with the medium of instruction for dental students

in India. The questions were based on studies conducted in other health professionals under similar setting [8-10]. The language of the questions was modified according to Indian context and some questions were added to assess the knowledge and attitude regarding oral aspects of the disease. The questionnaire was translated in Hindi followed by a reverse translation according to Guidelines by Beaton et al., for cross cultural adaptation of self report measures [18]. Required changes were suitably incorporated. Questions related to knowledge were designed to cover sources of knowledge, aetiology, transmission, clinical features, oral manifestations, management, prevention and public health aspects related to Leprosy. The attitude questions were designed to assess the participants about fear, social stigma and personal prejudices attached to leprosy in various situations at home, workplace and society.

Standardization of Instrument: Face validity of the questionnaire was determined by administering the questionnaire to 5 experts from the field of medicine and dentistry. Demographic variables were kept bare minimum in order to reduce prestige bias among the respondents.

A pilot study was conducted on 10 participants 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 questionnaires were scored by a single examiner on basis of an answer key, therefore inter-examiner variability was eliminated while scoring the questionnaire.

The finalized questionnaire consisted of 43 questions out of which 16 questions were related to knowledge, 25 were related to attitude and two questions were introduced on source of knowledge on leprosy.

Data Collection: Data collection was done from students of the two existing dental colleges in Faridabad over a period of 30 days in June and July 2014. 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, 524 students were present, out of whom 400 undergraduate and post graduate dental students consented to participate in the study. The response rate was 76.3 %. Out of a total of 400, 50 students were excluded from the study as they didn't fill the form completely or filled more than one choice for the questions. Hence the results of the study were based on data from 350 participants.

Knowledge and attitude were evaluated separately for each of the participant. Appropriate response was given a score 1 while incorrect or inappropriate response was given a score of 0. Scores for correct responses were summed up to determine individual knowledge and attitude scores separately. The score for knowledge ranged from 0 to 16 and scores for attitude ranged from 0 to 26. The scores were further coded as poor, fair and good.

STATISTICAL ANALYSIS

Statistical analysis was done using SPSS software Version 19. Significant difference in knowledge and attitude according to various demographic factors was determined by applying independent T-test. Predictors for knowledge and attitude were determined using multivariate analysis and linear regression. The p-value of < 0.05 was considered statistically significant for all analysis.

RESULTS

Three hundred and fifty individuals completed the questionnaire. Approximately 69% of the participants were females (n=241). About one-fourth of the participants were post graduate students (n=88; 25.1%). Of the total sample, 13.7% (n=48) were first year students and 10% (n=35) were second year students 7.7% (n=27) belonged to third year while 21.7% participants (n=76) belonged to fourth year. Interns made up 21.7% of the sample size (n= 76) [Table/Fig-1].

Knowledge scores of Dental Students: The primary source of knowledge about Leprosy for majority of the participants (75.2%) was lectures books and journals. A large number (n= 185; 52.9%) however, had never attended any lecture on Leprosy.

A large majority had incorrect knowledge about National Leprosy Eradication Program (NLEP) (n= 246; 70.3%). Similarly, most of the respondents did not know about intersectoral collaborations for implementation of NLEP (n= 195; 55.7%) [Table/Fig-2]. Mean knowledge score for the sample was 7.64±3.23. A total of 113 participants (32.29%) were categorized under poor knowledge category; 201 (57.42 %) were found to have fair knowledge about Leprosy while 36 (10.29 %) had good knowledge.

The mean knowledge score was 8.95 in PG students, 8.41 for interns, 7.24 for fourth year, 7.52 for third year, 7.11 and 5.08 for second and first year respectively. 15.90% of the PG students

Variable	Frequency (n)	%age
Age group		
<= 20 years	70	20
21 to 25 years	222	63.4
<= 26 years	58	16.6
Gender		
Male	109	31.1
Female	241	68.9
Year of Dental Training		
I year	48	13.7
II year	35	10
III year	27	7.7
IV year	76	21.7
Intern	76	21.7
PG student	88	25.1

[Table/Fig-1]: Distribution of dental students according to demographic characteristics.

Question	Correct response n (%)	Incorrect response n(%)	Don't know n(%)
Leprosy is a communicable disease	171(48.9)	121(34.6)	58(16.6)
Leprosy is curable	262(74.9)	31(8.9)	57(16.3)
Leprosy affects children and young adults	232(66.3)	34(9.7)	84(24)
Cause of Leprosy	286(81.7)	19(5.4)	45(12.9)
Mode of transmission of Leprosy	122(34.9)	140(40)	88(25.1)
Tissue primarily affected by Leprosy	262(74.9)	41(11.7)	47(13.4)
First Clinical feature of Leprosy	252(72)	30(8.6)	68(19.4)
Diagnostic test for Leprosy	222(63.4)	60(17.2)	68(19.4)
Availability of vaccination for Leprosy	105(30)	115(32.9)	130(37.1)
Most commonly affected oral tissue	36(10.3)	171(48.8)	143(40.9)
Best available treatment	204(58.3)	51(14.6)	95(27.1)
Stoppage of transmission after starting treatment	21(6)	151(43.1)	178(50.9)
Precautions before coming in contact with a Leprosy patient	172(49.1)	97(27.7)	81(23.1)
Preventability of deformities caused by Leprosy	140(40)	85(24.3)	125(35.7)
Knowledge about any National leprosy eradication program	104(29.7)	246(70.3)	0(0)
National leprosy eradication program works in collaboration with	83(23.7)	72(20.6)	195(55.7)

[Table/Fig-2]: Frequency of responses to questions on knowledge of Leprosy.

Towards changes in society		
Question	Agree n(%)	Disagree n(%)
Should leper's colonies be developed	150(42.9)	200(57.1)
Do you think person with Leprosy should be treated in all hospitals	272(77.7)	78(22.3)
Should a person who had Leprosy be allowed to use public transport	271(77.4)	79(22.6)
Should a person who had Leprosy be allowed to attend public functions	279(79.7)	71(20.3)
Towards personal attitude or behaviour with a person who had Leprosy		
	Yes n(%)	No n(%)
Have you ever treated a Leprosy patient	13(3.7)	337(96.3)
Would you like to treat a leprosy patient	243(69.4)	103(29.4)
Do you think it is possible for you to have Leprosy	136(38.9)	214(61.1)
Are you afraid of Leprosy	191(54.6)	159(45.4)
Have you ever donated for the cause of Leprosy	46(13.1)	304(86.9)
Would you like to work in a Leprosy centre	204(58.3)	146(41.7)
If you are diagnosed with Leprosy, will you share it with your colleagues / friends	234(66.9)	116(33.1)
Would you marry a person who had Leprosy	59(16.9)	291(83.1)
Would you marry a person whose parents had Leprosy	161(46)	189(54)
If you fall ill, will you agree to be admitted in the same hospital as people with Leprosy	226(64.6)	124(35.4)
Would you sit with him/ her	261(74.6)	89(25.4)
Would you shake hands with him/ her	209(59.7)	141(40.3)
Would you share food with him/her	158(45.1)	192(54.9)
Would you buy food /clothes from him/ her	210(60)	140(40)

[Table/Fig-3]: Frequency of responses to questions on attitude changes in society and personal attitude.

Regarding behavior at workplace		
Question	Positive attitude n(%)	Negative attitude n(%)
Would you be comfortable working with someone who had Leprosy	223(63.7)	127(36.3)
Would you employ someone who had Leprosy	222(63.4)	128(36.6)
What would your reaction be, if your friend/colleague had Leprosy	277(79.1)	73(20.9)
What would your reaction be, if you see a person who had Leprosy.	236(67.4)	114(32.6)
Regarding behaviour at home/ neighborhood		
Would you allow someone in your family to marry a person who had Leprosy	93(26.6)	257(73.4)
What would your reaction be, if your family member is diagnosed with Leprosy	297(84.9)	53(15.1)
If someone in your family had Leprosy would you talk about it to your friends	224(64)	126(36)
Would you allow children in the family to play with him/ her	162(46.3)	188(53.7)

[Table/Fig-4]: Frequency of responses to questions on attitude at workplace and at home /neighborhood.

had good scores while 2.09% of the first year students had good knowledge scores. 64.3% of first year students had poor knowledge scores followed by third (40.74%), second (40%) and fourth year (34.21%) students. In interns and postgraduate students, 21.05% and 17.05% respectively had poor knowledge.

Attitude scores of Dental Students: Most of the respondents showed positive attitude about changes in society regarding Leprosy [Table/Fig-3] and behavior towards an individual who had Leprosy at workplace [Table/Fig-4]. Attitude scores of the respondents ranged from 1 to 26. Mean attitude score was 15.5±5.98. A total of 107 participants (30.57%) had poor attitude scores, 149 (42.57%) had fair scores while 94 (26.86%) had good attitude scores [Table/Fig-5].

	No. of Participants	%age
Knowledge Score		
Good (12 -16)	36	10.29%
Fair (7-11)	201	57.42%
Poor (0-6)	113	32.29%
Attitude Score		
Good (20 -26)	94	26.86%
Fair (13-19)	149	42.57%
Poor (0-12)	107	30.57%

[Table/Fig-5]: Distribution of knowledge and attitude scores of participants.

	Mean Knowledge Score	Mean Attitude Score
PG (N=88)	8.95	16.25
Intern (N=76)	8.41	14.7
IV BDS (N=76)	7.24	16.8
III BDS (N=27)	7.52	14.3
II BDS(N= 35)	7.11	15.9
I BDS (N= 48)	5.08	13.4

[Table/Fig-6]: Mean knowledge and attitude scores according to year of training.

Univariate analysis	β	95% CI of β	t	p-value
Knowledge score : F=27.17, p<0.001 , r^2=13.5%, Adjusted r^2=13%				
Year of training (1st year=1)	.672	0.587-0.766	7.12	<0.001
Gender (Male=1)	.534	0.185-.883	1.53	.127
Constant	4.027			
Attitude score : F= 2.01, p = 0.135, r^2 =01%, Adjusted r^2=0.6%				
Year of training (1st year=1)	0.375	0.188-0.562	2.01	0.05
Gender (male=1)	-0.101	-0.79-0.59	-0.146	.884
Constant	14.11			

[Table/Fig-7]: Multivariate linear regression and multiple multivariate analysis of knowledge and attitudes towards leprosy.

Attitude scores were found to be the highest in postgraduate students (16.25), who were also found to have highest number of participants having 'Good' score (n=32; 36.36%). Lowest attitude scores were seen in first year students (13.40), who also had highest parcentage falling in 'Poor' attitude category (n=20; 41.67 %) [Table/Fig-6].

Knowledge and Attitude according to Year of training: The present study showed statistically significant association between knowledge about leprosy and year of training (Pearson Chi-square value = 44.301; p-value <0.001). A significant association was also established between leprosy related attitudes and year of training (Pearson chi-square value = 26.159; p-value = 0.004) in our study sample. Analysis of Variance showed a significant difference in knowledge scores (p< 0.001) and attitude scores (p=0.019) between years of training in dental schools. Multiple comparisons using Dunnett t3 test showed that there was a significant difference of knowledge scores of 1st year students when compared with interns (Mean difference = -3.32456; p < 0.001) and Post graduate students (Mean difference = -3.87121; p<0.001). A significant difference was also found between the knowledge levels of postgraduates students as compared with final year students (Mean difference = 1.71770; p=0.001). Univariate analysis showed year of training to be a significant predictor for knowledge level (t = 7.12; p < 0.001) [Table/Fig-7].

Knowledge and Attitude according to age of respondents: A statistically significant association between age and knowledge score was found in the present study (Pearson Chi-Square value

= 30.908; p<0.001), however, such an association could not be established between age and attitude score (Pearson Chi-Square value = 9.182; p= 0.164). Similarly, a significant difference was found to be present in knowledge scores among different age groups (p<0.001) but such difference was not found in attitude scores among age groups (p = 0.081). Multiple comparisons showed that there was a significant difference in knowledge level in age group of 20 years or less as compared to the age group of 21-25 years (Mean difference = -1.95367; p < 0.001), 26-30 years (Mean difference = -3.10440; p < 0.001) and greater than 30 years (Mean difference = -4.89286; p = 0.014). However, no significant difference could be established between attitude scores and age group [Table/Fig-7].

DISCUSSION

This study is the first to assess the knowledge and attitude of dental students about Leprosy including various pathological, clinical and social aspects of the disease. In the present study only 10.29% showed good knowledge of Leprosy. This percentage was low as compared to knowledge of HIV/AIDS in dental students according to a study conducted in dental students in Shimla [20] where 68.3% of students demonstrated good knowledge. The students in the present study, however, showed a high level of willingness to treat Leprosy patients (69.4%) which is in accordance with the study on HIV/AIDS (77.4%). It could be said that despite a high level of willingness to treat Leprosy patients, the knowledge about Leprosy in dental students was inadequate. Improvement is required in both knowledge and attitude levels. But an increased emphasis is required on imparting adequate Leprosy related knowledge. This is important because of lower percentage of participants with good knowledge score as compared to percentage of participants with good attitude score.

A large number of participants had correct knowledge about aetiology, site, curability, clinical features and investigations for Leprosy. However, knowledge about Leprosy in relation to oral aspect was extremely low. Low knowledge on this aspect may be attributed to absence of Leprosy specific topics in dental curriculum for both undergraduate as well as post graduate students. Knowledge of transmission of Leprosy and stoppage of transmission was also low, reflecting as negative changes in attitude about leprosy.

Public health related knowledge was also found to be less. As much as 70.3 % did not know about existence of National Leprosy Eradication Program. This lack of knowledge could be attributed to a reduced emphasis on Leprosy as a public health problem after elimination was achieved in 2005.

Most of the participants had a positive attitude regarding changes in society for greater acceptance toward Leprosy patients and agreed that leprosy patients should be treated in general hospitals, allowed to use public transport and attend public functions without any discrimination. Many participants were also positive about working with people who had Leprosy. However, a little less than half of the participants favored development of leper colonies indicating that there is still a stigma towards complete integration of Leprosy patients into the social mainstream. Such an attitude could have its roots at knowledge obtained from unreliable means such as home and media. There was a realistic attitude among the participants about possibility of having Leprosy themselves. A little more than half of the participants, however, had a fear about Leprosy. About 86.5% of the participants had never donated for Leprosy, even though donating for Lepers on special occasions has been a part of Indian culture traditionally. This could be an indicator of increasing social neglect of Lepers which could be due to neglect of public health aspect of the disease. The personal attitude of the participants was negative about integrating Leprosy patients into their family, home and immediate neighborhood. This could be attributed to a lack of public health awareness about leprosy.

A majority of the participants had never treated a Leprosy patient; however, a large majority was interested in managing such patients, thus indicating the need of increased problem based teaching in dentistry about Leprosy.

The significant predictor for participants' knowledge as well as attitude was their year of training. Thus, we should emphasize on younger students as important target groups for advanced educational programs about infectious diseases.

There is a need for three important changes towards Leprosy in dentistry in India. These changes are including leprosy education in dentistry, incorporating problem based as well as evidence based learning in dentistry integrated with general health and increased involvement of dental workforce in public health programs for leprosy. Keeping in view, the substantial dental workforce in India; they can be used in curbing the effect of leprosy in the society. However, the present dental curriculum is inadequate in meeting these requirements. Therefore, there should be curriculum changes incorporating training on leprosy. There is also a need to change social stigma attitude of dental students towards the patients. There are only two dental colleges in Faridabad and students from both the colleges participated. While the sample may not warrant generalizations, it may be a pointer to the feelings of Indian dental students towards leprosy. It is therefore important to replicate this study on a more representative sample of dental students and clinicians.

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. We suggest that in future studies more comprehensive variables will be recruited for better understanding.

CONCLUSION

Leprosy elimination has been achieved; however, the disease has a long incubation period and need is felt for continued support from government as well as non governmental agencies to achieve zero incidence rates. WHO suggests that effective leprosy control requires an integration of leprosy services with other health services.

The knowledge and attitude of Indian dental students about leprosy is fairly good. Still, there is need for well-organized, specifically targeted educational programs in leprosy for dental trainees and their integration in national health programmes.

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