



## AWARENESS AMONG YOUNG DENTISTS ABOUT TRANSMISSION OF H.I.V AND PREVENTIVE MEASURES

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**Abstract:** HIV/AIDS has profoundly affected every aspect of the health sector. Most importantly doctor's attitude of avoiding treatment of HIV patients is mainly due to their apprehensions caused by their lack of understanding of the disease and its modes of transmission. To assess the knowledge, attitudes, and perceptions of risk of occupational transmission of HIV in a group of dental students. Design-Cross sectional anonymous questionnaire survey of all occupational groups in a large inner city teaching hospital. Overall correct responses were given by most of the respondents. Others either gave wrong responses or answered 'Not-sure'. Well known modes of HIV transmission like, blood transfusion, needle stick injuries and question about vertical transmission to newborn were answered correctly by more than 90% of the respondents. Correct responses were very low to query of possibility of spread by saliva [58.2%]. Higher percentage of correct responses by BDS graduates compared to MDS graduates was statistically significant [ $p>0.05$ ]. These findings highlight the importance of teaching the dental students on various aspects of the disease. Universal Work Precautions implementation should be emphasized at an early level of their curriculum and reinforced from time to time.

**Keywords:** HIV/AIDS, Dental Students, Knowledge, Attitude

### INTRODUCTION

The mouth being the mirror of general health has always given scope for early detection of many systemic diseases, as most lesions present orally during the initial stage of the disease. The possibility of HIV transmission in the oral health care setting has become common as dental surgeons deal with body fluids, sharp instruments and needles. Global estimates reveal that nearly 2% of new cases of HIV occur due to unsafe injection practices<sup>1</sup>. The Centers for Disease Control and Prevention<sup>2,3</sup> and other professional associations<sup>4</sup> thus recommend adherence to infection control guidelines to decrease the risk of occupationally acquired infections. Risk assessment and testing for HIV are not always feasible, especially in some emergency cases, therefore following universal precautions assuming every patient as potentially infectious is critical to prevent occupational exposure to blood and body fluids related infections like HIV. The estimated risk of HIV transmission from patients to dentists is minimal if "universal precautions" are strictly observed.<sup>5,6</sup> However, many times breach may occur in these universal precautions as well.

Studies conducted in the United Kingdom,<sup>7,8</sup> North America,<sup>9,10</sup> and Italy<sup>11</sup> have shown that one of the reasons that dentists have refused to treat patients with HIV infection was an inflated fear of cross infection caused by their lack of knowledge. Hence it

was decided to carry out a study among young dentists to explore their knowledge about transmission of HIV infection, practice and awareness of some of the protective measures those must be employed by dentists.

### METHOD

The study was carried out over a period of one month in a dental college in south India. Young dentists up to five years of experience were included in the study, which included interns, post graduate students and those who have been working for one or two years after the completion of post-graduation. A convenient sampling method was adopted. A self-administered, pre tested, validated questionnaire prepared by the subject experts<sup>8</sup> was given to all eligible subjects in the college. The questionnaire consisted of 20 questions about modes of transmission of HIV, preventive measures of HIV infection, self-assessment of knowledge about HIV and about the participant's opinion, about the responsibilities of the institution in training and preparing guidelines about managing high risk patients. Permission for the study was obtained by the institutional ethics committee. A written informed consent was obtained from the study subjects. Baseline characteristics were also collected in the questionnaire. The data was analyzed by using SPSS [version 11.5] software.

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## RESULTS

The questionnaire was distributed among 198 subjects and returned by 141 [71.21%]. There were 88 [62.4%] BDS graduates and 53 [37.6%] were with MDS qualification. Seventy six of the respondents were men [53.9%] and 65 [46.1%] women. Among the study subjects 62 [44%] were aged 25 years or less and 22 [15.6%] were more than 35 years, mean age being  $28.62 \pm 6.82$ . Respondent's knowledge of modes of HIV infection transmission is shown in table 2. Overall correct responses were given by most of the respondents. Others either gave wrong responses or answered 'Not-sure'. Well known modes of HIV transmission like, blood transfusion, needle stick injuries and question about vertical transmission to newborn were answered correctly by more than 90% of the respondents. Correct responses were very low to query of possibility of spread by saliva [58.2%]. Higher percentage of correct responses by BDS graduates compared to MDS graduates was statistically significant [ $p > 0.05$ ]. More than 25% of the respondents were unaware that HIV infection is not transmitted by mosquitoes [25.5%], toilet seats [25.6%], or contact with urine [38.3%] or faeces [29.1%]. There was statistically no difference in the responses for all these questions among post graduates and non-postgraduates. Awareness and practice of special precautions [SP] and post exposure prophylaxis [PEP] is shown in table 3. Among graduates [BDS] 14.8% and 9.4% among MDS graduates were not aware of the term PEP. Overall 13.5% of the respondents did not know that PEP considerably reduces the risk of HIV transmission if administered soon after exposure. Most [96.6%] of the respondents were aware of special precautions but 23.5% of the respondents did not routinely practice 'special practices' irrespective of HIV status of the patients. Fifteen respondents admitted coming in contact with body fluids of HIV patients in the previous one year. All of these dentists except one used additional protective equipment while treating these patients. This particular person who did not use additional protective equipment had admitted that he was not aware of the need for this equipment's while treating HIV patients. The analysis of responses to three questions assessed by Likert scale [1-Strongly agree, 2-agree, 3-neither agree nor disagree, 4-Disagree, 5-Strongly disagree] are shown in table 4. There was statistically no difference between BDS graduates and MDS graduates in responses to these questions.

## DISCUSSION

The oral cavity is the entry point into the digestive system, hence ill health in the mouth can contribute to low food intake and eventually to malnutrition. A 'diseased' mouth could also have an adverse impact on a person's social and sexual interactions as the mouth

plays a very intimate and central role in that aspect of a person's life. The practice of dentistry exposes dentists and patients to a variety of microorganisms that are transmittable via blood, oral or respiratory secretions. Occupational exposures can occur percutaneous, i.e., through needle stick or cuts from sharp instruments contaminated with infected blood or through contact of the eye, nose or mouth with infected blood. Cross infection can be from patient to dentists, from dentists to patient or from patient to patient<sup>12</sup>.

The risk for HIV transmission from infected dentists to patients during invasive procedures is small and can be reduced with appropriate use of infection control precautions. It is associated with the circulating titre of the pathogen in blood, the procedures performed, techniques and infection-control precautions used and the medical condition of the dentists.

To date there has been only one case of reported HIV infection spread from dentists to 6 patients (CDC, 1993b). This case elevated the concern of society with regard to the risk associated with visiting a dentist. The dental surgery provides an ideal environment for cross-infection with pathogens other than HIV including cytomegalovirus, hepatitis B and C viruses, herpes simplex virus, Mycobacterium Tuberculosis (TB) and staphylococci. "Disease transfer to the dentist and dental staff during dental care is considered an "occupational exposure" to a given pathogen, while disease transfer from one patient to another in the dental clinics is considered "cross-infection". Therefore, the dental health care provider must be knowledgeable about the diseases commonly encountered during dental care and must responsibly provide care to patients without getting infected, or without infecting patients<sup>13</sup>. Knowledge of the disease process, and modes of transmission influences health care workers' attitudes and behavior towards management of such patients<sup>14</sup>. In our study though majority of the dentists were aware of the common modes of transmission of HIV infection as suggested by the correct responses, it must be of concern that 3.5% were not aware that HIV could be transmitted by sexual intercourse or were not sure. One respondent answered in the negative for the spread of infection by blood transfusion, and 5% of the respondents did not know that needle stick injuries could spread HIV. It must also be of concern that substantial number of dentists believed that the HIV infection could be transmitted by contact with urine and faeces, coughing and sneezing, mosquitoes, toilet seats, contact with saliva and sharing plates, cups and spoons. This indicates that knowledge transmission of HIV infection among dentists is incomplete. Even the awareness of special precautions and post exposure prophylaxis is lacking among some of the respondents. Nearly 15% were not aware of PEP and 24% did not practice special

precautions routinely. In a study conducted by Venu Shan et.al<sup>15</sup> among dental students 38% were not aware of universal basic precautions. Not observing basic precautions puts dentists at a higher risk of exposure. In a study carried out by Al Naimi R J et.al<sup>16</sup> even 90% of dental students were practicing barrier techniques.

Aizawa et al<sup>17</sup> conducted a survey to find potential risk factors for HIV transmission in the dental practice. Out of a sample of 747 dentists, they found that although most dentists did use gloves, masks and other protective garments, they did not use them during the full course of treatment. Usage was limited to treating patients in the “high-risk group” and for surgical treatment. Almost 13% of practitioners re-used an anesthetic liquid cartridge. The results of this study confirmed results of a previous study by the same authors Aizawa et.al<sup>18</sup> The latter study reported that despite 71.3% of the respondents expressing a belief that they have a moral responsibility to treat HIV-positive patients, only 15,6% were willing to do so.

Synder<sup>19</sup> also demonstrated that having knowledge does not translate into desirable behavior. He surveyed 300 dental hygienists in Pennsylvania, USA using 89 Likert-type questions to assess knowledge, 10 attitudes and practices on infection control. A low association between knowledge and adherence to infection control procedures was demonstrated.

In 1990, Siegal<sup>20</sup> in a survey of 600 dentists in Ohio reported that 48% of the respondents felt capable of providing dental care to people with AIDS. Out of 294 responses, 69% were not willing to treat HIV patients and 31% would treat regular patients known to them only. Adequacy of knowledge of HIV transmission as admitted by respondents themselves suggests that they are not confident enough. This study highlights the need for programs to train dentists, postgraduates and non-postgraduates, about various facets of transmission of HIV infection more thoroughly.

The results of the study suggest that infection control practices with particular reference to HIV should find an important place in teaching curriculum. Teachers have a great responsibility in disseminating knowledge about all aspects HIV transmission and protective measures to every student. No doubt every practicing dentist should also proactively keep abreast of every aspect of this disease.

## CONCLUSION

The results of the present study showed that the knowledge of young dentists is relatively weak about infection control procedures. This situation indicates that cross-infection control topics do not arouse

interest among dentists, or that there is a deficiency in continuing dental education on how to avoid cross infection in dental practice. Improved compliance with recommended infection control measures is required for all dentists. Continuing education programs and short-time courses about cross-infection and infection control procedures are suitable to improve the knowledge of dentists.

**Table.1:** correct response to statements about modes of HIV transmission

Statement	Qualification [% correct]	
	BDS n=88	MDS n=53
Sexual intercourse can spread HIV/AIDS	85 [96.6]	51 [96.2]
Sharing plates, cups and spoons can spread HIV/AIDS	74 [84.1]	40 [75.5]
HIV/AIDS can be spread from an infected woman to her child during pregnancy and birth	83 [94.3]	49 [92.5]
Contact with urine can spread HIV/AIDS	54 [61.4]	33 [62.3]
Mosquitoes can spread HIV/AIDS	64 [72.7]	41 [77.4]
HIV/AIDS can be spread from an infected woman to her child during breastfeeding	56 [63.6]	31 [58.5]
Coughing and sneezing can spread HIV/AIDS	75 [85.2]	44 [83.0]
Contact with faeces can spread HIV/AIDS.	62 [70.5]	38 [71.7]
Blood transfusion can spread HIV/AIDS	87 [98.9]	53 [100.0]
Tattooing/body piercing can spread HIV/AIDS	64 [72.7]	42 [79.2]
HIV/AIDS can be spread when needles are shared by IDUs	83 [94.3]	51 [96.2]
Contact with saliva can spread HIV/AIDS	58 [65.9]	24 [45.3]
Needle stick injury can spread HIV/AIDS	84 [95.5]	50 [94.3]
HIV can be spread through toilet seats	71 [80.7]	41 [77.4]

**Table.2:** Awareness & practice about SP & PEP

Awareness about	Qualification	
	BDS n=88	MDS n=53
The term PEP	75 [85.2]	48 [90.6]
Reduction of risk by PEP	76 [86.4]	46 [86.8]
About SPP	82 [93.2]	50 [94.3]
Practice of SPP routinely irrespective of HIV	69 [78.4]	39 [73.6]
Additional protection with HIV patients	82 [93.2]	48 [90.6]

Figures indicate correct responses

Figures in parenthesis are percentages of ‘n’.

**Table.3:** Response about self-assessment of knowledge, Presence of guidelines & need for the hospital to address difficulties

	Qualification	N	Mean* score	Sig. (2-tailed)
Adequacy of knowledge of HIV transmission	BDS	88	2.2273 [0.75]	0.669
	MDS	53	2.1698 [0.80]	
Presence of guidelines in the place of work	BDS	88	2.1023 [0.95]	0.708
	MDS	53	2.0377 [1.03]	
Hospital should address difficulties regularly	BDS	88	1.5682 [0.73]	0.142
	MDS	53	1.3962 [0.53]	

\*Strongly agree [1], Agree [2], Neutral [3], Disagree [4], strongly disagree [5]

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