INTRODUCTION

The acquired immunodeficiency syndrome (AIDS) epidemic is continuing to grow\(^1\) and global estimates indicated that over 40 million people are infected.\(^2\) The fact that the number of human immunodeficiency virus (HIV)-infected patients under dental care is expected to increase\(^3\) highlights the importance of providing healthcare, part of which is dental treatment, to all individuals indiscriminately.\(^4\) The reports indicated that about 90% of the HIV infections among healthcare workers occurs in developing countries where occupational safety is a neglected issue.\(^5,6\)

AIDS is the serious epidemic problem in India. The AIDS epidemic is one of the most destructive health crisis of modern times, ravaging families and communities throughout the world. In India, a semiautonomous body called National AIDS Control Organization (NACO) was established under ministry of health and family welfare to control the HIV epidemic.\(^7\) According to joint United Nations (UN) Programme on HIV/AIDS (UNAIDS) and World Health Organization (WHO), approximately 34 million people are currently living with HIV and about 30 million people have died of AIDS-related causes since the beginning of epidemic.\(^8\) According to new estimates released by NACO supported by UNAIDS and WHO, an estimated 23.9 lakh people are infected with HIV in India by 2009-2010. According to NACO, adult HIV prevalence at national level is 0.31% in 2009. HIV/AIDS has devastating effect on adolescents.\(^9\) Till date very less work
has been done to assess the knowledge and attitude among Indian dental students, hence a sincere attempt has been made on this front. The purpose of this study was to assess the dental student’s knowledge of HIV/AIDS and attitude toward them and their willingness to treat patients living with HIV and AIDS (PLWHA).

MATERIALS AND METHODS

A cross-sectional questionnaire survey was conducted among 600 students studying in third and fourth years of dental colleges located in National Capital Region (NCR). The sample was selected, as they treat the patients in the clinics. The students were given a predesigned questionnaire [Table 1] during a regular theory class. All the students participated voluntarily in the study and were informed about the confidentiality of their response. All students were asked to report about their age, gender and year of study. The questionnaire included 25 questions out of which 15 questions represent knowledge of the subjects and 10 questions represent attitude of the subject towards HIV/AIDS. The questionnaires were distributed to the respondents and were asked to complete it individually. Each and every question was explained to them before they answered to prevent any ambiguity.

Statistics

Later the data were subjected to statistical analysis by using Statistical Package for Social Sciences (SPSS). One-way ANOVA (Analysis of Variance) was used to compare the mean level of knowledge and attitude toward HIV/AIDS between the genders, years of study and age groups. To calculate mean level of knowledge and attitude, ‘0’ score was assigned for negative knowledge and attitude and ‘1’ score was assigned for positive knowledge and attitude.

RESULTS

A total of 600 dental students returned a completed questionnaire giving an overall response of 100%. About 60% respondents fell into 21-23 years age group and majority of dental students were unmarried (89.5%). Male to female ratio was approximately 1:2 [Table 2]. According to the survey, only 28% subjects had excellent knowledge and 54% subjects had good knowledge regarding HIV and AIDS. In all, 7% responded poorly to the questionnaire [Table 3]. When the subjects were asked where they will refer the HIV/AIDS patients for the treatment, 86% responded for hospital but 21.5% subject said they will refer them to traditional healers and 16% to miracle center (P value: 0.00) [Table 4].

There were more misconceptions regarding the mode of transmission among the subjects, 78.5% said the mode of transmission is unprotected sex, whereas 34 and 25% said breast feeding and kissing, respectively [Table 5]. The most

| Table 1: Questionnaire |
|------------------------|
| 1. AIDS is caused by which virus? |
| 2. Does HIV-infected patient attend dental clinic? Yes [ ] No [ ] |
| 3. Do you think all HIV-positive patients look unhealthy? Yes [ ] No [ ] |
| 4. Do you think there is no cure for HIV/AIDS? Yes [ ] No [ ] |
| 5. Do you think there is any appropriate vaccine for HIV available? Yes [ ] No [ ] |
| 6. Does HAART improve the quality of life in HIV-positive people? Yes [ ] No [ ] |
| 7. Where will you refer the HIV-positive patients? |
| a. Hospital HIV counselling [ ] |
| b. Miracle centre [ ] |
| c. Traditional healer [ ] |
| d. No response [ ] |
| 8. What are the modes of transmission of HIV/AIDS (tick multiple if required)? |
| a. Unprotected sex [ ] |
| b. Breast feeding [ ] |
| c. Blood transfusion [ ] |
| d. Unsterilized instruments [ ] |
| e. Sharing of sharp instruments [ ] |
| f. Kissing [ ] |
| 9. What are the sources from which you get information regarding HIV/AIDS (tick multiple if required)? |
| a. Electronic media [ ] |
| b. Magazine/newspaper [ ] |
| c. Health worker [ ] |
| d. Seminars/workshops [ ] |
| e. Pamphlets/posters [ ] |
| f. Text book [ ] |
| g. Internet surfing [ ] |
| 10. With whom have you discussed HIV-related issues most frequently? |
| a. Classmates/friends [ ] |
| b. Parents [ ] |
| c. Partner [ ] |
| d. Teachers [ ] |
| e. Other health workers [ ] |
| 11. Are you aware of your HIV status? Yes [ ] No [ ] |
| 12. If not, are you willing to undergo HIV testing? Yes [ ] No [ ] |
| 13. Should HIV testing be made mandatory for every dental student? Yes [ ] No [ ] |
| 14. Do you support premarital HIV testing? Yes [ ] No [ ] |
| 15. Do you think both HIV-infected and non-infected patients should be treated in same dental clinic? Yes [ ] No [ ] |

Contd...
important source of information about HIV/AIDS was electronic media (63.5%) followed by newspaper (57%) and textbooks (57%) [Table 6]. The study showed that there were very less involvement of parents (16.6%) regarding sharing the knowledge about AIDS/HIV [Table 7].

Only 43% subjects were aware about their own HIV status and only 58% were willing for HIV testing [Table 8]. When asked about their attitude towards PLWHA, 43% subjects responded that they have the right to refuse the treatment and 29% said they should be quarantined [Table 9]. Five parameters were given regarding the risk perception, 67.6% subjects said that dentists are at high risk group, whereas 44.4% are not worried about HIV infection [Table 10].

**DISCUSSION**

The response rate obtained in this survey was high and comparable with other surveys. Most of the survey has included less than 200 subjects, but in our study 600 subjects were involved. There was disproportionate gender distribution that was similar to the findings in study conducted by Soukaina T Raylat[10] on Jordanian dental students. We found that students showed moderate knowledge with respect to modes of HIV transmission and infection control practices. A similar finding was reported by Sadeghi M[11] among Iranian dental students and by Azodo et al.,[12] among Nigerian dental nursing students. Nearly one-third (34%) of the students thought that HIV/AIDS could be acquired by the breast feeding and one-fourth (25%) thought that HIV could be contracted by kissing an infected person, which is a misconception.

The attitude and willingness to treat HIV/AIDS patient was assessed and found an overall negative attitude of students toward HIV/AIDS patients. Shan V et al.,[13] and Azodo et al.,[12] also reported dental students having negative attitude toward HIV/AIDS. According to our study, electronic media is main source of information regarding HIV/AIDS. Whereas in study conducted by Ajayi YO and Ajayi EO,[14] main source of information was health workers and textbooks. This negative attitude of the dental students will have a direct impact on the treatment of the PLWHA.

In this study, only 43% subjects were aware of their HIV status and 58% were willing for HIV testing. Kopacz et al.,[15] in their study reported that 84% were aware of their HIV status and only 20% were willing for HIV testing. It is quite alarming that more than 50% of the students are not aware of their HIV status.

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**Table 1: Demographic characteristics**

| Characteristics     | Frequency | Percentage |
|---------------------|-----------|------------|
| Age group (years)   |           |            |
| 17-21               | 126       | 21         |
| 21-23               | 360       | 60         |
| Above 23            | 114       | 19         |
| Gender              |           |            |
| Female              | 402       | 67         |
| Male                | 198       | 33         |
| Marital status      |           |            |
| Unmarried           | 537       | 89.5       |
| Married             | 63        | 10.5       |

**Table 2: HIV/AIDS knowledge**

| Knowledge about AIDS | Excellent | Good | Fair | Poor |
|----------------------|-----------|------|------|------|
| AIDS                 | Acquired immunodeficiency syndrome; HIV: Human immunodeficiency virus |

**Table 3: HIV/AIDS knowledge**

| Knowledge about AIDS | Excellent | Good | Fair | Poor |
|----------------------|-----------|------|------|------|
| AIDS                 | 28%       | 54%  | 11%  | 7%   |

**Table 4: Recommendation**

| Recommendation | Hospital Miracle center Traditional healers No response |
|----------------|--------------------------------------------------------|
| Recommendation | 86% 16% 21.5% 3%                                       |
The results of this survey can be interpreted as true representation of HIV/AIDS knowledge and attitude among dental students of NCR. Dental students have repeatedly reported good knowledge regarding HIV/AIDS with some misconception that was also supported by our survey findings.

**CONCLUSION**

From the present study, we conclude that knowledge regarding HIV/AIDS should be included from first year of dentistry or from school level, so that they are well trained in treating the PLWHA. Therefore, students must be made well aware of the importance of treating HIV/AIDS patients and help the society from this drastic disease. It is recommended that a comprehensive training of the dental students be done, to promote a good delivery of accurate information on HIV/AIDS to the public and to provide proper patient care. Dental students should work with different Non Governmental Organizations (NGOs) working for AIDS patients. A separate dental unit should be established in a hospital specially for treating PLWHA and dental students should be posted there for more exposure to the HIV/AIDS patients. Emphasis must be placed on in-depth discussion on HIV/AIDS issue by experienced health workers and lectures with dental students in order to clarify existing misconceptions and discourage discriminatory behaviour.

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**Table 5: Mode of transmission**

| Mode of transmission          | Unprotected sex | Breast feeding | Blood transfusion | Unsterilized instrument | Sharing of sharp instruments | Kissing |
|-------------------------------|-----------------|----------------|-------------------|--------------------------|------------------------------|---------|
| Mode of transmission          | 78.5%           | 34%            | 68%               | 62%                      | 49.5%                        | 25%     |

**Table 6: Source of information**

| Source of information           | Electronic media | Newspaper | Health workers | Text books | Internet |
|---------------------------------|------------------|-----------|----------------|------------|----------|
| Source of information           | 63.5%            | 57%       | 31.5%          | 57%        | 53.5%    |

**Table 7: Interpersonal communication**

| Classmates/friends | Parents | Partner | Teachers | Siblings | Others |
|--------------------|---------|---------|----------|----------|--------|
| Interpersonal communication | 78.5%   | 16.6%   | 15%      | 31.3%    | 42.5%  |

**Table 8: Attitude toward HIV testing**

| Attitude towards HIV testing | Aware of HIV status | Willing for HIV testing | Mandatory HIV screening | Mandatory premarital HIV testing |
|------------------------------|---------------------|------------------------|-------------------------|---------------------------------|
| Attitude towards HIV testing | 43%                 | 58%                    | 71%                     | 67.5%                           |

HIV: Human immunodeficiency virus

**Table 9: Attitude toward PLWHA**

| Attitude toward PLWHA          | Right to refuse treatment | Segregation | Quarantine | Support and treatment | Willingness to render dental care |
|--------------------------------|----------------------------|-------------|------------|-----------------------|----------------------------------|
| Attitude toward PLWHA          | 43%                        | 61%         | 29%        | 87.8%                 | 65%                              |

PLWHA: Patient living with HIV and AIDS

**Table 10: Risk perception**

| Parameters                                | Yes (%) | No (%) |
|-------------------------------------------|---------|--------|
| Dentists are at high risk group           | 67.6    | 32.4   |
| Need for extra precaution                 | 82.4    | 17.6   |
| Wearing gloves while washing instruments  | 68.3    | 31.7   |
| Need to be informed by dentist if patient is HIV positive | 81.2 | 18.8 |
| Worried about HIV infection               | 55.6    | 44.4   |

HIV: Human immunodeficiency virus
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Announcement

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