

A survey of human immunodeficiency virus-related knowledge and attitude among dental professionals and students

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ABSTRACT

Background: Kimberly. A. Bergalis was one among the six patients infected with human immunodeficiency virus (HIV), the first reported case after visiting a dentist with acquired immunodeficiency syndrome (AIDS). As the number of patients with HIV/AIDS is increasing, the need for medical and dental care is also increasing. Practitioners have to enhance their knowledge about the disease, its manifestations, prevention, and management. **Aim:** The aim was to evaluate HIV-related knowledge and attitude among dental professionals and students. **Methodology:** This cross-sectional study was conducted using a questionnaire survey, which was distributed among 140 participants belonging to Al Badar Dental College and Hospital, Gulbarga, Karnataka. **Result:** The respondents overall mean knowledge score was good, 62.88%. The overall mean attitude score was 72.05% (7.92 ± 2.86) with a statistical significance ($Z = 2.37, P < 0.05$) shown by the males (79.68%, 8.76 ± 3.21) than females (67.72%, 7.44 ± 2.6). **Conclusion:** “Higher level of knowledge has higher attitude and willingness to treat HIV/AIDS patients,” thus proving a need for a greater awareness among the undergraduates whose present level of knowledge is inadequate to function as part of a dental health care team in a country with a high prevalence of HIV. This article attempts to assess and reflect how much we need to improve our education system so as to be foolproof against this virus of mass destruction because forewarned is forearmed.

Key words: Attitude, dental professionals, human immunodeficiency virus/acquired immunodeficiency syndrome, knowledge

INTRODUCTION

Human immunodeficiency virus (HIV) infection and acquired immunodeficiency syndrome (AIDS) is a globally emerging public health problem. India alone accounts for over 2.5 million people living with HIV/AIDS (PLWHA) with a prevalence of 0.91%.^[1]

Dental therapeutic procedures frequently involve blood and saliva that may contain a variety of blood-borne pathogens and microorganisms. The oral environment has become a tool for early detection as most lesions of HIV infection present

orally during the first stages of the disease. Hence, the dentists fall into the high-risk category for cross-contamination.^[2,3]

According to the World Health Organization, it is imperative for all dentists to treat HIV-positive patients. Despite these recommendations, dentists are reluctant or refuse to treat HIV/AIDS patients due to lack of knowledge and ignorance about the disease.^[4] Willingness to treat patients with HIV/AIDS appears to be related to knowledge of the disease process, recognition of oral manifestations, and understanding of modes of transmission. Increasing knowledge of issues concerning HIV has led to increased willingness to treat HIV-positive patients by dental professionals.^[2]

Aim of the study was to assess knowledge, attitudes, and practices among dental professionals and students in Dental College and Hospital, Gulbarga, Karnataka.

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METHODOLOGY

This cross-sectional study was conducted utilizing questionnaire survey format among 140 participants belonging to Al Badar Dental College and Hospital and Private practitioners in and around Gulbarga, Karnataka. The questionnaire was adapted from the survey questionnaire used by Shinde *et al.*^[4] in a previous study with some modifications.

Study samples were divided into three groups, which were chosen as representatives of the strata of hierarchy in dental education.

- Group A: 37 MDS and 23 BDS faculty
- Group B: 34 post-graduate students
- Group C: Dental students including 17 intern dentists and 29 final year dental students.

The study subjects participated voluntarily in the study and were asked to report about their gender, age, year of study, and years of experience.

The questionnaire included 32 close-ended questions to evaluate participants' knowledge and attitude toward PLWHA and willingness to treat these patients. For every correct answer, a score of 1 was assigned and a score of 0 for every incorrect answer. The total score for each participant was obtained by adding the score of each answer. Score of 75% and above, between 50% and 74%, between 25% and 49%, and score <25% was considered as excellent, good, moderate, and weak knowledge, respectively. Score of 75% and above, between 50% and 74%, and <50% were considered as positive, negative, and passive attitude, respectively.

All the statistical data were analyzed using SPSS statistics version 10.0 software (IBM). Z-test for comparing the knowledge and attitude score distribution among different groups and unpaired *t*-test for comparing the gender score distribution.

RESULTS

The response rate was 140 (100%). The sample was composed of 63 (45.0%) males and 77 (55.0%) females [Table 1].

The age of the participants ranged from 22 to 40 years with a mean age 28 ± 4.36 years and the male: female ratio was 1:1.14. There were 21

questions in the questionnaire to test their knowledge on HIV/AIDS. The respondents overall HIV/AIDS knowledge score was good, 63.03%. The knowledge score of different groups was 68.0%, 60.79%, and 60.37% for groups A, B, and C, respectively. There was no statistical significant difference in the knowledge among males and females ($Z = 0.84, P > 0.05$) [Table 2].

When the comparison of knowledge between different groups were done, there was a statistical significance with Group A to Group B and Group A to Group C, but statistically no significance with Group B to Group C [Table 3].

When comparison of knowledge score among males and females in each group were done, no statistical significance (NS) were shown among groups A and B. However, there was a statistical significance among group C indicating female's higher knowledge than males [Table 4].

The maximum score (99%) was for the question "sexual intercourse can spread HIV/AIDS" and the minimum score (5.76%) was for the question "contact feces can spread HIV/AIDS" [Table 5].

There was a statistically significant difference in the mean knowledge percentage score of MDS faculties when compared to the BDS faculties [Table 6].

The total average attitude score was 79.58%, 67.9%, and 64.91% for group A, B, and C, respectively, which was highly statistically significant with Group A to Group B and Group A to Group C, but not significant with Group B to Group C [Table 7]. The overall mean attitude score was 72.05% (7.92 ± 2.86) with a statistical significance ($Z = 2.63, P < 0.05$) shown by the males (79.68%, 8.83 ± 3.42) than females (67.70%, 7.44 ± 2.6) [Table 8]. The highest positive attitude score (94%) was obtained for the question no. 1 by Group B and minimum negative attitude score (16.17%) for question no. 8 by Groups C by referring the patient to HIV specialty center [Table 9].

Comparison of attitude percentage score of MDS to BDS faculties was statistically not significant [Table 10].

The results show a positive correlation between attitude and knowledge score ($r = 0.86, P < 0.01$) thus stating "higher the knowledge has higher the attitude and willingness to treat HIV/AIDS patients."

Table 1: Category wise distribution of study sample

Category	Males		Females		Total	
	Total number	Average (%)	Total number	Average (%)	Total number	Average (%)
Group A	38	63.3	22	36.7	60	42.8
Group B	20	58.8	14	41.2	34	24.4
Group C	5	10.6	41	89.4	46	32.8
Total	63	45.0	77	55.0	140	100

Table 2: Percentage of knowledge score distribution of different groups and statistical significance

Category	Males (%)	Females (%)	Total (%)	Statistical significance
Group A	69.14	66.88	68.0	Z=0.84, P>0.05, NS
Group B	60.5	61.22	60.79	
Group C	51.58	61.45	60.37	
Total	63.08	62.95	63.03	

NS: Not significant

Table 3: Comparison of knowledge between different groups

Groups	t-test	P	Statistical significance
Group A to group B	2.61	<0.05	Significant
Group A to group C	2.73	<0.05	Significant
Group B to group C	0.246	>0.05	NS

NS: Not significant

DISCUSSION

This study reveals that the comparison between genders had no statistical significance, but when compared between the groups, females in Group C had higher knowledge than males agreeing with Al-Naimi *et al.*; whereas no statistical difference was noticed in Group A and B. The female participants in the study showed less positive attitude and willingness to treat such patients.

The group wise comparison results showed higher statistical significance in group A in their knowledge and attitude toward treating HIV/AIDS patients than group B and C.

In our study, the mean knowledge about HIV/AIDS patients was good (Group A = 68.01%, Group B = 60.79%, Group C = 60.37%) which agrees with Ragavendra *et al.*, but contradicts with the study conducted by Shinde *et al.* where it was poor.

A study done among slum dwellers in another metropolitan city of India (Chennai),^[5] showed that 67% males and 55% females were aware of the sexual mode of transmission, as compared to 90% in

Ragavendra *et al.* and 99% in our study population. In the same study,^[5] 45% males and 62% females thought AIDS could spread through mosquito bites when compared to 22.75% in our study.

The results also show that only 58.36% knew about HIV transmission through breastfeeding but 98.51% were aware of HIV transmission through needle sharing, agreeing with 48% and 94%, respectively, of study population from coastal Karnataka.^[6]

Irrespective of the study group, salivary and aerosols contamination in dental practice was considered as means of HIV transmission by the majority of the study subjects and most participants thought that special dental clinic setups were required to treat HIV/AIDS patients, both statements agreeing with Patil *et al.* study. This highlights the fact that there is a lack of practical exposure for students in delivering dental care to PLWHA.

It is noteworthy that when 95.28% responded the necessity of routine HIV/AIDS test for all surgical patients, 80.62% and 79.36% responded that it is not necessary to do routine HIV/AIDS test for all exodontia and periodontia patients, respectively. However, considering the risk of HIV/AIDS transmission through blood and blood products, the routine HIV/AIDS tests must be made mandatory before any major or minor surgical procedure.

Overestimation of the transmission risk of HIV seemed to be the most important reason for fear in providing dental care to HIV/AIDS patients.^[3] Universal precaution is adequate for prevention of HIV transmission in oral healthcare setting, yet 98.21% in our study and 87.6% in Ragavendra *et al.*'s study population believed that extra infection control precaution is needed while treating HIV-positive patients. This response is an obvious revelation of deficiencies in HIV/AIDS knowledge and infection control among respondents. A moderate knowledge with respect to modes of HIV transmission and

Table 4: Comparison of knowledge among males and females in each group

Groups	Mean±SD			t-test (t), P value, and significance
	Male	Female	Total	
Group A	14.53±5.33	14.04±4.36	14.35±4.58	t=0.32, P>0.05, NS
Group B	12.70±3.98	12.85±4.32	12.76±4.09	t=0.083, P>0.05, NS
Group C	10.8±4.61	12.90±4.63	12.64±4.84	t=2.34, P<0.05, significant
Total	13.19±5.49	13.26±4.86	13.26±4.86	t=0.114, P>0.05, NS

SD: Standard deviation, NS: Not significant

Table 5: Knowledge of HIV/AIDS

Questions	Group A	Group B	Group C	Total score (%)
Sexual intercourse can spread HIV/AIDS	97	100	100	99.0
Contact with urine can spread HIV/AIDS	43	8	8.6	19.86
Mosquitoes can spread HIV/AIDS	34	11.7	22.55	22.75
Coughing and sneezing can spread HIV/AIDS	32.4	2.9	10.3	15.5
HIV/AIDS can spread from an infected women to her child during breastfeeding	49.6	44.1	78.39	57.36
Contact with feces can spread HIV/AIDS	0	5.8	11.52	5.76
Tattooing can spread HIV/AIDS	81.0	94	62.65	79.21
HIV/AIDS can spread when needles are shared by IDUs	98.5	100	97.05	98.51
Contact with saliva can spread HIV/AIDS	27.5	20.5	33.46	27.15
Do you think spillage of the blood of HIV/AIDS patient into open mucosal surfaces can lead to infection?	84.2	76.4	87.72	82.77
Do you think usage of same dental instruments can spread HIV/AIDS	36.5	85.3	0	40.6
Do you think aerosols from handpiece can be a vehicle for transmission of HIV infection	54.5	82.3	72	61.56
It is necessary to take extra infection control precaution for patients with HIV/AIDS	97	100	100	98.21
Patient with HIV/AIDS needs to be nursed separately from other patients	86	67.6	85.15	80.34
All surgical patients should be routinely tested for HIV/AIDS	98.7	100	85.15	95.28
All exodontia patients should be routinely tested for HIV/AIDS	80.0	79.4	81.53	80.62
All periodontia patients should be routinely tested for HIV/AIDS	80.3	79.4	78.59	79.36
Do you ask for HIV status of patients who visit your clinic?	74.6	82.35	70.48	78.76
Needle prick injuries from HIV/AIDS infected individual is 100% responsible for causing HIV infection	72.0	70.58	48.07	61.78
What would you do if you get a needle prick injury during your work with a patient?	78.3	55.88	40.7	60.15
Pseudomembranous candidiasis is the most common opportunistic infection	68.0	67.6	54.08	62.73

IDUs: Injection drug users, HIV/AIDS: Human immunodeficiency virus infection/acquired immunodeficiency syndrome

Table 6: Comparison of knowledge percentage score of MDS to BDS faculties

Category	Number of participants	Percentage of mean knowledge score	Mean±SD	t-test and P value significance
MDS	37	69.83	15.24±4.59	t=2.06, P<0.05, significant
BDS	23	65.10	12.93±4.13	
Total	60	68.01	14.35±4.58	

SD: Standard deviation, MDS: Master of dental surgery, BDS: Bachelor of dental surgery

Table 7: Comparison of attitude between different groups

Groups	Total average attitude (%)	t-test	P	Statistical significance
Group A to group B	79.58-67.9	4.18	<0.01	HS
Group A to group C	79.58-64.91	4.30	<0.01	HS
Group B to group C	67.9-64.91	0.59	>0.05	NS

HS: Highly significant, NS: Not significant

infection control practice was reported by Sadeghi and Hakimi^[2] and among Iranian dental students, by Ryalat *et al.* in Jordanian student.^[7]

In our study, when made to indicate the most common opportunistic infection, majority answered pseudomembranous candidiasis, which agrees with the results from Ragavendra *et al.*^[3] Al-Naimi and Al-Saygh,^[8] and Sadeghi and Hakimi.^[2]

Our study found that attitudes toward treating HIV/AIDS patients were positive and were high with male participants than female participants (79.68% and 67.72%, respectively). Attitude factors significantly associated with the willingness to treat these patients

were the following: Ability to treat infected patients safely, feeling a moral responsibility, and believing that HIV/AIDS patients can live with others.^[2] In this study, the general willingness to treat HIV-positive patients was 72.05%. However, our results regarding this factor were lower than the findings of Shinde *et al.*^[4] Only 43.82% participants in our study had no previous professional contact with HIV/AIDS patients. This is less when compared to Ragavendra *et al.* (77.9%).

In our study, 52.31% and 62.15% stated that they will accept and will provide care and support to a colleague and a friend or spouse if he or she is HIV-seropositive. This again agrees with the findings from Patil *et al.* study. It was noted that 91.44% respondents were in support premarital HIV testing which coincides with Azodo *et al.*^[9]

Table 8: Percentage of attitude score among males and females in different groups

Category	Males	Females	Total
Group A	86.41	73.59	79.54
Group B	71.81	62.33	67.9
Group C	78.39	61.70	64.91
Total	79.68	67.70	72.05
Mean±SD of attitude score and statistical significance	8.83±3.42	7.44±2.6	7.92±2.86 Z=2.63, P<0.05, statistically significant

SD: Standard deviation

From the study, we also found that Group A had the higher knowledge (68.01%) so also the willingness to treat such patients (79.54%) when compared to the other groups.

CONCLUSION

Only education can dispel ignorance. From this study, it can be concluded that, 86.48% of MDS participants declared that they will treat HIV/AIDS patients which is more when compared to BDS faculties, post-graduate students, dental interns, and dental students; once again stating the high knowledge level of MDS (71.78%) in this situation. The results also indicate that the dental students are not well prepared to treat HIV/AIDS patients and are unsympathetic toward this group of patients. Dental students must, therefore, be made aware of and should understand the importance of treating HIV/AIDS patients. This can be achieved by proper modeling and making the students more sensitized toward PLWHA apart from giving appropriate knowledge of the disease, regarding its mode of transmission, recognition of oral manifestations, treatment, and monitoring the condition. To achieve these aims, an essential improvement in the dental school curriculum is required.

Table 9: Attitude toward and willingness to treat HIV/AIDS in percentage

Questions	Group A	Group B	Group C	Score (%)
Do you think, it should be made mandatory to know the HIV status of the partner before marriage?	92	94	91.6	92.12
I feel worried about caring for people with HIV/AIDS	76	76.4	45.3	67.32
Doctors, nurses, and other health care workers should be allowed to refuse care for people with HIV/AIDS	91	94	96.77	93.82
I am willing to work/assist with operative procedures on patients with HIV/AIDS	80	58.8	67.8	71.32
I would not prefer to care for patients with HIV/AIDS	90.2	70.58	74.42	80.12
I worry about catching HIV/AIDS and hepatitis B at work	82.1	76.4	75.19	78.26
Dentists with HIV/AIDS should not be allowed to practice	59.2	76.4	46.39	57.62
If a patient in your private clinic discloses that he is HIV positive what would you do?	72.1	49.4	16.17	45.12
What will be your attitude toward AIDS patient, if he/she is your wife/husband?	73.2	52.9	55.67	62.15
What will be your attitude toward AIDS patients, if he/she is a doctor?	67.2	52.9	38.52	52.31
Have you ever been associated (met, talked, treated, etc..) with HIV/AIDS patients?	63.2	59	16.40	43.82

HIV/AIDS: Human immunodeficiency virus infection/acquired immunodeficiency syndrome

Table 10: Comparison of attitude percentage score of MDS to BDS faculties

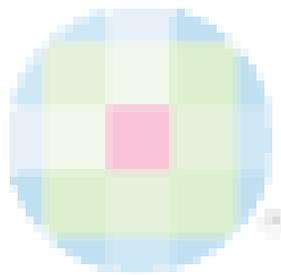
Category	Number of participants	Percentage of mean attitude score	Mean±SD	t-test and P value significance
MDS	37	79.88	9.12±3.41	t=0.78, P>0.05, NS
BDS	23	79.07	8.54±2.86	
Total	60	79.58	8.89±3.32	

SD: Standard deviation, NS: Not significant, MDS: Master of dental surgery, BDS: Bachelor of dental surgery

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