

Research Paper: knowledge and attitudes towards HIV/ AIDS among dental students in Iran



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ABSTRACT

Introduction: Human Immunodeficiency Virus (HIV) infection is known to be a cause of health and socioeconomic problems in affected patients. In 1981, approximately 25 million people were killed by HIV in the world. In 2015, World Health Organization (WHO) estimated that approximately 36 million people are infected with HIV throughout the world. The aim of this study was to assess the knowledge and attitudes concerning HIV/AIDS amongst Iranian dental students in 2019, and to evaluate the effect of school years and gender on the aforementioned items.

Materials and Methods: A total of 200 questionnaires were distributed among Iranian dental students (Response rate = 93.5%)(n=187). Unpaired t-test and One-way ANOVA were used to evaluate their mean level of knowledge and attitude.

Results: In total, 188 students filled out the questionnaires; of them, 97.8% were aware that dentists can be infected by HIV-positive patients and 3.3% did not know that oral manifestations are helpful in diagnosis of HIV-positive patients. Approximately, all the students (98.9%) believed that HIV transmission could occur via needle stick injury during the dental practice. About 40% (n=72) of the dental students believed that they were able to treat HIV/AIDS patients safely.

Conclusion: The knowledge and attitude towards HIV/ AIDS of females and sixth year students were more significant than others. Knowledge and attitude amongst Iranian dental students towards HIV/AIDS were relatively good, but it should be reinforced.

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Introduction

Human Immunodeficiency Virus (HIV) infection is known to be a cause of health and socioeconomic problems in affected patients. (1) HIV was first identified in the early 1980s, and it has become a serious public health concern in the world.(2,3) In 1981, approximately 25 million people were killed by HIV in the world. (4) In 2015, World Health Organization (WHO) estimated that approximately 36 million people are infected with HIV throughout the world and approximately 1.2 million people were killed as a result of it.(5) Iranian general population over 1% and people with high-risk behaviors are more than 5% at the risk of being infected with HIV.(6) In recent years, the prevalence of patients with AIDS in Iran has reached an alarming rate.(7) HIV infection is more common in dental clinics due to needle sticks and sharp Instruments.(8) The first case of patient with HIV in Iran was reported in 1986. (9) From 1988, WHO suggested that HIV-positive patients should be treated by dentists.(10) However, most of the dentists did not agree to treat HIV-patients.(11,12) Dental students' knowledge in South Africa, Brazil, Japan, and Sudan was not sufficient with respect to HIV/AIDS and the HIV-infected patients' treatment, especially transmission of HIV.(13-15) Hence, it is necessary to accept the patients suffering from this disease.(16) It appears that dentists' willingness to treat HIV- infected patients is related to their knowledge, oral manifestation and recognition of the methods of transmission (10,17,18). Thus, willingness of the dental professionals has increased following increase in their knowledge toward HIV.(12,18,19) Appropriate knowledge of the dental students about HIV/AIDS helps them to understand their responsibility to treat HIV-infected patients.(20) There is currently no study on the Iranian dental students' knowledge and attitude towards HIV/AIDS, and the last study on this subject was conducted almost 10 years ago.(13) Hence, the aim of this study was to assess the knowledge and attitude towards HIV/AIDS amongst Iranian dental students and to compare the differenc-

es between genders and years of participants in dental education programs towards HIV/AIDS knowledge and attitudes.

Materials and Methods

Iranian dental students from four to twelve semester were the samples in this cross-sectional questionnaire study. All samples were from the second to sixth year students and were asked to take part in this survey. A total of 200 students from the second to sixth year voluntarily participated in the study. This survey was based on ethical issues. A self-administrated questionnaire consisting of twenty closed-ended questions was used to assess the students' knowledge; thirteen questions to evaluate their attitudes, and fourteen questions to obtain their knowledge about their information as to oral manifestation of HIV was prepared in April 2019. The validity of the survey was confirmed by some articles. (10,11,12,18) The questionnaire contained three parts. Demographic questions in the first part consisted of gender and year of study, but the second and third part evaluated the dental students' knowledge and attitude towards HIV/AIDS and its transmission patterns. The questionnaire was distributed among the students. They responded twenty questions with two choices of "agree" and "disagree" in the knowledge part. The answers to eleven questions were correct and nine were incorrect. Two score was given to each correct answer, while zero score was considered for wrong ones. Thus, the total score of knowledge was from 0 to 40. The scores of the correct answers were changed into percentages. Knowledge of 25% or less was considered weak knowledge, 25- 50% moderate knowledge, 50- 75% good knowledge, and more than 75% excellent knowledge. In the second part, the students' attitude towards HIV/AIDS was evaluated by thirteen questions. In this part, legal responsibility and willingness of students for treating HIV-infected patients were evaluated. Five-point Likert scale was used for this part (strongly agree, agree, neutral, disagree, strongly disagree). A score of 5 was given to the response 'strongly agree' and a score of 1 was given to "strongly disagree" for

students with positive attitudes, and conversely for negative attitudes. Thus, totally the score in the attitudes part was in the range of 13 to 65. Then, the scores were changed to percentage. Positive attitudes were when the scores were more than 75%. Scores between more than 50 and less than 75 % were considered passive and those less than 50 percent were regarded as negative attitudes. Finally, the students' knowledge about oral manifestations of HIV/ AIDS was evaluated in the third part of the questionnaire that consisted of thirteen questions with "yes" and "no" options. A total score was obtained by computing the percentages of "yes" answers. According to the scores, the students' knowledge towards oral manifestations was: less than 25 %: week; between 25 and 50 %: moderate; between 50 and 75 %: good; and more than 75 %: excellent. Five students from each year distributed the questionnaire by performing a pilot study. The data were analyzed using SPSS (IBM Corp. Released 2018. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp). Comparing the significance of the difference in the mean knowledge and attitude between the genders and years of study was performed using Unpaired 't' test and One-way ANOVA, respectively.

Results:

From 200 distributed questionnaire, 188 returned; thus, the response rate was 93.5 %. All of 187 questionnaires were responded completely. Females constituted more than half of the samples (50.2%), and 49.8 % of the samples were males. Table 1 shows the distribution of students in different genders and years of education. Totally, the average percentage of knowledge among students was 86.4 percent (excellent knowledge).

Males were found to have more knowledge and attitude towards HIV than females in different years of education (Table 1).

Table 1: Iranian dental students' knowledge and attitudes in relation to gender and year of study.

	n (%)	Knowledge		P value	Attitudes		P value
		Mean	SD		Mean	SD	
Gender ^a							
Males	93 (49.8)	91.6	6.14	<0.001	49.28	3.28	<0.001
Females	94 (50.2)	81.3	1.92		34.10	5.98	
Year of study ^b							
2 nd year	37 (19.8)			<0.001	34.97	10.13	<0.001
3 rd year	37 (19.8)				38.68	8.16	
4 th year	37 (19.8)				41.73	7.08	
5 th year	37 (19.8)				45.03	6.30	
6 th year	39 (20.8)				48.19	6.43	
Total	187				41.65	9.01	

a: Unpaired t-test
b: One way ANOVA

The average of correct response to the questions was significantly different (males: 91.6 % and females: 81.3 %). A significant difference in knowledge and attitudes was found among the students in different years of study; thus the sixth and fifth year students showed more knowledge and positive attitudes than others. The knowledge score was reported excellent: 99.5% (n=186); good: 0.5 % (n=1); and moderate or poor knowledge: no student (Table 2).

Table 2: Responses of Iranian dental students to knowledge statements about HIV/AIDS.

Knowledge statement	Agree (%)	Disagree (%)
Dentists can be infected by HIV/AIDS patients.	183 (97.8) *	4 (2.2)
Oral manifestations are helpful for diagnosing HIV/AIDS patients.	181 (96.7) *	6 (3.3)
HIV can be transmitted by needle stick injury during dental practice.	185 (98.9) *	2 (1.1)
Hepatitis B is more communicable than HIV/AIDS	170 (90.9) *	17 (9.1)
Medical staff are more prone to involving with infection.	174 (93) *	11 (7)
The negative HIV tests is meaning that there are no viruses in that persons.	13 (7.1)	174 (92.9) *
Definite diagnosis test of HIV/AIDS is Western blot.	141 (75.4) *	46 (24.6)
ELISA is a screening test for HIV infection.	165 (88.2) *	22 (11.8)
Adequate protection for HIV transmission provide by same infection control methods for Hepatitis B.	127 (67.9) *	60 (32.1)
Saliva can be a vector for HIV transmission.	18 (9.6)	169 (90.4) *
There is a lot of HIV in the saliva of HIV/AIDS patients	39 (20.9)	148 (79.1) *
All sterilization methods can kill HIV	32 (17.1)	155 (82.9) *
There are special dental clinics for treatment of HIV/AIDS patients in Iran.	169 (90.3) *	18 (9.7)
There is a potential for transmission of HIV during dental practice.	185 (98.9) *	2 (1.1)
There is a possibility of HIV transmission using similar tooth-brush of a AIDS patient.	170 (90.1) *	17 (9.9)
There is a lot of HIV in the tears of HIV/AIDS patients	28 (15)	159 (85) *
Naocl is a suitable rinse agent for HIV-infected instruments.	4 (2.2)	183 (97.8) *
Contact with patient's saliva is the most common way of HIV transmitting in dentistry.	24 (12.8)	163 (87.2) *
HIV can be transmitted with drinking coffee from cup of a AIDS patient.	8 (4.2)	179 (95.8) *
Ionizing radiation and X-rays can be used to sterilize HIV-infected equipments.	47 (25.1)	140 (74.8) *

* Correct response to the statement

The students responded correctly to the statement “Dentists can be infected by HIV/AIDS patients.” more than others (97.8 %, n=183), and the lowest percentage of correct answers belonged to the “ Adequate protection for HIV transmission provided by the same infection control methods for Hepatitis B” statement (67.9 %, n=127). Also, 3.3 % of subjects did not know that oral manifestations are helpful for diagnosing HIV/AIDS patients. Less than 25% of the subjects had no knowledge about the tests available for HIV diagnosis. About HIV transmission, 90.4% of the participants knew that saliva plays a role as a vehicle. More than 80 percent of the students acknowledged that HIV can be killed by all sterilization methods. It was surprising that 4.2 % of the subjects believed that HIV can be transmitted with drinking coffee from the cup of an AIDS patient. As shown in Table 3, most of the students (92 %) did not agree with the statement “Treatment of HIV/AIDS patients is equal to damaging national resources”, but 52.4 % of the subjects believed that community health improves by supporting HIV/AIDS patients. It was surprised that more than three fourths of the participants (80.7 %) agreed with the statement “We should consider all dental patients potentially infectious.” It was interesting that 20.4 % of students agreed that “If my friend has HIV infection, I end that friendship.” Also, less than a quarter of subjects (17.6%) believed that “ HIV/AIDS patients should be treated at a private room.” More than half of them (53.4 %) agreed twith the statement “Morally, I’m responsible for treating HIV/AIDS patients” and just 39.6 % of the subjects agreed with the statement “I have enough knowledge about infection control to treat HIV/ AID patients.” As shown in Table 3, the total average attitude score was 49.3%. A significant difference was found among male (49.3 %) and female (34.1 %)participants towards the attitude (p<0.001)

Table 3: HIV/AIDS related Iranian dental student’s attitudes.

Attitude statement	Strongly agree(%)	Agree(%)	Neutral(%)	Dis-agree(%)	Strongly dis-agree(%)
Treatment of HIV/AIDS patients is equal to damaging national resources.	1.1	1.6	5.3	32	60
We should consider all dental patients potentially infectious.	0.5	80.2	5.3	4.3	9.7
If my friend has HIV infection, I end that friendship.	7	13.4	26.7	42.8	10.1
Community health improves by supporting HIV/AIDS patients.	1.6	50.8	34.7	8	4.9
Morally, I’m responsible for treating HIV/AIDS patients.	13.4	40	34.7	5.5	6.4
HIV/AIDS patients should be treated at a private room.	6.9	10.7	54	7.5	20.9
HIV/AIDS patients can live with other people in the similar place.	6.4	59.3	17.6	9.6	7.1
I’m not forced to treat HIV/AIDS patients.	7.4	42.8	34.7	9.8	5.3
HIV/AIDS patients can be a leader of a normal life.	8	14.9	36.4	18.3	22.4
I can treat HIV/AIDS patients with confidence and safely.	0	38.5	11.2	28.9	21.4
I will treat patients with HIV/AIDS.	0	8.5	25.2	35.3	31
I have enough knowledge about infection control to treat HIV/AIDS patients.	22.4	17.2	13.4	30.4	16.6
I’m worried about being infected with HIV by my patients.	47	22.4	13.9	10.2	6.5

The statement “Treatment of HIV/AIDS patients is equal to damaging national resources” obtained the highest positive attitude score and the statement “I will treat patients with HIV/AIDS” obtained the highest negative attitude score.

The percentage of correct answers in oral manifestation of HIV/AIDS is presented in Table 4. The percentage of correct answers of students about oral candidiasis, ANUG and Cytomegalovirus was 98.9%, 95.1 %, and 91.9 percent, respectively. In this part, females’ knowledge was more than males’, but a significant difference was not reported. (Table4).

Table 4: Iranian dental student's knowledge about oral manifestations of AIDS.

Oral manifestation	Yes(%)
Oral candidiasis	98.9
Kaposi's sarcoma	96.2
ANUG	95.1
Major aphthous	93.5
Cytomegalovirus	91.9
Hairy leukoplakia	90.9
Severe periodontitis	88.2
Xerostomia	87.7
Salivary gland infection	85.5
Gingivitis	83.9
Herpes zoster	84.4
Herpes simplex	82.8
Papilloma	77.5
Lichen planus	77

Discussion

This is the first comparative study about knowledge and attitudes towards HIV/AIDS among Iranian male and female dental students in different years of the study. In the present study, many issues such as knowledge about oral manifestation of HIV-infected patients, methods of HIV transmission, students' desire to treat AIDS patients and their moral obligations to HIV-positive patients were evaluated. The participants were 49.8% male and 50.2 percent female. The questionnaire used in this study was adopted from previous studies, that was distributed among Iranian dental students. It was surprising that more than half of the students agreed with general statements such as "Dentists can be infected by HIV/AIDS patients", "Oral manifestations are helpful for diagnosing HIV/AIDS patients", "medical staff are more prone to getting the infection," and "HIV can be transmitted by needle stick injury during dental practice". The ratio of students in agreement with these statements in our study was comparable to a survey on dental dentists in Iran.¹³ However, these statements had more proponents in recent studies from India, Sri Lanka and Saudi Arabia. In addition, more than half of the subjects were aware about the diagnostic tests and sterilization methods for HIV. Probably, these differences can be the result of the difference in dental curriculum at dental universities in Iran. Out of all students, 90.4 agreed with this statement "Saliva can be a vector for HIV transmission". This could be due to the

large study and research of Iranian students about HIV as well as appropriate curriculum in dental education in Iran. In our survey, the average knowledge of students in the fifth and sixth year was higher than the other students, which can be related to more education in the last years, as well as more students presenting in the last year in the clinical part and their more involvement with HIV-infected patients. A significant difference was seen among male and female participants.

Although the recent rules suggest that all dentists should morally treat HIV-positive patients, all patients should be considered infectious. They could argue that these patients hide their illness from dentists, since they might refuse the treatment of these patients. In our study, 69.4% of the students were concerned with infection by the patients. However, Fallahi also stated in his study that the reluctance to treat HIV-positive patients is due to the fear of being infected by them.⁽²¹⁾ It is also reported in previous studies that these patients should not be treated in a separate room.⁽²²⁾ Of course, many students had neutral comment on these issues, and nearly one-fifth of the students agreed with treatment of HIV-infected patients in the separate ward. There was no significant difference in the students' willingness in different years in the treatment of HIV-positive patients. Moreover, in the studies conducted by Aggarwal (and Vijendra, 39.7% and 44.5% of the participants believed that patients should be treated in a separate room.^(23,24) The ratio of people who tended to treat HIV-positive patients in our study (8.5%) was comparable to the students in Vijendra's study (71.5%). Of course, in prior studies in other countries, there is greater willingness to treat HIV-positive patients in students.⁽²⁴⁾ Willingness of male students was greater than females in treating HIV-positive patients, but no significant difference was observed.

For professional care of HIV-infected patients, students need to be well aware of the oral manifestations of these patients. In our study, nearly 90% of the participants were aware of the oral lesions of HIV-positive patients, such as

candidiasis, Kaposi's sarcoma and hairy leukoplakia. The sixth and fifth year dental students had more knowledge than the third and fourth year students about this issue, with a significant difference ($p < 0.001$). Approximately, 87 % of male and 90 percent of female subjects responded correctly to the questions about the oral manifestation of HIV-positive patients, but no significant difference was found among them. Students, especially the last year students, need to be given more education about the oral manifestations of HIV-positive patients. Of course, the awareness of Iranian dentistry students about the oral manifestations of A HIV-positive patients is considered excellent in comparison to the universities in other countries.

Totally, having enough knowledge and positive attitude toward AIDS plays an important role in controlling and managing patients with this disease. In our study, the average student knowledge was 86.4% and the mean attitude was 41.7%. Given the increased incidence of AIDS, more educational programs in this field should be held for the students. There are a few special centers for the treatment of HIV-positive patients, and approximately 90% of the students were aware of this issue.

One of the limitations of our study was that the distribution of students from different universities was not equal, which is why we could not make comparisons between students among them. Similar to our study, previous studies have shown that knowledge and attitude increase with increase in academic years(13,22,23) Also, in the study of Sadeghi, there was a positive relationship between knowledge and attitude,(13) so according to these results, students need to learn more about the disease. Although knowledge and attitude of Iranian dental students about AIDS was excellent, they should prepare themselves mentally for the treatment of such patients, which requires necessary training at their university.

Conclusions

It can be concluded that, knowledge and attitudes of Iranian dental students towards HIV/

AIDS are comparable to other studies from Iran, but they are weak when compared to other studies performed in other countries. In our study, we found better knowledge and attitudes in females and 6th year dental students towards HIV when compared to males and students in the 3rd or 4th years.

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Conflict of interest

The authors declare that there is no conflict of interest.

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