

## The knowledge and attitude of Turkish pre-clinic and clinic dental students towards the dental treatment of patients with human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS)

*Duygu Recen DDS<sup>1</sup>, Gultur Devrim Kaki PhD, DDS<sup>2</sup>, Baris Kaki PhD<sup>3</sup>*

### Original Article

#### Abstract

**BACKGROUND AND AIM:** Acquired immunodeficiency syndrome (AIDS) is one of the most stigmatised diseases which leads the individuals to feel alone with the social and economic anxiety. The aim of the present study was to evaluate the knowledge and attitude of dental undergraduate students about human immunodeficiency virus (HIV)/AIDS.

**METHODS:** This study comprised pre-clinic and clinic students of School of Dentistry, Usak University, Usak, Turkey. A web-based questionnaire (WBQ) was administered to total of 280 students. The data were collected and interpreted.

**RESULTS:** According to AIDS Knowledge Questionnaire and AIDS Attitude scale (AAS), there was a statistically significant difference only in the protection dimension ( $P \leq 0.05$ ). No statistically significant difference was found between pre-clinic and clinic groups with respect to the AAS ( $P > 0.05$ ).

**CONCLUSION:** Despite the fact that they all had lack of information about HIV/AIDS, clinic group had better knowledge about how they could protect themselves. Also, they all had stigmatized attitudes towards this group of patients.

**KEYWORDS:** Human Immunodeficiency Virus; Acquired Immunodeficiency Syndrome; Students; Dental; Awareness; Knowledge; Social Stigma

**Citation:** Recen D, Kaki GD, Kaki B. **The knowledge and attitude of Turkish pre-clinic and clinic dental students towards the dental treatment of patients with human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS).** J Oral Health Oral Epidemiol 2019; 8(3): 124-30.

Acquired immunodeficiency syndrome (AIDS) is a notable health disease that can be endemic. It was described in the United States in 1981.<sup>1</sup> The human immunodeficiency viruses (HIVs) such as HIV-1 and HIV-2 belong to the family of retrovirus.<sup>2</sup> Besides the fact that it is contagious and so far the treatments only have limited the illness itself, AIDS is the most stigmatised disease which leads the individuals to feel alone with the social and economic anxiety. Moreover, they often have problems in benefiting from health services.<sup>3</sup>

United Nations Program on HIV/AIDS (UNAIDS) estimated that 36.9 million people all over the world were living with HIV, of

whom 1.8 million had been newly infected in 2018.<sup>4</sup> Although it has not been endemic in Turkey, 3356 new HIV-infected (HIV+) and AIDS cases were seen and they have a considerable extent in young adults in ages of 25-29 years.<sup>5</sup> Based on these data, it is important to educate people about transmission ways and protection against HIV especially the young adult ones.<sup>3</sup>

It is a fact that HIV is most commonly transmitted through sexual intercourse. The second most common transmission route of HIV is through the narcotic addicts who use intravenous drugs with the same needles. Moreover, the virus is transmitted from the HIV+ mother to the infant, in the uterus and

1- Associate Professor, Department of Restorative Dentistry, School of Dentistry, Usak University, Usak, Turkey

2- Associate Professor, Department of Endodontics, School of Dentistry, Usak University, Usak, Turkey

3- Assistant Professor, Department of Econometrics, School of Econometrics, Usak University, Usak, Turkey

Correspondence to: Duygu Recen DDS

Email: recenduygu@hotmail.com

during delivery. Also, there is a risk of transmission through breastfeeding. If the disease is not under control, this vertical transmission rate of HIV can range from 15% to 45%.<sup>6</sup> During dental treatment, the transmission of HIV/AIDS virus is quite rare.<sup>2</sup> Despite major progress in treatment response, still HIV epidemic is a public health threat. Dentists should be educated enough to diagnose HIV/AIDS-related early oral lesions. HIV+ patients have more dental care needs than the healthy ones.<sup>7</sup> In this case, the dentist responsibility is to treat the HIV+ individual ethically without any patient discrimination.<sup>8</sup>

Dentists, nurses, and co-workers must have a detailed knowledge of self-protection and methods of cross-infection prevention about HIV. Furthermore, the transmission paths which are frequently related to direct contact with blood in a dental office must be known and a certain procedure must be followed. Fear of HIV contagion which can be resulted in declining to treat the patient is very common among dentists. Studies reveal that dental students are not educated enough to know HIV/AIDS transmission routes.<sup>9</sup>

The null hypothesis of this study is that with increase in education about HIV/AIDS, dental students approach will not be discriminative to treating HIV+ patients. The aim of this study was to demonstrate the data from a chosen target population and compare knowledge and attitude of the pre-clinic and clinic dental students about HIV/AIDS.

## Methods

After ethical committee approval (date: 22/03/2019, number: 2019/06-01), this descriptive cross-sectional study was conducted on the dental students of Usak University, Usak, Turkey. 280 students participated in the study. The HIV/AIDS awareness of dental students was assessed by a web-based questionnaire (WBQ). Students were suitable for the survey if they were 18 years of age or older, willing to take the WBQ, and able to answer the questions in

Turkish. WBQ was administered to first, second, and third year dental students as the pre-clinic group and to fourth and fifth year dental students as the clinic group. These groups were selected as they had a clinic internship experience or not.

The WBQ used in this survey was based on the study of a novel questionnaire which was tested on Turkish population and resulted in acceptable psychometric values.<sup>3</sup> A 21-item AIDS Knowledge Scale and a 17-item AIDS Attitude Scale (AAS) were used in this study.

In the first part, there was a 21-item AIDS Knowledge Scale. It had closed-ended questions and the answer for questions was "agree", "unsure", or "disagree". A score of 1 was given for agree answer and a zero for the unsure and disagree answers. Hence, a student's total score ranged from 0 to 21.

In the second part, there was a 17-item AAS. It had closed-ended questions and participants were asked to choose the answer "strongly agree", "agree", "neutral", "disagree", or "strongly disagree" to each question in the form of a five-point Likert scale. Thus the total score for attitude ranged from 22 to 73.

In the evaluation, the reliability of WBQ was determined with Cronbach's alpha and the correlations of the scale expressions were examined. Then the scale sub-dimensions were obtained by exploratory factor analysis (EFA). Cronbach's alpha coefficients were calculated for the obtained dimensions. Factor analysis was based on Kaiser-Meyer-Olkin (KMO) and Bartlett's tests. However, in factor analysis, dimensions were determined by direct oblimin rotation on the basis of principal component analysis (PCA). Expressions contained in more than one factor and less than 0.10 difference in terms were excluded from the evaluation. For the obtained dimensions, the normal distribution assumption was controlled with the Kolmogorov-Smirnov test. The comparison of pre-clinical and intern students in terms of obtained dimensions was performed with

Mann-Whitney U test. Statistical analyses were performed using SPSS software (version 22, IBM Corporation, Armonk, NY, USA).

## Results

Total number of 280 students were included in this study, 53.2% (n = 149) were women and 46.7% (n = 131) were men. There was no statistically significant difference between the genders in terms of the dimensions discussed in the clinical group ( $P > 0.05$ ). However, there was a significant difference in AIDS Knowledge Scale between the genders for protection and sexuality dimensions in the pre-clinical group ( $P < 0.05$ ). In terms of protection knowledge, the average of women was higher than men ( $P < 0.01$ ), while the average level of sexuality knowledge was higher in men than women ( $P < 0.01$ ). Across these samples, the mean age of the students was 21.4 years. 63% (n = 180) of them were in pre-clinic group and 36% (n = 102) of them were in clinic group.

Distribution of AIDS knowledge is given in table 1. AIDS Knowledge Scale was examined in three dimensions: transmission, protection, and sexuality (Table 2). The overall Cronbach's alpha value of the AIDS Knowledge Scale is acceptable as 0.767. Cronbach's alpha values of the three sub-dimensions were between 0.572 and 0.848. A low correlation of 29.7% was found

between transmission and protection sub-dimensions and it was found to be statistically significant ( $P < 0.01$ ). Also, a statistically significant but lower correlation (15.2%) was found between transmission and sexuality ( $P < 0.05$ ). The 6.3% correlation between protection and sexuality was not statistically significant. The expressions in each dimension are given in table 2. Regarding pre-clinic and clinic groups, a statistically significant difference was found only in the protection dimension ( $P \leq 0.05$ ). Clinic group was more informed than the pre-clinic one.

AAS was examined in 4 dimensions which were physical contact, social relationship, special relationship, and stigma, reliability was assessed as well (Table 3). The overall Cronbach's alpha value of the AAS is questionable as 0.614. Cronbach's alpha values of the four sub-dimensions were between 0.437 and 0.739. The acceptable Cronbach's alpha value was 0.739 in the physical contact sub-dimension, while the alpha values of the other sub-dimensions were poor. Correlations between physical contact and social relationship, special relationship, and stigma were -5.6%, 40.3%, and 30.4%, respectively. The last two of these correlations were statistically significant ( $P < 0.05$ ). The correlations between social relationship and special relationship and stigma were -10.4% and -10.0%, respectively.

**Table 1.** Distribution of acquired immune deficiency syndrome (AIDS) Knowledge Scale and AIDS Attitude Scale (AAS)

Variable	Dimension	Term	N	Descriptive statistics				Mann-Whitney U		
				Mean $\pm$ SD	Median	IQR	Minimum	Maximum	Z	P
Transmission	Pre-clinic		188	3.50 $\pm$ 2.24	4	3.5	0	7	-0.600	0.548
	Clinic		91	3.67 $\pm$ 2.38	4	5	0	7		
	Total		279	3.56 $\pm$ 2.28	4	5	0	7		
Protection	Pre-clinic		188	1.60 $\pm$ 1.20	2	3	0	3	-2.475	0.013
	Clinic		91	1.98 $\pm$ 1.10	2	2	0	3		
	Total		279	1.72 $\pm$ 1.18	2	2	0	3		
Sexuality	Pre-clinic		188	3.23 $\pm$ 1.09	4	1	0	4	-0.709	0.478
	Clinic		91	3.21 $\pm$ 0.97	4	1	1	4		
	Total		279	3.23 $\pm$ 1.05	4	1	0	4		
General	Pre-clinic		189	12.00 $\pm$ 4.30	12	6	0	21	-2.802	0.005
	Clinic		91	13.68 $\pm$ 3.85	14	5	4	21		
	Total		280	12.55 $\pm$ 4.23	13	5	0	21		

IQR: Interquartile range; SD: Standard deviation

**Table 2.** Dimensions of acquired immune deficiency syndrome (AIDS) Knowledge Scale

Dimension	Expressions	Component		
		1	2	3
Transmission, Cronbach's alpha = 0.848	Kissing a patient with AIDS can spread the disease.	0.837		
	Kiss from a patient with AIDS can spread the disease.	0.798		
	Eating from the same plate with the patient with AIDS can spread the disease.	0.768		
	Cough of a patient with AIDS can spread the disease.	0.756		
	Sharing the same items (teacup, towels, clothes, etc.) with the patient with AIDS can spread the disease.	0.749		
	Swimming in the same pool with the patient with AIDS can spread the disease.	0.636		
Protection, Cronbach's alpha = 0.742	Using the same toilet as the patient with AIDS can spread the disease.	0.501		
	Regular exercise can be a way to protect from AIDS.		0.840	
	Healthy nutrition helps protect against AIDS.		0.811	
Sexuality, Cronbach's alpha = 0.572	Too much stressful life can lead to AIDS.		0.797	
	Avoiding a one-night relationship helps protect against AIDS.			0.735
	Monogamy helps protect against AIDS.			0.724
	Getting to know your partner is helpful in protecting against AIDS.			0.719
	Using condoms helps protect against AIDS.			0.458
Extraction method: Principal component analysis (PCA); Rotation method: Oblimin with Kaiser normalization				

AIDS: Acquired immune deficiency syndrome

These correlations were not statistically significant ( $P > 0.05$ ). There was a 11.9% correlation between the special relationship and stigma, which was statistically significant ( $P < 0.05$ ). In general, all correlations were low. No statistically significant difference was found between the pre-clinic and clinic groups in 4 dimensions ( $P > 0.05$ ).

Distribution of AAS is given in table 4.

### Discussion

In this study, which was performed to assess the dental students' knowledge and attitude about HIV/AIDS, it was seen that the general education of the participants was noticeably low.

**Table 3.** Dimensions of acquired immune deficiency syndrome (AIDS) Attitude Scale (AAS)

Dimension	Expressions	Component			
		1	2	3	4
Physical contact, Cronbach's alpha = 0.739	I would not want to work in the same job with someone who has AIDS.	0.853			
	Working with someone who has AIDS makes me feel uncomfortable.	0.832			
	If a friend had AIDS, I would stay away from him.	0.712			
	I think it is dangerous for patients with AIDS to get in touch with others.	0.532			
Social relationship, Cronbach's alpha = 0.437	I feel comfortable with someone who has AIDS.		0.742		
	I live in the same house as someone with AIDS.		0.670		
	If I was an employer, I would hire someone with AIDS.		0.608		
Special relationship, Cronbach's alpha = 0.584	If my lover said he had AIDS, I would leave him.			0.729	
	I turned against my child marrying someone with AIDS.			0.728	
Stigma, Cronbach's alpha = 0.463	I prefer to be away from someone with AIDS.			0.653	
	It is a shame to have AIDS.				0.771
	It would be embarrassing for me to have one of my parents suffering from AIDS.				0.673
	I would be ashamed to go to the doctor to get an AIDS test.				0.606
Extraction method: Principal component analysis (PCA); Rotation method: Oblimin with Kaiser normalization					

AIDS: Acquired immune deficiency syndrome

**Table 4.** Distribution of acquired immune deficiency syndrome (AIDS) Attitude Scale (AAS)

Variable		Descriptive statistics						Mann-Whitney U	
Dimension	Term	N	Mean $\pm$ SD	Median	IQR	Minimum	Maximum	Z	P
Physical contact	Pre-clinic	188	12.15 $\pm$ 4.01	12	6	4	20	-0.317	0.751
	Clinic	91	12.33 $\pm$ 3.73	12	4	3	20		
	Total	279	12.21 $\pm$ 3.92	12	6	3	20		
Social relationship	Pre-clinic	188	7.54 $\pm$ 2.63	7	3	3	15	-1.866	0.062
	Clinic	91	8.11 $\pm$ 2.82	8	4	3	15		
	Total	279	7.73 $\pm$ 2.70	7	4	3	15		
Special relationship	Pre-clinic	188	8.74 $\pm$ 3.38	9	4.5	3	15	-0.984	0.325
	Clinic	91	8.29 $\pm$ 2.76	8	3	3	15		
	Total	279	8.59 $\pm$ 3.19	9	4	3	15		
Stigma	Pre-clinic	188	10.14 $\pm$ 2.57	10	4	3	15	-0.987	0.323
	Clinic	91	9.92 $\pm$ 2.22	10	4	5	15		
	Total	279	10.07 $\pm$ 2.46	10	4	3	15		
General	Pre-clinic	188	49.82 $\pm$ 8.48	50	11	22	73	-0.219	0.827
	Clinic	91	50.07 $\pm$ 7.78	50	10	33	72		
	Total	279	49.90 $\pm$ 8.24	50	10	22	73		

IQR: Interquartile range; SD: Standard deviation

An increasing number of HIV+ patients requires appropriate dental care and as a consequence dentistry students, who are the dentists of the future, should be well trained. By this way, HIV/AIDS-related risk behaviors can be reduced in dental practice. Having knowledge and experience in practice are the keys in an attempt for improvement of a healthy behaviour.<sup>10,11</sup> Professional attitude can be provided with the help of an integrated education that includes the ethical aspects and a better perception of the disease.<sup>12</sup> In the present study, there was no significant difference between the groups in terms of transmission and sexuality. Also, it was determined that clinic group was more informed in the dimension of protection. Unlike this study, Singh et al. found that dental students had adequate information about transmission patterns although they had lack of knowledge about infection control.<sup>13</sup>

A study done in the School of Dentistry of Yeditepe University, Istanbul, Turkey, indicated that 72.8% of the students were concerned about the transmission of HIV/AIDS infection from patients, 81.6% of them thought that they had insufficient knowledge, and 87.2% of them thought they needed further education.<sup>14</sup> In another study involving dentistry students, 81.0% of the

students reported that they were worried about the risk of transmission during dental treatment.<sup>15</sup> Moreover, in the present study, HIV/AIDS knowledge level was found inadequate. Even though the protection dimension was found statistically and significantly better in clinic group than the pre-clinic group, it was not satisfactory either. With more education, the concerns about treating an HIV/AIDS-infected patient can be reduced.

Regarding gender, a study at Jazan University, Jazan, Saudi Arabia, revealed that male and 4<sup>th</sup> year dental students had better HIV-related knowledge and attitudes when compared to female and lower level students.<sup>16</sup> In the present study, there was no statistically significant difference in terms of gender in clinic group ( $P > 0.05$ ). Also, contraversally to this study, men in pre-clinic group were less informed than women according to AIDS Knowledge Scale. These differences in two study can be explained by the difference of culture.

There were no statistically significant differences between the two groups in AAS for all these 4 dimensions. So, this study showed an undesired data about attitude of dental students toward patients with HIV/AIDS and current findings showed that in both groups, dental students had

substantially prejudiced thoughts. These high rates of HIV+ patients discrimination are congruent with previous study done in an other dentistry school in India in which the students had adequate knowledge about patients with HIV/AIDS.<sup>17</sup> The findings of this study are different from those of previous researches who found students having positive attitude about HIV/AIDS-infected patients.<sup>18</sup> On the other hand, a research revealed that students who had adequate knowledge about patients with HIV/AIDS, had a positive attitude.<sup>18</sup> One of the most salient findings of this study was that both in clinic and pre-clinic groups, the knowledge and attitude toward HIV/AIDS fell short of the expectations. These stigmatized thoughts can be changed with an adequate qualified education.<sup>19,20</sup>

The results indicated that students' knowledge and attitude about HIV/AIDS did not change as the year of study progressed. This is not compatible with the findings of previous studies observed.<sup>19</sup> This may be attributed to insufficient content of knowledge acquired as one progresses through the curriculum. In line with the present study, different studies in different countries revealed educational deficit in medical and dental students with regards to HIV/AIDS.<sup>21</sup> Nasir et al. revealed that students were not prepared for facing an HIV/AIDS-infected patient and they

suggested that dental curriculum should be improved with respect to treating patients with HIV/AIDS.<sup>8</sup> Therefore, the low knowledge level about the HIV/AIDS found in our study should be a source of concern because of the risk of cross-infection.

The limitation of the present study is the inclusion of only one dental school. This limited sample size may limit the generalization of the findings. Far-reaching further researches should be done in the future.

### Conclusion

The present study revealed that most of the respondents did not have enough education with respect to HIV/AIDS. Even though non of them were well-informed about HIV/AIDS, clinic group had better knowledge about how they could protect themselves; nevertheless, they all had stigmatized attitudes towards this group of patients. Further education should be given to improve the future dentists thoughts. This will be important in decreasing both HIV/AIDS discrimination stigma and cross-infection among the dentists and the patients.

### Conflict of Interests

Authors have no conflict of interest.

### Acknowledgments

The authors wish to thank Serap Keskin Tunc for her help in the data gathering process.

### References

1. Yazdani R, Mohamadzadeh M, Kharazi Fard MJ. Knowledge and attitude of patients presenting to a dental school clinic towards HIV/AIDS. *J Craniomaxillofac Res* 2018; 5(1): 27-34.
2. Hasan SA, Ganapathy D, Jain A. Knowledge and awareness among undergraduate students on human immunodeficiency virus transmission. *Drug Invention Today* 2018; 10: 3285-8.
3. Aydemir N, Yakin I, Arslan H. Developing AIDS knowledge and AIDS attitude scales and assessing their reliability and validity. *Studies in Psychology* 2018; 38(1): 73-93. [In Turkish].
4. Joint United Nations Programme on HIV/AIDS (UNAIDS). UNAIDS Data 2017 [Online]. [cited 2019 May 6]; Available from: URL: [https://www.unaids.org/sites/default/files/media\\_asset/20170720\\_Data\\_book\\_2017\\_en.pdf](https://www.unaids.org/sites/default/files/media_asset/20170720_Data_book_2017_en.pdf)
5. Turkish Ministry of Health. HIV-AIDS Statistics [Online]. [cited 2019 Apr 20]; Available from: URL: <https://hsgm.saglik.gov.tr/tr/bulasici-hastaliklar/862-hiv-aids/1135-h%C4%B1v-aids-istatistik.html>. [In Turkish].
6. Barral MF, de Oliveira GR, Lobato RC, Mendoza-Sassi RA, Martinez AM, Goncalves CV. Risk factors of HIV-1 vertical transmission (VT) and the influence of antiretroviral therapy (ART) in pregnancy outcome. *Rev Inst Med Trop Sao Paulo* 2014; 56(2): 133-8.
7. Okala S, Doughty J, Watt RG, Santella AJ, Conway DI, Crenna-Jennings W, et al. The people living with HIV STIGMASurvey UK 2015: Stigmatising experiences and dental care. *Br Dent J* 2018; 225(2): 143-50.

8. Nasir EF, Astrom AN, David J, Ali RW. HIV and AIDS related knowledge, sources of information, and reported need for further education among dental students in Sudan--a cross sectional study. *BMC Public Health* 2008; 8: 286.
9. Crossley ML. An investigation of dentists' knowledge, attitudes and practices towards HIV+ and patients with other blood-borne viruses in South Cheshire, UK. *Br Dent J* 2004; 196(12): 749-54.
10. Cabbar F, Suer BT, Capar GD, Yildiz H, Ozcakil TC. Dental patients' knowledge and awareness about transmission ways of acquired immune deficiency syndrome (AIDS). *J Istanbul Univ Fac Dent* 2016; 50(1): 19-26.
11. Fisher JD, Fisher WA. Changing AIDS-risk behavior. *Psychol Bull* 1992; 111(3): 455-74.
12. Ali A, Ali NS, Nasir U, Aadil M, Waqas N, Zil-E-Ali, et al. Comparison of Knowledge and attitudes of medical and dental students towards HIV/AIDS in Pakistan. *Cureus* 2018; 10(4): e2426.
13. Singh VP, Osman IS, Rahmat NA, Bakar NAA, Razak NFNA, Nettem S. Knowledge and attitude of dental students towards HIV/AIDS patients in Melaka, Malaysia. *Malays J Med Sci* 2017; 24(3): 73-82.
14. Gunbatan M, Tolonay B, Tomruk CO, Capar GD. Awareness, knowledge and attitudes of dental students in Yeditepe University Faculty of Dentistry towards individuals with HIV/AIDS. *Yeditepe Dental Journal* 2016; 1: 29-39.
15. Altindis A, Cumhur A, Kahraman E, Koseoglu M. The evaluation of the awareness and attitude of dental students on the infection control. *Journal of Biotechnology and Strategic Health Research* 2018; 2(3): 196-204. [In Turkish].
16. Kumar S, Tadakamadla J, Areeshi AYBH, Tobaigy HAWM. Knowledge and attitudes towards HIV/AIDS among dental students of Jazan University, Kingdom Saudi Arabia. *Saudi Dent J* 2018; 30(1): 47-52.
17. Patil P, Sreenivasan V, Goel A. Knowledge of HIV/AIDS and attitude of dental students towards HIV/AIDS patients: A cross-sectional survey. *J Educ Ethics Dent* 2011; 1(2): 59-63.
18. Sadeghi M, Hakimi H. Iranian dental students' knowledge of and attitudes towards HIV/AIDS patients. *J Dent Educ* 2009; 73(6): 740-5.
19. Turhan O, Senol Y, Baykul T, Saba R, Yalcin AN. Knowledge, attitudes and behaviour of students from a medicine faculty, dentistry faculty, and medical technology Vocational Training School toward HIV/AIDS. *Int J Occup Med Environ Health* 2010; 23(2): 153-60.
20. Chan KY, Stooze MA, Sringernyung L, Reidpath DD. Stigmatization of AIDS patients: Disentangling Thai nursing students' attitudes towards HIV/AIDS, drug use, and commercial sex. *AIDS Behav* 2008; 12(1): 146-57.
21. Shaikh FD, Khan SA, Ross MW, Grimes RM. Knowledge and attitudes of Pakistani medical students towards HIV-positive and/or AIDS patients. *Psychol Health Med* 2007; 12(1): 7-17.