



Knowledge and attitude of dental students towards the oral care of HIV/AIDS patients

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ABSTRACT

Introduction: Oral health is strongly linked with the systemic conditions, with HIV being one of them. As a dental professional, it is imperative to have the knowledge of this association. *Materials and methods:* A cross sectional study, which utilized a closed ended questionnaire constructed in Arabic language. This online survey was designed using Google forms, which consisted of questions related to the demographics and knowledge and attitude related to HIV/AIDS. *Results:* A total of N=521 dental students filled out the online survey. Out of this sample, 46% were females and 54% males. Statistically significant results were achieved amongst various levels of dentistry, when inquired about transmission through saliva (p-value: 0.008), transmission through CPR (p-value: 0.048) and infection control protocol being time consuming (p-value: 0.027). *Conclusion:* Male students showed better knowledge regarding the association of oral manifestations of HIV. Level 8, 9 and 10 students showed positive attitude towards the treatment of HIV patients in dental clinic.

Keywords: space maintainer, parents' knowledge, pediatric dentistry.

1. INTRODUCTION

Oral health is strongly linked with the systemic conditions, with HIV being one of them. As a dental professional, it is imperative to have the knowledge of this association. Oral problems such as caries, periodontal diseases and oral-mucosal lesions are commonly found in patients having HIV/AIDS. In extreme conditions, the prevalence and severity of these oral disorders is higher than normal

with most common sufferers being IV drug abusers and female sex workers (Nouaman et al., 2015; Moscicki et al., 2016). Having HIV/AIDS is not the only issue when it comes to having oral problems; its treatment also affects the oral health to some extent. Combination antiretroviral therapy has been proven to be playing its role in deteriorating oral health by increasing the number of active caries and higher DMFT (Shiboski et al., 2018). Children with HIV, mainly in Africa also represent with high prevalence of oral diseases such as enamel hypoplasia, candidiasis, caries, angular cheilitis and herpes labialis. However, those who received HAART therapy had a lower prevalence and intensity of these oral conditions (Oyedeji et al., 2015).

Dental health practitioners are trained to manage patients having systemic diseases, with HIV/AIDS being one of them. However, it is important to understand the protocol of treating patients with AIDS so that appropriate treatment could be provided (Dhanya et al., 2017). Similarly, dental students are also responsible to manage patients with AIDS and must be able to provide them with care without any prejudice. Therefore, it is important for the students to have complete knowledge about the protocol. A study in China among the dental students revealed that their knowledge was adequate but their attitude and readiness towards treating HIV patients was negative (Li et al., 2016). Similarly, another investigation in Malaysia exhibited a high level of knowledge among dental students but their attitude was not associated with it. However, the knowledge was significantly associated with the ethnicity and gender of dental students (Singh et al., 2017). Contrary to these results, a lower level of knowledge was observed when dental students from Jazan, Saudi Arabia were inquired about treating patients with HIV (Kumar et al., 2018).

It can be observed from these and other studies that providing knowledge about treating HIV patients is not enough, but instilling positive attitude towards implementation is also important (Lou, 2017).

Why did we choose this topic?

To measure the awareness of dental students as this disease is rare and it is not easy to manage them in the daily practice.

Aims of the study

To determine the knowledge and practice of dental students in Saudi Arabia regarding treatment of HIV patients

To compare the findings on the basis of dentistry level and gender

2. MATERIALS AND METHODS

Study Design

This is a cross sectional study that was conducted among the dental students using an online survey. The research was approved by IRB, Riyadh Elm University by letter number FRB/2019/022 and the duration of the research was from 01/01/2020 to 10/07/2020.

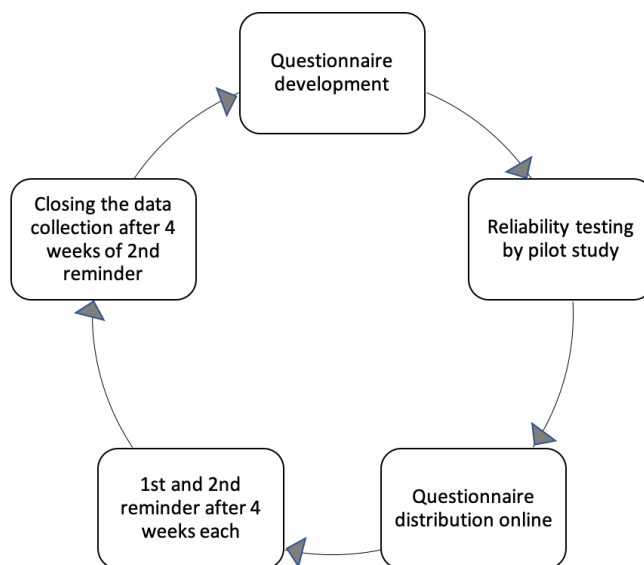


Figure 1 Flowchart of study methodology

Study Sample

All dental universities in Saudi Arabia were contacted and students were requested to fill up the survey.

Study Instrument

An online questionnaire was designed using Google Forms with questions related to personal and demographic information followed knowledge and attitude related questions.

Instrument Validity and Reliability

A pilot study was conducted by sending the survey to 20 participants and the data was inserted in SPSS version 22 to determine the reliability by using Cronbach's coefficient alpha (0.862). Validity of the questionnaire was tested by sending it to experienced researchers in REU but no changes were made (figure 1).

Statistical Analysis

Collected data was analyzed using SPSS version 22, where descriptive as well as inferential statistics were conducted. Comparisons between groups were made with the value of significance kept under 0.05.

3. RESULTS

The results revealed that a total of N=521 dental students participated in this study, which included n=280 (54%) males and n=235 (46%) females. Students were also divided on the basis of dentistry level, which included n=67 (13%) from level 8, n=83 (16%) from level 9, n=81 (16%) from level 10, n=84 (16%) from level 11, n=90 (18%) from level 12 and n=110 (21%) were interns (table 1-4 & figure 2).

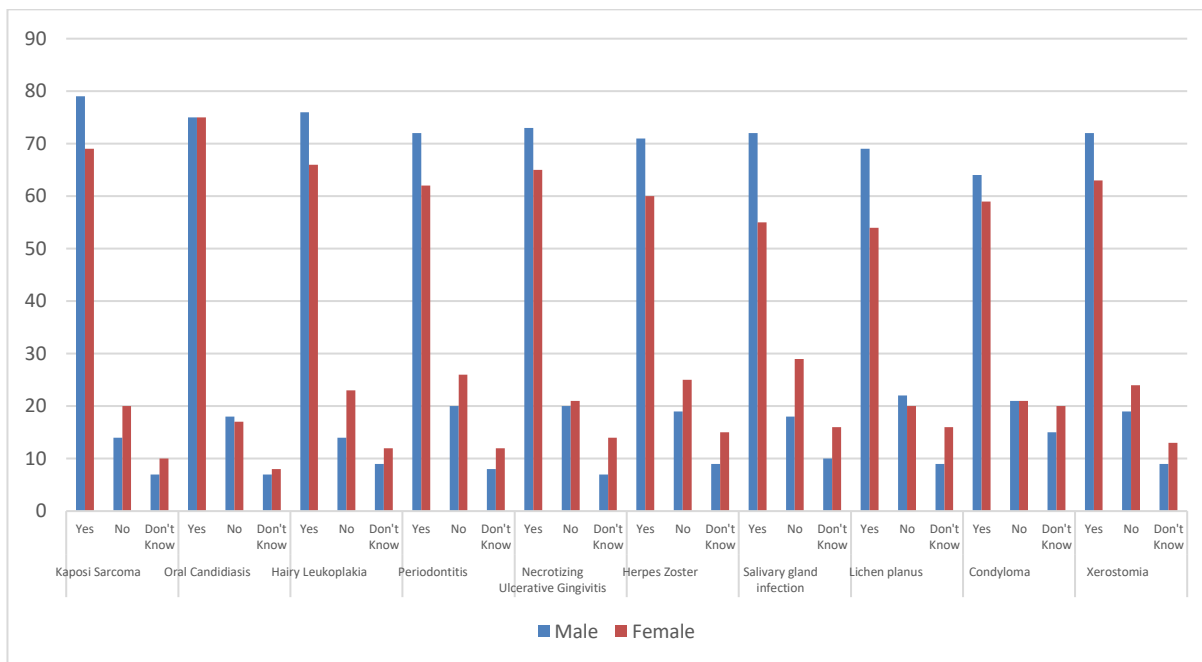


Figure 2 Graphs showing gender-wise distribution of knowledge regarding conditions which can be oral manifestations associated with HIV

Table 1 Gender and Dentistry Level of students participating in this study

Variables	Frequencies	
Gender	Male	280 (54%)
	Female	235 (46%)
Level	Level 8	67(13%)
	Level 9	83(16%)
	Level 10	81 (16%)
	Level 11	84 (16%)
	Level 12	90 (18%)
	Interns	110 (21%)

Comparisons were made on the basis of gender and dentistry levels using Chi-square test. Statistically significant differences were reported among males and females when inquired the students about association of HIV with Hairy Leukoplakia (p-value: 0.048), Necrotizing Ulcerative Gingivitis (p-value: 0.044), Salivary gland infection (p-value: 0.001) and Lichen planus (p-value: 0.005). furthermore, significant comparisons were achieved when inquired about testing for HIV after a needle stick injury (p-value: 0.005), transmission of HIV through saliva (p-value: 0.000), presence of HIV particles in saliva (p-value: 0.004), willingness to treat HIV patient (p-value: 0.003), treating HIV patient as an ethical responsibility (p-value: 0.002), infection control is time consuming (p-value: 0.002) and HIV patients should treated as routine (p-value: 0.004).

As far as dentistry levels were concerned, majority of the survey questions resulted in statistically insignificant comparisons. However, significant associations were reported when inquired the students about relation between HIV and Lichen planus (p-value: 0.028), Condyloma (p-value: 0.013) and Xerostomia (p-value: 0.024). When assessed the attitude towards the patients, statistically significant results were achieved when inquired about transmission through saliva (p-value: 0.008), transmission through CPR (p-value: 0.048) and infection control protocol being time consuming (p-value: 0.027).

Table 2 Comparison on the other parameters basis of Gender

Items			Male(%)	Female(%)	p-value
Students' knowledge about biosafety	Would you be tested for HIV after a needle stick injury?	Yes	75	60	0.005*
		No	17	26	
		Maybe	8	14	
	Can saliva be a vehicle for the transmission of AIDS?	Yes	71	51	0.001*
		No	20	35	
		Maybe	9	14	
	Are there a lot of HIV particles in the saliva of HIV/AIDS patients?	Yes	69	54	0.004*
		No	21	31	
		Maybe	10	15	
	Can CPR in patients with AIDS transmit HIV/AIDS?	Yes	66	57	0.055
		No	24	28	
		Maybe	10	15	
	Do all sterilization methods have cidal effects against HIV?	Yes	66	55	0.062
		No	23	31	
		Maybe	11	14	
Can HIV be transmitted through aerosols by hand pieces?	Yes	65	56	0.191	
	No	24	28		
	Maybe	11	16		
Is ELISA a screening test for HIV infection?	Yes	73	63	0.128	
	No	14	21		
	Maybe	13	16		
Attitudes towards treating HIV patients	I am willing to treat HIV positive patients:	Yes	68	52	0.003*
		No	18	26	
		Maybe	14	22	
	Treating an HIV positive patient is the ethical responsibility of a dentist:	Yes	74	58	0.002*
		No	18	29	
		Maybe	8	13	
	Infection control procedures necessary for treatment of HIV patients are time-consuming and may affect the work quality of the dentist:	Yes	75	59	0.002*
		No	16	28	
		Maybe	9	13	
	Routine dental care should be a part of the treatment of patients with HIV/AIDS:	Yes	74	59	0.004*
		No	18	24	
		Maybe	8	17	

All dental patients should be treated even if they have HIV/AIDS.	Yes	64	61	0.081*
	No	24	27	
	Maybe	12	12	
The dentist has the right to refuse to treat an HIV positive patient	Yes	35	41	0.276
	No	50	43	
	Maybe	15	16	

Table 3 Level-wise distribution of knowledge regarding conditions which can be oral manifestations associated with HIV

Item		Level						p-value
		8	9	10	11	12	Intern	
Kaposi Sarcoma	Yes	70	86	81	71	74	64	0.055
	No	21	12	11	15	16	21	
	Don't Know	9	2	8	13	10	15	
Oral Candidiasis	Yes	67	82	74	71	71	76	0.55
	No	22	14	18	23	21	14	
	Don't Know	10	4	9	6	8	10	
Hairy Leukoplakia	Yes	66	76	73	76	68	59	0.095
	No	21	16	10	15	20	28	
	Don't Know	13	8	16	8	12	13	
Periodontitis	Yes	61	75	72	72	63	60	0.179
	No	25	20	14	18	26	30	
	Don't Know	13	5	14	10	11	10	
Necrotizing Ulcerative Gingivitis	Yes	69	71	62	69	70	68	0.932
	No	21	18	23	20	23	19	
	Don't Know	10	11	15	11	7	13	
Herpes Zoster	Yes	64	65	61	70	61	54	0.26
	No	24	17	28	19	19	30	
	Don't Know	12	18	11	11	20	16	
Salivary gland infection	Yes	60	60	62	67	62	59	0.92
	No	25	22	23	24	27	28	
	Don't Know	15	18	15	10	11	13	
Lichen planus	Yes	55	59	69	65	57	52	0.028
	No	28	20	14	27	35	33	
	Don't Know	16	20	17	8	8	15	
Condyloma	Yes	55	64	67	58	44	51	0.013
	No	21	11	15	20	36	26	
	Don't Know	14	25	18	22	19	19	
Xerostomia	Yes	67	67	75	73	66	55	0.024
	No	18	20	14	13	28	33	
	Don't Know	15	12	11	13	6	12	

Table 4 Comparison on the other parameters basis of levels

Items			Level						p-value
			8	9	10	11	12	Intern	
Students' knowledge about biosafety	Would you be tested for HIV after a needle stick injury?	Yes	69	70	75	69	57	69	0.456
		No	19	17	16	16	29	21	
		Maybe	12	12	9	16	13	10	
	Can saliva be a vehicle for the transmission of AIDS?	Yes	57	69	68	69	55	50	0.008*
		No	31	20	19	19	40	38	
		Maybe	12	11	13	12	4	13	
	Are there a lot of HIV particles in the saliva of HIV/AIDS patients?	Yes	58	64	61	63	57	52	0.631
		No	28	28	24	20	30	28	
		Maybe	13	9	13	17	13	20	
	Can CPR in patients with AIDS transmit HIV/AIDS?	Yes	54	60	71	63	49	52	0.048
		No	33	28	10	25	33	31	
		Maybe	13	12	19	12	18	17	
	Do all sterilization methods have cidal effects against HIV?	Yes	54	72	62	68	53	53	0.174
		No	31	16	20	31	34	30	
		Maybe	15	12	18	11	13	17	
Can HIV be transmitted through aerosols by hand pieces?	Yes	64	60	64	60	55	51	0.427	
	No	22	27	15	25	31	32		
	Maybe	13	13	21	14	14	17		
Is ELISA a screening test for HIV infection?	Yes	65	76	71	66	61	61	0.38	
	No	21	12	11	12	16	19		
	Maybe	14	12	18	22	23	19		
Attitudes towards treating HIV patients	I am willing to treat HIV positive patients:	Yes	66	60	57	51	60	55	0.649
		No	15	25	22	25	26	25	
		Maybe	19	14	22	24	15	20	
	Treating an HIV positive patient is the ethical responsibility of a dentist:	Yes	73	74	70	64	72	63	0.441
		No	18	22	16	24	21	26	
		Maybe	9	4	14	12	7	11	
	Infection control procedures necessary for treatment of HIV patients are time-consuming and may affect the work quality of the dentist:	Yes	69	61	77	59	56	63	0.027
		No	19	30	12	28	38	28	
		Maybe	12	9	12	13	6	8	
	Routine dental care should be a part of the treatment of patients with HIV/AIDS:	Yes	73	62	70	67	69	66	0.913
		No	18	23	18	16	20	20	
		Maybe	9	15	13	17	10	14	
	All dental patients should be treated even if they have HIV/AIDS.	Yes	72	70	60	60	63	56	0.203
		No	19	24	23	32	23	27	
		Maybe	9	6	17	9	15	17	
The dentist has the right to refuse to treat an HIV positive patient	Yes	40	32	36	29	44	37	0.686	
	No	48	51	49	51	38	48		
	Maybe	12	17	15	20	18	15		

3. DISCUSSION

According to a similar research, almost 99% of the students are aware of the HIV transmission if there is a needle stick injury. The risk level of this infection after percutaneous exposure is very low i.e. 0.3%. But on the other hand, this infection through needle stick can give much stress to the dentists psychologically. So the students today should be taught regarding the procedures and safety

measures to be taken if there is a prompt needle stick injury. Around 61% of the students agreed that HIV can be transmitted through saliva. If the blood of the HIV positive patient is there in the aerosols, there is a possibility of HIV transmission, theoretically. There is a possibility of oral fluids and blood aspiration into a dental unit waterline from an infected patient which can spread the microbes of that patient into the next consecutive patient or the dentist (JPDA, 2018).

Compared to another research, the dentist has the ethical responsibility to treat an HIV positive patient, this fact was agreed by around 65% of the students. This shows that the level of ethical awareness is much better nowadays. Still, the stats show that the students in India and Iran are much more aware and well informed. So, the level of importance of these teachings is much more than among the students regarding the HIV transmission. A report was prepared by the Centre for disease control in the year 2001, where they mentioned that the sharps injuries had more chances of transmission of HIV. There was a mutual understanding among the students regarding the fact that every other patient is a potentially infectious. Properly constituted policies should be there in all the institutions which should be upgraded from time to time whenever needed where precautions should be mentioned too that can become normal in all the institutions after regular practices (Ayanbadejo and Agbelusi, 2005).

There should be a good knowledge of the oral lesions which are linked with the diseases so that the proper care is taken by the dental practitioners. The results of the study show that the students have been well taught as they were aware of the major AIDS indicators. The most common HIV related oral manifestations recorded were oral candidiasis, hairy leukoplakia and Kaposi's sarcoma. Still guidance was required for the students regarding lesions that are not strongly, but connected with the HIV such as xerostomia, condyloma and papilloma. Furthermore, the fact those lesions that are strongly associated with the AIDS/HIV are not only exclusive to HIV/AIDS. The diseases such as hairy leukoplakia, oral candidiasis and Kaposi's sarcoma can also be found among the patients not having HIV/AIDS (M and Ky, 2012). The need for dental and medical care for the individuals is increasing as there has been a notable increase in the growth of HIV/AIDS patients. The dentists should increase their understanding regarding the diseases and their signs which was nearly 70%. The institutions here have a curriculum which includes the detailed theoretical classes on how to control and diagnose the HIV/AIDS. But enhancing this curriculum and guidance through seminars, professional development, conferences and workshops can bring betterment in overall (Fotedar et al., 2015).

The regressive thing noticed among the students in our study was that their behavior was not satisfactory towards the patients of HIV/Aids. Almost 24% of the students disagreed that treating an HIV positive patient is the ethical responsibility of a dentist. Around 27.74% students studying dentistry stated that there was no obligation on them to treat HIV/AIDS patient. WHO (world health organization) declared in the year 1988 that it is must for all the dentists to treat the HIV patients? Students might suppress their ability to cope with the management of such patients and treatment because of the unease and panic of being infected (Lee et al., 2017). Methods of sterilization and diagnostic tests for HIV were not much common among the students studying dentistry. This shows that there is a difference in the curriculum followed in the universities. We can take an example that topics including examination and prevention of cross infection for manifestations are taught in the second semester of fourth year in the Jazan University. Although the students in our study were of 4th year onwards, they were studying in the 1st semester. Besides limited exposure, earlier in a study which was conducted in Saudi it was concluded that there is scarcity in spreading of knowledge related to HIV/AIDS (Scheutz and Pindborg, 2009).

Most of the students believed that saliva is the most common medium of AIDS transmission. There is a possibility of difference in the opinion and also the literature on this transmissibility via salivary route of HIV. In fact, such transmission cases are very rare. Although there was a bit of disagreement, most of the countries stated that HIV patients must be treated by all the practitioners and that normal patient can also be considered to be potentially infectious. But almost every fifth student in our study agreed with this statement if Periodontitis an oral manifestation associated with HIV. Whereas, 80% of the oral and dental hygiene students in South Africa disagreed that these patients of HIV/AIDS should be entertained at any dental clinic (Sposto et al., 1994).

4. CONCLUSION

Male students showed better knowledge regarding the association of oral manifestations of HIV. Male students showed better attitude towards the treatment of HIV patients and inflectional control protocol. Levels 10 and 11 showed better knowledge of HIV related oral manifestations as compared to other levels. Level 8, 9 and 10 students showed positive attitude towards the treatment of HIV patients in dental clinic.

Author contribution

All authors contributed equally for the research.

Conflict of Interest

The authors declare no conflict of interest.

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Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

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Data and materials Availability

All data associated with this study are present in the paper.

Peer-review

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