

Knowledge, Attitude, and Practice towards HIV Patients among Dentists

R. S. Dhanya, Vijaya Hegde¹, S. Anila², George Sam³, Rajat R. Khajuria⁴, Rishav Singh⁵

Department of Public Health Dentistry, PSM Dental College, Akkikavu, Trichur, Kerala, ¹Department of Public Health Dentistry, A J Institute of Dental Sciences, Mangalore, Karnataka, ²Department of Periodontics, St. Gregorious Dental College, Ernakulam, Kerala, India, ³Department of Preventive Dental Sciences, College of Dentistry, Prince Sattam bin Abdul Aziz University, Al kharj, Kingdom of Saudi Arabia, ⁴Department of Prosthodontics and Dental Materials, Indira Gandhi Government Dental College, Jammu, Jammu and Kashmir, ⁵Department of Pediatric and Preventive Dentistry, Hazaribag College of Dental Sciences and Hospital, Jharkhand, India

Received : 10-02-17.

Accepted : 02-03-17.

Published : 29-03-17.

INTRODUCTION

Human immunodeficiency (HIV) is a disease which results in decreased chemotaxis, defective granuloma formation and maintenance, impaired antigen processing and presentation, and generalized loss of CD4+ T cells. Acquired immunodeficiency syndrome (AIDS) is a globally emerging public health problem. India alone accounts for over 2.5 million people living with HIV with an estimated prevalence of 0.91%.^[1,2]

The risk of occupational transmission of the virus from a patient to a health-care provider has been estimated at 0.3% after a single percutaneous exposure to HIV-infected blood.^[1]

ABSTRACT

Aims and Objectives: Discrimination by some health care workers, including dentists, against human immunodeficiency virus (HIV) infected persons has been noted. The main aim of the present study was to assess the knowledge, attitude, and practice towards HIV patients among the dentists of Trichur district, Kerala.

Materials and Methods: A cross-sectional survey was conducted among 206 dentists practicing in Trichur district of Kerala. Data was collected using a pretested, self-administered 26-item questionnaire and was statistically analyzed using SPSS software version 20.

Results: Out of 206 participants, 39.3% were unwilling to treat HIV patients. A statistical significance was found between willingness to treat HIV infected patients and age groups ($P = 0.0001$) as well as between the willingness to treat HIV infected patients and ethical responsibility ($P = 0.0001$).

Conclusion: Staff fears and increased personal risk are found to be the most frequently reported concerns in treating HIV patients among dentists of Trichur district, Kerala. Senior dentists showed more reluctance to treat HIV positive individuals.

KEYWORDS: Attitudes, dentists, HIV, knowledge, practice

We can improve the medication tolerance/effectiveness, treatment success rate, and quality of life by providing good oral care to HIV-positive individuals.^[3,4] With improved survival rates, in the near future more HIV-positive patients will seek dental care.^[5]

Previous reports have shown that approximately 90% of the HIV infections among health-care workers occur in developing countries where occupational safety is a neglected issue.^[6-8]

Address for correspondence: Dr. R. S. Dhanya,

Department of Public Health Dentistry, PSM Dental College, Akkikavu, Trichur, Kerala, India.

E-mail: drdhanyamdstr@gmail.com

This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as the author is credited and the new creations are licensed under the identical terms.

For reprints contact: reprints@medknow.com

How to cite this article: Dhanya RS, Hegde V, Anila S, Sam G, Khajuria RR, Singh R. Knowledge, attitude, and practice towards HIV patients among dentists. J Int Soc Prevent Communit Dent 2017;7:148-53.

Access this article online

Quick Response Code:



Website: www.jispcd.org

DOI: 10.4103/jispcd.JISPCD_57_17

In the last two decades all over the world, many dentists do not treat HIV-positive individuals.^[9-11]

Unwillingness to treat patients with HIV by the dentists has been associated with inadequate knowledge of disease process, transmission, diagnosis, and treatment of HIV infected patients which in turn has led to fear regarding contagion or AIDS phobia.^[12-16]

Dental faculty should act as a role model for the dental students regarding the dental treatment of AIDS patients.^[17,18] In the studies conducted in various countries,^[17-20] although satisfactory knowledge level among the study participants was there, a stigma was reported regarding the treatment of HIV/AIDS patients. Studies done in South Africa, Brazil, Japan, and Sudan demonstrated that dental students had insufficient knowledge regarding HIV, its mode of transmission, and management of HIV positive patients.^[16,21-23]

Lack of knowledge, fear of contracting the infection during the course of treating HIV infected patients, resistance of support staff, and perceived lack of clinical skills act as barriers to treating HIV positive individuals among dentists.^[24,25]

The studies done in India by Aggarwal *et al.*^[26] and Fotedar *et al.*^[27] have demonstrated good knowledge score among the dental students. According to the World Health Organization (WHO), HIV-positive patients should be treated.^[28-30] Despite all these recommendations, dentists are reluctant to treat HIV/AIDS patients because of lack of knowledge and ignorance about the disease.^[31-37] Infectious diseases' including HIV/AIDS and cross-infection control should form a part of the dental course curriculum.^[1,38]

The studies done till date in Kerala to assess the knowledge and attitude of dentists towards HIV are rare. The purpose of the present study was to assess the knowledge, attitude, and practice towards HIV patients among the dentists of Trichur district, Kerala.

MATERIALS AND METHODS

A cross-sectional survey was conducted among the registered dental practitioners of Trichur district, Kerala using a pretested 26-item questionnaire. Out of the 26 questions, 5 questions were based on sociodemographic factors and the rest were knowledge, attitude, and practice questions. A pilot study was conducted to determine the sample size. The sample size was estimated to be 206. The sample size was calculated by using the formula $Za^2 pq/e^2$.

The correct knowledge response rate was estimated to be at $65.25 = (1.96^2) \times 65.25 \times 34.75 / (65.25 \times 10/100)^2 = 204.59$

The data collection was done by direct interviews, telephoning, and mailing. A written informed consent was obtained from all the study participants. Ethical clearance was obtained from AJ Ethics committee prior to beginning the study. A convenient sampling method was undertaken for data collection. The questionnaire consisted of 5 questions based on sociodemographic factors, 9 questions on knowledge, 9 questions on attitudes, and 5 questions on practice. Participants who were legally registered dental practitioners of Trichur district, Kerala were included in the study. Participants who were unwilling to participate in the study were excluded. The study was conducted for a period of 6 months from January to June 2013.

The reliability of the questionnaire was determined to be 0.87. The questionnaire was checked for validity by two professionals. The statistical analysis was done using the IBM Statistical Package for the Social Sciences software version 20, and the statistical test used here was the chi-square test.

RESULTS

In the present study, out of 206 study participants, 67% and 70.4% agreed that if they treated patients with HIV or AIDS, they would be placed at an increased personal risk and that it would be difficult to deal with staff fears about patients with HIV/AIDS, respectively. In the present study, 89.6% disagreed that they do not have an ethical responsibility to treat patients with HIV. In the present study, 60.7% of the participants were willing to treat HIV patients. A total of 46.4% of dentists agreed that, if they treat patients with HIV/AIDS, other patients may discontinue treatment in their dental office.

Only 4.4% correctly answered the question "What is the risk of contracting HIV infection from an HIV-contaminated needlestick injury." In the current study, 60.7% of the dentists agreed that it is possible to be infected with HIV by mother's breast milk. In the present study, 69.9% of the study participants knew that white lesions on the lateral parts of the tongue with fissured or hairy surface is HIV manifestation. Only 60.5% knew that positive anti-HIV findings indicated that a patient suffered with HIV.

In the present study, out of 38 study participants who agreed that they did not have an ethical responsibility to treat HIV infected patients, 89.5% were unwilling to treat HIV infected patients. A statistical significance was found to exist between q12 (I am willing to treat HIV infected patients) and q6 (I don't have an ethical responsibility to treat HIV infected patients) ($P = 0.0001$).

In the present study, 10% of the study participants agreed that they used hard containers for disposing sharps.

Table 1 shows that, out of 81 study participants who were unwilling to treat HIV infected patients, 39.5% were in the age group of 50–59 years. A statistical significance was found to exist between q12 (I am willing to treat HIV infected patients) and age groups ($P = 0.0001$).

Table 2 shows that, as attitude towards HIV patients increases, knowledge and practice towards HIV also increases. As knowledge towards HIV patients increases, practice also increases.

Table 3 shows that there is a significant difference between males and females regarding attitude and knowledge with females showing an increase in both attitude and knowledge towards HIV ($P = 0.048$ for attitude and $P < 0.001$ for knowledge, $t =$ students t -test).

Table 4 reveals that as age increases knowledge, attitude, and practice towards HIV is significantly reduced ($P < 0.001$, vhs; F–F test).

Table 5 shows that there is a significant difference in the attitude and knowledge among dentists in rural, urban, and semirural areas ($P = 0.001$; vhs).

DISCUSSION

In the current study, 70.4% of the dentists agreed that it would be difficult to deal with staff fears about patients

with HIV. This is the most frequently reported concern regarding HIV. This is comparable to the study done by Bodadhe *et al.*^[39] in India where 61.4% agreed to the same.

In a study conducted by Mc Carthy *et al.*^[40] in Canada, staff fears was the second frequent reported concerns to HIV. This difference can be attributed to the differences between Canadian and Indian population.

In the present study, 67% of the dentists agreed that they would be placed at greater personal risk if they treat HIV patients. This is similar to the study done by Mc Carthy *et al.*^[40] where 62% agreed to the same.

In the present study, 46.4% of dentists agreed that, if they treat patients with HIV/AIDS, other patients may discontinue treatment in their dental office. This finding is in coherence with the study done by Bodadhe *et al.*^[39] where 49.7% of the dentists agreed to the same.

In the present study, 60.7 % of the study participants were willing to treat HIV patients. This is consistent with

Table 1: Age group versus q12 (I am willing to treat HIV infected patients)

Age groups	I am willing to treat HIV infected patients (q12)		Total (%)
	Agree (%)	Disagree (%)	
23-29 years	40 (32)	1 (1.2)	41 (19.9)
30-39 years	52 (41.6)	4 (4.8)	56 (27.18)
40-49 years	28 (22.4)	19 (23.5)	47 (22.8)
50-59 years	4 (3.2)	32 (39.5)	36 (17.5)
60>years	1 (0.08)	25 (30.9)	26 (12.6)
Total	125 (100)	81 (100)	206 (100)

Chi-square value=128.090, df=4; $P=0.0001$

Table 2: Correlations between attitude and knowledge, attitude, and practice and knowledge and practice

	Knowledge	Practice
Attitude		
R	0.807	0.275
P	<0.001 (vhs)	<0.001 (vhs)
N	206	206
Knowledge		
R		0.254
P		<0.001 (vhs)
N		206

Table 3: Knowledge, attitude, and practice versus gender

Gender	N	Mean	Std deviation	t
Attitude				
Male	94	54.711	28.773	1.998
Female	112	61.735	21.882	$P=0.048$ (sig)
Knowledge				
Male	94	52.364	18.117	5.039
Female	112	64.980	17.723	$P<0.001$ (vhs)
Practice				
Male	94	44.894	25.684	0.134
Female	112	44.464	20.217	$P=0.893$ (ns)

Table 4: Knowledge, attitude, and practice versus age group

	N	Mean	Std deviation	F	P
Attitude					
23-29	41	81.882	11.528	76.57	<0.001 vhs
30-39	56	73.469	16.215		
40-49	47	52.584	12.320		
50-59	36	42.857	22.652		
>60	26	21.978	17.719		
Knowledge					
23-29	41	75.068	13.784	115.16	<0.001 vhs
30-39	56	71.429	6.982		
40-49	47	59.102	8.388		
50-59	36	44.753	15.139		
>60	26	28.205	5.649		
Practice					
23-29	41	50.244	22.857	6.11	<0.001 vhs
30-39	56	51.429	19.765		
40-49	47	45.957	23.559		
50-59	36	36.111	22.838		
>60	26	30.769	18.957		

Table 5: Knowledge, attitude, and practice versus region

	N	Mean	Std. deviation	F	P
Attitude					
Urban	32	78.571	16.227	13.977	<0.001 (vhs)
Rural	106	56.604	23.980		
Semirural	68	52.101	26.785		
Knowledge					
Urban	32	70.833	12.542	7.726	<0.001 (vhs)
Rural	106	56.499	20.638		
Semirural	68	58.007	16.719		
Practice					
Urban	32	43.750	21.213	0.685	0.505 (ns)
Rural	106	46.415	23.184		
Semirural	68	42.353	23.059		

the study done in UAE by Haroun *et al.*,^[41] where 59% of the students responded that the university should treat HIV infected personnel or students.

This can also be correlated with the study reported by Sharma *et al.*^[42] where 60% of the dentists showed positive attitudes towards HIV patients. In contrast, in the study conducted by Aggarwal *et al.*,^[43] only 39.23% of the study participants were willing to treat HIV infected patients.

Only 4.4% of the study participants correctly answered the question of the risk of contracting HIV infection from an HIV-contaminated needlestick injury. This is in accordance with the Bodadhe *et al.*,^[39] where only 10.9% correctly answered this question.

In the current study, 60.7% of the dentists knew that it is possible to be infected with HIV by mother's breast milk. This is similar to the study done by Li *et al.*^[44] among Chinese students, where majority of the students answered correctly about the routes of transmission and also in contrast to the study done by Rehan *et al.*^[45] in Pakistan where 47.3% students answered incorrectly regarding the mode of transmission. This may be due to the difference in study population and the difference in training given at the under graduate level and at the continuing education level.

In the present study, only 67% of the study participants knew that AIDS cannot be diagnosed using urine and only 78.6% knew that AIDS can be diagnosed using blood. This is lower than the study conducted by Park *et al.*^[46] in Korea where 98% and 87% of the dentists correctly answered these questions, respectively.

In the present study, 10% agreed that they used hard containers for disposing sharps, whereas in the study conducted by Borax *et al.*,^[47] no one has reported to follow that practice. A statistical significance was found to exist between willingness to treat HIV patients and age groups. Respondents younger than 30 years were least likely to

refuse to treat HIV infected patients. This is similar to the study done by Mc Carthy *et al.*^[40] in Canada. This may be because of the fact that they had received more formal training related to HIV than older dentists.

There is a significant difference between males and female dentists in attitude and knowledge, with females showing an increase in positive attitude and knowledge towards HIV than males; however, in studies by Aggarwal *et al.*^[26] and Hashemipour *et al.*,^[48] there was no significant gender difference. There was a positive correlation between knowledge and attitude, which is similar to the study done by Mc Carthy *et al.*^[40] As age increases, knowledge, attitude, and practice towards AIDS decreases probably because the junior dentists had received more formal training related to HIV than older dentists had. In the present study, dentists practicing in urban areas showed significant increase in positive attitude and practice, which is similar to the study done by Bodadhe *et al.*^[32] This may be because of the readily available emergency facilities in urban areas.

One of the main limitation of the study was that the results of the study are based on subjective assessment. There is no actual judgement of their attitudes and practices towards HIV patients. As the participants were selected according to convenient sampling from a single district, the results cannot be generalized to the general population of India. One of the main concerns of the study was regarding the effect of age and sex of the dentists on the knowledge and attitude level towards HIV patients. Another was the effect of knowledge score of dentists on attitudes towards HIV patients.

Further studies can be done to assess the effect of continuing dental education programs/health education related to HIV on the attitudes, knowledge, and practice among dentists.

CONCLUSION

In this study, there was discrimination by dentists against HIV-infected persons. Staff fears and increased personal risk are found to be the most frequently reported concerns in treating HIV patients among dentists of Trichur district, Kerala. Senior dentists showed more reluctance to treat HIV positive individuals. Another alarming finding is that only very few dentists reported that they knew how to treat an HIV patient safely. Moreover most of the dentists were not treating all patients as if they would treat an HIV positive patient. Further, the HIV status of many patients are unknown. The dentists should make decisions with regard to the type of dental treatment provided. Dentists should not refuse to treat a patient solely based on their HIV positive status.^[33]

Continuing dental education has to be given to reduce the dentists' refusal to treat HIV infected patients.^[33]

FINANCIAL SUPPORT AND SPONSORSHIP

Nil.

CONFLICTS OF INTEREST

There are no conflicts of interest.

REFERENCES

- Prasanth PB, 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;1:59-63.
- Swaminathan S, Narendran G. HIV and tuberculosis in India. *J Biosci* 2008;33:527-37.
- Rohn EJ, Sankar A, Hoelscher DC, Luborsky M, Parise MH. How do social-psychological concerns impede the delivery of care to people with HIV? Issues for dental education. *J Dent Educ* 2006;70:1038-42.
- Azodo CC, Ehigiator O, Oboro HO, Ehizele AO, Umoh A, Ezeja EB, et al. Nigerian dental students' willingness to treat HIV-positive patients. *J Dent Educ* 2010;74:446-52.
- Oberoi SS, Mohanty V, Sharma N, Oberoi A. Self-reported knowledge and attitude toward the treatment of HIV/AIDS infected individuals by the Dental Practitioners working in a public sector institute: A cross sectional study. *J Educ Ethics Dent* 2015;5:14-6.
- Kermode M, Jolley D, Langkham B, Thomas MS, Crofts N. Occupational exposure to blood and risk of bloodborne virus infection among health care workers in rural north Indian health care settings. *Am J Infect Control* 2005;33:34-41.
- Ansa VO, Udoma EJ, Umoh MS, Anah MU. Occupational risk of infection by human immunodeficiency and hepatitis B viruses among health workers in south-eastern Nigeria. *East Afr Med J* 2002;79:254-6.
- Gumodoka B, Favot I, Berege ZA, Dolmans WM. Occupational exposure to the risk of HIV infection among health care workers in Mwanza Region, United Republic of Tanzania. *Bull World Health Organ* 1997;75:133-40.
- Hazelkorn HM. The reaction of dentists to members of groups at risk for AIDS. *J Am Dent Assoc* 1989;119:611-9.
- Scheutz F. HIV infection and dental care: Views and experiences among HIV-seropositive patients. *AIDS Care* 1990;2:37-42.
- Weyant RJ, Bennett ME, Simon M, Palaisa J. Desire to treat HIV-infected patients: Similarities and differences across health care professions. *AIDS* 1994;8:117-21.
- Sadeghi M, Hakimi H. Iranian dental students' knowledge of and attitudes towards HIV/AIDS patients. *J Dent Educ* 2009;73:740-5.
- Kemppainen JK, Dubbert PM, McWilliams P. Effects of group discussion and guided patient care experience on nurses' attitudes towards care of patients with AIDS. *J Adv Nurs* 1996;24:296-302.
- Khandwalla HE, Luby S, Rahman S. Knowledge, attitudes and practices regarding sexually transmitted infections among general practitioners and Medical specialists in Karachi, Pakistan. *Sex Transm Infect* 2000;76:383-5.
- 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;12:7-17.
- 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-parent article. *BMC Public Health* 2008;8:561-5.
- El-Maaytah M, Al Kayed A, Al Qudah M, Al Ahmad H, Moutasim K, Jerjes W, et al. Willingness of dentists in Jordan to treat HIV-infected patients. *Oral Dis* 2005;11:318-22.
- Ellepola AN, Sundaram DB, Jayathilake S, Joseph BK, Sharma PN. Knowledge and attitudes about HIV/AIDS of dental students from Kuwait and Sri Lanka. *J Dent Educ* 2011;75:574-81.
- Sposto MR, Goncalves F, Ferracioli A, Porter SR, Afonso W, el-Maaytah M, et al. Willingness of Brazilian dentists to treat an HIV-infected patient. *Oral Surg Oral Med Oral Pathol* 1994;78:175-7.
- Irigoyen M, Zepeda M, López-Cámara V. Factors associated with Mexico City dentists' willingness to treat AIDS/HIV-positive patients. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1998;86:169-74.
- Oliveira ER, Narendran S, Falcao A. Brazilian dental students' knowledge and attitudes towards HIV infection. *AIDS Care* 2002;14:569-76.
- Erasmus S, Luiters S, Brijlal P. Oral hygiene and dental students' knowledge, attitude, and behavior in managing HIV/AIDS patients. *Int J Dent Hyg* 2005;3:213-7.
- Kitaura H, Adachi N, Kobayashi K, Yamada T. Knowledge and attitudes of Japanese dental health care workers towards HIV-related disease. *J Dent* 1997;25:279-83.
- Nimbulkar GC, Garcha V, Shetty V, Bhor KB. Assessment of knowledge, attitude and practice towards human immunodeficiency virus post exposure prophylaxis among academicians, interns and students in dental and medical colleges in Pune city: A cross sectional questionnaire based study. *Int J Recent Sci Res* 2016;7:12909-13.
- Chauhan AS, Hussain MA, Pati S, Nallala S, Mishra J. Knowledge and attitudes related to hiv/aids among medical and allied health sciences students. *Indian J Community Health* 2011;23:96-8.
- Aggarwal A, Panat SR. Knowledge, attitude, and behavior in managing patients with HIV/AIDS among a group of Indian dental students. *J Dent Educ* 2013;77:1209-17.
- Fotedar S, Sharma KR, Sogi GM, Fotedar V, Chauhan A. Knowledge and attitudes about HIV/AIDS of students in H.P. Government Dental College and Hospital, Shimla, India. *J Dent Educ* 2013;77:1218-24.
- Astrom AN, Nasir EF. Predicting intention to treat HIV-infected patients among Tanzanian and Sudanese medical and dental students using the theory of planned behavior – A cross sectional study. *BMC Health Serv Res* 2009;9:213.
- Coogan MM, Greenspan J, Challacombe SJ. Oral lesions in infection with human immunodeficiency virus. *Bull World Health Organ* 2005;83:700-6.
- Santella AJ, Conway DI, Watt RG. The potential role of dentists in HIV screening. *British Dent J* 2016;220:229-33.
- Khan SA, Liew ML, Omar H. Role of ethical beliefs and attitudes of dental students in providing care for HIV/AIDS patients. *Saudi Dent J* 2016;29:7-14.
- Kesavan R, Mary AV, Priyanka M, Reashmi B. Knowledge of dental ethics and jurisprudence among dental practitioners in Chennai, India: A cross-sectional questionnaire study. *J Orofac Sci* 2016;8:128-34.
- Hu SW, Lai HR, Liao PH. Comparing dental students' knowledge of and attitudes toward hepatitis B virus, hepatitis C virus, and HIV-infected patients in Taiwan. *AIDS Patient Care STDS* 2004;18:587-93.
- Seacat JP, Inglehart MR. Education about treating patients with HIV infections/AIDS: The student perspective. *J Dent Educ* 2003;67:630-40.

35. Bennett ME, Weyant RJ, Wallisch JM, Green G. Dentists' attitudes toward the treatment of HIV-positive patients. *J Am Dent Assoc* 1995;126:509-14.
36. Saki M, Kermanshahi MK, Mohammadi F, Mohraz M. Perception of Patients with HIV/AIDS from Stigma and Discrimination. *Iran Red Crescent Med J* 2015;17:e23638.
37. Peeran SW, Naveen Kumar PG, Ramalingam K, Peeran SA, Elhammali NN, Elhassan A, *et al.* Knowledge and attitudes of Libyan dental students about HIV/AIDS infection and HIV-positive patients. *Dent Med Res* 2015;3:8-14.
38. Yousuf A, Farooq SA, Jan SM, Sidiq M, Baba IA. Awareness of HIV/AIDS infection and ethical concerns amongst dentistry students and auxiliary staff in a hospital setup in Kashmir, India. *Int J Community Med Public Health* 2016;3:2850-55.
39. Bodhade A, Dive A, Khandekar S, Dhoble A, Moharil R, Gayakwad R, *et al.* Factors associated with refusal to treat HIV-infected patients: National survey of dentists in India. *Sci J Public Health* 2013;1:51-5.
40. Mc Carthy GM, Koval JJ, MacDonald JK. Factors associated with refusal to treat HIV-infected patients: The results of a national survey of dentists in Canada. *Am J Public Health* 1999;89:541-45.
41. Haroun D, El Saleh O, Wood L, Mechli R, Al Marzouqi N, Anouti S. Assessing Knowledge of, and Attitudes to, HIV/AIDS among University Students in the United Arab Emirates. *PLoS One* 2016;11:e0149920.
42. Sharma A, Sharma S. Assessment of Knowledge and Attitude among Dental Care Workers towards Patients Affected with HIV/AIDS in a Private Dental College in India. *BJMMR* 2016;11:1-7.
43. Agarwal J, Agarwal RS, Shrivastava A, Shrivastava S. Analysis of Information, Impact and Control of HIV amongst Dental Professionals of Central India. *J Clin Diagn Res* 2015;9:ZC80-4.
44. Li R, Dong W, He W, Liu Y. Chinese dental students' knowledge and attitudes toward HIV/AIDS. *J Dent Sci* 2016;11:72-8.
45. Rehan M, Waheed U, Sarwar M, Arshad M, Satti HS, Zaheer HA. Knowledge, Attitude, Practices and Awareness Regarding HIV/AIDS among University Students of Islamabad and Rawalpindi, Pakistan. *Ann Pak Inst Med Sci* 2016;12:86-9.
46. Park JC, Choi SH, Kim YT, Kim S J, Kang HJ, Lee JH, *et al.* Knowledge and attitudes of Korean dentists towards human immunodeficiency virus/acquired immune deficiency syndrome. *J Periodontal Implant Sci* 2011;41:3-9.
47. Borax VV, Arambašin AC, Alajbeg I, Biočina-Lukenda D, Blažević-Potočki Z, Ognjenović M. Dentists' Knowledge of HIV infection. *Acta Stomat Croat* 2001;35:15-8.
48. Hashemipour MA, Shahi M, Mirzadeh A, Gandjalikhan-Nassab SAH. Knowledge and attitude of post-graduate dentistry students regarding HIV-positive patients. *J Oral Health Oral Epidemiol* 2016;5:120-8.