

# Knowledge, Attitude and Practices toward Post Exposure Prophylaxis for Human Immunodeficiency Virus among Dental Students in India

Kasat VO, Saluja H<sup>1</sup>, Ladda R<sup>2</sup>, Sachdeva S<sup>3</sup>, Somasundaram KV<sup>4</sup>, Gupta A<sup>5</sup>

Departments of Oral Medicine and Radiology, <sup>1</sup>Oral and Maxillofacial Surgery, <sup>2</sup>Prosthodontics, Rural Dental College, Loni, Maharashtra, India, <sup>3</sup>Department of Periodontics, Government Dental College, Aurangabad, Maharashtra, India, <sup>4</sup>Centre for Social Medicine, Pravara Institute of Medical Sciences, Loni, Maharashtra, India, <sup>5</sup>Private Practitioner, Delhi, India

## Address for correspondence:

Dr. Vikrant Kasat,  
Department of Oral Medicine and  
Radiology, Rural Dental College,  
Loni - 413 736, Maharashtra, India.  
E-mail: drvikrantkasat@rediffmail.  
com

## Abstract

**Background:** India has the third largest number of people living with human immunodeficiency virus (HIV) and thus, dental practitioners are more likely to encounter such patients for dental management. **Aim:** The aim of the following study is to evaluate the knowledge, attitude and practice regarding post-exposure prophylaxis (PEP) for HIV among dental interns and post graduate (PG) students of a dental institution in India. **Subjects and Methods:** A cross-sectional study was conducted among 128 dental students (64 interns and 64 PG students). Data related to HIV PEP was collected by pre-designed, pre-tested, self-administered questionnaire and difference in responses by education level was assessed by Chi-square test and Z-test (significance level was set at  $P \leq 0.05$ ). For statistical analysis, Statistical Package for Social Sciences (SPSS version 16, Chicago IL, USA) was used. **Results:** Difference in responses between dental interns and PG students was not statistically significant for majority of questions. All participants had positive attitude toward HIV patients (98.4% [63/64] interns vs. 100% [64/64] PG students). Interns (68.8%, 44/64) and PG students (68.8%, 44/64) were equally aware of the concept of HIV PEP. PG students had better knowledge than dental interns on few questions but overall both of them lacked knowledge about the best timing for commencement of HIV PEP (20.4% [13/64] interns vs. 42.2% [27/64] PG students) ( $P < 0.01$ ), the antiretroviral drug regimen (48.4% [31/64] interns vs. 43.7% [28/64] PG students) and its duration (23.4% [15/64] interns vs. 25.0% [16/64] PG students), timing of antibody testing to rule out infection to health care worker (23.4% [15/64] interns vs. 35.9% [23/64] PG students) ( $P = 0.04$ ). **Conclusion:** As knowledge regarding HIV PEP is found to be inadequate, well-designed educational programs need to be conducted to increase the understanding of dental professionals on this issue.

**Keywords:** Attitude, Dental interns, Human immunodeficiency virus post-exposure prophylaxis, Knowledge, post graduate students, Practice

## Introduction

Globally the new human immunodeficiency virus (HIV) infection cases per year are decreasing, still at the end of 2010 an estimated 34 million people were living with HIV.<sup>[1]</sup>

India is the second-most populous country with approximately 1.22 billion people and has the third largest number of people living with HIV. Based on the HIV Sentinel Surveillance 2008-2009, it is estimated that 23.9 lakh people are infected with HIV in India and Maharashtra ranks 6<sup>th</sup> among high HIV prevalence states of India (4.2 lakh people with HIV). It is estimated that about 1.72 lakh people in India died of AIDS related causes in 2009, but the trend of annual AIDS deaths is showing a steady decline due to free antiretroviral therapy (ART) program started in 2004.<sup>[2]</sup>

Occupational exposure to blood or other body fluids constitutes a small, but significant risk of transmission

## Access this article online

### Quick Response Code:



Website: [www.amhsr.org](http://www.amhsr.org)

DOI:  
10.4103/2141-9248.139308

of HIV and other blood-borne pathogens to health care workers (HCWs).<sup>[3]</sup> The rate of transmission of HIV following percutaneous exposure in the healthcare setting has been shown to be 3/1000 injuries.<sup>[4-6]</sup> In addition, such exposures can cause tremendous anxiety, fear and stress among HCW as well as their families and colleagues.<sup>[3]</sup>

Since the first documented case of occupational transmission of HIV to HCW in 1984,<sup>[7]</sup> 94 confirmed and 170 possible cases have been reported world-wide until 1997.<sup>[6]</sup> Although the risk of HIV transmission in the dental office is very low, there have been reports of transmission of HIV from infected dentist to patient<sup>[8]</sup> and in the same way it can be transmitted to dentist from infected patient. Furthermore, in majority of patients the HIV infection status is not known at the time of initial visit and if known they are less likely to disclose it to the dentist. A study among HIV individuals on self-disclosure of HIV status to dentists and physicians reported that only 53% revealed their HIV status to their dentists compared with 89% who had told to their physicians.<sup>[9]</sup>

Guidelines have been formulated by Centers for Disease Control (CDC) to prevent disease transmission to HCWs. In India, National AIDS Control Organization (NACO) has formulated similar guidelines for post-exposure prophylaxis (PEP) against HIV. Despite these clear guidelines, HCWs generally take inadequate measures following occupational exposure to HIV.<sup>[7]</sup> Studies on awareness regarding HIV PEP have been reported on family physicians/general practitioners,<sup>[7,10]</sup> medical interns,<sup>[11]</sup> trainee surgeons,<sup>[12]</sup> anesthetists,<sup>[13]</sup> general surgeons,<sup>[13]</sup> orthopedic surgeons,<sup>[5]</sup> nurses and health assistants<sup>[14]</sup> and junior doctors,<sup>[4]</sup> but we could not find any such study on dental students, though dental literature has many published studies that evaluated the knowledge and attitude of dental students toward HIV/AIDS.<sup>[15]</sup> Therefore, this study was done to assess the awareness and knowledge of dental interns and post graduate (PG) students in India regarding HIV PEP.

## Subjects and Methods

This cross-sectional analytical study was carried out for a period of 1 month in June 2013 among 128 dental health care providers (64 interns and 64 PG students) at Rural Dental College of Pravara Institute of Medical Sciences (PIMS) Deemed University. PIMS Deemed University is one of the premium teaching institutions of central India that has Medical, Dental, Physiotherapy and Nursing Colleges. For calculation of the minimum sample size, knowledge rates of 45% reported by Chogle *et al.*<sup>[13]</sup> in a previous similar study was used. Therefore in order to achieve a power of 80% and 10% margin of error at 95% confidence interval, the minimum sample size required turned out to be 95. This sample size was increased to 128 in order to decrease the margin of error (or to increase the absolute precision) of the study.

The variables in the study were as follows: (1) Knowledge levels of the research subjects (dental interns and dental PG students) about HIV transmission through saliva and first aid measures following needle stick injury. (2) Knowledge levels of the research subjects about PEP for HIV. (3) Practices followed by research subjects on PEP for HIV. (4) Attitudes of the research subjects for providing treatment to HIV positive patients. A 13-item questionnaire in English was designed to assess interns and PG student's knowledge and practice regarding HIV PEP and their attitude toward HIV patients [Appendix 1]. A pilot survey was conducted with 20 students to test the reliability of the questionnaire before carrying out the final study. After applying Cronbach's alpha test, 0.8 value was obtained which indicated high reliability of the questionnaire. Institutional ethical committee approval was obtained for the final study. All subjects provided written informed consent to participate in the study. The questionnaires were distributed to the interns and PG students who were asked to gather in a classroom and collected by the investigator after 20 min. Some questions were objective in nature with "yes" or "no" options whereas few questions had multiple-choices. To assess awareness, participants were asked if they had heard of HIV PEP. Questions to assess knowledge were related to saliva as a risk fluid, the first-aid measures to employ in case of accidental exposure, the best timing for commencement of HIV PEP following exposure, the antiretroviral drug regimen and its duration for HIV PEP, timing of antibody testing to rule out infection to HCW. Attitude of participants toward HIV patients was assessed by knowing their willingness to provide dental treatment to HIV patient if encountered in clinical practice. They were also asked whether they have already treated HIV patients while pursuing their undergraduate or PG course. Furthermore, history of personal needle stick injuries was obtained and their response following needle stick injuries was noted by asking them whether HIV PEP consultation was sought or not. E-mail addresses of all the participants were taken and correct answers for each question were E-mailed to them at the end of the study.

## Statistical analysis

For statistical analysis, Statistical Package for Social Sciences (SPSS) Version 16 (SPSS Inc; Chicago, IL, USA) was used. Differences between responses of interns and PG students were statistically assessed with Chi-square test and Z-test (Significance level was set at  $P \leq 0.05$ ). Z test and Chi-square test were applied for finding out the differences in the large binomial samples (sample proportions) of two variables. Chi-square test was applied to find out the association between two events of absolute counts in binomial samples. Z test is a 'test of significance' of the difference observed in two large ( $n > 30$ ) binomial samples (sample statistics expressed in means or proportions) of two variables under study. In the present study, the probability of observed difference in the two variables (proportions [%]) of interns and PG students by chance was assessed through Z test.

## Results

Out of total 128 participants, there were 60 males and 68 females with the age range of 21-30 years. No statistically significant differences were found between the responses of dental interns and PG students for the majority of questions. However, significant differences were found between the responses of dental interns and PG students for the questions related to saliva as a risk fluid, first-aid measures, timing for commencement of HIV PEP, timing of antibody testing to rule out infection to HCW and treatment of HIV patients [Tables 1 and 2].

Majority of the interns (89.0%, 57/64) and PG students (85.9%, 55/64) thought HIV as one of the maximum risk hazard a dentist would encounter in practice. Compared with only 14.1% (9/64)

of interns, triple the number of PG students (46.8%, 30/64) had ever treated a HIV patient and this difference was statistically highly significant ( $P < 0.001$ ), but almost all interns (98.4%, 63/64) and PG students (100%, 64/64) were willing to provide dental treatment to HIV patient if encountered in practice [Table 2].

Majority of the interns (73.4%, 47/64) and PG students (87.5%, 56/64) correctly stated that through uncontaminated saliva HIV can't be transmitted and this difference in response was statistically significant ( $P = 0.02$ ). Compared with 73.4% (47/64) of interns, more number of PG students (93.7%, 60/64) knew the first aid measures to be taken immediately after needle stick injury and again this difference in response was statistically highly significant ( $P < 0.01$ ). None of the interns and 3.2% (2/64) PG students had needle stick injury

**Table 1: Knowledge about PEP for HIV among study population**

Questions on knowledge	Interns (n=64) correct response		Post-graduates (n=64) correct response		Z value P value
	Number	%	Number	%	
Awareness of the availability of HIV PEP	44	68.8	44	68.8	Z=0 P=0.50
Best timing for commencement of HIV PEP	13	20.4	27	42.2	Z=2.74 P<0.01
Currently recommended drugs for HIV PEP	31	48.4	28	43.7	Z=0.53 P=0.29
Duration of PEP drug regimen	15	23.4	16	25	Z=0.23 P=0.40
Timing of antibody testing to rule out infection to health care worker	15	23.4	23	35.9	Z=1.67 P=0.04

$P < 0.05$  is considered to be significant,  $**P < 0.001$  is considered to be highly significant. PEP: Post-exposure prophylaxis, HIV: Human immunodeficiency virus

**Table 2: Participant's attitude toward HIV patients and practice regarding PEP for HIV**

Questions on attitude and practice	Interns (n=64) response		Post-graduates (n=64) response		$\chi^2$ value P value
	Number	%	Number	%	
HIV is one of the maximum risk hazard for a dentist in practice					
Yes	57	89	55	85.9	$\chi^2=0.002$
No	7	11	9	14.1	P=0.50
Have you ever treated a HIV patient?					
Yes	9	14.1	30	46.8	$\chi^2=31.5$
No	55	85.9	34	53.2	P<0.001
For a HIV patient you will					
Deny treatment	1	1.6	0	0	-
Provide treatment	63	98.4	64	100	
Needle stick injury experienced while treating a HIV patient					
Yes	0	0	2	3.2	-
No	64	100	62	96.8	
If yes, then have you sought advice about PEP?					
Yes	NA	NA	2	3.2	-
No	64	100	62	96.8	
Attended lecture or seminar on HIV PEP					
Yes	0	0	2	3.2	-
No	64	100	62	96.8	

PEP: Post-exposure prophylaxis, HIV: Human immunodeficiency virus

while treating a HIV patient for which they sought advice about PEP. Among all participants, only 3.2% (2/64) of PG students had attended lecture, or seminar about HIV PEP [Table 2].

Interns (68.8%, 44/64) and PG students (68.8%, 44/64) were equally aware of the concept of HIV PEP for high risk occupational exposures. Compared with 20.4% (13/64) of interns, double the number of PG students (42.2%, 27/64) knew that HIV PEP should commence within 1 h of exposure and this difference in response was statistically highly significant ( $P < 0.01$ ). Surprisingly only 23.4% (15/64) of interns and 25.0% (16/64) of PG students knew the correct duration of HIV PEP, 18.7% (12/64) of interns and 21.8% (14/64) of PG students overestimated the duration (8 weeks), while 9.5% (6/64) of interns and 4.7% (3/64) of PG students underestimated the duration (1 week). Nearly half of the interns (48.4%, 31/64) and PG students (43.7%, 28/64) knew the ideal PEP regimen for low and high-risk exposures. Compared to 23.4% (15/64) of interns and slightly more number of PG students (35.9%, 23/64) knew the correct timing of antibody testing after cessation of PEP to confirm that HCW is not infected following exposure to HIV-infected material and this difference in response was statistically significant ( $P = 0.04$ ) [Table 1].

## Discussion

In India, dentistry is a 5 year course that includes 4 academic years and 1 year of internship, after which Bachelor of Dental Surgery (BDS) degree is awarded to the students. After BDS many dentists start their private practice while few of them pursue post-graduation for further 3 years. As a student when they treat HIV patients in a dental college and hospital, faculty members are there to guide them if any untoward incidence occurs. However in a private practice, they should be competent enough to handle needle stick or other injuries encountered, as the number of HIV patients seeking dental treatment are likely to increase. With this aim, the study was conducted to assess the knowledge and increase the awareness regarding HIV PEP among dental interns and PG students.

Universal precautions have been advocated by CDC as means to reduce occupational exposures to HIV.<sup>[12]</sup> But in spite of taking care, sometimes annoying incidence may happen. For example needle stick injury is one of the most common yet dreaded hazards in health care set up. CDC and NACO recommend PEP for HCW with needle stick injuries.<sup>[16]</sup> HIV PEP is the prescription of one or more antiretroviral drugs to reduce the risk of transmission of HIV following a known or possible exposure to HIV.

In our study, 68.8% of Interns and PG students were aware of the concept of HIV PEP for high risk occupational exposures which is comparable to that reported by Ooi *et al.*<sup>[10]</sup> in general practitioners (68.8%), but less than that reported by Agaba *et al.*<sup>[7]</sup> in family physicians (97.7%), Nwankwo and Aniebue<sup>[12]</sup> in the trainee surgeons (93.5%) and Chen *et al.*<sup>[4]</sup> in junior doctors (93.0%).

Apart from exposure to blood which has the highest risk of HIV transmission, various body fluids such as semen, vaginal secretions, breast milk, cerebrospinal, pleural, peritoneal, pericardial, synovial and amniotic fluids are considered potentially infectious.<sup>[17]</sup> We did not include these in the questionnaire because dentists are not routinely exposed to these fluids in their practice. Hence, we tested the knowledge of HIV transmission through saliva to which they are routinely exposed. Saliva along with other body fluids such as sweat, tears, urine and nasal secretions is not considered infectious unless it is visibly bloody.<sup>[17]</sup> This fact was known to majority of the participants as only 26.6% of interns and 12.5% of PG students gave incorrect reply. Our participants had better knowledge than that reported by Uti *et al.*<sup>[18]</sup> (where 40.8% Nigerian dentists), Chogle *et al.*<sup>[13]</sup> (where 50% surgical and anesthetic residents) and Ryalat *et al.*<sup>[15]</sup> (where 84.5% of 3<sup>rd</sup> year and 81.5% of 5<sup>th</sup> year BDS students) wrongly considered saliva as a high risk fluid for HIV transmission.

The knowledge regarding commencement of HIV PEP after exposure was comparable in our participants (20.4% of interns and 42.2% of PG students gave correct response) to that reported by Chacko and Isaac<sup>[11]</sup> in medical interns (31.6%), Chen *et al.*<sup>[4]</sup> in junior doctors (33.0%), Khan *et al.*<sup>[19]</sup> in medical staff (22.0%), but less than that reported by Agaba *et al.*<sup>[7]</sup> in family physicians (93.9% gave correct response) and Chogle *et al.*<sup>[13]</sup> in surgical and anesthetic residents (64.0%). The maximum benefit of PEP is obtained by commencing prophylaxis within the 1<sup>st</sup> h of exposure although it may be delayed to a maximum of 48-72 h, after which it is less effective in preventing infection.<sup>[13]</sup> This is because when a person is exposed to HIV, systemic infection does not occur immediately, but infection of dendritic cells in the mucosa and skin occurs at the site of inoculation during the first 24 h. During the subsequent 24-48 h, migration of these cells to the regional lymph nodes occurs and the virus is detectable in the peripheral blood within 5 days. Initiation of prophylaxis soon after exposure may prevent systemic infection by limiting proliferation of virus in the dendritic cells or lymph nodes.<sup>[13]</sup>

In our study, the correct duration of HIV PEP was known to 23.4% of interns and 25.0% of PG students. This is more than that reported by Chogle *et al.*<sup>[13]</sup> in surgical and anesthetic residents (6.0%), but significantly less than that reported by Agaba *et al.*<sup>[7]</sup> in family physicians (83.3%). PEP is normally continued for 4 weeks (28 days) following occupational exposure to HIV.

Knowledge of our study population (73.4% of interns and 93.7% PG students) regarding the first aid measures to be taken immediately after needle stick injury is similar to that reported by Chogle *et al.*<sup>[13]</sup> in surgical and anesthetic residents (78.0%). First aid measures after needle stick injury include promoting active bleeding from the wound and washing the site with water and soap.



In our study, nearly half of the respondents (48.4% interns and 43.7% PG students) knew the ideal PEP regimen for low and high-risk exposures. Similar response is reported by Agaba *et al.*<sup>[7]</sup> in family physicians (57.0%) and Chacko and Isaac<sup>[11]</sup> in medical interns (50.0%). Significantly lower response was seen in a study by Khan *et al.*<sup>[19]</sup> in medical staff (22.0%), Chen *et al.*<sup>[4]</sup> in junior doctors (6.0%) and Chogle *et al.*<sup>[13]</sup> in surgical and anesthetic residents where none of the participants knew other drugs apart from zidovudine.

Selection of PEP regimen depends on various factors like comparative risk represented by the exposure (for example, severe: large bore hollow needle with visible blood; mild: few drops of blood splashed on to the skin or mucous membrane), current CD4 count and viral load in the source patient.<sup>[20]</sup> According to the CDC guidelines which are also followed by NACO in India, HIV PEP is available as either basic regimen consisting of two nucleoside reverse transcriptase inhibitors (NRTI) for low risk exposure or expanded regimen in which one protease inhibitor (PI) is added to basic regimen for high risk exposures.<sup>[13,16,20]</sup> Zidovudine has been recommended as the first drug of choice in all PEP regimens.<sup>[20]</sup> As combination regimens have been proved superior to single drug in reducing the viral load, lamivudine is recommended as the second agent for PEP because it is active against many zidovudine resistant HIV strains without substantial increase in toxicity.<sup>[20]</sup> Hence, zidovudine and lamivudine are commonly given as basic regimen. Addition of third drug, i.e. indinavir or nelfinavir (expanded regimen) is done for exposures that pose an increased risk for transmission or where resistance to the other drugs for PEP is known or suspected.<sup>[20]</sup> Indinavir is preferred as third drug because of its increased bioavailability and less toxicity during short term use.<sup>[20]</sup> In India, these drugs are available free of cost at all ART Centers and Integrated Counseling and Testing Centers.

6 months' time is required to rule out infection to HCW following exposure to HIV-infected material and completing PEP regimen. This was known to 23.5% of interns and 36.0% of PG students in our study. This was less than reported by Khan *et al.*<sup>[19]</sup> in medical staff (49.0%). The exposed HCW should be evaluated for HIV seroconversion with baseline HIV testing and follow-up testing at 6 weeks, 3 months and 6 months. In 95% of cases, seroconversion occurs within 6 months after the exposure.<sup>[20]</sup>

In our study, almost all the interns (98.4%) and PG students (100%) had positive attitude toward HIV patient. This is significantly more than that reported by Ryalat *et al.*<sup>[15]</sup> in 3<sup>rd</sup> (60.8%) and 5<sup>th</sup> year BDS (73.7%) students respectively. In our study, none of the interns and only 3.2% of PG students had attended lectures, workshops or seminars about PEP. The difference in the knowledge regarding HIV PEP found in our study participants and other studies may be due to the differences in the profession of participants, years of clinical experience, HIV prevalence in the study area, importance given to the topic in the curriculum etc.

The limitation of the study is that though it was conducted in one of the premium institute of India, the results obtained can't be generalized to all the dental interns and PG students of the country. Hence, further studies should be carried out on dental interns and PG students of different institutes in India and accordingly the topic should be given adequate importance in the curriculum.

## Conclusion

This study suggested that majority of the participants were aware of the concept of HIV PEP, but surprisingly very few students knew the details like when to start PEP, which drugs to use and for how long to use etc., Hence well designed lectures, seminars or continuing dental education program need to be conducted to enrich the knowledge of dental students regarding HIV PEP.

## Acknowledgments

The authors sincerely thank all the participants of the study. We would like to acknowledge the help given by Dr. Prashant Viragi, Dr. Gauri Pendyala, Dr. Saurabh Joshi, Dr. Praveen Byakod and Dr. Abhijeet Misal for the study. This study was self-funded. The authors have no conflict of interest to report.

## References

1. WHO, UNICEF, UNAIDS. Global HIV/AIDS response: epidemic update and health sector progress toward universal access. Progress Report 2011. Available from: [http://www.unaids.org/.unaids/.unaidspublication//20111130\\_UA\\_Report\\_en.pdf](http://www.unaids.org/.unaids/.unaidspublication//20111130_UA_Report_en.pdf). [Last accessed on 2012 Dec 12].
2. Current Epidemiological Situation of HIV/AIDS. Annual Report 2011-12. New Delhi: Department of AIDS Control, National AIDS Control Organisation, Ministry of Health and Family Welfare, Government of India; 2012.
3. Gupta A, Anand S, Sastry J, Krisagar A, Basavaraj A, Bhat SM, *et al.* High risk for occupational exposure to HIV and utilization of post-exposure prophylaxis in a teaching hospital in Pune, India. *BMC Infect Dis* 2008;8:142.
4. Chen MY, Fox EF, Rogers CA. Post-exposure prophylaxis for human immunodeficiency virus: Knowledge and experience of junior doctors. *Sex Transm Infect* 2001;77:444-5.
5. Duff SE, Wong CK, May RE. Surgeons' and occupational health departments' awareness of guidelines on post-exposure prophylaxis for staff exposed to HIV: Telephone survey. *BMJ* 1999;319:162-3.
6. Ippolito G, Puro V, Heptonstall J, Jagger J, De Carli G, Petrosillo N. Occupational human immunodeficiency virus infection in health care workers: Worldwide cases through September 1997. *Clin Infect Dis* 1999;28:365-83.
7. Agaba PA, Agaba EI, Ocheke AN, Daniyam CA, Akanbi MO, Okeke EN. Awareness and knowledge of human immunodeficiency virus post exposure prophylaxis among Nigerian Family Physicians. *Niger Med J* 2012; 53:155-60.
8. Ciesielski C, Marianos D, Ou CY, Dumbaugh R, Witte J, Berkelman R, *et al.* Transmission of human immunodeficiency virus in a dental practice. *Ann Intern Med* 1992;116:798-805.

9. Perry SW, Moffatt M Jr, Card CA, Fishman B, Azima-Heller R, Jacobsberg LB. Self-disclosure of HIV infection to dentists and physicians. *J Am Dent Assoc* 1993;124:51-4.
10. Ooi C, Dayan L, Yee L. Knowledge of post exposure prophylaxis (PEP) for HIV among general practitioners in northern Sydney. *Sex Transm Infect* 2004;80:420.
11. Chacko J, Isaac R. Percutaneous injuries among medical interns and their knowledge and practice of post-exposure prophylaxis for HIV. *Indian J Public Health* 2007;51:127-9.
12. Nwankwo TO, Aniebue UU. Percutaneous injuries and accidental blood exposure in surgical residents: Awareness and use of prophylaxis in relation to HIV. *Niger J Clin Pract* 2011;14:34-7.
13. Chogle NL, Chogle MN, Divatia JV, Dasgupta D. Awareness of post-exposure prophylaxis guidelines against occupational exposure to HIV in a Mumbai hospital. *Natl Med J India* 2002;15:69-72.
14. Tebeje B, Hailu C. Assessment of HIV post-exposure prophylaxis use among health Workers of Governmental Health Institutions in Jimma Zone, Oromiya Region, Southwest Ethiopia. *Ethiop J Health Sci* 2010;20:55-64.
15. Ryalat ST, Sawair FA, Shayyab MH, Amin WM. The knowledge and attitude about HIV/AIDS among Jordanian dental students: (Clinical versus pre-clinical students) at the University of Jordan. *BMC Res Notes* 2011;4:191.
16. Shevkani M, Kavina B, Kumar P, Purohit H, Nihalani U, Shah A. An overview of post exposure prophylaxis for HIV in health care personals: Gujarat scenario. *Indian J Sex Transm Dis* 2011;32:9-13.
17. Tolle MA, Schwarzwald HL. Postexposure prophylaxis against human immunodeficiency virus. *Am Fam Physician* 2010;82:161-6.
18. Uti OG, Agbelusi GA, Jeboda SO, Ogunbodede E. Infection control knowledge and practices related to HIV among Nigerian dentists. *J Infect Dev Ctries* 2009;3:604-10.
19. Khan AZ, Duncan KM, Escofet X, Miles WF. Do we need to improve awareness about HIV post exposure prophylaxis? *Ann R Coll Surg Engl* 2002;84:72-3.
20. Varghese GM, Abraham OC, Mathai D. Post-exposure prophylaxis for blood borne viral infections in healthcare workers. *Postgrad Med J* 2003;79:324-8.

**How to cite this article:** Kasat VO, Saluja H, Ladda R, Sachdeva S, Somasundaram KV, Gupta A. Knowledge, attitude and practices toward post exposure prophylaxis for human immunodeficiency virus among dental students in India. *Ann Med Health Sci Res* 2014;4:543-8.

**Source of Support:** Nil. **Conflict of Interest:** None declared.