

Questionnaire on HIV/AIDS related knowledge among undergraduate dental students and dentists

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ABSTRACT

Background: As dental students and practitioners are involved in care of HIV / AIDS patients, it is essential that they have knowledge of this disorder.

Objective: To assess the knowledge of undergraduate students, interns and dentists regarding HIV /AIDS through a questionnaire.

Methods : A self-administered questionnaire on HIV/AIDS completed by 136 BDS students, interns and dentists was analyzed. The participants were grouped as Pre-clinical (Group A), Third Year (Group B), Final year (Group C) BDS students and Interns and Dentists (Group D).

Results : A majority knew the full form of AIDS and the common modes of HIV transmission i.e. sexual, mother-to-child, contaminated needle and blood products. All groups ranked commercial sex workers to be at the highest risk. Dentists were ranked lowest risk by Group A, second highest risk by Group B and third highest risk by Group C and D. The majority identified recapping as a cause of needlestick injuries. The knowledge of management of needle stick injuries including consultation with experts and post-exposure prophylaxis was unsatisfactory in all groups. Information on management of blood spills in the workplace was inadequate while disinfectants were recommended by the majority in Group B and D. Most students know the clinical feature of AIDS as Candidiasis, Kaposi's sarcoma and Oral Hairy Leukoplakia. Knowledge about anti-retroviral agents was also unsatisfactory. Use of surgical gloves for prevention of transmission of infection was indicated by all groups while Group B, C and D also identified the need to wear gowns, masks, eye protection (goggles). The participants perceived that reduction of HIV/AIDS could be achieved by public awareness, needle-safety practices, safe sex and safe blood transfusion.

Conclusion: The study highlights lack of adequate knowledge of students and interns about HIV and various aspects of occupational exposures to potentially infectious material.

Key words: dentistry, immunodeficiency, prevention, occupational exposure.

INTRODUCTION

The Joint United Nations Programme on HIV/AIDS estimated that 34 million people were living with HIV in 2010. While it is the leading cause of death among 15-59 year old persons worldwide, a striking decline in AIDS deaths has been observed due to rapid evolution of successful treatment with Highly Active Anti-Retroviral Therapy. A sizeable proportion of these patients are children.¹ Therefore, all dental specialities, at some time or the other, deal with this subset of patients and the unique problems they present in the dental workplace.

The microenvironment of the dental health care team's work entails performing procedures with sharp instruments within the narrow confines of the oral cavity in close proximity to blood, saliva and

aerosols exposing them to blood borne pathogens including HIV and the other highly prevalent viruses like Hepatitis B and Hepatitis C which carry a higher transmission risk than HIV.² While the average risk of HIV infection after exposure of non-intact skin to infected blood is less than 0.3%³ the immediate outcome of such an incident results in extreme psychological trauma and may become a life changing event for the unfortunate health care worker who acquires this infection. Of the 504 occupational exposures to potentially infectious material over a 10 year period, in a dental teaching institute, 82.1 percent occurred among dental students who are considered especially vulnerable due to lack of experience and surgical finesse.⁴

The dental team may not be aware of the blood borne pathogen status of a majority of patients who

are being treated in the dental operatory, therefore it is essential for all students, dentists and hospital staff to know and practice universal precautions. In addition there is a need to ensure updated immunization of staff and develop monitoring mechanisms as well as safer instrument handling procedures, safety needles and instruments.⁵

The aim of the present questionnaire based study was to assess the knowledge of BDS students, interns and dentists regarding:

- HIV /AIDS virus related terminology, modes of transmission, and occupational groups at risk.
- Workplace related issues including accidental needle prick injury, spillage of infectious material and use of personal protective equipment.
- Common oral manifestations of HIV / AIDS and anti-retroviral drugs.
- Opinion about measures for reducing the HIV epidemic in the community.

MATERIALS AND METHODS

The present self-administered, questionnaire based, descriptive study was conducted to assess the knowledge regarding HIV/AIDS from a group of BDS students, interns and dentists at a dental college in north India. The anonymous questionnaire which included open and closed ended questions was developed by the authors to address knowledge regarding HIV/AIDS terminology, transmission modes, population at-risk, prevention, protective wear in the workplace

and universal precautions. In addition, specific information regarding common oral lesions, anti-retroviral medication, occupational exposure, post-exposure prophylaxis and accidental spills was sought. The questionnaire is depicted in Table 1.

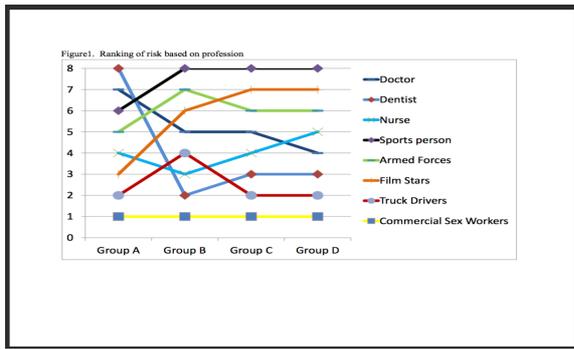
The questionnaires were distributed to 180 undergraduate BDS students, interns and dental surgeons at the dental college who volunteered to complete it. The data was entered into an Excel worksheet. The open-ended responses of the participants were then categorized into themes and converted into more manageable categories. The data was analyzed using descriptive statistics as numbers and percentages.

RESULTS

Baseline Data and knowledge in the four groups: Table 2 depicts the questionnaires distributed, response rate, knowledge of what the abbreviations represent, source of initial information regarding HIV / AIDS, nature of virus and modes of transmission.

Ranking of high risk based on profession: (Figure1) the participants were asked to rank various professionals in terms of perceived risk of contracting HIV. All participant groups perceived commercial sex workers at higher risk than other groups. However, while Group A perceived dentists to have lowest risk, Group B ranked them to be the second and Group C as well as D the third highest professionals at risk.

TABLE 1. Baseline data and knowledge in the four groups				
Questionnaires distributed		180		
Response Rate : Number (%)		136 (75.5%)		
Groups	Group A (1 st and 2 nd BDS)	Group B (3 rd BDS)	Group C (Final BDS)	Group D (Interns / Dentists)
Number (%)	30 (22%)	32 (23.5%)	29 (21.3%)	45 (33%)
Baseline Knowledge				
1. Abbreviations				
Number (%)				
HIV	18 (60%)	31(96.8%)	26 (89.6%)	39 (86.6%)
AIDS	30 (100%)	32 (100%)	29 (100%)	40 (88.8%)
ELISA	29 (96.6%)	30 (93.7%)	20 (68.9%)	28 (62.2%)
2. Acquisition of initial knowledge regarding HIV / AIDS (number)				
Media sources	25	19	16	33
Friends	2	3	2	5
Teachers	8	11	12	13
3. HIV is RNA virus / DNA virus / Fungus / Protozoa: number, (%)				
RNA Virus	22 (73.3%)	16 (50%)	19 (65.5%)	32 (71.1%)
4. List the mode of transmission of HIV: number, (%)				
Sexual contact	29 (96.6%)	32 (100%)	25(86.2%)	44 (97.7%)
Mother to Child	26 (86.6%)	25 (78.1%)	22 (75.8%)	31(68.8%)
Blood products	25 (83.3%)	28 (87.5%)	25 (86.2%)	40 (88.8%)
Contaminated Needle	23 (76.6%)	27 (84.3%)	24 (82.7%)	35 (77.7%)

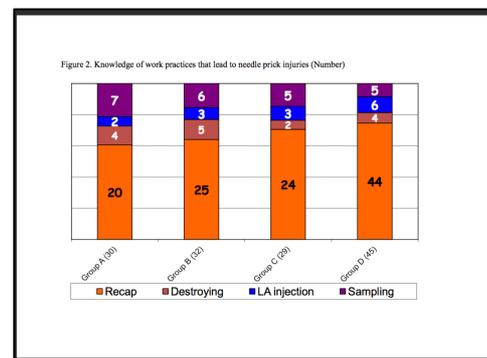
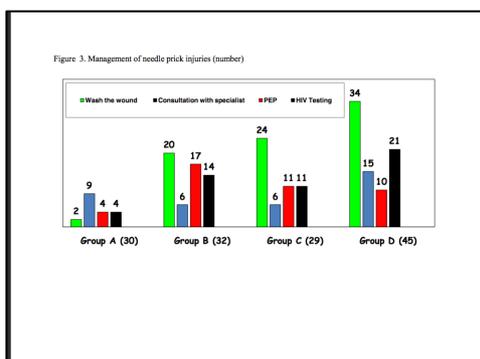


Relative risk of occupational transmission of different viruses: All Group A and a 17 (58.6 percent) of Group C participants perceived HIV was transmitted more easily than Hepatitis B, while 20 (62.5 percent) of Group B and 29 (64.4%) Group D participants indicated that Hepatitis B transmission was easier than HIV.

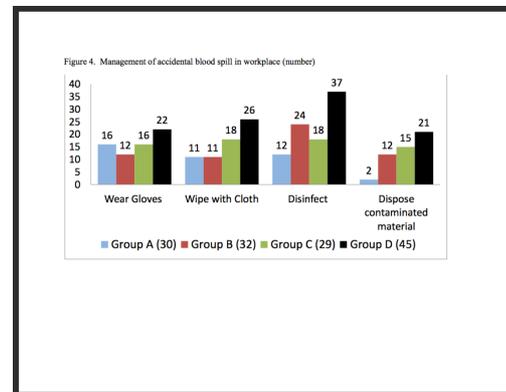
Knowledge of work practices that lead to needle prick injuries: (Figure 2) The most common reason for needle prick injury was identified to be recapping of needles by majority of participants in all groups.

Nature of occupational exposure and ranking of risk: For ranking the occupational exposures in order from most likely to least likely out of the options hollow needle with blood, solid needle with visible blood, needle with no visible blood and splash on intact skin, the correct sequence of ranking was provided by 14 (46.6 percent) in Group A, 14 (43.7 percent) in Group B, 20 (68.9 percent) in Group C and 28 (62.2 percent) in Group D.

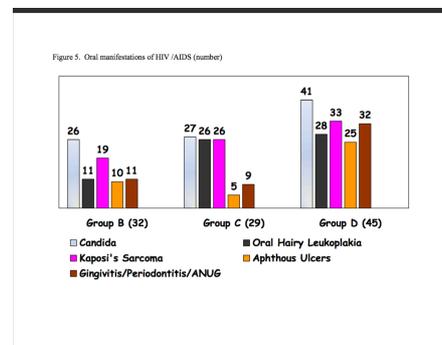
Knowledge of Management of Needle Prick Injuries: (Figure 3.) The overall response was not satisfactory with regard to the action to be taken in case of a needle prick incident. A consultation with a medical specialist was considered by less than one-third. The knowledge about post-exposure prophylaxis was acceptable by 53.1 percent in Group B and very low in other groups. Washing of the wound was considered by only 6.6 percent in Group A and by over 60 percent in other groups.



Management of accidental blood spills: (Figure 4) The statements of the respondents were short-listed into use of gloves for handling spills (including not touching with bare hands), wiping the area with cloth or cotton, using disinfectants and disposal of the material and are presented in the figure.



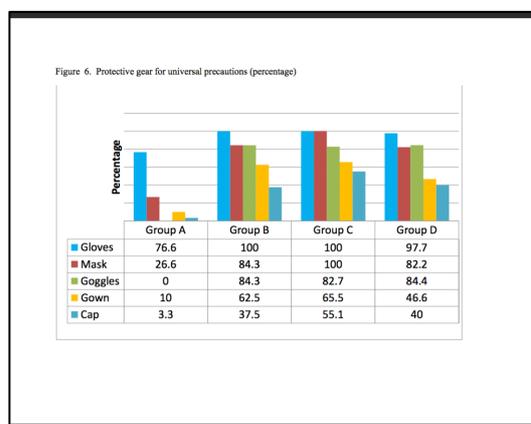
Knowledge of Oral Manifestations of HIV/ AIDS: (Figure 5) The participants were asked to list the oral manifestations of HIV /AIDS. The responses from Group A were unsatisfactory and not analyzed. The majority in the other groups reported mainly Candida infection followed by Kaposi's sarcoma and Oral hairy leukoplakia. Gingivitis, periodontitis, acute necrotizing ulcerative gingivitis and aphthous ulcers were also listed by a low proportion in all groups.



Knowledge of Anti-retroviral drugs: Majority of participants did not know the name of more than

one anti-retroviral drug. The anti-retroviral drug Zidovudine was mentioned by 20 percent to 71.8 percent in different groups. Knowledge that Post Exposure Prophylaxis refers to providing drugs to health care personnel if they are accidentally exposed to HIV contaminated material was known to 30 to 59.3 percent in different groups.

The basis of Universal Precautions that all specimens should be considered as if infected by a blood borne pathogen was known to 26.6 to 64.4 percent in different groups. Knowledge of protective gear while handling HIV patients: (Figure 6) The use of gloves was considered most important by participants in Groups B, C and D, followed by mask, eye protective goggles gowns or aprons and lower for use of caps on the head. In Group A, 76.6 percent considered use of gloves but knowledge of other protective gear was low.



Identifying ways to reduce the HIV epidemic: The major themes that emerged from this data through the responses of the participants were needle safety, public awareness, safe sexual practices and blood transfusion safety. Needle safety practices (including disposal, non-reuse, needle-destruction, disposable needles) were identified by over 60 % in Group A, B and C to prevent HIV / AIDS . Among all the groups the importance of public awareness programmes, including school health education was identified by 43.7 to 68.9 percent while the role of safe sexual practices, including having a single partner, was indicated by 62 to 86.2 percent as steps in the direction for reducing the HIV/AIDS epidemic. The role of blood transfusion safety through proper screening was identified by 37.7 to 62.5 percent. The suggestions included counseling during pregnancy in the community and use of universal precautions as well as protective gear in the operatory.

DISCUSSION

The results of the present study indicated that the knowledge of general terminology regarding HIV / AIDS, modes of transmission, recapping and needle prick injuries, and ways to reduce the HIV

epidemic was satisfactory. There was some discrepancy in knowledge of the nature of the virus (RNA or DNA), and its transmissibility as compared to hepatitis B which was not as expected. A need to improve knowledge regarding practical problems like management of needle prick incidents, accidental blood spills in the dental operatory, universal precautions and anti-retroviral drugs for Post-exposure prophylaxis was identified.

The present study had a response rate of 75.5 percent. A questionnaire based survey of dental students and interns in Uttar Pradesh, had a response rate of 79.7 percent, similar to the present study while another study from Brazil on occupational exposure to potentially infectious material among final year dental undergraduates had a higher rate of 86.4 percent. [6],[7]

Studies regarding knowledge of HIV/AIDS among dental students have observed overall mean knowledge on this subject to be excellent or good.[6],[8] In a low prevalence country, Iran, the medical students' knowledge of HIV/AIDS was good in 27.1 percent while for their dental counterparts it was 10.5 percent. [9] In a questionnaire based study on dental practitioners, 70.5 percent identified the T lymphocyte as the host cell affected in AIDS and that intact skin contact with blood of HIV patient did not result in infection indicating good knowledge of basics of the disease. [10]

In a majority of studies related to this subject, students and dentists identified Oral Candidiasis, Kaposi's sarcoma, ANUG, oral hairy leukoplakia, major aphthous ulcers as the most common oral manifestations. [6], [8],[10] The results are similar to the Group B, C and D in the present study except that the Group A participants did not provide any correct responses to this question.

Where participants reported 35.6 percent percutaneous and mucous membrane exposures to potentially infectious material, incomplete use of the full complement of individual protective equipment including gloves, cap, mask, coat, protection glasses and closed shoes was implicated. While the present study did not evaluate incidents of actual clinical exposure to infectious material, a majority considered use of gloves, mask and eye protection, but only a few considered the use of gown and cap. The Group A, however, had deficient knowledge of protective gear. [7]

In a high prevalence setting, while a majority (89 percent) had knowledge of PEP and an increasing trend observed with years of education, 43.5 percent knew that it should be started within one hour after needle prick, 26.6 percent knew the latest expanded three-drug regime used in PEP and 35.1 percent could report the duration for which PEP should be given. [11]

Dental students adequacy of knowledge of blood borne pathogens (66.7 percent), identifying that Hepatitis C was more transmissible than HIV (84.9 percent) and that a non- hollow bore needle without visible blood constituted a low risk was offset by low (25 percent) overall knowledge of post-exposure management with only 44.2 percent indicating the immediate steps to wash thoroughly with soap and water and 46.5 percent on timing of Post Exposure Prophylaxis. The pre-clinical students answered fewer questions on transmission and management of exposures in the workplace.^[12]

In an evaluation of Hepatitis B viral infection control and practice measures among dental students, a relatively good knowledge was accompanied with less than satisfactory response to practical issues. Significantly, 11-30 percent were knowledgeable about standard universal precautions. 45.8 percent of the participants had sustained needle stick injuries, mostly in the earlier academic years, a majority recapping needles as a matter of routine, but creditably 68.3 percent of them using single hand recapping technique.^[13]

Electronic (16.1 percent) and print media (13.1 percent) were identified by dental students as sources of knowledge regarding HIV/AIDS in addition to internet (18.6 percent) and textbooks (17.2 percent). The majority considered alcohol (40.6 percent) over sodium hypochlorite (29 percent) in the management of blood spills on environmental surfaces. Another study identified differences in responses of students from public and private dental institutions regarding HIV / AIDS but in general media, reading sources, lectures, health care workers were sources of information, unsafe blood transfusion a major risk factor and health workers, barbers, soldiers and truck drivers were high risk groups.^{[14][15]}

The present study has certain shortcomings. The authors used a self-developed questionnaire which was not pre-validated. The majority of studies cited above have used a validated and pre-tested questionnaire. The number of participants in each group was also low and meaningful statistical data could not be derived. There were deficient responses to some questions in all groups so meaningful information could not be extracted. For example, the abbreviation CD4 did not elicit a good response from all groups and Group A did not provide any information on oral manifestations of HIV/AIDS. The questionnaire did not cover other aspects like actual needle prick incidents and hepatitis B immunization status which would have increased our knowledge regarding this population. There may have been some reporting bias as the participants provided the information on a voluntary basis and whether they had shared responses among themselves cannot be ruled out. However, the authors are of the opinion that the strength of open-ended questions reduces cueing

and encourages the participant to synthesize knowledge into meaningful information.

CONCLUSION

The present study has given an insight into the knowledge of students and dentists regarding HIV / AIDS which adds to the existing literature independently. In order to provide high quality care to the vulnerable population having multiple blood borne pathogens including HIV /AIDS without fear of adversely affecting the dental workers and the environment requires regular training on theoretical and practical aspects of universal precautions, effective immunization against hepatitis B and early identification and referral of health care workers exposed to blood borne pathogens.

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