

# Occupational Exposures to Blood among Dentists in Jaipur District

Priyanka Yadav<sup>1</sup>, Ankita Jain<sup>2</sup>, Mayank Agrawal<sup>3</sup>, Jyoti Latha Ballal<sup>4</sup>, Sonam Agrawal<sup>5</sup>

1- Post Graduate Student, Department of Public Health Dentistry, Rajasthan Dental College & Hospital, Jaipur, Rajasthan, India

2- Post Graduate Student, Department of Public Health Dentistry, Teerthanker Mahaveer Dental College and Research Centre, Moradabad, Uttar Pradesh, India

3- Senior Lecturer, Department of Public Health Dentistry, Rajasthan Dental College & Hospital, Jaipur, Rajasthan, India

4- Professor and Head, Department of Public Health Dentistry, Rajasthan Dental College & Hospital, Jaipur, Rajasthan, India

5- Lecturer, Department of Conservative Dentistry and Endodontics, Rajasthan Dental College & Hospital, Jaipur, Rajasthan, India

Correspondence to:

Priyanka Yadav,  
Department of Public Health Dentistry, Rajasthan Dental  
College & Hospital, Jaipur, Rajasthan, India  
E-mail: drpriyankayadav9@gmail.com

Contact Us : editor@ijdmr.com  
Submit Manuscript : submissions@ijdmr.com  
www.ijdmr.com

## ABSTRACT

### **INTRODUCTION**

Dental personnel may be exposed to a wide variety of microorganisms in the blood and saliva of patients. This can be through direct contact, droplets or aerosols. It is well documented that indirect contact transmission of infection by contaminated instruments is possible. The aim of the study was to find out the knowledge, attitude and practice among dentists regarding occupational exposures.

### **MATERIALS AND METHODS**

A community based descriptive type of observational study was conducted among the practicing dentists of the Jaipur district. A predesigned and pre-tested schedule was used to collect data regarding knowledge, attitude and practice of occupational exposures from 150 randomly selected dentists of the study area. The schedule consists of 20 items pertaining to knowledge, attitude and practice of respondents. The data collected was analysed using graph pad /Prism.

### **RESULTS**

In the study it was found that the 62% dentists study population had exposure to blood among them 40.67% were males and 21.33% were females, 27.63% in rural area, 33.33% were MDS, and 26.67% aged 30 and above 30.67% has satisfactory knowledge 65.33% has positive attitude, 48.67% satisfactory-practice.

### **CONCLUSION**

It was concluded that the knowledge and attitude regarding the occupational exposure procedures was more among urban than rural dentists. All dental healthcare workers should be aware of the risks from blood borne viruses associated with sharps injuries. All practices should have a policy for the management of a sharps injury; however, prevention of injuries remains the best policy.

**KEYWORDS:** Blood, Dentists, Hepatitis, Knowledge, Occupational Exposure

*How to cite this article:*

Yadav P, Jain A, Agrawal M, Ballal JL, Agrawal S. Occupational Exposures to Blood among Dentists in Jaipur District. Int J Dent Med Res 2014;1(2):6-11.

## INTRODUCTION

**B**lood borne pathogens are microorganisms that can cause disease when transmitted from an infected individual to another non-infected individual through blood and other body fluids. Blood borne pathogens are capable of causing serious illness and even death. The most common illnesses caused by blood borne pathogens are hepatitis B (HBV), hepatitis C (HCV), and acquired immunodeficiency syndrome (AIDS) from HIV, or human immunodeficiency virus.<sup>1</sup>

Although adherence to universal precautions and routine use of appropriate barriers provide protection against most microorganisms, health care workers (HCW) are still at risk of infections due to accidental exposures, compared to the other health care settings, sharp's injuries are more likely due to a small operating field, frequent patient movement and the variety of sharp dental instruments used in everyday practice.<sup>2</sup> In the dental care setting it has been established that occupational blood exposures carry a certain risk of transmission for blood borne infections to the health care worker.<sup>3</sup>

Blood-borne viruses (BBVs) in particular hepatitis B (HBV), hepatitis C (HCV) and HIV can be transmitted occupationally from infected health care workers to patients, from infected patients to health care worker, or from staff, or from patient to patient via contaminated instruments.<sup>4</sup>

Hundreds of thousands of health care workers are out in the open to deadly microorganisms every year. They are exposed to preventable injuries involving over 20 different blood borne pathogens resulting about 1,000 infections per year of which the most common are HBV, HCV, and HIV.<sup>5</sup> In November 2002, it was

demonstrated in World Health Report data that 2.5% of HIV and 40% of hepatitis B and C cases among health care workers worldwide are a results in occupational exposures.<sup>6</sup>

As for HBV, the risk of pathogen transmission with a sharp object has been estimated to be 6 to 30% while the number is 5 to 10% for HCV and 0.3% for HIV. Post-exposure prophylaxis is shown to be effective in 75 to more than 90% of the cases for HBV. As for HIV, they are found reduce the risk of infection; however, the way of preventing HCV acquisition following needle stick injury (NSI) is still unknown.<sup>7,8,9,10</sup>

The aim of this study was to determine the knowledge, attitude and practice against exposure to blood-borne pathogens among dentists of Jaipur district.

## METHODS

A community based descriptive type of cross sectional observational study was conducted among the practicing dentists of the Jaipur district. The period of the study was December 2013 to January 2014. A self-administered, predesigned questionnaire, which had been pretested for a validity and reliability, was prepared. The questionnaire was distributed among the dentists of rural and urban areas of Jaipur. The questionnaire was given to dentists by hand to them self to as to minimize the chance of attended filling the form. If dentist was working on a patient's the questionnaire given to him and filled questionnaire was collected on next day. The filled questionnaire was collected then and there. Questionnaire was used to collect data regarding knowledge, attitude and practice of occupational exposures from 170 randomly selected dentists. Total population of dentists in Jaipur district is around

1700, 170 dentists were randomly selected, which is 10% of total dentist population. Out of 170 dentists, 20 dentists did not respond to all questions or they were unwilling to participate in the study. Questions were in English language. The questionnaire consisted of 20 questions, which were categorized under three different parts according to the knowledge, attitude and practice of the dentists, about occupational exposures. There were no penalties or rewards for participation, and dentists were told that participation was voluntary. It was stated that all collected information about participants would be treated as confidential. Chi-square test was used as statistical test. The data was analyzed using the graph pad software.

### Inclusion Criteria

- Dentists who are not registered.

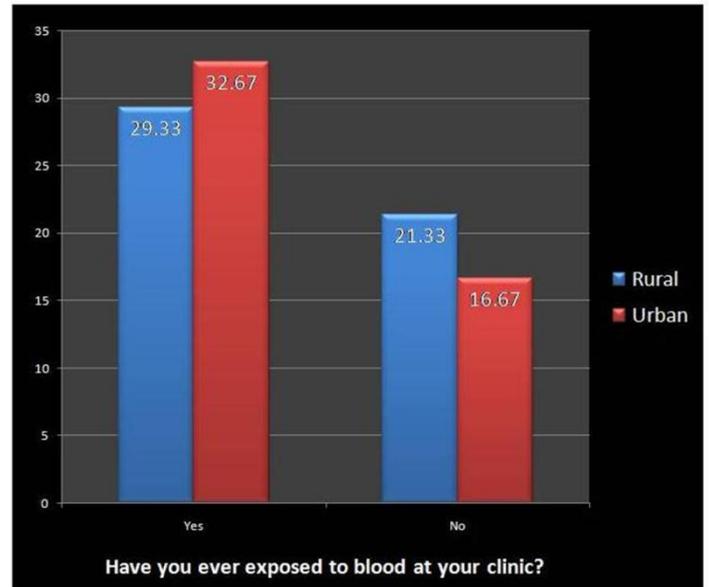
### Exclusion Criteria

- Dentists who are not willing to participate in the study.
- Dentists who are not present at their clinic.

## RESULTS

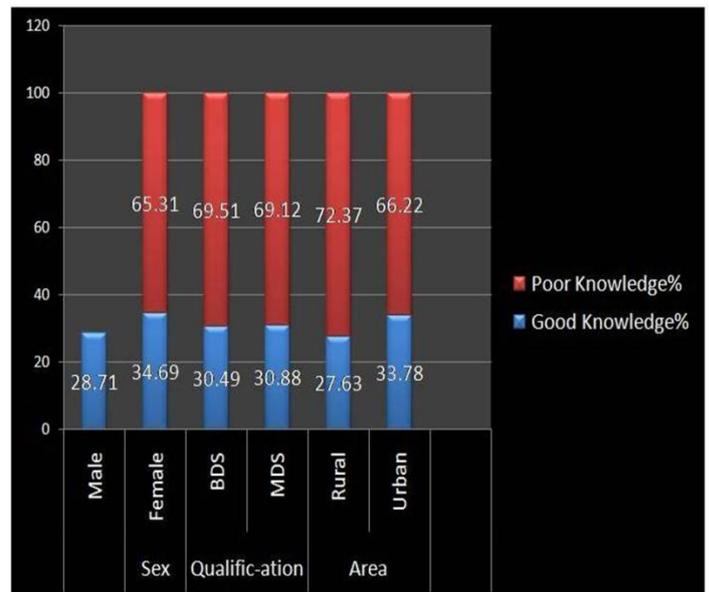
Of the 170 dentists questioned 150 returned the completed questionnaires (response rate: 88.23%), of the 150 responses. 67.33% of dentists were male and 32.67% were female. Among the dentists, 54.67% were general dentists and 45.33% were specialists. Among the dentists who reported occupational exposures while working at the various dental clinics, 40.67% were male dentists, 21.33% were females, 45.33% were general dentists and 33.33% were specialists, 29.33% of the respondents out of 50.67 % rural and 32.67% urban dentists (Graph No.1) had occupational

exposures to blood.



Graph No.1

According to Graph No.2, there was poor knowledge towards occupational exposures among dentists practicing in rural compared to the urban areas.



Graph No.2

According to Table No.1, more specialists had positive attitude regarding dental practices at their clinics. There was not much differences between attitudes of male and female dentists regarding dental practices were similar.

		Positive attitude %	Negative attitude%
Sex	Male	65.35	34.65
	Female	65.31	34.69
Qualification	BDS	57.32	42.68
	MDS	75.00	25.00
Area	Rural	72.37	27.63
	Urban	58.11	41.89

Table No.1

According to Table No.2, the practices regarding the safety from occupational exposures among specialists were good compared to the general dental practitioners. Similarly the rural dentists had good practices towards safety from occupational exposures of blood than urban dentists. Specialists (61.76%) had good practice towards occupational exposure than general dentists (31.80%). The low practice score can indicate the lack of attention of this medical community to possible blood-borne infection transmission, and the lack of useful programs of improving education on the problems related to infection control procedures or insufficient participation in these programs. It was seen in our study that 85.3% dentist's vaccination against hepatitis.

		Good Practices%	Poor Practices%
Sex	Male	48.51	51.49
	Female	48.98	51.02
Qualification	BDS	37.80	62.20
	MDS	61.76	38.24
Area	Rural	62.20	50.00
	Urban	38.24	52.70

Table No.2

## DISCUSSION

Occupational exposure to blood borne pathogens is a well-recognized hazard to health care workers.<sup>10</sup> Pre-cutaneous injuries among health care workers pose the greatest risk of infection. Dentists are in danger of both contracting diseases from their patients and infecting patients with pathogenic with organisms carried by them or transmitted from other patients.<sup>11</sup> Hepatitis B viruses (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV) are the principal blood-borne pathogens of concern to oral health professionals.<sup>12</sup> With the advent of AIDS in 1981, a higher level of importance has been elucidated to the disease's routes of transmission. Hepatitis B had earlier been identified as a blood-borne infection with potentially serious consequences, and by the mid-1970s, it was known to be at much higher prevalence in dentist than general population.<sup>13</sup>

The aim of this study was to determine the knowledge, attitude and practice against exposure to blood-borne pathogens among dentists of Jaipur district. Similar study conducted by Shahram Farzin Ebrahimi et al. In the present study male dentists had experienced higher number of occupational exposures (40.67%) than female dentists (21.33%). Similar results were reported in a study done by K Bokhari<sup>14</sup> et al (2012). In the results of study done by Al-Hussayeen AA et al<sup>15</sup> (2007) showed higher injury rates among females than the males.

A study done by Sharifi et al (2008) on dentists of Qazvin, Iran, showed a high prevalence of which was 96.8% subjects were vaccinated.<sup>16</sup> In the study done by Alavian et al, it was reported that the vaccination against hepatitis B was done in 74.8% of the participating dentists in the forty-fourth international congress of the

dentists of Iran.<sup>17</sup> This was similar to the result of our study, this showed 85.3% dentist's vaccination against hepatitis. The degrees of knowledge about infection transmission, especially hepatitis B, have also increased. Whereas in a study B. M. Hashemipour<sup>18</sup> (2008) et al showed 6.1% of the medical students and none of the dental students (0.0%) vaccinated against hepatitis, Jepsen and Smith<sup>19</sup> (2003) on 406 medical students in a study where 34% of subjects were not vaccinated against hepatitis B. Al-Sarheed<sup>20</sup> (2004) in his study on dental students found 28.9% not vaccinated, Duffy et al<sup>21</sup> (2004) reported 8% of the study population of Romanian dentists not to be vaccinated while 9% of them had received only two doses of vaccination.

In the present study the knowledge about occupational exposures to blood among female (34.69%) dentists was higher than male (28.71%) dentists. Similarly urban dentists (33.78%) had better knowledge regarding occupational exposure compared to rural (27.63%) dentists. But there was no difference among general and specialist dentists regarding occupational exposure to blood. This was contrary to the study done by Shahram Farzin Ebrahimi<sup>22</sup> (2012) et al where the knowledge score of the male dentists was significantly higher than the females ( $P = 0.02$ ).<sup>23,24</sup>

## CONCLUSION

Dentists are at a high risk of occupational exposures at their work place. Therefore, preventive measures should be taken. Also, focusing on the importance of reporting an occupational exposures and the possibility of prophylactic measures seem quite necessary. Education program and seminars should be carried out to increase the awareness of occupational exposure to blood among the dentists.

## REFERENCES

1. Bloodborne Pathogens: Department of consumer Business and services Questions and Answers about Occupational Exposure. 440-2261 (4/11) OR-OSHA
2. Porter KM, Scully C, Porter S, Theyer Y. Needlestick injuries to dental personnel. *J Dentistry* 1990;18:258-62.
3. Gerberding JL. Management of occupational exposures to bloodborne viruses. *N Eng J Med* 1995;332:444-51.
4. A survey of needle sticks and other sharp injuries among dental undergraduate students- Mohamed Abdullah Jaber- *Int J Infect Control* 2011, v7:i3 doi
5. Bolyard EA, Tablan OC, Williams WW, Pearson ML, Shapiro CN, Deithman SD. Guidelines for infection control in health care personnel. *Am J Infect Control* 1998;26:289-354.
6. World Health Organization. The world health report 2002: Reducing risks, promoting healthy life[Online]. Geneva 2002: Available from: [URL:http://www.who.int/whr/2002/en/index.html](http://www.who.int/whr/2002/en/index.html)
7. Centre for Disease Control and Prevention. Selection, evaluation and using sharps disposal containers 1998 [Online]. 1999 February 25 [cited 2004 Oct 25], Available from: URL: <http://www.cdc.gov/niosh/homepage>
8. Askarian M, Ghavanini AA. Survey on adoption of measures to prevent nosocomial infection by anaesthesia personnel. *East Mediterr Health J* 2002;8:416-21.
9. Grady GF, Lee VA, Prince AM, Gitnick GL, Fawaz KA, Vyas GN, et al. Hepatitis B immunoglobulin for

- accidental exposures among medical personnel: final report of a multicenter controlled trial. *J Infect Dis* 1978;138:625-38.
10. Anil S, Jafer M, Preethnath RS. Transmission and post-exposure management of blood-borne virus infections in dental practise. *Saudi Dent J* 2008;20:56-66
  11. Cleavland JL, Gooch BF, Shearer BG, Lyerla RL. Risk and prevention of hepatitis virusinfection. *J Am Dent Assoc* 1999;130:641-7
  12. Smith AJ, Cameron SO, Bagg J, Kennedy D. Management of needlestick injuries in general dental practice. *Br Dent J* 2001;190:645-50.
  13. Siew C, Gruninger SE, Miaw CI, Neidle EA. Percutaneous injuries in practising dentists. A prospective study using a 20-days dairy. *J Am Dent Assoc* 1995;126:1227-34.
  14. Bokhari K, Sariff M, Waheb MA, Tagoo RA, Hady Y, Hassan Y. Accidental Occupational Exposures among Dental Healthcare workers in Asir Region, Saudi Arabia. *Journal of Orofacial Research* 2012;2:5-8.
  15. Hussayeen AA, Sadhan SA. Accidental occupational exposures occurring at dental healthcare workers in dental clinics in Riyadh, Saudi Arabia. *Saudi Dent J* 2007;19:155-63
  16. Sharifi M, Borhan MK, Salmani M, Mostajeri A, Alipour HM. Correlation between anti-HBs antibody level with education status and duration of practice among dentists in Qazvin city. *The Journal of Islamic Dental Association of IRAN (JIDA)* 2008;19: 43-9
  17. Alavian S, Akbari H, Ahmadzad asl M, Kazem M, Davoodi A. Assessment of vaccination against hepatitis B and infection control compliance among dentists participated in 42nd international congress of Iranian dentists. *The Journal of Islamic Dental Association of IRAN (JIDA)* 2005;17:48-56.
  18. Hashemipour M, Sadeghi A. Needlestick Injuries among Medical and Dental Students at the University of Kerman. A Questionnaire Study. *Journal of Dentistry* 2008;5:71
  19. Jepsen MP, Smith E. Needlestick injuries among medical students at the University of Copenhagen - A questionnaire study in 2001. *Ugeskr Laeger* 2003;165:2273.
  20. Al-Sarheed M. Occupational exposures and hepatitis B vaccination statues in dental students in Central Saudi Arabia. *Saudi Med J* 2004; 25:1943-6.
  21. Duffy RE, Cleveland JL, Hutin YJ, Cardo D. Evaluating infection control practices among dentists in Vâlcea, Romania, in 1998. *Infect Control Hosp Epidemiol* 2004;25:570-5.
  22. Ebrahimi SF, Shadman N, Ghaempanah I. Needlestick injuries in dentists and their assistants in Kerman, Iran: Prevalence, knowledge, and practice. *JOHOE/Winter & Spring* 2013;2
  23. Behnaz MA, Behnaz F, Mohammadzadeh M. The prevalence of hepatitis C infection among the dentists of Yazd and assessment of their knowledge about hepatitis. *Journal of Dental Medicine* 2004; 17: 55-9
  24. Askarian M, Assadian O. Infection control practices among dental professionals in Shiraz Dentistry School, Iran. *Arch Iran Med* 2009;12:48-51

Source of Support: Nil

Conflict of Interest: Nil