

A CROSS-SECTIONAL KABP STUDY AMONG DENTISTS IN GOA TOWARDS BLOODBORNE PATHOGENS AND THEIR POST EXPOSURE PREVENTIONJagadish Cacodcar¹, Annet Oliveira²**HOW TO CITE THIS ARTICLE:**

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ABSTRACT: BACKGROUND: As any other health care workers dentists too are at risk to Blood borne Pathogens. Hence they should be familiar with protocols for the immediate management in case of exposure. It is also necessary to assess the knowledge, attitudes & practices among dentists about methods of disinfection of their instruments and disposal of bio-medical waste generated in dental practice. In view of the public health importance of Blood borne infections like HIV, HBV & HCV and risk posed by them to dentists as well as their patients, the present study was undertaken amongst the dentists practicing in Private and Government clinics across Goa. **AIMS:** To document the knowledge, attitude, behavior & practice of dentists in Goa towards blood-borne pathogens and their Post-Exposure Prevention. To assess their adherence to Universal Safety Precautions, to validate the need for continuing education and optimize universal safety precautions. Methods and materials–A Cross-sectional study conducted among 107 dentists in Goa selected by systematic random sampling. A questionnaire to assess the knowledge, attitude, behavior & practice of dentists towards blood-borne pathogens and their Post-Exposure Prevention was administered to all the study participants. **RESULTS:** Although the risk of Blood borne Pathogens to doctors and patients was known by 87.9% of dentists, correct practice of disinfecting used syringes/needles were not followed by almost half of them. Whereas, correct practice to disinfect re-usable dental instruments/equipment were not followed by majority. Only 75.7% of participants in the study were vaccinated for hepatitis B. 98.1% of those dentists with an experience of less than 5years willing to perform treatment on patient with known infection. But none of the dentists in the present study knew all the correct actions to be taken after an accidental needle-stick injury. **CONCLUSIONS:** This Study highlights some misconceptions about Blood borne Pathogens and some incorrect attitudes/practices towards Universal Safety Precautions, disinfection methods, Bio-Medical Waste disposal & Post Exposure Prophylaxis. Hence it is recommended that continuing education focusing on the above topics is essential for the Dentists in Goa. Adherence to Universal Safety Precautions must be monitored in all Dental Practice settings. All Dentists must receive the Hepatitis B vaccine doses and boosters.

KEYWORDS: Blood-borne pathogens, Post-exposure prevention and universal safety.

INTRODUCTION: As a occupational hazard, dentists are at low risk of blood-borne pathogens like HIV, Hepatitis B & Hepatitis C viruses; so also are their patients. Infact, the first such health care worker who was responsible for HIV transmission to 5 patients, was a Florida Dentist.^[1] Another study mentions Dental personnel's are at high risk of receiving infections in clinical environment from infected patients and equipment's. Such infections are caused by varied microorganism most commonly Hepatitis B, Hepatitis C, Human Immunodeficiency virus.^[2,3] It has been seen in literature that the highest prevalence of HBV infection exist among dentist.^[4]

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The estimated risks of transmission for these 3 important Blood borne Pathogens by the occupational route in health care settings are as follows: HBV: 2– 62% (i.e., 1 per 50 to 2.2 needle-stick injuries); HCV: 3–10% (i.e., 1 per 37 to 10 needle-sticks). The average risk of HIV transmissions approximately 0.3 percent (95 percent confidence interval, 0.2 to 0.5) after a percutaneous exposure to HIV-infected blood and approximately 0.09 percent (95 percent confidence interval, 0.006 to 0.5) after a mucous-membrane exposure.^[5] Hence, dentists are obliged to take adequate measures to protect themselves and their patients against the Blood borne Infections during clinical practice. 3.8 lakh needle-stick injuries each year in US; needle-stick injuries are under reported elsewhere in the world.^[6] 57 US health care workers were documented to have acquired HIV by the occupational route and 138 were considered as possible cases.^[5,7] Therefore, dentists should also be familiar with protocols for the immediate management of occupational exposure to Blood borne Pathogens, in order to prevent occupational transmission of these pathogens.

HIV epidemic is one of India's important health problems. In India, as in much of the world, stigma and discrimination are major barriers to controlling AIDS.^[8] Patients with HIV and other Blood borne Infections should not be denied oral health care solely because of status of their infection. It is difficult to identify an HIV infected person or a person with any other Blood borne Infection without confirmatory blood tests. Mandatory testing for HIV has its limitations and is impractical. Here lies the importance of Universal Safety Precautions with all patients, irrespective of their status of Blood borne infections.

In view of public health importance of Blood borne Infections like HIV, HBV &HCV and risk posed by them to the dentists as well as their patients, the present cross sectional study was undertaken amongst the dentists practicing in Private and Government clinics across Goa, with the following objectives: (a) To document the knowledge, attitude, behavior & practice of dentists in Goa towards blood-borne pathogens and their post-exposure prevention. (b) To assess the adherence to universal safety precautions. (c) To validate the need for continuing education and optimize universal safety precautions.

METHODOLOGY: A cross sectional study was carried out among 107 dentists in Goa, 58 from Private Practice and 49 in Government Service. The participants for the present study were selected by systematic random sampling method. A questionnaire was given to all the dentists participating in the study. The questionnaire had a total of 20 questions out of which 5 were to assess Knowledge regarding Blood borne Pathogens, 6 to assess Perceptions & attitudes towards patients with blood-borne pathogens, 6 Behaviors & Practices towards universal safety precautions and 4 to see awareness of Post-Exposure Prevention of Blood borne Pathogens. Proportions were used for Statistical analysis of the knowledge, attitude, behavior & practice among dentists in Goa towards Blood borne Pathogens and their Post-Exposure Prevention.

RESULTS: Knowledge Regarding Blood Borne Pathogens: All the dentists in the present study knew that a person infected with any Blood borne Pathogens can have an outwardly healthy appearance. The risk of Blood borne Pathogens to doctors and patients was known by 87.9% of dentists. This knowledge was greater among those with an experience of less than 5 years as compared to those with an experience of more than 5 years. Broad recognition of the fact that HBV, HCV, and HIV can all be transmitted by blood; a question assessing this knowledge was answered correctly by 90.7% of the respondents.

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This knowledge was more among Dentist with an experience of less than 5 years i.e. 98.1% as compared to those with experience of more than 5 years i.e., 83.5%. There was recognition of the availability of counselling and testing facilities for Blood borne Pathogens, a question assessing this knowledge was answered correctly by 79.4 percent of the respondents. This knowledge was more among the dentist with more than 10 years' experience i.e. 92.3%, as compared with those who had less than 10 years' experience i.e., 74.4%. Almost half of the dentists i.e., 57.9% could not correctly identify local/systemic complications associated with unsterile instruments.

Perceptions & Attitudes towards Patients with Blood Borne Pathogens: Mandatory testing of each patient for HIV/HBV was considered ideal by 63.6% of the Dentists; this perception being more among those who had an experience of more than 5 years. 79.4% of the dentist were willing to work with HIV infected staff. Almost all i.e. 98.1% of Dentist with an experience of 5 years were willing to perform treatment on patients known to be infected. As compared to them those with an experience of more than five years were less willing to perform on infected patients. 72.9% had correct attitude towards confidentiality and less than half of them had correct perceived risk of acquiring a blood borne Pathogen. Only half of the Dentist Correctly perceived appropriate level of care for AIDS cases.

Behaviors & Practices towards Universal Safety Precautions: Correct practice of disinfecting used syringes/needles were not followed by almost half of the dentists i.e., 54.2% who were surveyed. Correct practices to disinfect re-usable dental instruments/equipment were not followed by majority in the present study. Correct protective measures followed during minor and major procedures were more among those who had an experience of less than 5 years as compared to those with an experience of more than 5 years. Hardly any i.e. 2.8% with experience of less than 10 years and none with an experience of more than 10 years stored and disposed their waste as per Bio-Medical Waste Disposal Act. 75.7% of the dentist were vaccinated for hepatitis B; 24.3% being unvaccinated.

Awareness of Post-Exposure Prevention of Blood Borne Pathogens: Less than half of the Dentists in the present study were aware of availability of Post-Exposure Prevention in health care facilities. Hardly any of them knew earliest test for confirming HIV infection and number of drugs under the 2 Post-Exposure Prophylaxis Regimens. None of the dentist in the present study knew all the correct preventive actions to be taken after a needle-stick injury.

DISCUSSION: Dentists participating in this present study had basic knowledge of the risks of transmission of blood borne pathogens but relatively poor knowledge of post-exposure management of blood borne Pathogens. Exposure to blood borne Pathogens poses a serious risk to health care workers. The transmission of at least 20 different pathogens by needle-stick and sharps injuries has been reported.^[9] In the present study, majority of the Dentists correctly identified HIV, HCV, and HBV as important blood borne pathogens in their Dental practice. However, hardly any of them knew earliest test for confirming HIV infection and number of drugs under the 2 PEP Regimens. None of the Dentist in the present study knew all the correct actions to be taken after a needle-stick injury. Each one of these knowledge gaps may lead to a failure to report incidents and delays in appropriately managing an exposure and in seeking timely formal medical attention. As the knowledge of Post-Exposure Prevention of blood borne Pathogen was poor among the Dentist in the present study,

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written policies and procedures to facilitate prompt reporting, evaluation, counseling, treatment, and medical follow-up of all occupational exposures should be available to all the Dentists.

The knowledge of risk of blood borne Pathogens to doctors and patients was greater among those with an experience of less than 5 years as compared to those with an experience of more than 5 years this could be due importance of the subject of blood borne Pathogens in the teaching curriculum in recent years. McCarthy et al,^[10] suggest that younger Dentists may have received more formal training related to HIV than older dentists. Therefore a need for continuing medical education as to keep in touch with the recent updates in Dental practices is required for those with and experience of more than 5 years. The knowledge of availability of counseling and testing facilities for blood borne Pathogens was more among Dentist with more than 10 years' experience as compared with those who had less than 10 years' experience. More experienced Dentists may have come across exposure to blood borne Pathogens during their Dental practice which could had lead them to find where to refer to in case of such exposure, which explains the above finding. Transmission of blood borne Pathogens can occur through contact with contaminated needle or improperly sterilized instruments.^[11,12] But almost half of the Dentists did not know about local/systemic complications associated with unsterile instruments.

Prevention of blood exposure through safer practices, barrier precautions, safer needle devices and other innovations, is the best way to prevent infection with HIV and other blood borne pathogens.^[5,7] In present time, awareness concerning cross infection control has improved among practitioners in Dental settings. This awareness has been heightening due to increase transmission of HIV, Hepatitis or other diseases to dental patients and Dental Care Practitioners.^[13,14] But in the present study such awareness was poor, as correct practice of disinfecting used syringes/needles were not followed by almost half of the Dentist. Neither correct practices were followed to disinfect re-usable dental instruments/equipment by majority of the Dentists in the present study. Avoiding occupational blood exposures is the primary way to prevent transmission of hepatitis B virus, hepatitis C virus and HIV in health-care settings.^[7] Hepatitis B immunization and post exposure management are integral components of a complete program to prevent infection following Blood borne Pathogen Exposure and are important elements of workplace safety.^[15] However 24.3% of dentist were not immunized against Hepatitis B virus which makes them vulnerable to get this infection from infected patient while practicing. But the immunization rate is much higher as compared to a study done among Nigerian dental students were only thirty-three (37.9 percent) were fully vaccinated against HBV.^[13]

Universal Safety Precautions are based on the concept that all blood and body fluids may be potentially infectious, because patients with blood borne Infections can be asymptomatic or unaware that they are infected. In spite of all the Dentists being aware about the above fact, 25.2% dentist did not follow correct protective measures like careful handling of sharp instruments, use of rubber dams to minimize blood spattering; hand washing; and use of protective barriers e.g. gloves, masks, protective eyewear, and gowns even during major procedures. Due to lack of knowledge of limitation of mandatory testing and Universal Safety Precautions, mandatory testing of each patient for HIV/ HBV was considered essential by 63.6% of Dentists.

In the context of inadequate knowledge of transmission of blood borne pathogens and management of blood borne Pathogen exposures, 13.1% of the respondents acknowledged an unwillingness to perform procedures on patients with HIV. This finding was similar to a study conducted in a dental school in U. S. were 8.2 % of the respondents acknowledged an unwillingness to

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perform procedures on patients with HIV.^[16] Although the proportion of such Dentists is considerably lower than that reported in another study conducted among Brazilian dentist were only 56% of the Dentist were unwilling to perform procedures on patients with HIV.^[17] This residual unwillingness likely contributes to the ongoing prejudice and discrimination experienced by individuals with HIV,^[18,19] and highlights the need for additional efforts to both inform and sensitize Dentists to the specific needs and challenges faced by these vulnerable populations.^[19]

The findings of this study should be interpreted with caution as the study is inherently limited by its cross-sectional design. Nonetheless, the results of this survey support a call to action to improve education on Blood borne Pathogens at Dental Education Institutions and Associations.

CONCLUSIONS: This present study highlights some misconceptions about blood-borne pathogens and some incorrect attitudes/practices towards Universal Safety Precautions, disinfection methods, Bio-Medical Waste disposal & PEP. Hence it is recommended that continuing education focusing on the above topics is essential for the Dentists in Goa. Adherence to Universal Safety Precautions must be monitored in all Dental Practice settings. All Dentists must receive the Hepatitis B vaccine doses and boosters. Dental practices should develop a written infection-control program to prevent or reduce the risk of disease transmission. Such a program should include establishment and implementation of policies, procedures, and practices (In conjunction with selection and use of technologies and products) to prevent work-related injuries and illnesses.

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Awareness	< 5 yrs experience (n = 53) %	5-10 yrs experience (n = 28) %	> 10 yrs experience (n = 26) %	Total (n = 107)%	95% C.I
Outwardly healthy appearance of aninfected patient	100	100	100	100	
Risk of BBPs to doctors & patients	94.3	75.0	84.6	87.9	
Availability of counseling & testing facilities	77.4	71.4	92.3	79.4	
Identification of \geq 2 important BBPs	98.1	78.6	88.5	90.7	
Local / systemic complications associated with unsterile instruments	54.7	64.3	57.7	57.9	

Table 1: Knowledge regarding blood-borne pathogens

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Perception / Attitude	< 5 yrs experience (n = 53) %	5-10 yrs experience (n = 28) %	> 10 yrs experience (n = 26) %	Total (n = 107) %	95% C.I.
Mandatory testing of each patient for HIV / HBV considered ideal	50.9	82.1	73.1	63.6	55-73%
Willing to work with HIV infected staff	86.8	64.3	80.8	79.4	72-87%
Willing to perform treatment on patient known to be infected	98.1	71.4	80.8	86.9	81-93%
Correct attitude towards confidentiality	73.6	67.9	73.1	72.9	65-81%
Correct perceived risk of acquiring a BBP	45.3	2.9	50.0	46.7	37-56%
Correct perceived level of care for AIDS cases	54.7	42.9	50.0	50.5	41-60%

Table 2: Perceptions & attitudes towards patients with blood-borne pathogens

Behavior / Practice	< 5 yrs experience (n = 53) %	5-10 yrs experience (n = 28) %	> 10 yrs experience (n = 26) %	Total (n = 107) %	95% C.I.
Correct practice of disinfecting used syringes/needles	60.4	42.9	53.9	54.2	45-64%
Practices followed to disinfect re-usable dental instruments / equipment	39.6	32.1	19.2	32.7	24-42%
Correct protective measures followed during:					
a. Oral examination	88.7	85.7	92.3	88.8	83-95%
b. Minor procedures	90.6	85.7	65.4	83.2	76-90%
c. Major procedures	83.0	71.4	61.5	74.8	67-83%
Storage & Disposal of waste as per Bio-Medical Waste Disposal Act	1.9	7.1	0.0	2.8	0-6%
Vaccinated against Hepatitis B	83.0	75.0	61.5	75.7	68-84%

Table 3: Behaviors & Practices towards universal safety precautions

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Awareness	< 5 yrs experience (n = 53) %	5-10 yrs experience (n = 28) %	> 10 yrs experience (n = 26) %	Total (n = 107) %	95% C.I.
Availability of PEP in a health care facility	39.6	32.1	50.0	41.1	32-50%
Earliest test for confirming HIV infection	1.9	7.1	3.9	4.7	1-9%
No. of drugs under the 2 PEP Regimens	1.9	7.1	0.0	2.8	0-6%
Actions taken after needle-stick injury					
a) ≥ 4 correct actions	17.0	32.1	23.1	21.5	14-29%
b) All correct actions	0.0	0.0	0.0	0.0	-

Table 4: Awareness of Post-exposure Prevention of Blood-borne Pathogens

Fig. 1: Pie chart showing the distribution of the dentist in private and government setup in Goa in the present study.

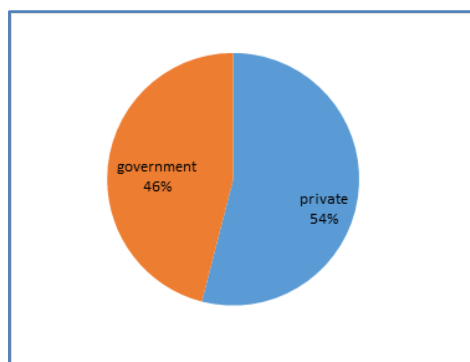


Fig. 1

Fig. 2: Pie chart showing the distribution of dentist in Goa in the present study according to their experience in dental practise.

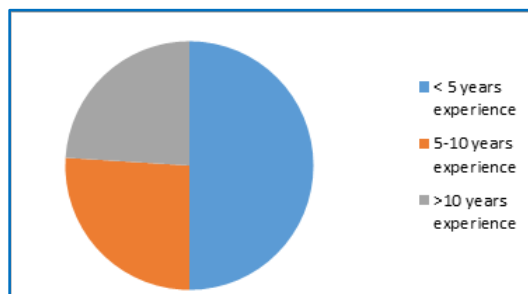


Fig. 2

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