

Sero Prevalence of Hepatitis C Virus Among Dentists in Dental Colleges in Western UP India

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ABSTRACT

Background: Health care workers across the world are at great risk of exposure to many blood borne pathogens due to their occupational hazards risk. Many Incidences of transmission of various pathogens in this high risk group that includes dentist, dental students have been reported in the past despite utmost precautions taken at different levels and various preventive measures taken by employing modern medical and dental equipments. Health care workers performing these procedures are still prone to exposure of vast array of blood borne pathogens like Hepatitis C Virus (HCV).

Aims and Objectives: To find out the serum positivity of the Hepatitis C virus among the dentists in Dental Colleges of western UP. To find out the demographic occupational, geographic and behavioral pattern of the dentists. To find out the history of any transfusion, drug use, any liver diseases and any addiction.

Methodology: Subjects chosen of the study were comprised of dentists in dental colleges of western part of UP. A written consent was taken and questionnaire was used to collect the demographic, occupational and behavioral pattern of the subject. The serum sample collected was 5.0 ml venous blood of each subject and it was subjected to tests for HCVAg positivity.

Results: Anti HCV, found (positive) in subject dentists.

Conclusion: Dentists and dental students have always been at an occupational risk of Hepatitis C virus infections, however neither magnitude of this risk nor the practices associated with it have been defined. A high prevalence of HCV among the general population put the Dental professionals at a higher risk of acquiring HCV infection. Results of our study show no sero prevalence of anti HCV amongst dentist. No case of occupational exposure was associated to the sero prevalence of hepatitis C. This attributes to the various precautionary measures taken while carrying out professional work which exposes the subject to such infections. It is pertinent to note that proper sterilization and screening procedures can avoid HCV infections in this high risk group in the near future. However, it is required to carry out the study with a larger sample size to arrive at more conclusive results.

Keywords: Dentists, HCV, Prevalence.

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INTRODUCTION

Hepatitis infections are community health problems in developing countries.¹ Hepatitis C is an emerging infection in India and an important pathogen causing liver disease in India. The high risk of chronicity of this blood-borne infection and its association with Chronic liver disease, cirrhosis, hepatocellular carcinoma (HCC) and liver transplant underscores its public health importance.²

Hepatitis C virus (HCV) is transmitted primarily through large or repeated direct per cutaneous exposure to blood. The highest prevalence of infection is found among injecting drug users, persons with hemophilia related with clotting factor concentrates that were not virally inactivated and persons who receive blood transfusion or solid organ transplants from HCV infected donors. It is well recognized that like other blood borne pathogens, HCV can be transmitted primarily by contaminated needle sticks³ in health care setups and also from infected patients to health care workers. Despite of continuous progressive preventive measures and employment of modern medical equipment, health care workers performing procedures which expose them to such viruses run at a risk of getting vast array of blood borne pathogen like Hepatitis C Virus etc. A number of patients become chronic carriers of hepatitis antigen and are potentially infectious.⁴

Acquisition of blood borne pathogens is a potential occupational health hazard for dentists across the world. Occupational exposure of Hepatitis virus is a well recognized risk throughout the world.⁵ Hepatitis B and C infections are very important for dentists because of its transmission route. The dentists are particularly at high risk because of exposure to the oral secretions and blood of potentially infectious patients.⁶ One of the problems associated with estimation of frequency of Hepatitis C is that many patients infected with this virus are asymptomatic, at least initially. They are detected incidentally when they are screened for HCV for various reasons like donating blood or applying for overseas employment. In today scenario with the expectance that Hepatitis C may affect large number of asymptomatic dentist and its ability to cause serious complications in patients who are infected, this study was planned to see the

burden of the disease and underlying risk factors responsible for its transmission in our asymptomatic dentists.⁷

AIM & OBJECTIVES

The aim of the study is to investigate the prevalence of Hepatitis C serum positivity in dentists of dental colleges of western UP and to find out its prevalence with occupational and personnel behavioral pattern of any transfusion, blood donation, needle prick injury, drug use, any liver diseases or any relevant addiction.

MATERIALS AND METHOD

Subjects in the present study comprised of 60 healthy dentists from dental colleges in western part of UP. This included Interns, Post graduate students, HODs and professors of various departments. A written consent was taken and a questionnaire was used to collect the demographic, occupational and personnel behavioral pattern of the subject. This included history of any Needle stick injury, Blood transfusion Contact with infected person, I.V drug user, Sexual intercourse, Blood donation, Hospitalization, Immunization status, complete dose and schedule of Hepatitis B vaccination, incomplete dose and schedule, awareness towards Hepatitis B and use of disposable needle in routine practice. After obtaining the information through the written consent form, 5.0 ml venous blood sample was collected for the testing of HCV Ag positivity. The serum was separated after centrifugation at speed (200-6000) rpm for 8 minutes. The serum sample was then subjected to tests for antibodies against hepatitis C (anti-HCV) using a commercially available standard diagnostic 'one step Anti-HCV test kit' which is a rapid, immune chromatographic test for the detection of antibody against hepatitis C virus in human serum. Data was analyzed using frequency, distribution, analysis and chi square test.

RESULTS

The mean age of the subject was 28.3 ± 4.5 yrs. There were 32 males and 28 females. Maximum subjects were Post graduate students (n=26).

Graph 1- Shows distribution of study subjects according age and gender. The mean age being 28.3

± 4.5 yrs with minimum age 22 yrs in both genders and maximum age being 42 yrs in males whereas in females the maximum age was 33 yrs.

Graph 2- Shows distribution of study subjects according to gender. 47% of the subjects were females and 53% of the subjects were males.

Graph 3, 4 and 5- Shows distribution of subjects according to responses.

-51.7% of subjects had needle stick injury and 10% had history of blood transfusion & 1.7% had contact with infected person.

-31.7% of subjects had a history of blood donation, 1.7% had history of i.v drug use, and 18.3% had undergone sexual intercourse.

-23.3% subjects had under gone hospitalisation, 5% were without immunization and 53.3% of the subjects had taken complete dosage and schedule of hepatitis vaccine.

-10% of the subjects were with incomplete dosage and schedule of hepatitis vaccine.

-98.3% of the subjects used disposable needles in routine practice.

- 100% awareness was recorded towards hepatitis.

Graph 6- Shows distribution of subjects according to occupation. The HCV was negative for all subjects. 51.7% of subjects had needle stick injury and 31.7% had history of blood donation. 46.7% had completed schedule and dose of hepatitis B vaccine. 100% awareness was there amongst our subjects related to hepatitis

DISCUSSION

Hepatitis is a world-wide problem. There are five million new cases every year. Hepatitis C virus (HCV) infection is a major occupational hazard in the dental environment. Infections commonly results in a chronic asymptomatic carrier state for many years before the development of symptoms. Staff performing exposure prone procedures might be expected to have a higher prevalence of hepatitis C antibodies compared with staff in less exposed occupations.⁸ Therefore the present study was undertaken to find the seroprevalence of hepatitis c virus among the dentist. A questionnaire was

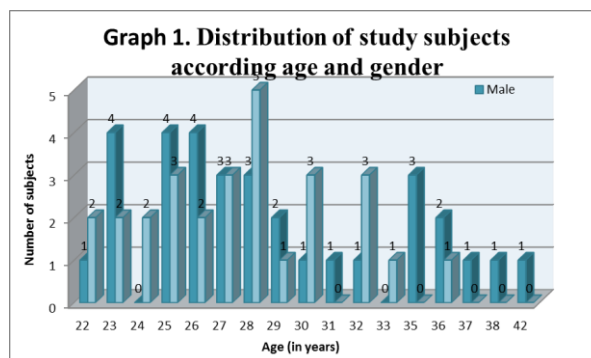


Fig 1: Distribution Of Study Subjects According Age And Gender.

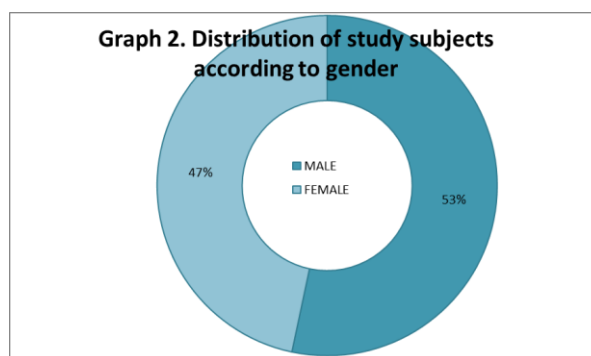


Fig 2: Distribution Of Study Subjects According to Gender.

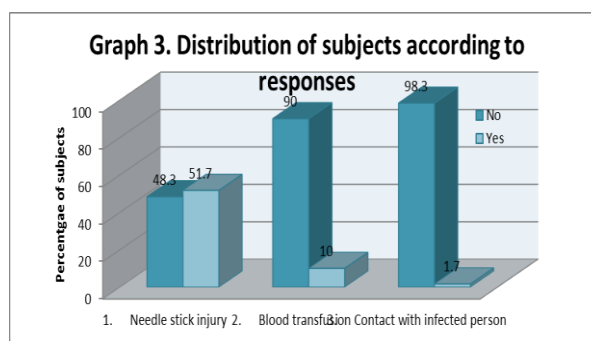


Fig 3: Distribution Of Study Subjects According to Responses.

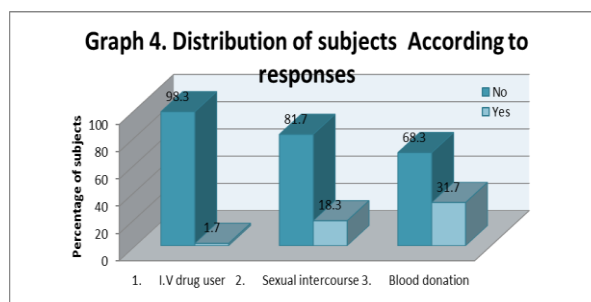


Fig 4: Distribution Of Study Subjects According to Responses.

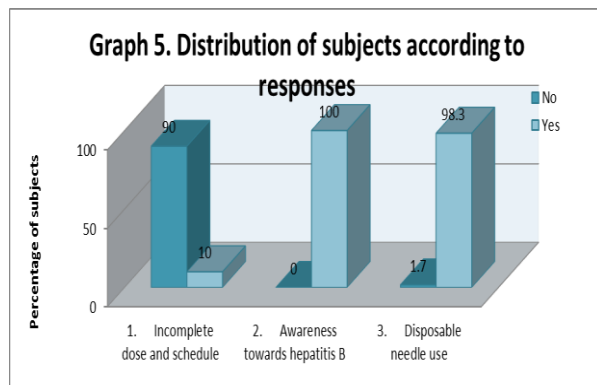


Fig 5: Distribution Of Study Subjects According to Responses.

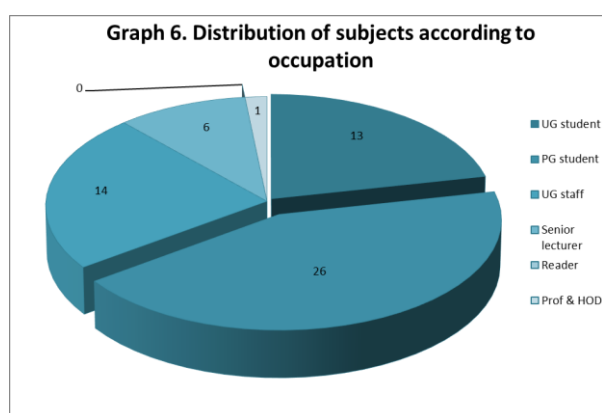


Fig 6: Distribution of Study Subjects According to Occupation.

prepared and the study subjects were questioned about their exposure to various risk factors associated with its transmission.

Blood transfusions are supposed to be the most important and frequent risk factor associated with Hepatitis C infectivity followed by dental procedures.⁹ In our study, 10% of subjects had history of blood transfusion but there was negligible prevalence of hepatitis C this can be attributed to general awareness and necessary precautionary measures taken. This coincides with data from various studies in different countries that supports this falling trend.⁹ When screening with first-generation anti-HCV test was introduced in Japan, incidence of post transfusion non-A non-B Hepatitis dropped from 4.9% (Oct 1988–89) to 1.9% (Nov 1989–90).¹⁰ In the United States, incidence of post-transfusion Hepatitis C decreased from 3.84% to 0.57% after HCV screening was started in 1990.¹¹ In England, the frequency of HCV infection by blood donations dropped from 1 in 520,000 (1993–98) to

1 in 30 million (1999–2001) when screening for HCV RNA was started.¹ 31.7% of subjects had a history of blood donation, in this study. This supports the evidence of awareness against HCV therefore a low prevalence rate which is also seen in our study.

However, incidence of transfusion related Hepatitis C is still higher in some areas of the world. A study done in the largest blood bank in Santa Catarina, Brazil from 1991–2001 showed a significant drop in the risk of acquiring HCV (1 in 13,721 patients) it also coincides with our study.

The prevalence of chronic HCV infection in the general population is not uniform across countries and ranges from 0.1 to 5%.¹³ The prevalence of HCV in dental staff has varied from 0 to 6.2%.^{14–15} Hepatitis C transmission by blood donation decreased dramatically from ~10% in 1970s to 1 in 100,000 in 1992. Data from various studies supports this falling trend.¹³ In our study 31.7% had a history of blood donation, but none showed positivity for hepatitis C. This is in co-relation with the other studies which shows a falling trend. In West Turkey, the prevalence of hepatitis C virus (HCV) infection was determined as 0.19% according to the serologic markers.¹⁶ Other sero epidemiologic studies has showed that the prevalence of HCV in blood donors was 0.1% in Northern Europe ¹⁷, 1.47% in Mexico ¹⁸, 1.2 % in France ¹⁹ and 0.64% in Italy.²⁰

In the present study, dentists with a history of needle prick injury was found to be 51.7% but coincidentally none were found to be positive with the HCV. This finding is close to the percentages obtained in the previous studies. However, the estimated risks for infection after a needle stick or cut exposure to HCV infected blood is approximately 1.8%.²¹ The prevalence of HCV in dentist has varied from 0 to 6.2%.^{15,21}

When skin is inadvertently punctured with instruments or needles, it is important to wash the wound thoroughly. Whenever feasible, the patient's hepatitis surface antigen status should be determined. If parenteral exposure to blood that is HBsAg-positive has occurred, the dentist should receive hepatitis B immune globulin immediately.

All dentists in this study were aware of it and claimed to practice Standard Precautions. Therefore the frequency of prevalence of hepatitis C serum Positivity in our study was very low or almost negligible. Taking a thorough medical history is very important to identify patients who are potentially infectious. Because dentists are exposed to the blood and oral secretions of patients, they are particularly at risk for contracting hepatitis ⁽²⁾. A strict sterilization procedure is mandatory to prevent the transmission. With inadequate sterilization, the dentist and other patients can be infected with hepatitis, therefore adequate measures should definitely be taken.

CONCLUSION

Health care workers have been at occupational risks of infection with Hepatitis C virus. However neither magnitude of this risk nor the practices associated with it have been defined, since dentist have numerous patients and are exposed to blood, they are likely to have a high risk. However with proper precautionary measures taken the risk factor decreases. Even though it is an emerging infection in India but its implications will be felt in the decades to come.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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