

## **Hepatitis Screening of Undiagnosed Dental Patients**

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### **Abstract**

**Objective:** The purpose of this study was to see the frequency of undiagnosed Hepatitis B Virus (HBV) and Hepatitis C virus (HCV) carriers in patients reporting for various dental treatments.

**Study Design:** A descriptive cross-sectional study

**Place and Duration of study:** This study was done at Khyber College of Dentistry, Peshawar in the department of Oral diagnosis / Oral Medicine from 5th April to 30th September (Six months) on patients for different dental treatment in the hospital.

**Materials and Methods:** All dental patients who reported to the Department of Oral diagnosis/Oral Medicine for routine examination and f different types of dental treatments were included in this study. The hepatitis screening was done for all patients by Immuno Chromatographic test (ICT) and in case of slight positive or positive were retested for confirmation by Enzyme Linked Immune-sorbent Assay (Elisa). A specially designed proforma was filled and those having current and previous hepatitis profile; risk factors and history of vaccination apart from demographic data was recorded. Those patients who were already Screened or suffering from Hepatitis and were under treatment for hepatitis were excluded from this study.

**Results:** A total of 4976 dental patients who reported for dental treatment were screened for Hepatitis B and C virus. Out of these 59.7% were male and 40.3% were females with age range 5-65 years. The hepatitis screening for of all patients was done. There were 3.5 % HBV positive and 5.3 % HCV positive patients out of all screened patients.

**Conclusion:** This frequency of HBV and HCV in these patients was very high. It suggests a routine screening of HBs Ag and anti HCV for all patients prior to Oral and Dental procedure in all dental clinics be done before any dental treatment

**Keywords:** Dentistry; Hepatitis B and C; Oral Cavity

### **Introduction**

Viral hepatitis has emerged as a serious global health problem and become epidemic worldwide affecting two billion people. It is a cause of considerable morbidity and mortality in human population both in acute and chronic forms especially in Pakistan [1]. There are several routes of spread of viral Hepatitis in dentistry through direct contact with oral fluids, blood, droplet splatter and aerosol ect. Hepatitis B and C. [2] This viruses can exist asymptotically in its human host and may be transmitted from one individual to other particularly in contact with the carrier's blood or blood contaminated body fluids .The use of general or selective screening of individuals for HBV coupled with passive immune prophylaxis with immune globulin can prevent transmission of HBV to health worker .Since the vaccination against hepatitis C does not exist, the only other choice for prevention is to avoid exposure to virus [3].

Pakistan has huge burden of these viral diseases. The common risk factors are blood transfusions, hemodialysis, and unsterilized infected dental instruments. Majority of these patients

are asymptomatic and pose greater danger of spreading these infections to society and medical /dental personals particularly [3].

Hepatitis B (HBV) was isolated by Blumberg in 196 [3] and is a DNA virus while Hepatitis C Virus (HCV) is a hepatotoxic viral infection was first cloned in 1989. [2] Hepatitis C virus is increasing more rapidly and has prevalence of about 2.2- 3% Worldwide [3].

The dental personals are exposed to a wide variety of microorganisms in saliva and blood of patients in their dental offices. Besides these bacterial infections, viral infections are also transmitted via blood and saliva through direct contact, droplets or aerosols in dental practices [4]. The indirect contact transmission of such infection is by contaminated instruments. These infections can be transmitted in medical and dental practices from patients to healthcare personnel, from patients to patients and rarely from practitioners to other patients [5].

Of these infections Viral hepatitis is one of the major public health occurring endemically in all areas of the World. [4] It

is one of ten reportable diseases in Pakistan and Pakistan is endemic area for viral hepatitis B and has high carrier rate for Hepatitis B. There are seven main Hepatitis viruses referred to as A, B, C, D, E, F and G [6]. In particular type B and C leads to chronic disease in hundreds of millions of people and together are most common causes of Liver cirrhosis and cancer. [5] Dentists are at high risk of contracting HBV and HCV disease due to the procedures and instruments of dental treatment and occupational hazards in dental profession. A number of reports suggest a significantly higher incidence of HBV among dental staff. A high rate of HBV especially Oral Surgeons, Periodontists and Endodontists [5]. Vector of infection with HBV in dental practice are blood, saliva and nasopharyngeal secretions. Mostly HCV infected patients 60-70% are asymptomatic. However, when symptoms occur they are not nonspecific acute infection may occur with limited or no symptoms or may include symptoms such as jaundice, dark urine, extreme fatigue, nausea, vomiting and abdominal pain. Patients with sub-clinical hepatitis cannot be reliably identified from medical history and it is impossible that the previous infection was never diagnosed. The incubation period is about two to six months and effects range from sub-clinical infection without jaundice to fulminating hepatitis, acute hepatitis and death. HBV can be prevented by routine exercise of good clinical hygiene, universal precautions plus immunization program [7].

On the other hand, the presence of HCV-RNA in saliva provides a biological basis for saliva as a possible source of HCV infection, although it does not necessarily impact transmission. In Pakistan the prevalence of HCV varies from 14 % while carrier rate of HBS Ag is 10 % [6].

A small proportion of patients fail to eliminate the offending viruses and become victims of chronic infection [8-11]. With risk of transmission of infection to close contacts. The dental surgeon should know then potential transmission of hepatitis B and Hepatitis C in surgery through undetected chronic patients who act as carrier of disease. The aim of study was to find the frequency of undiagnosed carrier of this disease who comes for different dental treatment at Khyber College of dentistry, Peshawar.

**Materials and Methods**

This descriptive study was conducted in the department of Oral diagnosis/ Oral Medicine of Khyber College of Dentistry, Peshawar from April 2014 to September 2014 on 4976 patients. The study got approval from ethical committee of the institution. The inclusion criteria were patients of both age and sex who came to the department of Oral diagnosis/Oral Medicine for different types of dental treatments and unaware of Hepatitis. Known patient of Hepatitis B or C or patient under treatment were not included in this study. All other dental patients were screened for HBs Ag and anti HCV before starting their dental treatment. The initial screening was done for all patients by using immunochromatography (ICT) method while slight or positive cases were confirmed by Enzyme Linked Immunosorbent Assay (ELISA) at Pathology department of KCD Peshawar free of cost.

**Results**

A total of 4976 healthy individuals were screened for HBs Ag and anti HCV by ICT method and then confirmed by Elisa and PCR. Out of 4976 patients, 2974(59.7%) were males Table 1 and 2002(40.3%) were females Table 2 with age range 5 years

to 65 years.

There were 175 (3.5%) HBS positive in all age group in both sexes. There were 119(4%) males with maximum of 45(1.5%) in age group of 21-30 years whereas 56(2.7%) were females with maximum of 14(0.6%) in age 11-20 years.

On the other hand, 265(5.3%) were HCV positive out of 4976 patients in age group of this study while in male patients (2974) 137(4.6%) were HCV positive with maximum in age group 21-30 and 30-40 years 35patients (1.1%) where as in female patients 2002 (40.3%) there were 128(6.3%) females were HCV positive with 47(2.3%) were in age group 31-40years.

Only 25 patients were aware of Hepatitis positive and were under the treatment were not included in this study while majority of patients who came for dental treatment were not aware of their Hepatitis status before they reported and screening was done.

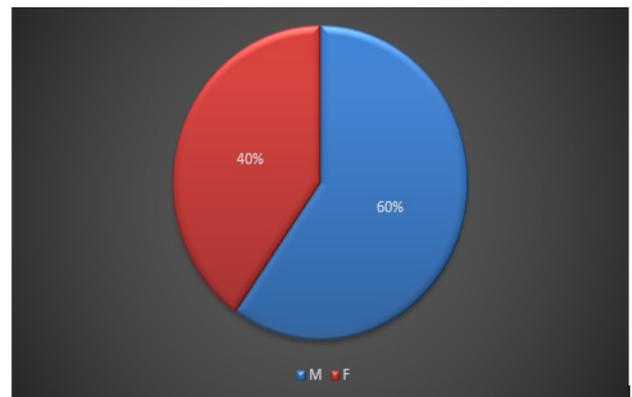


Figure 1: Gender distribution in Hepatitis

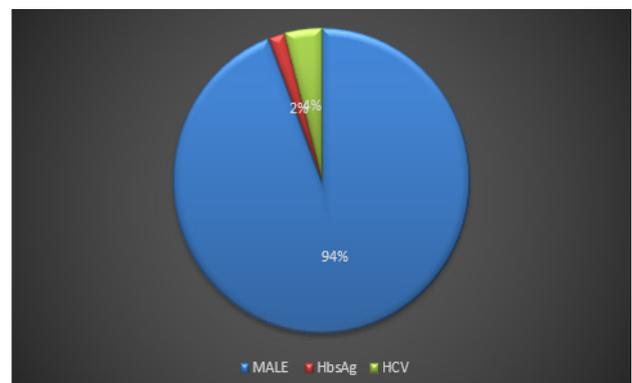


Figure 2: Total number of hepatitis B, C positive case in study population

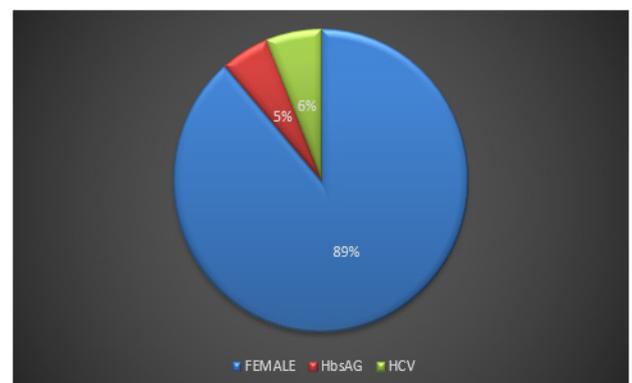


Figure 3: Total number of hepatitis B, C positive case in study population

Table 1: Total number of hepatitis B, C positive case in study population

Gender	Total number of hepatitis B, C positive case in study population Screened N= 4976	HBS +ve patients N= 4976	HCV +ve patients N=4976
Females	2002	56	128
Males	2974	119	137
Total	4976	175(3.5%)	265(5.3%)

Table 2: Hepatitis B and C Male positive cases

MALE AGEYEARS	TOTALPATIENTS	HBS +VE	HCV +VE
Up to 10	511	7	3
11-20	1104	21	8
21-30	531	45	35
31-40	344	14	35
41-50	210	15	21
51-60	192	12	22
>60	82	5	13
TOTAL	2974	119	137

Table 3: HBV and HCV Female patients

FEMALE AGEYEARS	TOTAL PATIENTS	HBS +VE	HCV +VE
Up to 10	372	4	0
11-20	498	14	7
21-30	364	12	27
31-40	355	13	47
41-50	198	7	28
51-60	144	5	11
>60	71	1	8
Total	2002	56	128

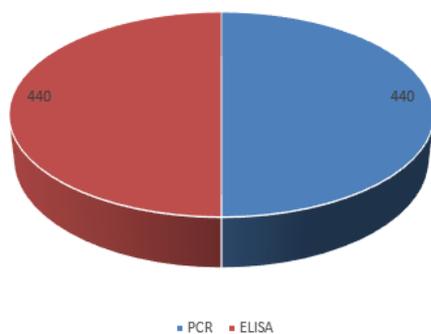


Figure 4: PCR, ELIZA Distribution

**Discussion**

Viral Hepatitis is one of the most common diseases in developing countries and considered as an occupational hazard for health care personals such as medical practitioners, dental practitioners, clinical laboratory workers and dental hygienists [3]. It is spread by blood, blood stained saliva and saliva. The transmission of HBS and HCV occur through parental route by injury with contaminated dental instruments, needles, nasopharyngeal secretions and sexual contacts. Patients carry HBV and may be infectious from 1 to 4 months after infection and surface antigen (HBs Ag) can be detected in blood with symptoms in 2 to 4 months.

The dental surgeons have a high risk of Hepatitis B virus infection about two to three times higher than persons in non-health care professions attributable to occupational exposure. The prevalence of disease is influence by numerous factors which may be modulating its onset. A dentist can play a major role in prevention of hepatitis by considering each and every patient

as a potential carrier of hepatitis. The carriers are at high risk of infectivity thus proper infection control and sterilization protocol should be followed in order to reduce the infection. Dental surgeons are greater risk of exposure than other specialists in medical field as exposure to aerosols during ultrasonic scaling so lay special emphasis on prevention and protection against hepatitis.

The frequency of HBV in our study is low 3.5% as compared to other study conducted at Rawalpindi 7% (5) and Karachi 6.5% (6) while HCV sero-positive cases in present study was 5.3% comparable to other studies as 7% at AFID Rawalpindi (5) and 10.84 % in pregnant women of Lahore [12-26]

In females the HBs Ag is more in age group between 11-20 years while HCV 41-50 years while in males 21-30 years and 31-40 years (Table 1).

This study confirm that Hepatitis is more in males as compared females as in study (6) as compared to other study conducted at Lahore where female population has more HCV than male (13). Thus, the frequency of HBV/HCV in this study suggests a mandatory screening of each patient before initiating dental treatment.

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