ORIGINAL ARTICLE

# PREVALENCE OF HBV AND HCV IN BLOOD DONORS IN HEALTHY MALE DONORS IN KHYBER TEACHING HOSPITAL PESHAWAR, PAKISTAN

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## ABSTRACT

**Objective:** The current study aimed to determine the prevalence of hepatitis B virus (HBV) and hepatitis C virus (HCV) among healthy male blood donors in healthcare facilities in Peshawar.

**Materials and Methods:** Over three months, from March 2020 to May 2020 a total of 300 units of blood records were collected from healthcare facilities in Peshawar. The donated units were serologically screened for hepatitis B surface antigen (HBsAg), antibody to hepatitis B core antigen (anti-HBc), and antibody to hepatitis C virus (anti-HCV).

**Results:** Our study shows seroprevalence of HBV 3.7% and seroprevalence of HCV 1.7% among blood donors at health care facilities in Peshawar. Among the positive cases, the highest prevalence was among the age group 18-25 years (0.6%).

**Conclusion:** The prevalence of Hepatitis B and Hepatitis C among donors in healthcare facilities in Peshawar is comparable with previous studies of Khyber Pakhtunkhwa, Northern Ethiopia, and Kenya. Education and immunization should be initiated to target the high-risk groups.

Keywords-Hepatitis, Blood donors, Health facilities, Transfusion transmitted infection

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## INTRODUCTION

Hepatitis B is an infectious disease caused by the hepatitis B virus (HBV) that affects the liver and is a type of viral hepatitis. It can cause both acute and chronic disease. Globally, more than eighty-one million units of blood are donated by blood donors each year. However, the presence of blood-borne infections in the blood cells of asymptomatic donors is the major cause of transmission of infectious agents through blood transfusion. [1] The most commonly encountered transfusion infections from the viral origin are Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV). Therefore, the World Health Organization (WHO) recommends that all blood collected should be tested for major transfusion transmissible infections (TTIs) caused by these pathogens before donation. [2] The virus is transmitted by exposure to infectious blood or body fluids. In areas where the disease is rare, intravenous drug use and sexual intercourse are the most frequent routes of infection. [3] Other risk factors include working in healthcare, blood transfusions, dialysis, living with an infected person, traveling in countries where the infection rate is high, and living in an institution. The hepatitis B and C viruses cannot be spread by holding hands, sharing eating utensils, kissing, hugging, and coughing. [4]

The World Health Organization (WHO) reports that approximately 350 million people are chronically infected with the hepatitis B virus (HBV) and 170 million people carry the hepatitis C virus (HCV) worldwide. [5] Moreover, it was estimated that about 1.34 million deaths were attributed to hepatitis. In Saudi Arabia, the average prevalence of HBsAg in blood donors ranges from 2.7% to 9.8%. [6] However, the overall prevalence of HCV among blood donors in Saudi Arabia is 1.1%. [7] Findings from a study conducted

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in India also indicated that the magnitude of HBV and HCV among blood donors was 1.76% and 0.19%, respectively, whereas 0.51% and 0.25% of blood donors in China were positive for HBC and HCV infection, respectively. [8, 9] Besides, 12.5% of patients who receive blood transfusion are at risk of post-transfusion Hepatitis in sub-Saharan Africa. [10]

HBV and HCV infections are also a serious public health concern in Pakistan. In a community-based study in Hafizabad, Punjab, HBV infection was prevalent in 4.3% and HCV infection in 6.5% of the residents [11]. Previous studies in Pakistan have reported that 20% of paid blood donors [12] 2.4% of replacement blood donors [13] and 1% of voluntary blood donors [14] had HCV infection, while 10% of paid donors and 5% of replacement donors had HBV infection [15] In the northern part of the country, 2.5% of blood donors have HBV and 5.1% HCV infection. [16]

Studies have not been done in Peshawar among blood donors. We conducted this study to determine the prevalence of Hepatitis B and Hepatitis C among healthy blood donors in healthcare facilities in Peshawar.

## MATERIAL AND METHODS

A cross-sectional study was conducted by a retrospective review of the profiles of 300 donors from March 2020 to May 2020 at the healthcare facilities in Peshawar. The blood donors were either voluntary or replacement donors. The age of the studied donors ranged from 18 to 45 years. The selected donors were healthy according to their clinical histories, and physical examinations, and they fulfilled the suitability criteria for donation. The donated units were serologically screened by enzyme-linked immunosorbent assay (ELISA) (Siemens-BEPIII, Dade Behring, Marburg, Germany) for HBsAg, anti-HBc, anti-HBs, and anti-HCV The recorded blood donors' history and laboratory tests were reviewed by data collectors analyzed with Statistical Package for the Social Sciences version 22 software.

## RESULTS

Our study shows seroprevalence of HBV 3.7% and seroprevalence of HCV 1.7% among blood donors at health care facilities in Peshawar. Among the positive cases, the highest prevalence was among the age group 18-25 years (0.6%) followed by the age group 36-45 (0.3%). Of the 300 blood donors, 94 were unmarried and 204 were married. The seroprevalence of HBV among married was 1.3 % while among unmarried was 2.3%. Similarly, the Seroprevalence of HCV among married was 1.3 % while among unmarried was 0.6%.

**Table 1: Seroprevalence of Hepatitis B and Hepatitis C**

| HBsAg Positive | | Anti HCV Positive | |
|---|---|---|---|
| Number | Percentage | Number | Percentage |
| 11 | 3.7% | 5 | 1.7% |

**Table 2: The distribution of positive HBsAg and anti-HCV tests according to the age groups**

| Age in Years | HBsAg +ve | Anti HCV +ve |
|---|---|---|
| 18-25 | 1.6% | 0.6% |
| 26-35 | 1.3% | 0.6% |
| 36-45 | 0.69% | 0.3% |

**Table 3: Marital status-wise Seroprevalence of HBV and HCV**

| Marital Status | HBsAg +ve | Anti HCV +ve |
|---|---|---|
| Married | 1.3% | 1% |
| Unmarried | 2.3% | 0.6% |

## DISCUSSION

Blood transfusion is an important component of health care in which millions of lives are being saved each year through this procedure. In the present study, all of the donors were males and were aged between 18 and 45 years. Similar findings were reported in previous studies. A study conducted in Karachi shows seroprevalence of HBV 4.7% and HCV 3.6% among healthy young voluntary blood donors. [17] The reason for this difference can be explained based on the level of awareness in rural areas, safety protocols, hygiene, and comparatively less screening for TTIs.

When compared globally, results were similar to the seroprevalence of HBV at 1.79% and HCV at 1.3% in northern Ethiopia, and also the seroprevalence of HBV of blood donors in Kenya is 3.4%. [18, 19] Much Higher HBV seroprevalence is observed in Gabon 7.28. [20] Lower seroprevalence is observed in Iran at 1.07% for HBV and 0.59% HCV. [21] The different results of prevalence in different areas of the World are due to different risk factors that people are exposed, differences in sensitivity of screening tests and effectiveness of program to select blood donors.

The relatively lower HBV seropositivity among donors who were married might be attributed to marriage stable the sexual network (a group of individuals connect-

ed through sexual contact). Moreover, unmarried people have a probability of a wider sexual network, leading to more sexual partners, which in turn elevates their risk of acquiring HBV results for HCV seroprevalence show that married donors are 1%, which is greater than married 0.6%. This may also be due to the lesser number of screenings for HCV and also association of HCV with transmission via sexual contact. Age-wise seroprevalence of HBV is 1.6% for 18-25 years, 1.3% for 26-35%,0.6% for 36-45. Also, the age-wise prevalence of 0.6% for 18-25,0.6% for 26-35,0.3% for 36-45 results of age-wise seroprevalence shows a decrease in positivity for HBV and HCV with an increase in age. However, it may also be due to the lesser number of elder people who are willing to donate blood so are therefore screened less.

## CONCLUSION

From this study, we concluded that Seroprevalence of HBV in blood donors is 3.7% and 1.7% for HCV. Major risk factors for HBV and HCV include unsterilized dental Procedures, surgery, blood transfusion, lack of awareness, and lack of proper screening

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under

**khan UA:** Concept, planning, study design, study conduction, critical review, analysis, manuscript writing.

**Dujah KU:** Critical review, discussion, interpretation, manuscript writing, study conduction.

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Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.