

# Frequency of Hepatitis C and Hepatitis B Virus in Rural Areas of Pakistan, An Experience at Tertiary Care Hospital in Khurrianwala

Munazza Choudary<sup>1</sup>, Asma Rehman<sup>1</sup>, Sadeea Shafique<sup>2</sup> and Zarrin Khaliq Chaudari<sup>1</sup>

## ABSTRACT

**Objective:** To find out the frequency of Hepatitis C virus and Hepatitis B virus in Rural areas of Pakistan, an experience at a Tertiary Care Hospital in Khurrianwala.

**Study design:** Cross-sectional / comparative study.

**Place and Duration of study:** This study was conducted at the Department of Pathology, Abwa Hospital and Research Centre, Khurrianwala, Faisalabad from 01.01.2019 to 31.03.2019.

**Materials and Methods:** The study included a total of 1000 patients visiting the screening camp. The screening camp was arranged to screen the individuals for viral hepatitis B and C in the hospital premises. General public, especially of the surrounding villages, were informed about the location and timings of the camp.

All healthy, asymptomatic adults not previously screened were included. Individuals previously tested and confirmed of disease, or on treatment for HBV/HCV, were excluded from the study.

**Results:** In this study, a total of 1000 patients were screened, each for hepatitis B and C virus. All these patients belonged to rural areas of khurrianwala. Among these patients 489 (48.9%) were HCV positive and 511 were (51.1%) found to be HCV negative, whereas 47 (4.7%) were HBV positive and 953 (95.3%) were found to be HBV negative.

**Conclusion:** In developing countries like Pakistan, with high rates of HCV and HBV infection rates, screening is mandatory for early diagnosis and ICT is easy, practical, economical and convenient. However, patients should be guided to get ELISA done to avoid false positive results.

**Key Words:** Hepatitis C virus (HCV), Hepatitis B virus (HBV), ICT, Screening

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## INTRODUCTION

Hepatitis B and Hepatitis C virus infections are one of the major health problems encountered worldwide. It is especially true for developing countries like Pakistan.<sup>1</sup>

Hepatitis C virus (HCV) is an enveloped single stranded RNA virus which belongs to the flaviviridae family of viruses. It is responsible for the majority of viral hepatitis and it mainly affects the liver.<sup>2,3</sup>

Infected blood along with blood products and other body fluids is the major source of HCV infection.<sup>4</sup> Whereas high risk behaviours and lifestyles are leading cause of HCV infection in young adults;<sup>5</sup> use of infected razors, infected sexual partner, tattooing and intravenous drug injecting.<sup>4</sup>

<sup>1</sup>. Department of Pathology / Biochemistry<sup>2</sup>, Abwa Hospital and Research Centre, Khurrianwala, Faisalabad.

Correspondence: Munazza Choudhary, Associate Professor of Pathology, Abwa Hospital and Research Centre, Faisalabad.  
Contact No: 0311-7131757  
Email: mahad\_azam@yahoo.com

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Other risk factors include occupational exposure, dental procedures, reuse of syringes, household contact and perinatal exposure.<sup>4,5</sup>

A worldwide prevalence of about 3% has been estimated by the World health organization (WHO) which means approximately 170 million people are infected with HCV globally.<sup>6,7</sup> Among the public health issues of the 21st Century, one major public health issue is being infected with HCV.<sup>8</sup> In Asia pacific region the prevalence rate of HCV is from from 4% to 12%.<sup>6</sup>

In Pakistan, 6% of the total population, that is more than 10 million people are infected with HCV.<sup>6</sup> HCV-infected people act as a reservoir for transmission of infection to others. HCV infection leads to a high rate of mortality and morbidity due to risk of developing chronic liver disease, cirrhosis, and primary hepatocellular carcinoma.<sup>5</sup>

Hepatitis B virus (HBV), is a partially double-stranded DNA virus and a member of the Hepadnaviridae family of viruses.<sup>9</sup> HBV infection is a serious global health problem. More than 240 million people in the world are estimated to be infected with HBV according to WHO statistics.<sup>10</sup>

Transmission of HBV is by exposure to infected blood or blood products, by body fluids, by intravenous drug abuse, by sexual contact with infected persons, or vertically transmitted from mother to child in utero.<sup>10</sup>

Active infection by HBV is identified by laboratory testing for Hepatitis B surface antigen (HBsAg) which is the serologic hallmark to detect active infection by HBV. HBsAg is typically detected by a sensitive immunoassay that uses antibody to hepatitis B surface antigen to capture the antigen in the sample.<sup>11</sup>

HBsAg and Anti HCV antibodies are effectively detected by immunoassays,<sup>11</sup> but have many limitations in endemic regions of the world with poor resources. The limitations include high cost of facility, specialized equipment, trained technicians, and continuous supply of electricity. All of these factors lead to high cost of tests which are not afforded by lower socio economic class of third world countries like Pakistan. The advantages include reduced cost of facility, early diagnosis which leads to timely treatment in poor regions of the world.

## MATERIALS AND METHODS

It is a cross sectional descriptive study conducted at the Department of Pathology in Abwa Hospital, Khurrianwala. The study data was collected over a period of three-months from 01.01.2019 to 31.03.2019. The study included a total of 1000 patients visiting the screening camp. A screening camp to screen the individuals for viral hepatitis B and C, was arranged in the hospital premises and general public, especially of the surrounding villages, were informed about the location and timings of the camp. All healthy, asymptomatic adults not previously screened were included. Individuals previously tested and confirmed of disease, or on treatment patients for HBV/HCV, were excluded from the study. After reassurance and informed consent of the individual, 2 ml of venous blood was drawn from the antecubital vein by aseptic technique and collected in the sample tube. Screening was done with Healgen One Step Rapid Test, which is a rapid chromatographic immunoassay for Anti-HCV antibodies and HBsAg (Healgen Scientific LLC, Houston, USA). It has a relative sensitivity of 98.13%, relative specificity of 98.9% and an accuracy of 98.8% for Anti-HCV antibodies and a relative sensitivity of 99.19%, relative specificity of 98.8% and an accuracy of 99% for HBsAg. For Anti-HCV, 30µL of serum or plasma was added to the S well of the test cassette followed by addition of 40µL of sample buffer immediately. Read and interpret the results after 15 minutes. For HBsAg, approximately 90µL of serum or plasma was added into the S well and results were read and interpreted after 15 minutes. Test was considered positive if two colored lines appeared in reading window opposite the place marked as C (control) and T (test) on the test cassette, negative if only one colored

line appeared against C mark and invalid if no colored line appeared against the C mark. Invalid tests were repeated. Those found HBV or HCV positive were guided to reconfirm with ELISA.

All statistical analyses were carried out using statistical program for social sciences (SPSS) version 20.0. The analyzed variables included age as the numerical data, for which mean and standard deviation were calculated. Percentages were used for qualitative data like frequency of HBV & HCV.

## RESULTS

In this study, a total of 1000 patients were screened, each for hepatitis B and C virus. All these patients belonged to rural areas of khurrianwala. Among these patients 489 (48.9%) were HCV positive and 511 were (51.1%) turned HCV negative. Among HCV positive 242 (49.5%) were males and 247 (50.5%) were females. All these HCV positive patients were of different age groups. The minimum age was 17 years and maximum was 80 years, mean  $\pm$  S.D of age was 42.7 $\pm$ 11.2. Percentage of HCV positive in different age groups is shown in the table I.

**Table No.1: Percentage of HCV positive patients in different age groups**

Age groups	Number of positive patients	Percentage of positive patients
1 to 20 Years Positive	5	1.0 %
21 to 40 Years Positive	237	48.4 %
41 to 60 Years Positive	222	45.3 %
61 to over all	25	5.3 %

Among these patients 47 (4.7%) were HBV positive and 953(95.3%) turned HBV negative. Among HBV positive 39 (3.9%) were males and 8 (0.8%) were females. All these HBV positive patients were of different age groups. The minimum age was 20 years and maximum was 62 years, mean  $\pm$  S.D of age was 35 $\pm$ 10.7. Percentage of HCV positive in different age groups is shown in the table 2.

**Table No.2: Percentage of HBV positive patients in different age groups**

Age groups	Number of positive patients	Percentage of positive patients
1 to 20 Years	1	2.1 %
21 to 40 Years	33	70.3 %
41 to 60 Years	13	27.6 %

## DISCUSSION

HCV and HBV is worldwide health issue, past studies have demonstrated substantial morbidity and mortality from both intense contaminations and unremitting complications. In the United States, of the foreseen 3–4

million people with hepatitis C, just roughly a large portion of a million have been dealt with, and the rest have not been recognized. Most conclusions of hepatitis C are made by good fortune, when people with asymptomatic hepatitis C endeavor to give blood or when they have blood drawn as a major aspect of routine therapeutic assessments or during protection physical assessments.<sup>12</sup>

Different countries develop specific approaches for prevention, detection and control and are critical in assessing the prevalence of these viruses. Systematic review and meta-analysis of the prevalence of HIV, HBV and HCV infections in Sudan shows that reducing the overall burden of these viral infections would require new interventions and national policies and identification of infection on priority basis.<sup>13</sup>

This study is designed to evaluate the prevalence and effective detection of hepatitis C and B virus in the general population of Khurrianwala. In our study, a large portion of the people positive for hepatitis B and C belong to low class financial status and country regions. Pakistan lies between center to low salary nations with more than one-twelfth of work power unemployed, where more than one fifth of the populace dies down in neediness and major portion of the populace is unskilled.<sup>12</sup>

Concurring to Populace Census Organization, Pakistan has 165.8 million people where urban population is 32.5%. It has been well reported that HBV disease is more predominant in low socio-economic settings as in Indonesia and so also in Pakistan.<sup>12, 16</sup>

In our study 1000 asymptomatic, healthy individuals, who were not suffering from hepatitis and any other liver disease were enrolled and screened for hepatitis C and hepatitis B virus. All the subjects belonged to low socio economic families. Hepatitis C was found in 48.9 % of individuals. Females showed a higher positive ratio about 50.5 %. There is no vertical transmission of hepatitis C documented in literature. Below 19 years of age no patient was found hepatitis C positive which is in accordance with past studies. Among 21 to 40 years old individuals 48.4 % were positive for HCV, this is highest prevalence group followed by 41 to 60 Years age group. Among 1000 patients screened 47 (4.7%) were HBV positive and 953(95.3%) turned HBV negative. Among HBV positive 39 (3.9%) were males and 8 (0.8%) were females. Highest positivity was observed in 21 to 40 years age group (3.3%). The tall level of anti-HBsAg within the more youthful age is a characteristic of the dynamic endeavors of EPI after inclusion of HBV immunization within the schedule immunization practice. Public mindfulness plays a much vital part within the avoidance and control of contaminations particularly those having no appropriate or particular treatment and remedy.<sup>12, 16</sup>

In a study, 751 of 16,400 patients (4.57%) were found to positive HCV Ab from 1998-2002 among Pakistanis

in the Middle East, with the largest age group from 41-50 years of age.<sup>7</sup> Among male blood donors in Karachi, the seroprevalence of HCV was 1.8% with a trend of increasing proportion of positive donors from 1998-2002.<sup>14</sup> In another study carried out in urban population of Multan it was observed that prevalence of HCV was about 6.68%. It was highest among mature males (8.92%) as compared to young males (6.66%) and elderly males (7.69%). The prevalence of hepatitis C was higher (5.68%) in elderly females as compared to mature females (5.03%) and young females (5.17%). In the study it was found that contaminated barber, parlor tools were main factors for transmission of the virus i.e. about 23.07%. Unscreened blood transfusion contributed 17.94%, contaminated dentist equipments 17.94%, infected syringes 15.38%, and contaminated surgical equipment 12.82%.<sup>15</sup>

The risk factor included the ongoing episode of HBV contamination detailed from Larkana (Sindh region of Pakistan) has been seen as the intravenous medication use. The restrictions of our examination incorporate the absence of data about HBV related hazard elements like different blood transfusions, hemodialysis, dental techniques, frequent hair stylist visiting and horizontal transmission modes. Likewise, the target populaces like intravenous drug clients and habitual are increasingly inclined and helpless against get and transmit disease much of the time and needs specific consideration.<sup>12</sup>

Our study highlights and advocates the importance of screening for early detection.<sup>16</sup> Numerous studies document the value of screening, particularly high risk individuals, primarily to play down budgetary burden and to suggest recommendations for the treatment and prevention of transmission, especially in people infected with HBV. The American Gastroenterological Association advocates unequivocally that individual from high-hazard crowds, even, who are asymptomatic, ought to be screened for proof of HCV positivity.<sup>17, 12</sup>

Although ICT devices are not best to predict the precise prevalence of HCV infection however in most health centers ICT devices are used to check HCV infection.<sup>18</sup>

It is suggested that positive cases should be followed by ELISA and PCR.<sup>19, 20</sup>

## CONCLUSION

**Conclusion:** In developing countries like Pakistan, with high rates of HCV and HBV infection rates, screening is mandatory for early diagnosis and ICT is easy, practical, economical and convenient. However, patients should be guided to get ELISA done to avoid false positive results.

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**Author's Contribution:**

Concept & Design of Study: Munazza Choudary  
 Drafting: Asma Rehman  
 Data Analysis: Sadeea Shafique, Zarrin Khaliq Chaudari  
 Revisiting Critically: Munazza Choudary, Asma Rehman  
 Final Approval of version: Munazza Choudary

**Conflict of Interest:** The study has no conflict of interest to declare by any author.

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