



E-ISSN: 2320-7078

P-ISSN: 2349-6800

JEZS 2018; 6(4): 638-641

© 2018 JEZS

Received: 10-05-2018

Accepted: 11-06-2018

**Rashid Ahmad**

Institute of Biotechnology and  
Genetic Engineering, The  
University of Agriculture  
Peshawar, Pakistan

**Zakirullah**

Department of Biotechnology,  
Quaid-e- Azam University  
Islamabad, Pakistan

## Prevalence of hepatitis B and hepatitis C infection in Matta, Swat, Khyber Pakhtunkhwa, Pakistan

**Rashid Ahmad and Zakirullah**

### Abstract

Pakistan carries one of the world's highest burdens of chronic hepatitis and mortality due to liver failure and hepatocellular carcinomas. However, national-level estimates of the prevalence of and risk factors for hepatitis B and hepatitis C are currently not available. The current investigation determines the frequency of HBV and HCV in the patients of Matta, Swat. Four hundred (400) patients were diagnosed with hepatitis within a time period of eight months from (1st September 2017 to 30th April 2018). All the blood samples were examined by Immune-Chromatographic Kit (ICT). Out of 400 patients, a total of 32 (8.4%) patients were reported positive for HBV and HCV. Among these patients, 22(68.75%) and 10(31.35%) were positive for HBV and HCV respectively. Conclusively, The Hepatitis B prevalence was higher as compared to Hepatitis C. In addition, among males, a high prevalence was recorded than females. In this study, it was reported that that primary high prevalence of HBV and HCV is in majority cases due to the lack of public health awareness on the transmission of disease.

**Keywords:** Hepatitis B, Hepatitis C, Antigen, ICT, Tehsil Matta, Swat

### 1. Introduction

Various liver attacking viruses (Hepatitis A, B, C, D, E, and G) are mainly responsible for the development of viral Hepatitis. According to WHO viral Hepatitis is responsible for 1.34 million deaths in 2015 and consider the eighth highest cause of mortality worldwide. Among viral hepatitis, HBV and HCV are responsible for 96% of mortality globally. It is estimated 257 million people are living with chronic HBV and approximately 71 million people chronically infected with HCV (WHO 2017 report). Hepatitis B virus infection is highly endemic in Pakistan and nine million persons are living with HBV and its rate on the steady rise <sup>[1]</sup>. HBV infection is characterized by liver cirrhosis, hepatocellular carcinoma, and end-stage liver diseases. HBV was discovered by Baruch Blumberg in 1963 <sup>[2]</sup>. HBV is small, partially double-stranded enveloped virus belong to family hepadnaviridae and depict highly compact organization. Analysis indicated that HBV is spherical in shape about 42 nm in diameter and having approximately 3.2 kb genome size <sup>[3]</sup>. HCV is RNA virus and was first time identified in 1988. HCV is positive single-stranded RNA enveloped viruses that belong to family Flaviviridae and Genus Hepacivirus. HCV is icosahedral in shape and 56-65 nm in diameter, and approximately 9.6kb long genome size <sup>[4]</sup>, Hepatitis C virus (HCV) in Pakistan is highly endemic, with around 6.8% of the general population infected with HCV. Approximately 6% of the population of Pakistan is actively infected with HCV <sup>[5]</sup> In United States, 2.7 million people are infected with HCV and causes 40% of all chronic liver disease (CLD) and it is the most widely sign of liver transplantation <sup>[6]</sup>. India, Pakistan, and Bangladesh have the highest rates of infection, with a prevalence ranging from 2 to 8% in different population groups <sup>[7]</sup> Most of the people infected with HBV and HCV remain asymptomatic <sup>[8]</sup> The prevalence of HBV in Balochistan is 9.3% followed by 2.4%, 2.3% and 1.31% in Punjab, Sindh, and KP respectively. And the lowest rate of HBV 1.1% is reported in Khyber Pakhtunkhwa <sup>[9]</sup> On the other hand highest rate of HCV is found in Punjab 6.7% and the lowest rate is reported in Khyber Pakhtunkhwa which is 1.1%. The frequency of HCV in Sindh is 5% where's in Balochistan is 1.5% <sup>[10]</sup>. Different factors are responsible for the high prevalence of HBV and HCV such as Intravenous Drug Use (IDU) and other reported risk factors include unscreened blood transfusion, vertical transmission, and by sex with infected partner, occupational exposure and tattooing use of contaminated needles and syringes by health workers in hospital and unhygienic practices by barbers <sup>[11]</sup> Due to poor socioeconomic conditions and lack of proper health facilities and public awareness in Tehsil Matta, Swat, the

**Correspondence**

**Rashid Ahmad**

Institute of Biotechnology and  
Genetic Engineering, The  
University of Agriculture  
Peshawar, Pakistan

current study was conducted in Tehsil Head Quarter Hospital Matta, Swat to check the prevalence of HBV and HCV.

**2. Materials and Methods**

**2.1 Collection of Samples**

A survey was conducted in Tehsil Head Quarter Hospital (THQ) Matta, KPK Pakistan from 1st September 2017 to 30 April 2018 in order to identify infected patients with HBV and HCV. In total 400 blood samples were collected from Hepatitis B and C infected patients. A number of 170 females and 230 males were interviewed in order to collect information regarding their, age, gender economic conditions, and marital status. After getting the history, each individual was subjected to laboratory tests as follows. Five (5) ml of venous blood was collected under strict aseptic conditions from ante cubital vein in a sterile disposable plastic syringe, it was then transferred to a plastic tube without anticoagulant and allowed to clot at room temperature. The blood was then centrifuged after clotting 30 mins to extract serum. Serum Alanine aminotransferase (ALT) level was estimated on each sample before storage. Afterward, the samples were stored at

-20 °C for further use.

**2.2 Immuno-Chromatographic Tests (ICT) SD Device**

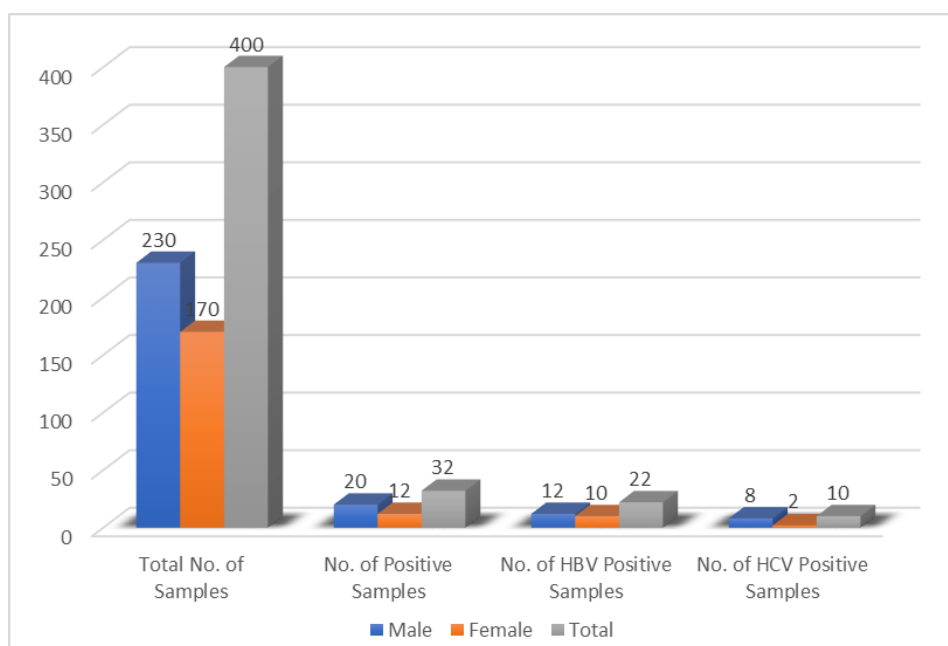
ICT was used to analyze blood samples. In accordance with the instruction given by the manufactures, 400 serum samples were tested for Hepatitis B Surface Antigen (HBS Ag) and Anti-HCV through Immuno-Chromatographic Technique. This technique is based upon the theory that antigen or antibodies in the solid phase can be detected by complementary antibody or antigen. These complementary Abs were labeled with an enzyme that has the ability to disintegrate a chromogenic substrate. When the substrate of that enzyme was provided the presence of antigen or antibody can be confirmed by the production of a colored end product.

**3. Results**

Out of 400 patients, a total of 32 (8%) patients were reported positive for HBV and HCV. Among these 22(68.75%) and 10(31.35%) were positive for HBV and HCV respectively. The data was recorded in Table 1 and also illustrated in the Fig.1 below:

**Table 1:** Gender wise prevalence of HBV and HCV.

Gender	Total No. of Samples	No. of Positive Samples	No. of HBV Positive Samples	No. of HCV Positive Samples
Male	230	20 (8.69%)	12 (60%)	8 (40%)
Female	170	12 (7%)	10 (83%)	2 (16.6%)
Total	400	32 (8%)	22 (68.75%)	10 (31.35%)



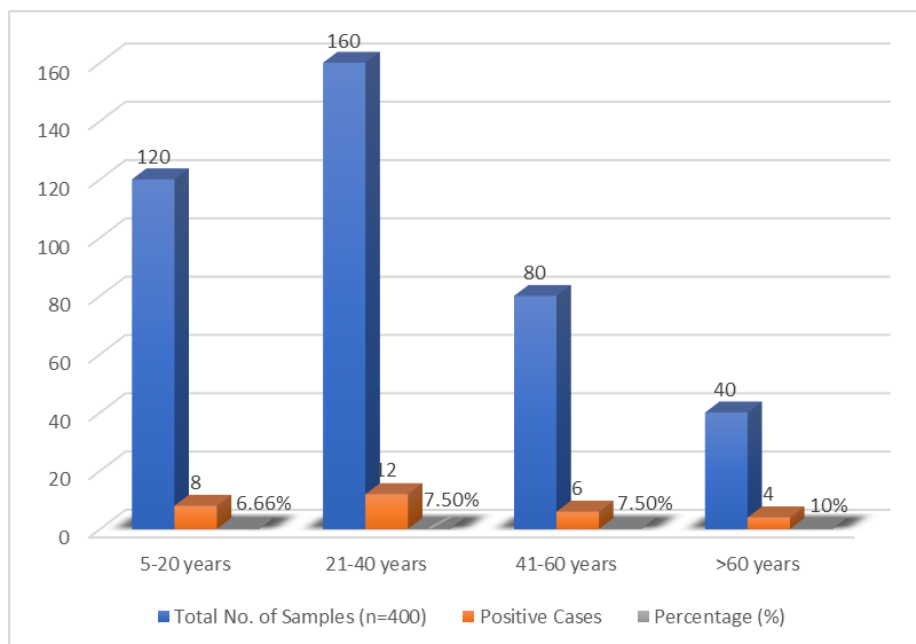
**Fig 1:** Gender wise prevalence of HBV and HCV.

A total number of Four hundred (400) patients were included in the present study that was divided into four groups on the basis of ages, i.e. (5-20), (21-40), (40-60) and (> 60) (Table.2: Fig.2). Out of the total 400 cases, 120 individuals were included in the group (5-20) in which 6.66% (8) cases were positive for Hepatitis B and Hepatitis C virus, 160 were

included in group (21-40) in which 7.5% (12) were positive, 80 were included in group (41-60) in which 7.5% (6) were Hepatitis B and Hepatitis C virus-positive and 40 cases were included in group (> 60) in which 10% (4) cases were positive for Hepatitis B and Hepatitis C virus. Majority of the patients were seen between 21 to 40 years of age.

**Table 2:** Age wise distribution of Hepatitis B and C viruses during the current study (n=400).

Age Group	Total No. of Samples (n=400)	Positive Cases	Percentage (%)
5-20 years	120	8	6.66%
21-40 years	160	12	7.5%
41-60 years	80	6	7.5%
>60 years	40	4	10%



**Fig 2:** Age group wise distribution of HBV and HCV in the studied age groups.

#### 4. Discussion

Viral Hepatitis is a blood transmissible disease its rate is higher in Pakistan due to unavailability of proper treatment, no proper sterilization, and unawareness of peoples. Viral hepatitis is the major health problem in the developing countries today including Pakistan [12]. Hepatitis B and C infections are blood-borne and are transmitted through unscreened blood transfusions, inadequately sterilized invasive medical devices and reuse of syringes and razors [13]. The contaminated dental instruments also play an important role in HBV infection because of the presence of HBsAg in the saliva of acute and chronic hepatitis B patients. In the present study the hepatitis B and C present in 32 (8.4%) cases with patients having HCV as 10(31.35%) and HBV in 22(68.75%) cases. As compare to present study the Prevalence of Hepatitis B in different parts of our country is among 2.11% to 5.46% [14]. Another study in District Dir (2.6%) and (16.2%) and highly founded (17.8%) in males followed by females (14.1%) [15, 16].

Blood screening method is effective to reduce the risk of HBV, HCV infections but still, there is a dire need of using more exact viral detection technique, in order to treat the patients with HBV, HCV infections.

#### 5. Conclusion

The present study showed that the Hepatitis B prevalence was higher as compared to Hepatitis C. In addition, among males, a high prevalence was recorded than females. It is suggested that best care should be implemented during surgical procedures or treatments and blood transfusions. Further awareness campaign against Hepatitis B and C infections should be approved to instruct the common people on the risk factors and rout of transmission in order to decrease the rate of infection.

#### 6. Acknowledgments

Nothing is possible without the power of Allah, the Holy Prophet Hazrat Muhammad (Peace Be upon Him), the greatest educator, the everlasting source of guidance and knowledge for humanity. I am Thankful to the Staff of Tehsil Head Quarter Hospital, Matta. I would like to acknowledge

my Teachers, parents, brothers, and friends for their constant support, prayers and best wishes. They uplifted my morale whenever I needed. They are the most valuable treasure in my life and my appreciation for them will never end.

#### 7. References

1. Ali M. Hepatitis B virus in Pakistan: A systematic review of prevalence, risk factors, awareness status, and genotypes. *Virology Journal*. 2011; 8(1):102.
2. Saeed U. Hepatitis B and hepatitis C viruses: a review of viral genomes, viral induced host immune responses, genotypic distributions, and worldwide epidemiology. *Asian Pacific journal of tropical disease*. 2014; 4(2):88.
3. Yates S. Quantitative detection of hepatitis B virus DNA by real-time nucleic acid sequence-based amplification with molecular beacon detection. *Journal of clinical microbiology*. 2001; 39(10):3656-3665.
4. Morozov VA, Lagaye S. Hepatitis C virus: Morphogenesis, infection, and therapy." *World Journal of Hepatology*. 2018; 10(2):186.
5. Umer M, Iqbal M. Hepatitis C virus prevalence and genotype distribution in Pakistan: Comprehensive review of recent data. *World journal of gastroenterology*. 2016; 22(4):1684.
6. Khan MY. Ratio of Hepatitis B and Hepatitis C viral infection in pregnant women of Haripur KPK, Pakistan." *Bio Medicine and Surgery*. 2017; 1(2):73-76.
7. Khan J. Prevalence of hepatitis B and C infection in district Mardan, Khyber Pakhtunkhwa, Pakistan, 2017.
8. Strader DB. Diagnosis, management, and treatment of hepatitis C. *Hepatology*. 2004; 39(4):1147-1171.
9. Khan MY. (2017). Ratio of Hepatitis B and Hepatitis C viral infection in pregnant women of Haripur KPK, Pakistan. *Bio Medicine and Surgery* 1(2): 73-76.
10. Basit A. Prevalence of Hepatitis B and C infection in Pakistan. *J Inf Mol Biol*. 2014; 2(3):35-38.
11. Wuytack F. Sexual transmission of Hepatitis C Virus infection in a heterosexual population: A systematic review. *HRB Open Research* 1, 2018.
12. Prevalence of Hepatitis B and C in Urban Patients Undergoing Cataract Surgery, *Pak J Ophthalmol*. 2013,

29(3).

13. Altaf Bosan, Huma Qureshi, Khalif Mohamud Bile, Irtaza Ahmad. A review of hepatitis viral infections in Pakistan, National Institute of Health, Pakistan Medical Research Council, WHO, 2010, 60(12).
14. Fawad Khan, Haji Akbar, Hayat Khan MI. The prevalence of HBV infection in the cohort of IDPs of war against terrorism in Malakand Division of Northern Pakistan *BMC Infect Dis.* 2011; 11:176. PMID: PMC3141412.
15. Chaudhary IA, Samiullah Khan SSR, Masood Sardar MA, Mallhi AA. Seroprevalence of hepatitis B and C among the healthy blood donors at Fauji Foundation Hospital, Rawalpindi. *Pak. J Med. Sci.* 2007; 23:64-7.
16. Prevalence of Hepatitis B and C Infection in District Dir, Khyber-Pakhtunkhwa, Pakistan, Rahimullah, Saif-ul-Islam, Sulaiman Bahadar, 10.5829/idosi.wjz.2015.10.2.94250.