Prevalence and Risk Factors of hepatitis B and C infections in general population of Tehsil Arifwala

Mahtab Ahmad¹, Muhammad Kamran³, Haroon Amin³, Saba Zafar³, Samra Asghar⁶, Uswa Siddique⁶, Aimen Khalid¹, Alia Sarfraz⁴, Mohsin Khurshid⁵, Irfan Ullah⁷

¹ Faculty of Allied Health Sciences, Riphah International College, Dera Ghazi Khan, Pakistan  
² Department of Medical Laboratory Technology, Islamabad Medical & Dental College Islamabad, Pakistan  
³ Department of Biotechnology, The Women University Multan, Multan, Pakistan  
⁴ Faculty of Rehabilitation and Allied Health Sciences, Riphah International University Faisalabad Campus, Faisalabad, Pakistan  
⁵ Department of Microbiology, Government College University Faisalabad, Pakistan  
⁶ Department of Forensic Medicine, Islamabad Medical & Dental College Islamabad, Pakistan  
⁷Department of Life Sciences, School of Science, University of Management and Technology (UMT), Lahore, Pakistan

A R T I C L E I N F O

Key Words: Prevalence, Hepatitis B virus, Hepatitis C virus, Risk Factors


*Corresponding Author: Mohsin Khurshid
Department of Microbiology, Government College University Faisalabad, Pakistan
mohsinkhurshid@gcuf.edu.pk

Received Date: 8th June, 2022  
Acceptance Date: 22nd June, 2022  
Published Date: 30th June, 2022

I N T R O D U C T I O N

Hepatitis due to HBV and HCV is extremely prevalent around the globe and a substantial burden is exerted by these problematic pathogens on the health care settings. According to the WHO, over 350 and 250 million individuals worldwide are estimated the chronic carrier of HBV and HCV, respectively [1]. Significantly high global morbidity and mortality are associated with them, and approximately one million deaths per annum are attributed to HBV and HCV-related liver diseases and their sequelae of hepatocellular carcinoma [2]. By the rough estimation of WHO, approximately 4.3 million individuals are infected by HBV in the Eastern Mediterranean region, each year [3]. Pakistan was also considered one of the most prominent countries with a 7% prevalence of HBV in the late 1980s, it was classified as a country with an intermediate prevalence of HBV [4]. It has been estimated that the...
economic burden due to chronic HCV infections exceeds $10 billion/ year, in the USA alone [5]. Unsafe and contaminated blood products, unhealthy dental procedures, contaminated barber tools, catheters, tattooing, unsafe sexual intercourse without precautionary measures, and different fluids of the body are the main sources of the spread of the causative agents [6]. HCV and HBV are the major etiological factors involved with hepatocellular carcinoma (HCC). Globally, of all tumor types, the HCC is the 5th most prevalent tumor, and 3rd leading cause of cancer-related deaths [6,7]. When these infections are accompanied by inflammatory reactions, destruction of the hepatocytes triggers the regeneration and scar formation (fibrosis), which then ultimately can lead to liver HCC and cirrhosis [8]. Hepatitis B virus is responsible for transient as well as chronic infections of the liver. Transient infections have a short span of a few months, while chronic infections have a long course [9]. It is estimated that transient hepatitis B infections result in serious illness, of which only 0.5% end with incurable fulminant hepatitis [10]. Chronic infections pose more serious consequences with 25% of the cases terminating permanent liver cancer [11]. The death toll due to liver cancer related to Hepatitis B virus infections reaches up to one million per year, worldwide. HBV has a very high mortality rate. Globally, a population of about 257 million has been estimated to have long-life chronic HBV infections. By an estimation, chronic hepatitis leading to liver cirrhosis, along with hepatocellular carcinoma results in 887,000 deaths/year, worldwide. Transmission of these deadly pathogens may occur through unprotected sexual contact, sharing the needles, unsterile surgical and medical equipment including syringes, scissors and cutters, and from mother to the fetus during birth. In Pakistan the percentage of infection is 81.45% due to infected needles and 10.62% because of unhealthy dental and surgical procedures. The WHO's global hepatitis report 2015 estimated that 71 million individuals were positive for HCV, which makes up 1% of the world's population. 2.3 million Individuals also had co-existence of HIV along with HCV infection. Uneven distribution of HCV infection is observed in the world, but the highest prevalence of HCV infections is seen in Eastern Mediterranean and The European. The individual prevalence rates in different cities of Punjab and provinces are as in Gujranwala 0.4-31.9%, in Lahore 23.8%, in Faisalabad 16% and 16% in Islamabad. While in Gilgit Baltistan is 25.7%, in KPK province 1.5% and Sindh is 1.1-9% [12]. Similarly, screening of blood donors showed 2.60% positive results for anti-HCV patients in CMH Peshawar, Pakistan [13]. In various areas of the world, and also in Pakistan, the sero epidemiological various studies and research have been conducted in past, but there is a lapse in available epidemiological data on HBV and HCV in Tehsil Arifwala, which is still much required and questioned. The present study showed a true picture of the cumulative prevalence of infections caused by Hepatitis B and Hepatitis C virus and made the comparison possible with available data on HCV and HBV in other cities of Pakistan.

M E T H O D S

For estimating the seroprevalence of HBV and HCV in district Arifwala, province Punjab, a descriptive cross-sectional study was conducted and 300 individuals were screened by ICT kit method followed by confirmation through ELISA. Immunochromatographic tests (ICT) were used to screen for HBV and HCV-positive samples. According to the manufacturer’s directions, accurate Acon (Acon, USA) strips were utilized. ICT-positive samples were subsequently confirmed through ELISA. SPSS version 23.0 and Microsoft Excel 2016 were used for the data analysis.

R E S U L T S

Out of 300 screened individuals, 24% (n=72) were found positive for either HBV or HCV. Prevalence of HBV was 14% (n=42) followed by HBV with 10% (n=30). Of tested population, 71.7% (n=215) were male and 28.3% (n=85) were female. Prevalence of viral hepatitis was high in males (18%, n=54) followed by females (6%, n=18). The patient’s age ranged from a minimum of 13 years to a maximum of 63 years. With the highest frequency, 79.7% (n=239) of individuals were adults of age between 25-64 years followed by 20% (n=60) of young ones who fell in the age group 15-24 years, and only 0.3% (n=1) children of age 13 years. Marital status of 68.67% (n=200) was ‘married’ while 33.33% (n=100) person were unmarried. By occupation, the highest proportion was of shopkeepers with 25.3% frequency, followed by the farmers, teachers, and health care personnel with frequencies of 17.7%, 16.7%, and 14.7%, respectively. It is interesting to note that the highest number of tested individuals were under matriculation in their studies with 34.7% frequency, followed by persons with the education of FA/F.Sc with 32% frequency. The person who was master’s and M. Phil counted for only 5.3% and 0.7% of the total sample population (Table 1).

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>Number (N)</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>85</td>
<td>28.3%</td>
</tr>
<tr>
<td>Male</td>
<td>215</td>
<td>71.7%</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Children (0-14 Years)</td>
<td>1</td>
<td>0.3%</td>
</tr>
<tr>
<td>Youth (15-24 Years)</td>
<td>60</td>
<td>20.0%</td>
</tr>
<tr>
<td>Adults (25-64 Years)</td>
<td>239</td>
<td>79.7%</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>200</td>
<td>66.67%</td>
</tr>
<tr>
<td>Unmarried</td>
<td>100</td>
<td>33.33%</td>
</tr>
<tr>
<td>Businessman</td>
<td>31</td>
<td>10.3%</td>
</tr>
<tr>
<td>Farmer</td>
<td>53</td>
<td>17.7%</td>
</tr>
</tbody>
</table>
Farmers were HCV positive followed by 7 with reactive HBsAg (Table 2). Of the tested population, the highest frequency of viral hepatitis. Both HBV and HCV were prominent in health care workers with 3% (n=9) and 2.66% (n=8) prevalence, followed by shopkeepers with 2.66% (n=8) and 4.66% (n=14) prevalence of HBV and HCV respectively (Figure 1).

**Table 1:** Overview of collected data for estimating seroprevalence of HBV and HCV in Arifwala

Out of 42 HCV positive patients, 9.5% (n=4) were also detected positive for HBsAg, while 90.5% (n=38) were negative for HBsAg. With respect to the total population of samples, 1.3% (n=4) individuals were found infected with HBV as well as HCV (Table 2).

**Table 2:** Co-existence of HCV with reactive HBsAg

A direct relation was observed between occupation and the prevalence of viral hepatitis. Both HBV and HCV were prominent in health care workers with 3% (n=9) and 2.66% (n=8) prevalence, followed by shopkeepers with 2.66% (n=8) and 4.66% (n=14) prevalence of HBV and HCV respectively (Figure 1).
the highest (54.3%) prevalence in patients of age 30-49 years [22]. Several miscellaneous risk factors are associated with the spread of HCV and HBV. Most prominent of these factors may include unhygienic living conditions, septic medical and surgical procedures including the dental procedures that are carried out without sterilization of tools, unprotected sexual intercourse, transfusion of body fluids especially the transfusion of blood, and unhygienic routine practices like sharing the shaving razors and injection syringes among the drug abusers. In the present study, the tested population had a significant number of individuals who had a history of experiencing one of these risk factors. 63 out of a total of 300 persons had gone through any dental procedure. Of these 63 individuals, 39.68% (n=25) were anti-HCV positive, while 22.22% (n=14) were positive for HBsAg. Another study conducted in Iraq reported that 77% and 75% of HBV and HCV-positive patients with a history of any dental procedure [23]. According to the Fact sheet on hepatitis 2017, by WHO, dental quackery is unrestrainedly practiced in that area of underdeveloped countries that have the highest burden of hepatitis [24]. In the meanwhile, of 300 individuals, only 23 had a history of blood transfusion. Of these 23 people, 43.48% (n=10) were anti-HCV positive followed by 30.43% (n=7) HBsAg positive individuals. A study carried out by the general public in Malaysia reported that 8% of HCV-positive individuals had a history of blood transfusion. Of these 23 people, 43.48% (n=10) were anti-HCV positive, while 22.22% (n=14) were positive for HBsAg. Another study conducted in Iraq reported that 77% and 75% of HBV and HCV-positive patients with a history of any dental procedure [23]. According to the Fact sheet on hepatitis 2017, by WHO, dental quackery is unrestrainedly practiced in that area of underdeveloped countries that have the highest burden of hepatitis [24]. In the meanwhile, of 300 individuals, only 23 had a history of blood transfusion. Of these 23 people, 43.48% (n=10) were anti-HCV positive followed by 30.43% (n=7) HBsAg positive individuals. A study carried out by the general public in Malaysia reported that 8% of HCV-positive individuals had a history of blood transfusion [25]. This low frequency of transfusion-related transmission of HCV/HBV is due to the practice of blood screening that is followed in every health care setting in routine.

**CONCLUSIONS**

In underdeveloped areas like Arifwala, a lack of adequate blood screening facilities and a lack of understanding about probable HBV and HCV transmission channels contribute significantly to the infection’s spread among people. Proper sanitation and screening measures must be made essential in public health care facilities to avoid a much greater hazards of HCV infection. Policymakers should enact legislation and enforce its implementation prohibiting untrained dental quakes from practicing in specific sections of the province.

**REFERENCES**


