

# Frequency of Hepatitis B and Hepatitis C in Hazara population of Quetta

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## ABSTRACT

**Objective:** To determine the frequency of Hepatitis B and Hepatitis C in Hazara population of Quetta.

**Patients and Methods:** This was a cross-sectional prevalence study conducted in the Marryabad area of Quetta. Total of 3000 volunteers were enrolled who fulfilled the following criteria: all participants were of Hazara ethnicity, they were permanent residents of Marryabad Quetta city, ages 2 years to 60 years. The following subjects were excluded from this study: non Hazara ethnicity, people below 2 years and above 60 years of age, non-residents of Quetta city. Two-stage cluster sampling technique was employed to draw required sample based on voting lists. Trained health workers were deployed in each sample unit at a time for collecting the sample and required data and filling the questionnaire. The collected samples were centrifuged within 6 hours of collection and serology for anti-HCV and HBsAg was performed on the collected blood samples using enzyme linked immunosorbent assay.

**Results:** Overall 247 (8.23%) were positive for HBs Ag with male to female ratio of 5:8 and the mean age was  $43.47 \pm 14.22$ . 420(14%) had positive anti-HCV with the mean age of  $35.04 \pm 16.77$  and male to female ratio of 3:4. Following were the positive percentage of for HBsAg according to professions: Doctors (0.13%) (RR 1.2498; 95% CI 0.4901 to 3.1871) P = 0.6407, Nurses and Paramedics (0.10%)(RR: 1.4631; 95% 0.5027 to 4.2584) P = 0.4850, Barbers and quack(0.17%) (0.7446; 95% 0.3158 to 1.7553)P = 0.5002. Following percentages were positive for anti-HCV: Doctors (0.27%) (1.4742; 95%CI 0.7897 to 2.7522) P = 0.2230, Nurses and Paramedics (0.2%) (1.7246; 95%CI 0.8536 to 3.4844) P = 0.1288, Barbers and quack (0.57%) (1.5202; 95%CI 0.9867 to 2.3420) P = 0.0575.

**Conclusion:** Hepatitis B and C remain a significant problem in the Hazara community and in certain professions at risk.

**Key Words:** Frequency, Hepatitis B, Hepatitis C

## INTRODUCTION

Hepatitis B and C are the most common blood-borne liver infections worldwide. According to the recent estimates, 270-300 million people worldwide are infected with hepatitis C virus (HCV) and more than 2 billion people have been infected with the hepatitis B virus (HBV).<sup>1</sup> The prevalence of hepatitis B virus (HBV) infection is estimated at 2.5% and the prevalence of hepatitis C virus (HCV) infection, estimated at 4.8%, is one of the highest rates in the world. Hepatitis surveillance in Pakistan has been syndromic, failing to confirm infection, distinguish among viruses, or collect information on risk factors.<sup>2</sup> The prevalence of hepatitis B in Baolchistan varies from 3.3% in Khuzdar to 17.0% in Kodi Zikriani.<sup>3</sup> The prevalence of Hepatitis B and Hepatitis C in the internally displaced population of Pakistan was found to be

9% and 91% respectively.<sup>1</sup> In Pakistan there is a rising trend of hepatitis C and declining evidence of hepatitis B.<sup>4</sup> Pakistani HCV serofrequency figures are significantly higher compared to those of the corresponding populations in surrounding countries like India, Nepal, Myanmar, Iran and Afghanistan.<sup>5</sup> There is a notable dearth of data about Hepatitis B Virus (HBV) and Hepatitis C Virus (HCV) prevalence in Afghanistan.<sup>6</sup> Percentage prevalence was 1.9% for HBV and 1.1% for HCV in all available Afghanistan population.<sup>6,7</sup> Continued civil war and political instability in Afghanistan have led to a huge influx of refugees into the neighboring provinces in Pakistan[8]. Hepatitis B is highly endemic among Afghan refugees.<sup>8,9</sup> The Hazaras are Mongol people who have migrated from Central Afghanistan to Quetta.<sup>10,11</sup> This study was done to

see if their frequency is same as of their mother country or it has changed after many years of living in Pakistan.

## PATIENTS AND METHODS

Total of 3000 volunteers were enrolled for this cross-sectional prevalence study from the various parts of Marryabad area of Quetta city which is the home of Hazara community. The inclusion criteria for this study was as following: all participants were of Hazara ethnicity, they were permanent residents of Marryabad Quetta city, Hazara people of ages 2 years to 60 years and patients with other comorbidities were also included in this study. The following subjects were excluded from this study: non-Hazara ethnicity, people below 2 years and above 60 years of age, non-residents of Quetta city. Two-stage cluster sampling technique was employed to draw required sample. The sample unit recruitment was based on the voting list. The numbers of voters with their names were obtained from the election commission office of Quetta. The random number function in Microsoft Excel 2010 was used to randomly select 4 geographically separate blocks (clusters) each with 504 households (sampling units). Households were randomly selected from these selected blocks using the same method. All individuals were tested who fulfilled the inclusion criteria and did not satisfy the exclusion criteria. If the family consent wasn't received for the survey or if due to any reason the samples could not be obtained from the selected house then the household next to it was selected. Trained health workers were deployed in each sample unit at a time for collecting the sample and required data. They approached the head of the family and aim and objectives were explained with assurance that information would be kept highly confidential. Written informed consent was taken from the head of the family to collect blood sample of the eligible candidates of the family. The trained health worker filled the questionnaire of individual participants. Following data was collected from the questionnaire in addition to demographic characteristics including age, gender, profession, number and places of each injections in past 10 years, type of health care provider for each injection, history of transfusion of blood or blood products, history of circumcision in male subjects along with type and place of health care provider for circumcision, current or past history of intravenous drug abuse, history of tattooing or of any piercing and

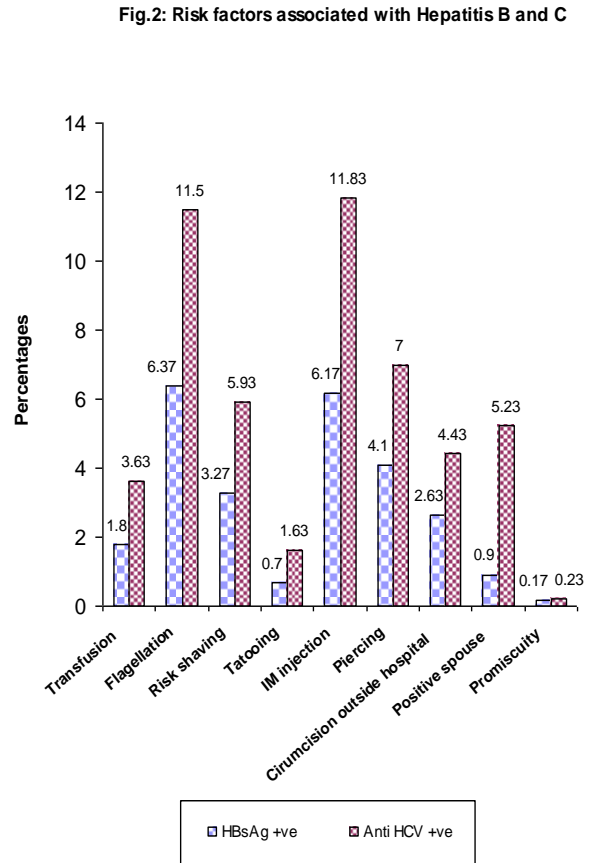
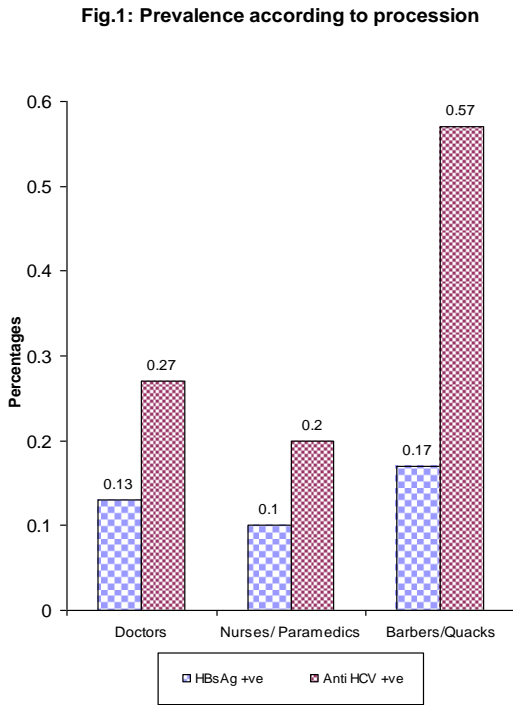
promiscuity history. The collected samples were centrifuged within 6 hours of collection and after serum separation stored in refrigerator. Serology for anti-HCV and HBsAg was performed on the collected blood samples after the completion of data collection. Enzyme linked immunosorbent assay (ELISA) visual test kits for anti-HCV and HBsAg were used to determine the positivity of anti-HCV and HBsAg in the sera of the subjects. Means and standard deviation were calculated for the quantitative variables and proportions for the categorical variables. The infected individuals or the responsible person were provided with appropriate information and were referred to the Bolan Medical Complex Hospital, Quetta.

## RESULTS

A total number of 3000 individuals were sampled for the study; the individuals belonged to various parts of the Marryabad area of Quetta city. Out of the total sampled 1393 were females whereas 1607 were males and the age range was 2 to 60 years of age. With increasing age, there was higher incidence of HBsAg and anti-HCV positivity. Highest incidence for HBsAg was recorded in 51 to 60 years of age group and it was 41 to 50 years of age group for anti-HCV. In all the age groups anti-HCV had higher percentage than HBsAg except for the 51 to 60 years age group. Overall 247 (8.23%) were positive for HBsAg with male to female ratio of 5:8 and the mean age was  $43.47 \pm 14.22$ . 420 (14%) had positive anti-HCV with the mean age of  $35.04 \pm 16.77$  and male to female ratio of 3:4 (Table 1).

Comparing the risk professions, barber and Quacks had the highest HBsAg positive percentage of 0.17% (RR: 0.7446; 95% CI: 0.3158 to 1.7553)  $P=0.5002$  and anti-HCV positive percentage of 0.57% (RR: 1.5202; 95% CI: 0.9867 to 2.3420)  $P=0.0575$ . The percentage of people infected was higher for anti-HCV positive in all the professions compared in this study. Following were the positive percentage of for HBsAg according to professions: Doctors 0.13% (RR 1.2498; 95% CI 0.4901 to 3.1871)  $P=0.6407$ , Nurses and Paramedics 0.10% (RR: 1.4631; 95% CI 0.5027 to 4.2584)  $P=0.4850$ , Barbers and quack 0.17% (0.7446; 95% CI 0.3158 to 1.7553)  $P=0.5002$ . Following percentages were positive for anti-HCV: Doctors 0.27% (1.4742; 95% CI 0.7897 to 2.7522)  $P=0.2230$ , Nurses and Paramedics 0.2% (1.7246; 95% CI 0.8536 to 3.4844)  $P=0.1288$ , Barbers and quack 0.57% (1.5202; 95% CI 0.9867 to 2.3420)

P=0.0575. Similarly, positive rates for both HBs Ag and anti-HCV were highest in practices of the self-flagellating and injecting outside hospital group (Fig.1).



**Table 1:** Frequency and percentage of gender and age in Hepatitis B and C (n=3000)

Variable	HBsAg +ve		Anti-HCV +ve	
	No.	%	No.	%
<b>Gender</b>				
Male	99	3.30	177	5.90
Female	148	4.93	243	8.10
<b>Age (years)</b>				
1-10	57	1.88	396	13.21
11-20	37	1.23	74	2.47
21-30	127	4.23	296	9.66
31-40	220	7.32	366	12.20
41-50	222	7.41	778	25.93
51-60	563	18.75	375	12.50

Comparing the risk behaviors for the HBsAg positivity and anti-HCV positivity we found the following percentage of positive results. HBsAg positive percentage in the risk habits were as follows: Transfusion 1.8% (RR 1.3856; 95%CI: 1.0408 to 1.8447) P=0.0255, self-flagellation 6.37% (RR: 8.4595; 95%: CI 6.3480 to 11.2735)

P<0.0001, shaving at barbershop 3.27% (RR: 1.8559; 95% CI: 1.4576 to 2.3630) P=0.0711, tattooing 0.7% (RR: 1.4732; 95% CI: 0.9673 to 2.2437) P=0.0711, injecting outside hospital 6.17% (RR: 5.8268; 95% CI: 4.4148 to 7.6904) P<0.0001, piercing (nose, ear or any body parts 4.10% (RR: 3.8155; 95% CI: 3.0218 to 4.8177) P<0.0001,

circumcision outside hospital 2.63% (RR: 0.8087; 95% CI: 0.6255 to 1.0456) P=0.1053, HBs Ag positive spouse 0.9% (RR: 1.7; 95% CI: 1.1703 to 2.4692) P=0.0053 and promiscuity 0.17% (RR: 1.9163; 95% CI: 0.8490 to 4.3257) P=0.1174. Anti-HCV positive were found in following percentages in these risk behaviors: Transfusion 3.63% (RR 1.7357; 95% CI: 1.4267 to 2.1117) P<0.0001, self-flagellation 11.5% (RR: 11.4093; 95% CI: 9.0031 to 14.4586) P<0.0001, shaving at barbershop 5.93% (RR: 2.0754; 95% CI: 1.7412 to 2.4738) P<0.0001, tattooing 1.63% (RR: 2.0939; 95% CI: 1.6201 to 2.7063) P<0.0001, injecting outside hospital 11.83% (RR: 10.6651; 95% CI: 8.2779 to 13.7407) P<0.0001, piercing (nose, ear or any body parts) 7% (RR: 3.8465; 95% CI: 3.2464 to 4.5575) P<0.0001, circumcision outside hospital 4.43% (RR: 0.797; 95% CI: 0.6580 to 0.9655) P=0.0204, anti-HCV positive spouse 5.23% (RR: 8.2688; 95% CI: 7.2123 to 9.4799) P<0.0001 and promiscuity 0.23% (RR: 1.572; 95% CI: 0.8118 to 3.0442) P=0.1797 were positive for anti-HCV (Fig.2).

## DISCUSSION

The female population was almost equal to the male population but more males were affected than females but this is a feature found in all studies from this region.<sup>12</sup> This may be due to gender dependent exposure to various risk factors. Some workers from Kashmir have reported almost equal frequency of both genders being affected by Hepatitis B<sup>13</sup> but our population constituted a specific race are region with its attendant risk factors like flagellating, tattooing etc. Moreover Australian workers have found that male gender and Muslim religion were independent predictors of Hepatitis B infection.<sup>14</sup> Similar results have been shown by Israeli colleagues.<sup>15</sup> Studies among the Shia sects are sparse but there frequency of hepatitis C has been shown to be more in this particular sect of Muslims due to slashing.<sup>16</sup>

More interesting is the comparison of the frequency of Hepatitis B and C in Hazaras race and their country of origin, along with the Mongol diaspora. Our frequency was 8% for hepatitis B and 14% for hepatitis C. The prevalence of hepatitis B (HBV) carriage in Mongolia is reported to be 14%.<sup>17</sup> In another study the frequency of Hepatitis B and C markers was found to be 28.7% and 48.0%, respectively.<sup>18</sup> In the former USSR, the next abode of the Mongol race. The incidence of antibodies to HCV varied from 0.7% in the Central

region to 3.8% in the Central Chernozem and 10.7% in Mongolia.<sup>19,20</sup> Among School children the anti-HCV prevalence was 0.6%.<sup>21</sup> A study from china showed the positivity rate of anti-HCV was as high as 30.13% in the professional blood donors from Hebei Province and 31.86% in those from Inner Mongolia Autonomous Region.<sup>22</sup> In Afghanistan which contains a significant Hazaras population the Percentage prevalence was 1.9% for HBV and 1.1% for HCV in all available Afghanistan population.<sup>6</sup> The higher frequency in our study testifies to the urbanization of the Hazaras population and consequently exposure to various risk factors. Moreover this study does not show the exclusive Hazaras population, in whom the prevalence and frequency may be higher. Meta-analysis of Pakistani studies show the frequency of HCV infection in blood donors and in the general population was 3.0 % (95% CI: 3.0-3.1) and 4.7 (95% CI: 4.6-4.8), respectively. The frequency among 6,148 pregnant females was 7.3% (95% CI = 6.7 - 8.0). The frequency in healthy children ranged from 0.4 to 4.1% (95% CI = 1.4-2.3).<sup>5</sup> Thus the pattern among Hazaras seems to follow the country of adoption. In an Iranian study, the frequency of HBsAg among street children, many of whom were Afghani was quite high.<sup>23</sup>

Health professionals have been identified as having an increased risk of harboring and dying from blood borne infections.<sup>24,25</sup> In this regard our study is comparable. In Italian barber the prevalence of HBsAg positive and anti-HCV individuals was found to be 2.2% and 0.4%, respectively.<sup>26</sup> Our barbers were more infected because of lack of sterilization practice and reluctance to change blades. Ear piercing and tattooing are a common practice in Hazaras culture and were associated with high frequency on both B and C in our study. This is consistent with international studies.<sup>27</sup>

## CONCLUSION

Hepatitis B and C remain a significant problem in the Hazara community and in certain professions at risk.

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