



## Prevalence of Hepatitis B and C virus infection in IDP's Camp of North Waziristan Agency and FR-Bakakhel of Khyber Pakhtunkhwa, Pakistan

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### Abstract

The prevalence of Hepatitis B and Hepatitis C infections was assessed among IDPs Camp North Waziristan Agency in Bakakhel FR-Bannu of Khyber Pakhtunkhwa province as there is insufficient published literature on this subject. HBsAg and AntiHCV screening were done in IDPs Camp aged between 1 to 70 years of both sexes in various Tribals of North Waziristan Agency. A total of 1000 subjects were screened for hepatitis-B and Hepatitis-C, 730 male and 270 female subjects. The total prevalence of Hepatitis-B and Hepatitis-C was found to be 11.2% (112/1000). Individually, the prevalence of hepatitis-B in population of IDPs Camp was 7.00% (70/1000) and it was more common in male subjects 7.1% (52/730) in comparison to female subjects with 6.7% (18/270). The prevalence of hepatitis-C in the population of IDPs Camp North Waziristan was 4.2% (42/1000) and it was less common in male subjects 4.1% (30/730) in comparison to 4.5% (12/270) in female subjects. The prevalence of Hepatitis-B and Hepatitis-C in the normal population of IDPs Camp North Waziristan in Bakakhel FR-Bannu was found to be 7.00% and 4.2%. Compared to general populations of Pakistan, the seroprevalence of Hepatitis B and Hepatitis C is high in the normal population of IDPs Camp North Waziristan Agency. It might be possible to conclude that these IDPs of North Waziristan populations perhaps are at higher risk of contracting hepatitis-B and hepatitis-C infections as compared to other populations.

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## Introduction

Chronic hepatitis is a leading cause of liver related morbidity and mortality. Amongst the different hepatic viruses, Hepatitis B (HBV) and Hepatitis C (HCV) have been identified as the main cause of chronic hepatitis (Gaeta *et al.*, 1990, Khokhar *et al.*, 2001). Approximately 500 million persons are living with chronic viral hepatitis worldwide with over a million persons dying annually due to HBV related complications (Lavanchy, 2004; Wright, 2006). Liver cancer is the fourth -leading cause of death from cancer worldwide. Cirrhosis, liver failure and hepatocellular carcinoma (HCC) develop in 15-40% of patients of HBV (Lok, 2004). Likewise, HCV is also responsible for a considerable proportion of liver-related complications including HCC in 32% of infected patients (Sangiovanni *et al.*, 2007). The clinical presentation of multiple viruses in the same patient leads to management problems with higher incidence of morbidity and mortality (Tsatsralt-Od *et al.*, 2005). Hepatitis B and hepatitis C are serious health problems worldwide. These viral diseases are transmitted through blood and blood products, sexual contacts and intra familial transmission. There are about 350 million people with chronic hepatitis B virus (HBV) infection and about 170 million people with chronic hepatitis C virus (HCV) infection worldwide (Previsani and Lavanchy, 2002). Pakistan is one of the worst afflicted countries with hepatitis B and hepatitis C. Seroprevalence of hepatitis C in Pakistan is higher than in other countries of the region like India, Nepal, Myanmar, Iran and Afghanistan (Hutin *et al.*, 2004). A number of studies have been conducted to find the prevalence of HCV and HBV in different areas of Pakistan (Ali *et al.*, 2009; Waheed *et al.*, 2009). Still there are very few population based studies to estimate the exact incidence of hepatitis in different areas (Waheed *et al.*, 2009). This is also because mostly the epidemiological studies concerning the prevalence of HBV and HCV are restricted to the hospitalized patients (Chaudhary *et al.*, 2005). A country wide survey conducted from July 2007 to May 2008 by Pakistan Medical Research Council (PMRC, 2007-2009) reveals that prevalence of hepatitis B and

hepatitis C is 2.5% and 5%, respectively in general population of Pakistan. Gender wise analysis showed slight preponderance of males for HBV all over Pakistan but no difference was seen in HCV (PMRC, 2007-2009).

## Materials and methods

### *Samples collection*

The study was conducted in a camp for internally displaced persons (IDPs) of the North Waziristan Agency in FR-Bakakhel, District Bannu of the Khyber Pakhtunkhwa Pakistan. This camp was temporarily organized by the Government of Pakistan for the internally displaced persons of North Waziristan Agency during war against terrorism. Majority of the IDPs belonged to rural and mountainous areas of North Waziristan Agency. A hepatitis-B and hepatitis-C screening study was conducted among the apparently suspected male and female population. A total of 1000 blood samples were taken from North Waziristan Agency IDPs Camp FR-Bakakhel, District Bannu of the Khyber Pakhtunkhwa Pakistan at those individuals having one or more health problems such as fatigue, anorexia, fever, joint pain, malaise, abdominal pain, nausea, burden on stomach, dark yellow eye, dark yellow urine, jaundice etc. The blood was collected and the serum were separated from the coagulated blood by centrifugation at 5000 rpm for 10min at room 4°C and stored at -20°C for further use.

### *Immuno-chromatographic tests (ICT)*

Sera screening was done for anti-HCV antibodies with the help of Immuno-chromatographic tests by using strips from (Accurate, USA) followed by (Acon, USA). The positive samples were subjected to further analysis. The routinely uses commercial HBsAg and HCV test kits, from Standard Diagnostics (SD-South Korea Inc). Tests were performed in accordance with the manufacturer's instructions. The HBsAg SD BIOLINE kit has both sensitivity and specificity of 99%, while the HCV SD BIOLINE kit has a sensitivity of 100% and specificity of 99.4%. Moreover, samples which were positive for either HBsAg or anti-HCV antibodies had been re-tested for second time by the

same method. Samples repeatedly reactive for HBsAg or anti- HCV antibodies were considered positive.

### Results

A total of 1000 subjects were screened for hepatitis-B and hepatitis-C. Age of the subjects was no limit. Among these 730 (11.09%) were male and 270 (11.5%) were female subjects. The total prevalence of both Hepatitis-B and Hepatitis-C in North Waziristan IDPs Camp was found to be 11.2% (112/1000) with Hepatitis-B having a higher prevalence of 7.1% (71/1000) in comparison to Hepatitis-C prevalence of 4.1% (41/1000). 11.09% (81/730) of the total male

population in North Waziristan IDPs Camp and 11.5% (31/270) of the total female population in IDPs Camp were positive for Hepatitis-B and Hepatitis-C infections. Predominance of male population in the total number of positive cases was 72.3% (81/112) in comparison to females with 27.7% (31/112).

No subject was found to have co-infection of both Hepatitis-B and Hepatitis-C. Individually, the prevalence of hepatitis-B in North Waziristan IDPs Camp was 7.1% (71/1000) and it was more common in male subjects 7.26% (53/730) in comparison to female subjects with 6.6% (18/270).

**Table 1.** Shows age-wise prevalence of Hepatitis in male.

Age wise prevalence of Hepatitis in male					
Age Groups Years	No.ofsamples	positive %	Negative %	HBV %	HCV %
1 to 15	60	26.66	73.33	21.66	5
16-30	330	9.4	90.6	6.36	3.03
31-45	250	8.4	91.6	5.2	3.2
46-60	80	12.5	87.5	5	7.5
61-above	10	30	7(70)	20	10
Total	730	11.09	88.9	7.26	3.83

The prevalence of hepatitis-B in IDPs Camp North Waziristan was 7.1% (71/1000) and it was also more common in male subjects 7.26% (53/730) in comparison to the female subjects 6.6% (18/270). The

prevalence of hepatitis-C in IDPs Camp North Waziristan was 4.1% (41/1000) and it was also less common in male subjects 3.83% (28/730) in comparison to the female subjects 4.8% (13/270).

**Table 2.** Shows age-wise prevalence of Hepatitis in Female.

Age wise prevalence of Hepatitis in Female					
Age Groups Years	No. of samples	positive %	Negative %	HBV %	HCV %
1 to 15	40	15	85	12.5	2.5
16-30	130	8.5	91	5.36	3.07
31-45	60	13.3	86.7	5	8.4
46-60	35	17.14	82.85	8.57	8.57
61-above	5	0	100	0	0
Total	270	11.5	88.5	6.6	4.8

The table 4.1 clearly indicates highest prevalence in the Age group 1 to 15, above-61 and lowest prevalence in Age group 31- 45. The Age group 1 - 15 and above-61 year's shows that this was expose to environment and also have a weak immunity system to defense

against the foreign agent. The Age group 31 - 45 shows that this people have strong immunity system to defense against foreign invader and have careful from the daily life. The table 4.2 clearly indicates highest prevalence in the Age group 46 to 60 (17.14%)

and lowest prevalence in Age group above-61 (0.00%). The table 4.3 clearly indicates highest prevalence in the Age group 1 to 15 (22%) this studies shows that Hepatitis B virus is (18%) as compare to Hepatitis C virus (4%) and the lowest prevalence in Age group 16- 30 (9.13).

### Discussion

Hepatitis B and Hepatitis C are global diseases that are endemic in many countries. Hepatitis C, in

combination with hepatitis B, accounts for 75% of all cases of liver disease around the world.

Many Asian countries are highly endemic to both Hepatitis B and Hepatitis C. Pakistan, like many developing countries, has a high incidence of Hepatitis B and Hepatitis C of 10% and 4-7% respectively. HBV prevalence was also reported in ophthalmic patients in Pakistan which is 3.89%  $\pm$ 1.004% (Ali *et al.*, 2011).

**Table 3.** Shows over all age-wise prevalence of Hepatitis.

Over all Age wise prevalence of Hepatitis					
Age Groups Years	No. of samples	positive %	Negative %	HBV %	HCV %
1 to 15	100	22	78	18	4
16-30	460	9.13	90.86	6.08	3.04
31-45	310	9.3	90.7	5.16	4.19
46-60	115	13.9	86.08	6.08	7.8
61-above	15	20	80	13.4	6.6
Total	1000	11.2	88.2	7.1	4.1

The higher prevalence in eye camps in comparison to hospitalized patients may be due to the fact that the study was conducted in rural areas and had a longer duration of time. Hepatitis B and Hepatitis C prevalence in preoperative cataract patients was found to be higher in males (59.18%) than females (40.82%) (Ahmad *et al.*, 2006) also showed that the total prevalence of Hepatitis B and Hepatitis C in males was very high compared to females among preoperative cataract patients of D.I Khan (Nangrejo *et al.*, 2011). In other different studies done in the country, similar findings and results were seen where males predominated females (Khan *et al.*, 2003; Farooqi *et al.*, 2000). The reason may be attributed to the fact that males in Pakistan have a higher social mobility and freedom, especially in rural areas as compared to females. Thus they have a greater chance of contracting the infection. Some studies however contradicted the result, with females having a higher prevalence than males (Farooqi *et al.*, 2000; Chauadry *et al.*, 2005).

In the present study, total prevalence of both Hepatitis-B and Hepatitis-C in IDPs of North

Waziristan was found to be 11.2%. The prevalence of hepatitis-B was 7.1% which is very high in comparison to general population of the Gujranwala district which is 2.9% (PMRC, 2007-2009). The prevalence of hepatitis-C was 4.1%. This is lower than the reported figure from general population of district Gujranwala which is 6.4%. This low incidence of hepatitis in IDPs Camp North Waziristan is perhaps due to high level of awareness and education about the disease.

Present study shows that predominance of male population in the total number of positive cases was (73.2%) in comparison to female subjects with (26.8%). Individually, the prevalence of hepatitis-B in male subjects (7.1%) was higher in comparison to female subjects where it is (6.7%). Similarly the prevalence of hepatitis-C was less high in male subjects (4.1%) in comparison to (4.5%) in female subjects. Similar findings were seen in other different studies done in the country where frequency of hepatitis in males predominate females (Farooqi & Farooqi, 2000a, Khan and Rizvi 2003; Mashud *et al.*, 2004; Khan & Siddiqui 2007). Khan *et al.* (2006) has also reported higher prevalence of HBV in males

(6.03%) compared with 5.05% in females. In some studies however higher prevalence have been reported in female subjects than males (Farooqi and Farooqi, 2000b; Chaudhry *et al.*, 2005). The reason for higher prevalence in males may be attributed to the fact that in Pakistan males enjoy a greater freedom and social mobility as a result they have more exposure to multiple risk factors and greater chances of contracting the viral infection.

### Conclusion

The disease is actively spreading in people belonging to low socioeconomic class. Similarly, prevalence also correlates with level of education. It is higher in illiterate people than educated people and at those individuals having one or more health problems such as fatigue, anorexia, fever, joint pain, malaise, abdominal pain, nausea, burden on stomach, dark yellow eye, dark yellow urine, and jaundice. Major factors responsible for HBV and HCV transmission are dental extraction, reuse of shaving blades, syringes, general surgery. Tattoos/body piercing, smoking and drug addiction and intra-familial transmission are significantly associated. So, proper training of barbers and health worker is necessary to control Hepatitis B Virus and Hepatitis C Virus progression. Extensive awareness programs and other preventive measures and cure should be taken to stop the spread of this alarming disease in the study area.

### References

- Ahmad I, Khan SB, Rehman HU, Khan MH, Anwar S.** 2006. Frequency of Hepatitis B and Hepatitis C among cataract patients. *Gomal Journal of Medical Sciences* **4**, 2.
- Ali M, Idrees M, Ali L, Hussain A, Rehman I, Saleem S, Afzal S, Butt S.** 2011. Hepatitis B virus in Pakistan: A systematic review of prevalence, risk factors, awareness status and genotypes. *Virology Journal* **8**, 102.
- Chauadry IA, Khan Samiullah SA.** 2005. Should we do Hepatitis B and Hepatitis C screening on each patient before surgery: analysis of 142 cases? *Pakistan Journal of Medical Sciences* **21(3)**, 278–280.
- Farooqi JI, Farooqi RJ.** 2000. Relative Frequency of Hepatitis B and Hepatitis C virus infections in cases of hepatocellular Carcinoma in NWFP, Pakistan. *Journal of College Physical Surgical Pakistan* **10**, 128–130.
- Gaeta GB, Rapicetta M, Sardaro C, Spadaro A, Chionne F, Freni AM.** 1990. Prevalence of anti-HCV antibodies in patients with chronic liver disease and its relationship to HBV and HDV infections. *Infection* **18**, 277-9.
- Khan TS, Rizvi F.** 2003. Hepatitis B seropositivity among Chronic Liver Disease patients in Hazara Division Pakistan. *Journal of Ayub Medical College Abbottabad* **15**, 54–55.
- Khan AA, Rehman KU, Haider Z, Shafqat F.** 2002. Sero-markers of hepatitis B and C in patients with cirrhosis. *Journal of College Physical Surgical Pakistan* **12**, 105–107.
- Khan AJ, Luby SP, Fikree F, Karim A, Obaid S, Dellawala S, Mirza S, Malik T, Fisher-Hoch S, and McCormick JB.** 2000. Unsafe injections and the transmission hepatitis B and C in a periurban community in Pakistan. *Bull World Health Organ* **78**, 956–963.
- Lavanchy D.** 2004. Hepatitis B virus epidemiology, disease burden, treatment, and current and emerging prevention and control measures. *Journal of Viral Hepatitis* **11**, 97-107.
- Lok AS.** 2002. Chronic hepatitis. *England Journal of Medicine* **346(22)**, 1682–1683.
- Nangrejo KM, Qureshi MA, Sahto AA, Siddiqui SJ.** 2011. Prevalence of Hepatitis B and C in the patients Undergoing Cataract Surgery at Eye Camps. *Pakistan Journal of Ophthalmology* **27**, 1.
- Previsani N, Lavanchy D.** 2002.

WHO/CDS/CSR/LYO/2002.2:Hepatitis B Geneva:  
World Health Organization.

Council, Shahrah-e-Jamhuriat, Sector G-5/2,  
Islamabad.

**PMRC National Survey on Prevalence of  
Hepatitis B and C in General Population of  
Pakistan.** 2007-2009. Pakistan Medical Research

**Waheed Y, Shafi T, Safi SZ, Qadri I.** 2009.  
Hepatitis C virus in Pakistan: a systematic review of  
prevalence, genotypes and risk factors. World Journal  
of Gastroenterology **15**, 5647-5653.