

# Seroprevalence of HbsAg and Anti-HCV in Ghurki Teaching Hospital, Lahore

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**Objective:** To find out the prevalence of hepatitis B and C in general population. **Design:** This is an analytical type of and non-interventional study. **Setting:** Data was collected from a two-day free screening camp for hepatitis B and C at Ghurki Trust Teaching Hospital, Lahore. **Material and method:** Normal people of any age and either sex were included in the study. Screening was performed for Hbs Ag and Anti HCV by Acu-check one step test (chromatographic immunoassay) in serum. **Results:** A total 1680 subjects were screened for both Hbs Ag and Anti HCV. Prevalence of Hbs Ag was 2.97% and Anti HCV was 11.96%. The mean age was  $24.96 \pm 14.67$  years. Females were 55.2% and males were 44.8%. seroprevalence in females and males of Hb Ag was 1.2% and 1.78% and that of Anti HCV 8.6% and 3.33% respectively. These gender differences are statistically significant (p value <0.05). Hbs Ag was more prevalent in younger population (up to 10 years). The majority of Anti HCV positive was in 31 to 40 years of age. **Conclusion:** Seroprevalence of Hbs Ag and Anti HCV is high in general population. Prevalence of HCV is very high in younger age group while Hbs Ag is very high in children up to 10 years of age. Larger population based studies are needed to confirm the results.

**Key Words:** Prevalence, General Population, Hepatitis B, Hepatitis C.

Hepatitis B is a major health problem worldwide. Approximately two billion people in the world have been infected by Hepatitis B Virus (HBV), and 350 millions of them became chronic hepatitis B surface antigen (HbsAg) carriers<sup>1</sup>. Hepatitis B virus infection is prevalent in Asia, Africa and Southern Europe having seroprevalence rates from 2-20%<sup>2</sup>.

Although the data at national level is lacking, according to some estimates Pakistan remains in the intermediate HBV prevalence area with 4.5 millions estimated carriers and a carrier rate of 3-4%<sup>3</sup>. Chronic infection with Hepatitis B leading to cirrhosis and hepatocellular carcinoma is a serious issue being faced in Pakistan<sup>4</sup>.

HBV is however potentially eradicable due to availability of effective vaccination, as infection in early childhood is a very important event leading to chronicity of the condition and its complications. In addition, in hyperendemic areas in Asia, perinatal transmission through HbsAg carrier mothers accounts for 40-50% HbAg carriers. Around 90% of infants of hepatitis B antigen (HbsAg) seropositive carrier mothers became HbsAg carriers irrespective of high or low HbsAg carrier rate in the population<sup>5</sup>. World Health Organization (WHO) has therefore advocated the introduction of HB vaccination into the global Expanded Programme of immunization (EPI), and Pakistan has incorporated the HB vaccination in Expanded Programme of Immunization (EPI) in various parts of the country.

Hepatitis C virus (HCV) is an important public health problem all over the world because it is a major cause of chronic hepatitis, cirrhosis and hepatocellular carcinoma (HCC) and has become the single most important reason for liver transplantation worldwide<sup>6</sup>. The global prevalence is estimated up to 2.9%, but it varies by geographic distribution. As defined by WHO, the lowest prevalence

being in Europe, while up to 3.5 % in Africa<sup>1</sup>. From these studies it is estimated that there are 127 million people with hepatitis C infection<sup>7</sup>.

Investigators at the Centre for Disease Control and Prevention (CDC) have suggested that the variation in the geographic and age related prevalence is related to the mode by which a person acquires HCV infection. In Egypt, where the prevalence rates range between 15-20%, high rates of infection are seen in all age groups, indicating ongoing risks of HCV acquisition. The parenteral antischistosomal therapy programmes utilizing reusable syringes, have been considered a major source of HCV infection in this country<sup>8,9</sup>.

In Pakistan, larger data from population based studies is scanty. A study from population of 150000 in Hafizabad showed an overall prevalence of 6%<sup>10</sup>. In other local studies it is reported to be between 3 and 7%<sup>11</sup>. Considering the overall 6% prevalence, approximately 10 millions people are infected with HCV in Pakistan. Regarding Hepatitis C in childhood, infection is usually a very benign illness, but chronic infection often leads to cirrhosis and hepatocellular cancer after many years<sup>12</sup>. In Pakistani children seroprevalence of HCV is much lower, being 0.2% and 0.4% in 12 and 19 years of ages respectively<sup>13</sup>. A comparative study of blood donors in northern Pakistan has shown seroprevalence of HCV being 2.46% and 5.4% in voluntary non-remunerated donors and replacement donors respectively<sup>14</sup>.

About 50-60% patients with chronic liver disease and cirrhosis are HCV positive<sup>15</sup> and up to 50% patients with HCC in Pakistan are infected by HCV<sup>4,16</sup>.

## Objectives:

- To find out the seroprevalence of Hepatitis B and Hepatitis C viruses in general population belonging to periphery of Lahore city.



- To create public awareness regarding hepatitis in this area.

**Types of study:** Analytical, non-interventional study.

**Materials and methods:**

- A free camp was organized for screening of hepatitis B and C at Ghurki Trust Teaching Hospital, Lahore.
- Two days were allocated for camp for screening preceded by banners, posters, and announcements.
- Incentives were the free screening and provision of HB vaccination for Hbs Ag negative people at subsidized charges.

**Inclusion criteria:** - Asymptomatic people of any age and sex were included.

**Exclusion criteria:** People having past history of jaundice

- People having oedema, ascities and bleeding of hepatic origin on clinical grounds.
- People known to have HBV or HCV positive results previously.
- Addicts, needle users
- People on dialysis or frequent blood transfusion recipients.

**Screening methods:** Screening was performed for Hbs Ag by using Acu-check test strip (a repaid chromatographic immunoassay for qualitative detection of Hbs Ag in serum or plasma). For anti HCV, screening was performed by using Acu-check test strip device (a rapid chromatographic immunoassay for qualitative detection of antibodies to HCV in serum or plasma).

**Statistical analysis:** Frequencies were calculated and mean age and  $\pm$  standard deviations were derived by using SPSS software.

**Results:** -

The study tested a total of 1680 people. The mean age was 24.96 years with standard deviation of  $\pm 14.67$ . The range of age was 71 years (from 4 - 75 years). The seropositivity for HBV and HCV is shown in table I.

Table I Seropositivity of HBV & HCV according to age distribution

Age (Years) group	n=	HBV Ag +ve	Anti HCV +ve
Up to 10	140	6 (4.2%)	1 (0.71%)
11-20	306	4 (1.3%)	18 (5.88%)
21-30	589	18 (3%)	60 (10.18%)
31-40	396	12(3%)	97(24.49%)
41-50	181	10(5.52%)	25(13.81%)
51-60	50		
> 60	18		
Total	1680	50(2.97%)	20(11.96%)

Seropositivity of Hbs Ag was more in 41-50 years and 1-10 years age groups. Above 50 years of age, no subject was positive for Hbs Ag. Majority of anti HCV positive

subject were in age group of 31-50 years, while in younger age group (<10 years) its positively was very low.

Seroprevalence of Hbs Ag and Anti HCV according to gender distribution is shown in table II.

Hepatitis Bs Ag is more prevalent in males (3.98%) as compared to females (2.16%) but anti HVC was more in females (15.6%) as compared to males (7.44%) which is a significant difference (P value < 0.05).

Table II Seroprevalence of HbsAg and Anti HCV in relation to gender distribution

Sex	n=	Hbs Ag +ve	Anti HCV +ve
Female	928(55.2%)	20(1.2%)	145(8.6%)
Male	752(44.8%)	30(1.78%)	56(3.33%)
Total	1680(100%)	50(2.97%)	201(11.96%)

**Discussion:**

HbsAg was positive in 2.97% in our study population, which mostly belongs to rural set-up, as Ghurki Trust Teaching Hospital is located in the periphery of Lahore and surrounded by a number of villages. Actually lager data representing the prevalence of HBV among general population in Pakistan is scanty. A study of 103858 blood donors in northern Pakistan showed 3.3 % positivity for Hbs Ag and 4.0 % for that of anti HCV<sup>17</sup>.

A recent study from same area showed seropositivity of 0.82% for HBV among voluntary blood donors as compared to 2.51% among replacement blood donors<sup>14</sup>. Another data from southern Pakistan on 50,000 blood donors, has shown prevalence of 2.28% for Hbs Ag<sup>18</sup>. The reason for slightly higher prevalence of HBV in our study may be the lack of health education and poor health services available in this area.

A study of 1176284 blood donors from all government hospitals of Punjab has shown 2.26% prevalence of Hbs Ag<sup>19</sup>. While a community based study at Hafizabad has shown somewhat higher prevalence for Hbs Ag (4.3%)<sup>10</sup>. Our results (2.97%) are consistent with different studies in Pakistan. The studies including the blood donors have some limitations i.e. age confinement from 18-50 years and the professional or replacement donors can not be absolutely excluded. In contrast, population based studies show a clear spectrum of the prevalence according to age and gender distribution as well. Our study has shown the alarmingly high (4.2%) prevalence of Hbs Ag in children up to 10 years of age. This may be due to perinatal transmission through undetected mothers or lack of Hb vaccination in their immunization programmes. Another study has already shown a seroprevalance of 3% in Pakistani children<sup>20</sup>.

In our results, the prevalence of anti HCV is 11.96%. Recent studies also show the high prevalence of HCV as compared and HBV in our country<sup>4, 21</sup>. A study of general population from Lahore has shown even higher prevalence of anti HCV i.e. 13.5%<sup>22</sup>. A population based study at Hafizabad has reported 6%of prevalence of anti HCV<sup>10</sup>. Another population based data from Punjab has shown the



anti HCV prevalence of 23.8% from Gujranwala and 16% from Lahore<sup>23</sup>.

A study from northern Pakistan has shown the anti HCV seroprevalance of 5.14% in replacement donors as compared to 2.46% in voluntary blood donors<sup>14</sup>. On the other hand, results from Karachi and Balochistan have shown the anti HCV prevalence of 1.76%<sup>24</sup> and 1.87%<sup>25</sup> respectively. The above discussion shows that Punjab has very high seroprevalence of anti HCV as compared to Sindh and Balochistan.

Regarding the seroprevalence of anti HCV in children, it is 0.71% in up to 10 years age and 5.88% in 11-12 years of age in our study. Although the clinical disease in children appears to be milder with slower progression to cirrhosis than adults<sup>26</sup>, these results are higher than another study from Pakistan that showed a prevalence of anti HCV of 0.2% in children under 12 and 0.4% in 12-19 years of age<sup>27</sup>.

#### Conclusion:

- Seroprevalence of HbsAg and anti HCV in general population is high in our country.
- To prevent HBV&HCV infections, public awareness regarding routes of spread and transmission is needed.
- For HBV, mass vaccination of children and high risk groups and health personnel is mandatory.
- Screening of pregnant ladies is needed for timely prevention of vertical transmission.
- Seroprevalence of anti HCV is very high in this region of Pakistan.
- Population based studies using good sample size is needed for both HBV&HCV infections in our country.
- A special attention is required to conduct such studies on Paediatric population in Pakistan.

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