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# HEPATITIS B AND C;

## AN IMMUNO-CHROMATOGRAPHIC STUDY OF HEPATITIS B AND C PREVALENCE IN SOUTHERN PUNJAB

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**ABSTRACT… Objectives:** This study was conducted to find out the prevalence of Hepatitis B and C in two different areas of southern Punjab. **Settings:** Layyah and Rajan pur region of southern Punjab Pakistan. **Study Design:** Descriptive, cross sectional study. **Study Period:** This study was conducted during the period of August to November 2014. **Methods:** 1824 subjects were selected from both male and female population visiting the free eye camps at Layyah and Rajanpur region. All the selected subjects were tested for HBsAg and for anti-HCV antibodies with Immuno-chromatographic test kit. **Results:** The cumulative prevalence was found 13 %, however the seropositivity of HCV was higher (nine %) as compared to HBV (four %). **Conclusion:** Findings of our study shows that HCV and HBV prevalence in under study areas is higher than the nationwide average. This menace can only be cope up with creating awareness about diseases and proper disease management.

**Key words:** Hepatitis C, Hepatitis B, Layyah, Rajanpur, Anti-HCV, HBsAg, ICT

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## INTRODUCTION

Hepatitis B virus (HBV) and hepatitis C virus (HCV) infections are very serious public health threat in most of the developing countries. The barriers in the prevention and control of these infections include, lack of awareness in general population about their mode of transmission and inadequate implementation of vital precautionary measures.[1-3] During the past 20 years, there have been many studies regarding these viral diseases. But due to the lack of nationally integrated governmental survey, most of these studies were limited to small communities, different NGOs or medical setups. So, all these studies regarding prevalence of HCV and HBV are not enough to effectively use them to assume about the prevalence of HBV and HCV in the general population. On the other side, the reports of HCV and HBV infection prevalence are emerging more frequently than the results of these studies.[4-7]

Since 1997, Hepatitis B vaccination was added to the routine national Expanded Program on Immunization (EPI) on recommendation of World Health Organization with the plan to immunize the younger generation against HBV infection and ultimately eradicate liver diseases related to HBV. But still there is no effective vaccine for HCV so the menace of Chronic Liver Disease (CLD) is there.[8,9] As most of the recent studies show that HCV is more prevalent viral infection than the HBV in Pakistan but the most alarming fact is that most of the patients infected with HCV may lead to CLD and hepatocellular carcinoma. So the need to carry out a large scale study will remain there until or unless the public healthcare system will not come up with a nationwide survey plan.[1,10]

In spite of the all limitations of the present studies regarding HCV and HBV that range from different demographic scope, different region and the limited scope of the population focused in these studies[4-7,11], it is evident that approximately 10% of Pakistani population are at risk of being infected with either HCV or HBV and these numbers will look much bigger when 10% is translated into number of person which is as large as 19 million. These 19 million are those who are either carrier of one of these viral disease are exposed to the risk factors that could cause any of HCV or HBV.[12-15]

The recent surveys shows that some regions have even higher prevalence of hepatitis (about 50% of population) specially the regions around Faisalabad are been found most affected but remained neglected due to the lack of any hepatitis control policy that can outreach these areas. The current high burden of HCV and HBV viral infections where 30% of the HBsAg and 82.5% of the anti-HCV positive individuals could later proceed to Chronic Liver Disease.[1,8]

HCV & HBV viral infections are not only associated with the poor socio-economic condition of the exposed population but also with the increased age, active sexual life and exposure to the risk factors that include illiteracy, lack of awareness, employment in healthcare facilities, poor sanitary system, shaving with shared razors, body piercing with unsterilized equipment, unsafe blood transfusions without standard screening, unchecked practicing of quakes and surgeries by qualified medical professionals but poor sterilized practices are few of the factors.[16-18] The transmission of HBV can be halted in near future through an effective universal vaccination along with public awareness campaigns and lifestyle changes, while for HCV, where vaccination is not an option, identification of target population and its management and education would be the only way forward.

Southern Punjab is one the poorly surveyed and less privileged area regarding healthcare facilities and respective budget allocations. Keeping in mind this issue, present study was planned and conducted to find out the prevalence of HBV & HCV in southern Punjab Pakistan.

## MATERIAL AND METHODS

This study was conducted with the approval of ethics Committee of HealthCare Diagnostics & Research Centre, Lahore from August 2014 to November 2014. 1824 subjects were selected from both male and female population visiting the free eye camps in Layyah and Rajanpur region. All the selected subjects were tested for HBsAg and for anti-HCV antibodies with Immuno-chromatographic test kit (ICT: ACON®, ACON Laboratories Inc., San Diego, CA, USA).

All 1824 subjects were grouped in their respective demographic region, age and gender category. The study population was divided into 2 different age groups, first group have subjects with the age range of 18 to 40 years while population in second group had the age range from 41 to 60 years. However, any subjects with age below 18 years or above 60 years were excluded from this study.

A questionnaire was designed to get the consent of these subjects and to collect their demographic data including age, sex and area. Following the universal SOPs for this study, all the syringes, that were used to collect blood samples, were sterilized and disposable. The blood sample was collected into sterile vacutainers coated with blood clotting gel. The blood samples were centrifuged at 5000 RPM and serum was collected in separate tubes for immuno-chromatographic tests. All the samples were tested for HBsAg and anti-HCV antibodies by Immuno-chromatographic test kit (ICT: ACON®, ACON Laboratories Inc., San Diego, CA, USA) according to the manufacture's protocol.

## RESULTS

A total of 1824 subjects were included in the present study. 868 subjects were males while 956 were females. All of them were divided in two different age groups as 769 were grouped in the first group where all subjects have the age between 18 to 40 years while the rest 1055 were grouped in the second group with the age range of 40 60 years (Table-I). All the subjects under present study belonged to two geographical regions Layyah and Rajanpur districts. From Layyah district, we had 748 subjects while 1076 subjects were from Rajanpur district. It was found that the prevalence of HCV is higher nine % in the population under study as compare to four % were found seropositive for HBsAg antibodies. But the cumulative disease burden is about 13%. 12.44% male subjects were found carrier for either HBsAg or Anti-HCV or both of them. So it can be said that the male fraction of population

is found carrying the greater chunk of disease burden while 10.46% of the female subjects were found infected with at least one of the under study viral infections (Table-I).

| Region | Gender | Age | Total | Negative (%age) | HBsAg (%age) | Anti-HCV (%age) |
|---|---|---|---|---|---|---|
| Layyah | Male | 18-40yrs | 110 | 90 (81%) | 11 (10%) | 09 (08%) |
| | | 40-60yrs | 138 | 110 (79%) | 17 (12%) | 11 (07%) |
| | Female | 18-40yrs | 294 | 276 (94%) | 0 | 18 (06%) |
| | | 40-60yrs | 206 | 180 (87%) | 0 | 26 (13%) |
| Rajanpur | Male | 18-40yrs | 202 | 180 (89%) | 08 (03%) | 14 (06%) |
| | | 40-60yrs | 418 | 380 (90%) | 12 (02%) | 26 (06%) |
| | Female | 18-40yrs | 163 | 132 (80%) | 09 (05%) | 22 (14%) |
| | | 40-60yrs | 293 | 240 (81%) | 19 (06%) | 34 (11%) |
| Total | | | 1824 | 1588 (87%) | 76 (04%) | 160 (09%) |

**Table-I. Frequency distribution of HBsAg and Anti-HCV antibodies in different age groups of male and female subjects from Layyah and Rajanpur Districts**

Although in cumulative numbers, the male subjects were found more prone to either HCV or HBV due to various factors but the female subjects from Layyah district with the age ranging from 40 to 60 years have about the double seropositivity rate 13% for anti-HCV antibodies than the male subjects from the same age group (Table-I).

Interestingly none of the female subject from Layyah district was found carrier of HBsAg while 11.29% of male subjects were found seropositive for anti-HCV antibodies (Table-I).

## DISCUSSION

HCV is an important cause of CLD (chronic liver disease) and hepatic cirrhosis in Pakistan and one of the major cause of early death. Viral infections of HBV and HCV are widespread in Pakistan with 7.6% population infected while 2.82% and 4.8% respectively with HBV and HCV.[23,30] In recent estimations, it is reported that about 10 million of Pakistani population is infected with HCV.[30] The worldwide prevalence of Hepatitis C viral infection is about 3% and there could be globally more than 175 million patients with HCV infection. So, Pakistan is catering about 2% of world HCV patients.[19,20,22] The present study was carried out in comparatively ignored Southern Punjab region of Pakistan and frequency of HBsAg and anti-HCV antibody infection was found four % and nine % by ICT. These results are contrary to the already established facts. Hence, these results show the need of nationwide extensive integrated study on governmental level regarding the widespread calamity of HBV and HCV. In a previous study that was conducted in District Head Quarter Hospital of Dera Ghazi Khan among volunteer blood donors, it was noted that the cumulative seropositivity rate for HBsAg and anti-HCV was 8.2%.[24] The seropositivity rate of HBsAg and anti-HCV antibodies did not significantly differ across gender and area group. However, it greatly differ among the subjects of age 40-60 years (Group B) as compare to the Group A that consist subject 18-40 years. In group B, prevalence of HBsAg and anti-HCV is respectively five % and nine % as compare to group A results of four % and eight %. The high seropositivity rate of HBV and HCV among population of age higher than 40 years could due to increased exposure to the risk factors like shared razors, unsafe blood transfusion, unsterilized medical equipment at medical centers and lack of any awareness about the disease transmission.[21-27]

It is found that seropositivity rates for HBsAg and anti-HCV antibodies are found higher in male subjects (12.44%) than the female ones (10.46%). Similarly, there are some other studies that also have reported higher percentage among males as compared to females.[28,29] Higher prevalence of Hepatitis B and C in male subjects of the studied region could be due to more exposure to unhygienic conditions, frequent visit to barber shop for shave, lack of proper medical facilities for basic healthcare needs in those remote areas and unstable socio-economic conditions.

The ICT kits are globally used for screening of HBsAg and anti-HCV antibodies in most clinical or diagnostic laboratories. The ICT kits are the right choice for large scale studies in third world countries like Pakistan where proper medical/ healthcare facilities are not available in remote areas or financial resources are inadequate.[22] However, it is known that no diagnostic test regarding HBV and HCV gives 100% accuracy except PCR. Thus, PCR test are to be used to confirm any seropositive result for HBsAg and anti-HCV antibodies.

## CONCLUSION

As some recent surveys shows that many regions have even higher prevalence of hepatitis specially the southern region of Punjab one of the most affected but remained neglected due to the lack of any hepatitis control policy that can outreach these areas. There could be more regions if there would have had an efficient Hepatitis policy on governmental level.

So, our present will be proved a leap forward to address this national calamity with the priority to educate the healthy ones about precautionary measures and the risk factors that are mostly responsible for the Hepatitis specially HBV & HCV infection while treatment and disease management of the ill-fated infected ones

The finding of this study could provide a way forward for a sustainable nationwide education, counseling, free screening of hepatitis and treatment for the underprivileged and largely neglected population of healthy or CLD (Chronic Liver Disease) patients. It will also give us a better picture of hepatitis B & C prevalence in the previously neglected regions.



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| 3 | Dr. Syed Waseem Ahmad Mujtaba | Data collection and analysis | |
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