



ORIGINAL ARTICLE

## Hepatitis C and B prevalence in Faisalabad and its correlation to gender distribution.

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**ABSTRACT... Objective:** To estimate the prevalence of hepatitis C and B in Faisalabad district with its association to gender difference. **Study Design:** Cross Sectional study. **Setting:** Department of Gastroenterology, General Hospital Ghulam-Muhammadabad, Faisalabad. **Period:** 01-08-2021 to 31-10-2021. **Material & Methods:** A sample size of 1827 population fulfilling the inclusion criteria was selected by using the probability sampling method. A blood sample of 5ml taken from each subject, centrifuged for 15 min according to manufacturer's recommended speed (usually 1000-2000 RCF) and serum was stored at -20°C. The HBsAg kit (HBsAg2 from Abbott pharmaceuticals) for detection of HBsAg in serum and Hepatitis C kit (SD rapid test, SD BIOLINE. Data was analyzed with statistical analysis program (SPSS version 26). **Results:** Hepatitis C was found in 248 people (13.5%), while Hepatitis B was found in 95 people (5.1%). In a hepatitis gender study, we observed that a higher proportion of females were seropositive for hepatitis C. **Conclusion:** Hepatitis C is more common than hepatitis B in the Faisalabad district, but it's far less common than it was in earlier surveys, which may be because there are more facilities available.

**Key words:** Hepatitis C, Hepatitis B, Prevalence in Faisalabad.

### INTRODUCTION

A significant majority of liver illnesses are caused by infections with HBV and HCV (hepatitis B and C viruses). The hepatitis C virus (HCV) is a blood-borne infection that causes a serious alarm to world health. After contracting the virus, acute HCV infection can develop into chronic infection, which is linked to a number of morbidities, including cancer<sup>1</sup> and liver cirrhosis. Approximately 71 million people are chronically infected worldwide, placing a pressure on healthcare systems due to HCV-related morbidity.<sup>2</sup>

An acute, self-clearing infection is the usual outcome of HBV infection. Alternately, infected people may acquire a chronic infection, which often has a protracted course in which the virus replicates at high levels and is then controlled by the immune system in a way that causes inflammatory changes in the liver. A favorable prognosis is indicated by seroconversion and the

preservation of undetectable or low levels of viral replication, although chronic illness can result in the growth of cirrhosis and hepatocellular cancer.<sup>3</sup> About 27 million HBV patients globally (10.5%) knew they had the disease, including 4.5 million (16.7%) who were receiving treatment.<sup>4</sup>

Punjab, along with the interior of Sindh and the war-torn districts, has the highest illness rate in Pakistan. In non-blood donors, hepatitis B antigen, hepatitis C virus (HCV), and antibodies had weighted averages of 1.98%, 7.44%, and 5.62%, respectively, whereas hepatitis B virus (HBV) occurrence was 2.41% and 3.31%, accordingly.<sup>5</sup>

The aim of the current research was to identify HCV infection among the general population of Faisalabad, the nation's most industrialized and thus most polluted city with continuous water pollution problems. In order to provide a clearer

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picture of the disease, we also are interested in contrasting the findings of this research with those of earlier ones that were conducted in the area around Faisalabad.

## OBJECTIVE

To estimate the burden of disease, thereby supporting the process of identification of priorities in prevention and treatment of disease.

## Operational Definitions

### Hepatitis B

Acute or persistent hepatitis resulting from a DNA infection (species Hepatitis B infection of the sort Orthohepadnavirus, family Hepadnaviridae), characterised ordinarily by weakness fever, queasiness, spewing, stomach torment, obscured pee, jaundice, and joint pain in any case may additionally be asymptomatic, is most extreme ordinarily transmitted through contact with blood (as in transfusions or through sharing unclean needles).

### Hepatitis C

An acute or chronic hepatitis caused by a flavivirus (species Hepatitis C virus of the genus Hepacivirus), which is typically transmitted by infected blood (such as by injection of an illicit drug, blood transfusion, or exposure to blood or blood products), is frequently asymptomatic in its early stages but may be accompanied by fatigue, fever, nausea, loss of appetite, abdominal tenderness, and muscle and joint pain.

## MATERIAL & METHODS

This is a cross sectional study, conducted in a 3 month period in the outdoor of Department of Gastroenterology at General hospital Ghulam-Muhammadabad, Faisalabad from August 2021 to October 2021. A sample size of 1827 population, fulfilling the inclusion criteria i.e., all patients who presented to the outpatient gastrointestinal department with the age: 20-18 years old including both men and women. Patient previously diagnosed with hepatitis B or C and visited for follow up treatment were excluded from the study.

The approximate sample size needed to evaluate the occurrence of HCV and HBV infection was derived using a simple random sampling procedure, with a 95% confidence interval and an anticipated prevalence of 10% computed.<sup>6,7</sup> The research included a sample size of 1827 people.

Patients included in the research who fulfill the inclusion criteria from outpatients Gastroenterology department General Hospital Ghulam Muhammadabad Faisalabad, after approval from ethical committee and research department (48/ERC/FMU/2022-23/300). Basic demographics were recorded to ensure anonymity and the fact that the patient is not at danger while participating in this study.

All subjects who visited the gastrointestinal department's outpatient clinic had their blood sampled. In vacutainer tubes with no anticoagulant, blood was drawn. For example, 5 ml of blood were collected for every 2 ml of serum, which is around 2 ½ times more blood than was required. Centrifuged at the manufacturer's suggested speed (often 1000–2000 RCF) for 15 minutes. After being transferred into marked cryovial tubes, serum was kept at -20°C.

After separating the plasma, the samples underwent molecular and serological analysis. The HBsAg kit (HBsAg2 from Abbott pharmaceuticals) was used to detect HBsAg in serum, and the Hepatitis C kit (SD rapid test, SD BIOLINE HCV test is an immunochromatographic rapid test for the qualitative identification of antibodies specific to HCV in human serum, plasma, or whole blood) was utilized.

## Data Analysis

The information was analysed using a statistical software programme (SPSS version 26). Frequency and percentage will be computed for qualitative variables like gender and type of hepatitis. Stratification will be done with regard to gender and type of hepatitis B or C. Association between hepatitis and gender was analyzed by chi square test. p- value ≤0.05 was considered significant.

## RESULTS

The present research had 1827 individuals, including 1179 (64.5%) females and 648 (35.5%) men. Hepatitis C was found in 248 people (13.5%), while the viral infection hepatitis B was found in 95 people (5.1%). When we looked at hepatitis by gender, we discovered that more ladies than males were seropositive for hepatitis

C. These results are supported by logistic regression analysis, which revealed an odd ratio of 1.72 and a beta coefficient of 0.316 for hepatitis C in females, implying a 1.72-fold higher risk of hepatitis C in females than in males. The odds ratio for hepatitis B is 0.79, demonstrating a negative or no association between female gender and the illness.

Gender	Hepatitis C (anti HCV)		Hepatitis B	
	Seropositive Frequency n (%)	Seronegative Frequency n (%)	Seropositive Frequency n (%)	Seronegative Frequency n (%)
Male (n=648)	63 (9.7)	585 (90.3)	53 (8.2)	595 (91.8)
Female (n=1179)	185 (15.7)	994 (84.3)	42 (6.4)	606 (93.6)

**Table-I. Stratification of data according to the gender distribution**

## DISCUSSION

Hepatitis B and C are chronic blood-borne viral illnesses that endanger world health. Hepatitis is becoming increasingly common in every region of Pakistan. According to the World Health Organization's most recent estimates, Pakistan has around 5 and 10 million cases of HBV and HCV, respectively. Every year, thousands of new patients are admitted due to a lack of knowledge, preventative measures, and access to medical testing and treatment alternatives, such as invasive medical tools that are not fully cleansed, dangerous injections, and unscreened blood transfusions.<sup>8</sup> A retrospective study of HCV infections in the general population of Pakistan's most populated province was done to identify sociodemographic groups at increased risk. Farmers and two geographical locations, Faisalabad and Okara, were shown to have considerably higher HCV seroprevalence rates.<sup>9</sup>

The current study sought to ascertain the incidence of hepatitis in Faisalabad's most populous area (Ghulam Muhammadabad and the surroundings of Allied Hospital). There were 1827 participants in all, with 248 (13.5%) testing positive for hepatitis C and 95 (5.1%) testing positive for hepatitis B, a drop from the last study in Faisalabad in 2018.<sup>10</sup> The Pakistani government has pledged a deliberate endeavour to eradicate the country of HBV and HCV infection by 2030, which might explain the decrease in disease burden. This initiative intends to expand

the provision of hepatitis prevention, testing, and treatment services at the provincial level by providing leadership and coordination.<sup>8</sup>

According to the most current results, females are the most commonly diagnosed gender for hepatitis infections (15.7% versus 9.7%). The Chi square test findings revealed a significant correlation between hepatitis infection and gender difference. This link was verified using logistic regression analysis. Women are 1.72 times more likely than males to get HCV, according to the odds ratio. These findings supported the Faisalabad study, which found that females were more prevalent than males to have HCV (19.5% versus 15%).<sup>11</sup> Hepatitis C is more common in women for a variety of reasons, including a history of syringe usage, major surgery, sexual activity, tattooing, caesarean delivery, and a history of frequent travel, or a lack of understanding about self-protection against contamination.<sup>12</sup> To reduce the incidence of hepatitis in Pakistan, health facilities and awareness programmes should be upgraded, and to avoid this catastrophic sickness in our community, precautions should be implemented.

## LIMITATION

The current research was conducted in a specific locale in the Faisalabad district with a restricted sample size. The government's prevalence surveys should encompass every location in the Faisalabad district. There is also a need to assess

the risk variables connected with the disease, such as population genetic variability.

## CONCLUSION

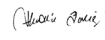






In the Faisalabad district, hepatitis C was more frequent than hepatitis B. However, it is far less frequent now than it was in prior studies, which may be related to the availability of additional facilities. Hepatitis C was more commonly discovered in females than in males, according to gender, but hepatitis B was more common in males.

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## REFERENCES

- Al Kanaani Z, Mahmud S, Kouyoumjian SP, Abu-Raddad LJ. **The epidemiology of hepatitis C virus in Pakistan: Systematic review and meta-analyses.** Royal Society open science. 2018; Apr 11; 5(4):180257.
- (Hellard ME, Chou R, Easterbrook P. **WHO guidelines on testing for hepatitis B and C—meeting targets for testing.** BMC Infectious Diseases. 2017 Nov; 17(1):1-7.
- Lamontagne RJ, Bagga S, Bouchard MJ. **Hepatitis B virus molecular biology and pathogenesis.** Hepatoma research. 2016; 2:163.
- Hutin Y, Nasrullah M, Easterbrook P, Dongmo Nguimfack B, Burrone E, Averhoff F, Bulterys M. **Access to treatment for hepatitis B virus infection—worldwide, 2016.** American Journal of Transplantation. 2018 Oct; 18(10):2595-8.
- Mehmood S, Raza H, Abid F, Saeed N, Rehman HM, Javed S, Khan MS. **National prevalence rate of hepatitis B and C in Pakistan and its risk factors.** Journal of Public Health. 2020 Dec; 28(6):751-64.
- Khalid A, Zahid M, Aslam Z, Bilal M, Haider A. **Sero-Epidemiology of Hepatitis B and C virus in rural population of Tehsil Samundri, District Faisalabad, Pakistan.** International Journal of Virology and Molecular Biology. 2015; 4:19-22.
- Takiar, Ramnath. (2020). **Re: How to calculate sample size for the study of disease prevalence?**. Retrieved from: [https://www.researchgate.net/post/How\\_to\\_calculate\\_sample\\_size\\_for\\_the\\_study\\_of\\_disease\\_prevalence/5fbf70e4cd1da61ab56093bf/citation/download](https://www.researchgate.net/post/How_to_calculate_sample_size_for_the_study_of_disease_prevalence/5fbf70e4cd1da61ab56093bf/citation/download).
- World Health Organization. **Hepatitis: 15 million people affected with hepatitis B and C in Pakistan: Government announces an ambitious plan to eliminate hepatitis.** Newsroom.2019Jul 28; Available from <https://www.who.int/hepatitis/news-events/pakistan-hepatitis-elimination-plan/en>. [cited on: June,20.2020]
- Ahsan A, Khan AZ, Javed H, Mirza S, Chaudhary SU, Shahzad-ul-Hussan S. **Estimation of hepatitis C prevalence in the Punjab province of Pakistan: A retrospective study on general population.** PloS one. 2019 Apr 3; 14(4):e0214435.
- Siddique M, Shafique M, Mateen A, Shahzad N, Aslam B, Ahmad N, Qamar MU. **Prevalence and genotypic analysis of hepatitis c virus isolated from liver center, Faisalabad, Pakistan.** Pakistan Journal of Zoology. 2020 Feb 1; 52(1):313.
- Rashid A, Bhatti MF, Ayaz S. **Gender wise estimates of Hepatitis B and C in the General Population of Faisalabad, Pakistan: Gender wise estimates Hep B&C.** Journal of Aziz Fatimah Medical & Dental College. 2021 Mar 22; 3(1):13-6.
- Hakim ST, Kazmi SU, Bagasra O. **Seroprevalence of hepatitis B and C genotypes among young apparently healthy females of Karachi-Pakistan.** Libyan Journal of Medicine. 2008 Jan 1;3(2):66-70.

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