
Original Article

Gender wise Estimates of Hepatitis B and C in the General Population of Faisalabad, Pakistan

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ABSTRACT

Objectives: To estimate the frequency of hepatitis B and C and find its association with gender.

Methodology: This community surveillance was done at Surriya Majeed trust hospital during January to April 2017. Ethical approval was taken from Ethical board. Free Hepatitis Camp was arranged at Surriya Majeed Trust Hospital Faisalabad - Pakistan in the above mentioned duration. During this survey 1000 subjects of either gender between ≥ 1 and ≤ 80 years of age, with diverse religions, professional, social and educational backgrounds, were screened for hepatitis B and C. All subjects were self-motivated beyond recording age and gender and were explained with the purpose of the study. Consent was obtained and anonymity was assured. In the case of subjects under 18 year consent was taken from the parents/guardians. From each included subject, blood was drawn following aseptic measures. For the qualitative detection of hepatitis B and C virus, Immunochromatographic tests were used. All positive cases are reconfirmed by ELISA technique. Statistical analysis was done by SPSS version 21. Results were presented as mean \pm SD, frequencies and percentages. Chi-square (X^2) test was used to analyze association between gender and hepatitis.

Results: This study consisted of 1000 participants of which 374(37.6%) were male and 622(62.4%) were females. Mean age of the study participants was 35.11 ± 13.65 . Of total 177(17.7%) were hepatitis C positive and 16(1.6%) were positive for Hepatitis B. On comparing gender for hepatitis, we found that greater number of females were seropositive for hepatitis C as compared males while hepatitis B was more commonly detected in males. X^2 test shows significant association of hepatitis and gender. These findings were strengthened by results of logistic regression analysis with significant p- value 0.046.

Conclusion: Hepatitis C was more prevalent than hepatitis B in Faisalabad district. In terms of gender, hepatitis C was most frequently found in females while hepatitis B was most prevalent in male gender.

KEYWORDS: Community Surveillance, Gender, Hepatitis B, Hepatitis C

INTRODUCTION

Chronic infection of hepatitis is exerting a major health burden globally. This disease is principally targeting the third world countries where it is spreading at a breakneck pace. The World Health Organization statistics shows around ten hundred thousand mortalities were due to hepatitis which is 2.7 % of total deaths estimation.¹ Concerning Pakistan its prevalence rate is 4.8% and is continuing to increase affecting health providers as well as the community subjects.

However, among the provinces of Pakistan, in Punjab its prevalence is 17% , much on higher side than overall prevalence and major proportion of this high prevalence was from Faisalabad district.² In this region extensive transmission of this disease needs critical understanding of its related epidemiology, cost effective prevention and treatment interventions. This continuous increase is most probably attributed to the low literacy and unsafe medical procedure.^{3,4} Hepatitis is caused by various types of viruses including hepatitis A , B, C, D and E. All these viruses are responsible for targeting the liver causing its damage. Hepatitis A and E are not blood born rather transmitted due to poor sanitation problems particularly in Pakistan and Bangladesh.⁵ Contrary to this; Hepatitis B virus (HBV) and Hepatitis C virus (HCV) share similar routes of transmission including contaminated blood product exposure, sexual activity or perinatal transmission and blood transfusion via different means.⁶ HBV belongs to Orthohepadnavirus genus a member of the Hepadnaviridae family while HCV belongs to Flaviviridae. Subjects affected by these viruses are

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diagnosed with the viral load in the blood detected by the PCR or through the antibodies produced resultant to viral exposure. If not timely diagnosed and treated, almost 80% progress to liver cirrhosis ahead of time. Due to its asymptomatic nature for longer period of time, many people are left undiagnosed.^{7,8} However, apart from diagnosis there is a debate that this virus has a gender predisposition towards male population.⁹ The increasing prevalence of this challenging health crisis, demands essential steps for the awareness and prevention of hepatitis at community level. In this regard screening for hepatitis especially at highly prevalent regions like Faisalabad is mandatory to manage and prevent complications of this lethal disease to improve quality of life of the community. Hence we aimed to screen the local population of Faisalabad district for hepatitis B and C among and we also sought to determine its association with gender.

METHODOLOGY

This community surveillance was done at Surriya Majeed Trust Hospital in collaboration with Lions Platinum Club Faisalabad during January to April 2017. Ethical approval was taken from ethical board. Permission is given by hospital management after weighing the beneficial effect of this screening on the local community. Free Hepatitis Camp for 15 days was arranged at Surriya Majeed trust hospital Faisalabad, Pakistan in the above mentioned duration. During this survey 1000 subjects of either gender between ≥ 1 and ≤ 80 years of age, with diverse religions, professional, social and educational backgrounds, were screened for hepatitis C and B. All subjects were self-motivated. The purpose and benefits of the study were explained to each participant. Subjects were enrolled on a voluntary basis. Consent was obtained and anonymity was assured. In the case of subjects under 18 year consent was taken from the parents/guardians. Subjects already diagnosed with hepatitis B and C were excluded from the study. From each included subject, blood was drawn following aseptic measures. For the qualitative detection of hepatitis B and C virus, rapid strip Immunochromatographic tests (ICT) with sensitivity and specificity 99.4% and 99.5% respectively were used. ICT follows the principle of lateral flow chromatography immunoassay technique. All positive cases were further confirmed by enzyme linked immunosorbent assay ELISA technique in the diagnostic laboratory of the hospital.

Statistical analysis was done utilizing SPSS version 21. Categorical variables were presented as frequencies and percentages. Continuous variable i.e age was

present as mean \pm SD. Association between hepatitis and gender was analyzed by chi square test. p-value ≤ 0.05 was considered significant.

RESULTS

This study consisted of 1000 participants of which 374(37.6%) were male and 622(62.4%) were females. Mean age of the study participants was 35.11 \pm 13.65. Of total 177(17.7%) were hepatitis C positive and 16(1.6%) were positive for Hepatitis B. On gender wise analysis of hepatitis, we found that greater number of females were seropositive for hepatitis C as compared to males while hepatitis B was more commonly detected in males. Chi square (X^2) test shows significant association of hepatitis and gender (Table 1). These findings are strengthened by logistic regression analysis which showed an odd ratio of 1.37 and beta coefficient of 0.316 for hepatitis C in females predicting 1.37 times more risk for hepatitis C as compared to males (p-value 0.000). While odd ratio of 0.355 and beta coefficient of -1.037 for hepatitis B was showing females have 0.355 less risk of hepatitis B as compared to males (p-value 0.046).

Table 1: Distribution of Hepatitis among Gender (n= 1000)

Gender	Hepatitis C (Anti HCV)		Hepatitis B (HBsAg)	
	Seropositive Frequency n (%)	Seronegative Frequency n (%)	Seropositive Frequency n (%)	Seronegative Frequency n (%)
Male (n=374)	56 (15.0)	318(85.0)	10(2.7)	364 (97.3)
Female (n=622)	121(19.5)	501(80.5)	6 (1.0)	616 (99)
P values	0.043*		0.037*	

Association between hepatitis and gender was checked by X^2 test. p-value ≤ 0.05 was considered to be significant.

DISCUSSION

Hepatitis B and Hepatitis C are chronic blood-borne infectious diseases considered global health issues. Prevalence of hepatitis rising at an alarming rate in Pakistan involving all the provinces. Latest estimates from the world health organization reveal that around 5 and 10 million of Pakistani population are affected by HBV and HCV respectively. Thousands of new patients are being added every years due to lack of awareness, prevention measures, medical testing and treatment resources including improperly sterilized invasive medical devices, unsafe injections and inadequately screened blood transfusion.¹⁰ Previous

epidemiological studies showed Punjab is the 2nd highest prevalent province of Pakistan and reported higher prevalence of hepatitis C in Faisalabad as compared to other regions of Punjab. Moreover, due to the asymptomatic nature of HCV and lack of routine medical checkup, several HCV infected individuals with the low-grade viremia remain undiagnosed and unaware of their health status for years and therefore, do not pursue treatment until the appearance advanced symptomatic stage of liver impairment.^{11,12} To curb the huge disease burden, the government of Pakistan has announced striving plan to eradicate HBV and HCV infection from the country by 2030. This program aims to provide leadership and coordination to provincial programs in scaling up hepatitis prevention, testing and treatment services.¹⁰

Keeping this in mind this study was conducted to screen the local population of Faisalabad district for hepatitis B and C and highlight its association with gender. Current study reveals that 17.7% of the study population was HCV positive and 16 (1.6%) were HBV positive. We found that HCV was more prevalent than HBV infection in our local population. Our results are justified with recent past study from Faisalabad reported 38.5% and 4% of the targeted population was affected by the HCV and HBV respectively.¹³ Current results are also in line with Maan et al, who in his two year retrospective study at district headquarter (DHQ) hospital, Faisalabad, estimated 21.99% of prevalence of HCV in Faisalabad that is slightly higher than other regions of Pakistan.¹² All above discussed studies are indicating that HCV is more prevalent in Faisalabad than HBV infection.

On analyzing gender wise frequency of hepatitis, current results reveals that HCV was most commonly found among females than males (19.5% versus 15%). Results of Chi square test show significant association of hepatitis with gender. This association was confirmed by logistic regression analysis. Odd ratio of 1.37 shows females have 1.37 times more risk of getting HCV infection. This finding is in agreement with Ramarokoto CE et al, study who reported higher frequency of HCV in females than males (71.42% Vs 28.57%) in their studied population.¹⁴ Concerning the gender distribution of HBV infection, current results revealed male predominance as compared to the female (2.7% versus 1.0). The odd ratio of 0.355 shows males possess 0.355 times more risk than females. These findings are compatible with results of Khan et al, that reported comparatively high prevalence in male (68.15%) than female population (31.15%).¹⁵ Public health programs should be arranged concerning assessment of hepatitis

infections among the general population, so the precautionary measures should be taken to prevent this lethal disease in our society.

Limitations: Study was carried out in only one region of the Faisalabad district. It should incorporate all regions of Faisalabad district at government level.

CONCLUSION

Hepatitis C was more prevalent than hepatitis B in Faisalabad district. In terms of gender, hepatitis C was most frequently found in females while hepatitis B was most prevalent in male gender.

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Conflicts of Interest: Authors and funding bodies have no conflict of interest. Authors have full access to data.

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Author's Contribution:

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Study design, data analysis and interpretation and write up of results. Manuscript writing, critically revised important intellectual content and approved it.

Dr. Muhammad Farooq Bhatti

Study design, acquisition of data and manuscript writing. Revised and approved the articles.

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Data Collection, manuscript writing Revised and approved the articles.

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