# SEROPOSITIVITY OF HEPATITIS B, C IN PRISONERS OF CENTRAL JAIL PESHAWAR

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## ABSTRACT

**Objective:** To find seropositivity of Hepatitis B and C in Prisoners of Central Jail Peshawar.

**Material and Methods:** This Descriptive-cross sectional study aimed to estimate the prevalence of HBV and HCV infection in the inmates of Central jail Peshawar between January 2011 and December 2011 after permission of Chief Capital City Police Peshawar with help of a non-governmental organization. Study participants included 1360 prisoners from Central jail Peshawar, Pakistan after informed consent. Most of the prisoners 1320 belonged to Pakistan and 40 were foreign nationals.Blood specimens from participating prisoners were collected after inform consent and tested in main laboratory of Police Services Hospital Peshawar for anti-HCV and HBsAg. Rapid testing immunochromatographic (ICT) devices were used for screening. Initially reactive samples were retested and final diagnosis of sero-positivity for HCV and HBV was made using ELISA system. All information were recorded in structured preformed proforma.

**Results:** Total of 1360 prisoners participated in this study. Male outnumbered the female participants 97.9% and 2.1% respectively.Less than 20 years were 4.04%, 21 to 30 years of prisoners were 17.64%, 31 to 40 years were 23.67%, 41 to 50 years were 29.55% and >50 years were 25.07%. Hepatitis C was present in 16% while 7% were seropositive for HBV and 0.8% having HBV/HCV co-infection.

**Conclusion:** The prevalence rate of HCV and HBV infection is quite high in the Central jail Peshawar Pakistan, higher than the national prevalence of amongst general population. Hepatitis prevention and control activities in the correctional facilities of Pakistan need to be institutionalized.

**Key Words:** HCV, HBV, prisoners.

## INTRODUCTION

Jail or prison is a place for the confinement of persons in lawful detention, especially persons convicted of crimes[1]. prisons also act as social or structural determinants of health[2,3]. Prison settings are commonly associated with high risk of infectious diseases[4]. Such increased risks are attributable to both the likelihood of a high proportion of people with infectious diseases coming in contact with the criminal justice system and the increased risk of infectious disease transmission in prison settings[5]. Close links between prison settings and surrounding communities, as well as the fact that more than 95% of inmates will eventually re-enter the general community[6].

The prevalence of infection with hepatitis C virus (HCV) is higher among prison inmates compared with the general population[7]. Hepatitis C Virus is a life threatening human pathogen, not only because of its high prevalence and worldwide burden but also because of the potentially serious complications of persistent HCV infection and its co-infection human immune deficiency virus with (HIV) and hepatitis B virus (HBV) is associated with an accelerated course of the disease and may result in more rapid progression of either or both[8,9]. HCV and HIV / HBV co-infections represent a public health problem of growing importance is because of similar modes of spread, many people are co-infected with HCV and HIV or HCV and HBV and in some cases with all three viruses at the same time[8]. In particular, HCV / HIV co-infections are common and are known as "twin epidemics"[9]. Both are blood born RNA viruses that replicate rapidly. Direct 'blood to blood transmission' – through needle sharing – is the most efficient means of transmitting both viruses[10,11]. Prison settings host a disproportionately high prevalence of HCV infection and co-infections. The prevalence of HCV among prisoners approaches 57.5%, and far exceeds that of HIV in prison[12].

Hepatitis B virus infection is a major global health problem[12,13,14] especially in Asia, Africa, southern Europe and Latin America[15] About 2 billion people are infected with HBV worldwide and 400 million among them are suffering from chronic HBV infection[17]. Pakistan is highly endemic with HBV[18] with nine million people infected with HBV[19] and its infection rate is on a steady rise[20]. The reason may be the lack of proper health facilities, poor economical status and less public awareness about the transmission of major communicable diseases including HBV, HCV and HIV[21].

## MATERIAL AND METHODS

This Descriptive-cross sectional study aimed to estimate the prevalence of HBV and HCV infection in the inmates of Central Jail, Peshawar between Janu-

ary 2011 and December 2011 after permission of Chief Capital City Police Peshawar with help of a non-governmental organization.

Study participants included 1360 prisoners from Central Jail Peshawar, Pakistan after informed consent. Most of the prisoners 1320 belonged to Pakistan and 40 were foreign nationals. Study Procedure: Blood specimens from participating prisoners were collected after inform consent and tested in main laboratory of Police Services Hospital Peshawar for anti-HCV and HBsAg. Rapid testing immunochromatographic (ICT) devices were used for screening. Initially reactive samples were retested and final diagnosis of sero-positivity for HCV and HBV was made using ELISA system. All information were recorded in structured preformed proforma.

## RESULTS

Total of 1360 prisoners participated in this study. Male outnumbered the female participants 1332 (97.9%) and 38 (2.1%) respectively. (Table 1). Less than 20 years were 55(4.04%), 21 to 30 years of prisoners were 240(17.64%), 31 to 40 years were 322(23.67%), 41 to 50 years were 402(29.55%) and >50 years were 341(25.07%). (Table 2). Hepatitis C was present in 217(16%) while 95(7%) were seropositive for HBV and 11(0.8%) having HBV/HCV co-infection.(Table 3)

**Table 1: Gender distribution of all participating and HCV & HBV positive prisoners**

| Gender | Subjects | |
|---|---|---|
| | Number | Percentage |
| Male | 1332 | 97.9% |
| Female | 38 | 2.1% |
| Total | 1660 | 100% |

**Table 2: Age distribution of prisoners**

| Age | Number | Percentage |
|---|---|---|
| <20 years | 55 | 4.04% |
| 21-30 years | 240 | 17.64% |
| 31-40 years | 322 | 23.67% |
| 41-50 years | 402 | 29.55% |
| >50 years | 341 | 25.07% |

**Table 3: Distribution Of HCV and HBV infection**

| | Proportions | |
|---|---|---|
| Positivity Status | Number | Percentage |
| HBsAg | 95 | 7% |
| Anti-HCV | 217 | 16% |
| HBV & HCVCo-Infection | 11 | 0.8% |
| *Total* | 323 | 23.8% |

## DISCUSSION

Imprisonment is considered a major risk factor for HCV infection, with the risk of infection directly proportional to the length of incarceration[21,22]. Prisons socially determine the transmission of HCV infection among inmates in several ways. First, a high proportion of inmates are addicted to illicit drugs that are injected, and some of the convicted illicit drug users manage to continue with their habit during incarceration[23]. Health services for addiction management in most prisons are inadequate to cope with the demand for such treatments. Addicted inmates are less likely to benefit from health-education activities, such as counseling about drug abstinence, without parallel addiction-management interventions, such as methadone or buprenorphine maintenance treatment[24]. Many drug-addicted inmates turn to tobacco and illicit drug use to satisfy their addictive cravings, as well as to numb the pains of imprisonment, famously classified by Sykes as deprivations of liberty, goods and services, heterosexual relationships, autonomy, and security[25].

Second, as a high proportion of individuals in contact with the criminal justice system have already contracted hepatitis C prior to incarceration, prison settings magnify the probability of hepatitis C transmission among inmates who engage in intra venous drug abuse (IVDA)[26]. Other risk factors for hepatitis C transmission, such as assault, body piercings, tattooing, and unprotected anal sex with male injection drug users, are also commonly practiced by inmates[27,28].

These risk factors are more common in custodial settings, primarily because of the structure and function of prisons. For example, limited access to harm reduction interventions, such as needle- and syringe exchange programs or condoms, makes it more likely that inmates will contract HCV infection. The finding that hepatitis C prevalence among custodial officers is higher compared with the general community[27] suggests that prison environments may also mediate infection risks for prison workers — either directly, through occupational hazards associated with physical assaults, or through the stress of prison duties putting custodial workers at higher risk of engaging in activities such as illicit drug use, and consequently contracting HCV infection. However, proof of such a trajectory is lacking from systematic reviews[29].

Third, custodial policies and practices influence the likelihood of inmates contracting HCV infection. Prisons with lax or poorly implemented policies in relation to illicit drug use make inmates more vulnerable

to contracting HCV infection. Lax policies include weak surveillance of drug and injecting-equipment trafficking, and inadequate sanctions meted to inmates or custodial workers found to be involved with drug trafficking[30].

In our study male prisoners outnumbered the female as observed in other local study by Gorar AZ et al from Sindh[31] and Australian study[32]. Prison inmates around the world are known high-risk populations for the transmission of, Hepatitis B, C, HIV and other sexually transmitted diseases (STD). The risky behaviour among these marginal segments of the society include injecting the drug, sharing of needles, men having sex with men and home-lessness[33]. This study has revealed that the Hepatitis C seropositivity is significantly higher 16% than measured in the general population through the national survey 4.9% comparable with local study by Gorar AZ et al from Sindh[31] while 6.3% in Bahawalpur Jail[34] and Australian study[32] revealed rates up to 34%.

Hepatitis B and C infections are one of the major health problems in the world and its high prevalence of infection in prisoners suggests them as one of the main infection source in community[35]. In our study 7% prisoners were seropositive for HBV while in USA 13% to 47% of prisoners had Hepatitis B infection that is 2-6 times more than its prevalence in the community[36]. In the New South Wales prisons 3.2% of them had HBS Ag,[37] while the Rhode Island prisons reported 23.1% prevalence of hepatitis B infections among males prisoners[38].

## CONCLUSION

The prevalence rate of HCV and HBV infection is quite high in the Central jail Peshawar Pakistan, higher than the national prevalence of amongst general population. Hepatitis prevention and control activities in the correctional facilities of Pakistan need to be institutionalized.

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