

Screening of Jail inmates for HIV and Tuberculosis

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ABSTRACT

Objective: To evaluate prevalence of infections among Pakistani male population of Camp jail Lahore.

Study design: This Study was designed to reach these jail inmates to estimate the burden of TB and HIV among them and examine their living conditions at jail to determine their vulnerability to acquisition of these infections. Since worldwide the number of people infected with both HIV and tuberculosis is rising and to make the global situation worse, tuberculosis has formed a lethal partnership with HIV.

Duration: June 2009 to August 2009

Methods: We examined 1027 jail inmates and blood samples were collected .All collected blood samples were tested for tuberculosis antibodies and HIV antibodies with chromatographic assay.

Results: Seroprevalance for, HIV and tuberculosis was 2.4% and 4.25% respectively. Overall prevalence of these infections was 6.65%.

Conclusion: it was evaluated that in jail inmates there is high incidence of HIV and tuberculosis as compared to general population. Regular testing is required to identify infected people and especially screening for these diseases should be mandatory for new inmates. In addition strict preventive measure must be adopted to curtail spread of these viral and contagious diseases.

Keywords: inmates, camp jail, survey, Pakistan, Lahore, HIV, Tuberculosis

INTRODUCTION

High incidence of blood born viral infections (HIV) and contagious infection (Tuberculosis) has been well documented in the sub population of jail globally^{1,2,3}. The reported high prevalence of these infections in jail inmates is related to sex and drug abuse along with poor socioeconomic condition prevailing in community^{1,5}. It is of great concern that jail can act as reservoir for transmission of these infections to general public as infected individual are released from prisons^{1,2,4}. It is estimated that in United States the infection rate of HIV is two to eight times higher than general public, Drug users in jail have higher incidence of HIV infection as compared to general community⁵.

Prisoners constitute a high risk group for acquisition of TB infection and development of tuberculosis compared with the general population due to the overcrowding, closed living conditions, insufficient ventilation, generally low socio-economic status, poor nutrition, and poor health of prison inmates⁶. Poor access to TB services and socioeconomic status play a role in the elevated TB rates among prisoners⁷. Inmates, in contrast to non-inmates, are more likely to have multiple risk factors for infection with mycobacterium tuberculosis and for progression to tuberculosis disease. Inmates are also more likely to have drug resistant TB. Special efforts

are needed to mitigate the personal and public health toll created by these risk factors. The concentration of these factors in a congregate population has resulted in explosive outbreaks of TB, as demonstrated in a North Carolina outbreak involving 25 homeless patients, 72% of whom had a history of incarceration in the local county jail^{9,10}.

Tuberculosis outbreaks and ongoing transmission have occurred even after inmates were screened for TB and also have been attributed to failure to complete treatment by inmates known to have latent TB infection¹¹. Tuberculosis among prisoners is a problem that is encountered and described by countries in all continents¹². The prevalence can be much higher than in the general population. For example, in a study in Botswana prisons the point prevalence was 3797 per 100,000 population¹³. In another study done on males aged 15 to 64 years at a correctional facility the percentage of TB cases reported as residing in a correctional facility was 9.2% for those born in the United States¹⁴. In a study of 20 large city and county jails, a review of inmate medical records found that only 48% of 376 inmates with latent TB infection had a known HIV status¹. Although the CDC recommends routine HIV counseling and testing at intake to the correctional facility, the majority of correctional systems currently do not offer universal HIV testing, a critical limitation for effective TB prevention and control and for the medical management of individual patients¹⁵. Moreover, in HIV-infected persons infected with M tuberculosis, the progression to tuberculosis is

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often rapid and can result in difficult-to-control outbreaks¹⁶. In prisons, intravenous drug use is frequent and facilitates transmission of HIV which in turn provides a perfect breeding ground for rapid spread of TB from index cases to other inmates. Frequently, because of rapid turnover, TB cases are not recognized and, once prisoners are released, they may infect others¹⁷.

All the prisons in Pakistan are faced with the problem of housing inmates far exceeding the number than what each of them was originally designed for. Due to meager resources, the old buildings are in bad condition and pose extreme health hazards for prisoners. This overcrowding adds to the already unhygienic conditions, as the ancient buildings lack a proper sewerage system. The segregated portion within the premises for women prisoners presents an even worse example of the negation of the fundamental right with respect to the inviolability of human dignity. The rooms, originally built to accommodate not more than ten prisoners, are being used for the confinement of more than 30. It is not only the women prisoners who are locked in these gloomy, unventilated rooms, but also the infant and children, some of whom are given birth in the same overcrowded premises. The prisoners in such overcrowded accommodation have no alternative but to sleep on the floor under hazardous conditions due to lack of space. The prisoners, therefore, run the risk of being exposed to health hazards¹⁸.

SUBJECTS AND METHODS

This cross-sectional study was conducted in Camp jail Lahore, Punjab, Pakistan. Field work was done between June 2009 and August 2009. This study was part of screening of inmates of different jail of Punjab for HIV, HCV, HBV and tuberculosis infection as per direction of Health Department of the Punjab. Study population comprised of 1027 randomly selected jail inmates (mainly new intakes). Political and psychiatric sub-population was excluded from study.

Each serum sample was tested for HIV I and HIV II using commercially available ICT test devices (ACON). Reactive samples were rechecked and repeatedly reactive samples were tested with ELISA technique. Serum sample reactive for HIV with ELISA at Sir Ganga Ram Hospital were retested at another facility, Institute of Public Health, Lahore (IPH).

All serum samples were tested for Tuberculosis antibodies using commercially available one step chromatographic assay (ACON). All reactive serum sample were retested with device of another manufacturer. All laboratory test were performed by trained laboratory staff at pathology department of Sir Ganga Ram Hospital Lahore.

Comparison of age was based on student t-test for continuous data and chi-square(X^2) test with Yates correction for categorical data. Analysis was conducted using SPSS version 15. Significance level was accepted at $p < 0.05$.

RESULTS

In this study 1027 jail inmates imprisoned at Camp Jail, Lahore were included at random. In this study all prisoner were male. Most of them (51.21%) were between 21 and 40 years of age, followed by 15.28% and 8.86% of prisoner who were in age group <20 and between 41 to 50 years respectively. Only 6.7% of prisoners were of age 51 years or above. The youngest inmate screened was 13 years old and oldest one was 65 years old male.

Altogether 6.65% jail inmates had positive results for one or more of pathogens and 2.4% were positive for HIV. Prevalence of antibodies to HIV and Tuberculosis are summarized in table. The most affected age group was between 21-30 and 31-40 years. However maximum prevalence of HIV and tuberculosis was noted in the age group 21-30 years as compared to other groups ($p < 0.001$). No other information regarding socioeconomic status was included because of restraint due to jail security and other factors. Serological Lab test done on jail inmates showed that twenty five (25) out of 1027 prisoners (2.4%) were Positive for HIV antibodies. Forty four (44) out of 1027 prisoners (4.25%) were positive for tuberculosis antibodies.

Age group (Yrs)	Total (n=1027)	HIV +ve	TB (sero +ve)
<20	157(15.28%)	3(0.29%)	05(0.48%)
21-30	526(51.21%)	16(1.55%)	20(1.94%)
31-40	194(18.88%)	04(0.38%)	13(1.26%)
41-50	91(8.86%)	01(0.097)	02(0.19%)
51-60	45(4.38%)	01(0.097)	02(0.19%)
>60	14(1.36%)	0	02(0.19)

DISCUSSION

Tuberculosis is known to be a disease of poverty, affecting those who live in crowded, ill-ventilated places, and those whose immune status or nutritious level is so low that they easily succumbed to tuberculosis. Many studies have been carried out on jail inmates to find prevalence of tuberculosis among them. These studies were initiated and built on the thesis that jail inmates are exposed to risk factors leading to the development of tuberculosis. Jail inmates are frequently engaged in activities which make them prone to HIV/AIDS. Pakistan ranks 8th among the 22 high-burden tuberculosis countries world-wide, according to the World Health

Organization (WHO) Global TB Report 2008. Every year, approximately 280,000 people in Pakistan (primarily adults in their productive years) develop TB. The emergence of multidrug-resistant TB and TB-HIV co-infection are growing concerns in the country¹⁹.

This study was done on the jail inmates of Camp Jail situated at Lahore, capital of Punjab province. The aim of the study was to find prevalence of tuberculosis among jail inmates. The study found that 44 prisoner out of 1027 were positive (4.25%) for tuberculosis antibodies. The dominant group positive for tuberculosis belong to young people (between 21 - 30 yrs of age). This high positivity for tuberculosis may be due to treated or old cases. Complete evaluation of these cases is required to label them as a tuberculosis infection.

Regarding HIV infection the high positivity is found in age group between 21-30 yrs. Most of the jail inmates belonged to age groups which are considered high risk groups for the sexually transmitted infections. Being a Muslim country AIDS is not much problem for Pakistan, but the jail inmates being criminal in nature and majority of them are exposed to drugs and have irresponsible sexual behaviour, the incidence of HIV can be much higher than general population.

The higher HIV positivity in inmates than general population may be due to the higher proportion of people with prior history of injectable substances and high risk sexual behaviours^{20,21,22}. This has important implication for the monitoring and control of this infection in the rest of society, as most prisoner sent to jail remain for very short time and then become part of general population again and might be potential reservoirs for dissemination of this infection¹⁻². The lower socioeconomic and educational status of the prisoner and the poor conditions prevailing in the jail, may have also contributed to the higher prevalence in the prisoners for most of infections^{1,2,4}.

The survey was not designed to provide direct evidences transmission of infectious disease in prison, but its results suggest that greater provision of measure to reduce harm in jails are needed. The significantly higher prevalence of these infections seen in 'camp jail Lahore' may be due to fact that this jail has much larger prisoner population (over 4500) with more overcrowding. The restrictive nature of jail, poor basic medical infrastructure and unnatural sexual behaviours heightens the hazard associated with high risk activities. Jail inmates therefore, constitute a high risk groups for HIV infection and other infectious diseases.

Some limitation of our study may be considered. Firstly, the study dealt with only one prison having

prisoners from all over the Punjab but result cannot be applied to entire incarcerated population, particularly the prisoner with short stay/detention. Rates of injectable substances and sex with in jail are difficult to estimate. Religious beliefs and security problem of jail are hindrance for prisoner to respond correctly to question about injectables used and about sex practises. Therefore we excluded any questionnaire from our study. Furthermore financial constraint did not permit confirmation of reactive blood samples by Western blot, PCR and other confirmatory diagnostic assays.

The major finding of our study was the high rates of HIV positivity (2.4%) among jail inmates as compared to general population in Pakistan. This is a cause of continuing public health concern because jail sub population represent an important segment of community, especially with regard to communicable diseases. It is further observed that there are inadequate medical facilities and staff in camp jail Lahore. Health care facilities must include, screening programs in prisons, facilities of specialized care within or outside prisons and isolated barracks for prisoner having evidence of communicable diseases like Tuberculosis. Effective counselling along with screening programs for blood born and communicable diseases will help to limit transmission of infection within and outside the incarcerated centers^{13,14,23}. The finding of 2.4% HIV positivity is highly alarming and calls on health authorities and Provincial AIDS Control programme to be on high alert.

CONCLUSION

The study found clustering of risk factors among jail inmates which are conducive for the transmission of STIs, HIV/AIDS and tuberculosis. This study recommends to Home and Health Departments to conduct health campaigns aiming at promoting health education related to these high burden and high risk diseases. This study has found 25 of 1027 jail inmates seropositive for HIV and recommends that voluntary counselling and testing services should be offered to all prisoners and to each prisoner on his entry into the jail. This study recommends that Jails in all four provinces of Pakistan be included in the next round of Integrated Behavioural and Biological Surveillance being conducted under the National AIDS Control Programme of Pakistan and HIV/AIDS Surveillance Project. HIV/AIDS positive jail inmates should be housed separately from other jail inmates to prevent transmission of mycobacterium tuberculosis to HIV-positive cases. However, this recommendation needs further evaluation for its implementation in the light of inherent patients' rights.

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