

# Prevalence of Hepatitis B and C, Tuberculosis, and Human Immune Deficiency Virus among injection drug users of Punjab, Pakistan-A cross sectional study

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## Abstract

**Objective:** To find prevalence of various infections, such as Hepatitis B and C, HIV, and Tuberculosis amongst injection drug users (IDUs) in several cities of Punjab region in Pakistan.

**Methods:** This study was conducted between September 2019 – September 2020. Centers contacted were chosen randomly over various cities of Punjab; with Lahore, Multan, Faisalabad, Gujranwala being major focus. A predesigned questionnaire with several open and closed ended questions was filled via interviewing each rehabilitation center administrator/staff to collect data for the study.

**Results:** A total of 78 rehabilitation centers was sorted and contacted. Only 21 of which agreed to be part of the study while 57 denied, even after having focus group discussions with the centers' administrators. We found a prevalence of 7.96% for HBV, 9.61% for HIV, 0.82% for TB, and the highest 32.69% for HCV amongst the surveyed cohort.

**Conclusion:** It is concluded that prevalence of infectious diseases in injection drug users is significantly higher than overall reported incidence, thus needs proper disease surveillance and mitigation programs on national level.

**Keywords:** Intravenous drug users, Hepatitis B, Hepatitis C, HIV, Tuberculosis, Rehabilitation centers.

## Introduction

Hepatitis B and C viruses (HBV, HCV), and Human Immunodeficiency Virus (HIV) are blood borne viruses, transmitted by sexual contact and injection drug use. HCV infects an estimated 170 million persons all over the world which makes 2.5% of the global population, a huge portion of which is intravenous drug users (IDUs). Hepatitis B virus is one of the most common infectious diseases in the world, infecting two billion people, 350 million of them being chronically infected. It is primarily transmitted through contact with body fluids of the infected person. According to an estimation, a worldwide prevalence of 17.8% (10.8–24.8) for HIV, 52.3% (42.4–62.1) for HCV, and 9.1% (5.1–13.2) for

HBV with substantial geographic variation in these levels has been reported in IDUs.<sup>1</sup> Having minimal to none regard for personal hygiene, bad quality of line, and injection abuse, turn the IDUs into a society's reservoir for blood borne infections. Such communities going unmonitored result in increased death rates and pose a serious threat to the health quality of the society, play significant role in spreading of the disease. Pakistan is reported to have an estimated prevalence of 510,000 cases of Tuberculosis<sup>2</sup>, some 8 million people infected with HCV (5% of the population)<sup>3</sup>, and almost 9 million people infected with HBV.<sup>4</sup> Although incidence of HIV reported in Pakistan is as low as 0.1%<sup>5</sup> to higher as 8.6%<sup>6</sup>, but it is significantly higher in IDUs around the globe.<sup>5</sup> Because IDUs are more susceptible to blood borne infections, we might expect the prevalence of such infections at similar or even higher rates amongst them in Pakistan. Thus, this study was designed to assess the same regarding three viral (i.e. HCV, HBV, HIV) and one bacterial (Tuberculosis) infection amongst IDUs of Punjab region in Pakistan.

## Methods

This study was conducted between September 2019 – September 2020, after having obtained ethical consent from the Institutional Ethical Committee. Various rehabilitation centers in several cities of Punjab region were selected via worldwide web search, to conduct this survey. Centers from different cities of Multan, Gujranwala, Lahore, and Faisalabad region were included.

Internet browsing resulted in listed addresses and contact numbers of the rehabilitation centers. Mostly the locations that were mentioned on their web page were fake. There might be an element of secrecy regarding location of most of the centers. These centers were contacted through phone calls and sought permission to visit their places to convince the doctors on duty to co-operate but was refused in most of the cases.

All centers were visited, including not only those whose information was correctly provided on

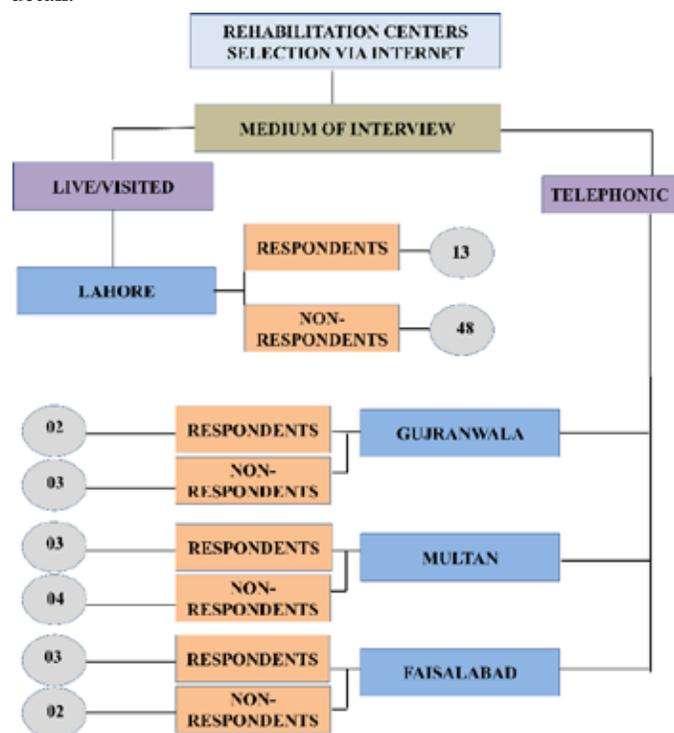
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internet, but also many of those places were visited whose information about location was invalid on internet by asking people in the locality. Information wasn't shared by majority of the centers, thus less of those cooperated. There were multiple reasons shared by the centers' staff, such as they weren't allowed to share data, or they didn't have the data because those centers refuse admission to any of the IDUs coming positive for known viral infections or TB. Such centers were excluded from the cohort.

A questionnaire was designed to be used in the survey (supplementary material-Questionnaire) to collect the information needed to see the prevalence of the infections included in the study. This was duly filled by consenting centers in presence of one or more of the authors or by a structured interview based on the same questionnaire by the authors.

**Results**

A total of 78 drug rehabilitation centers across Punjab were contacted via phone or visited in person. Only 21 of the said cohort agreed to share required information totally or partially for the study. While a majority of those, 57 were excluded based on several reasons as stated above, even after having focus group discussions with the medical consultants and rehabilitation center owners. Data was collected in person and on phone calls. Figure 1 shows the response rate of the drug rehabilitation centers in detail.

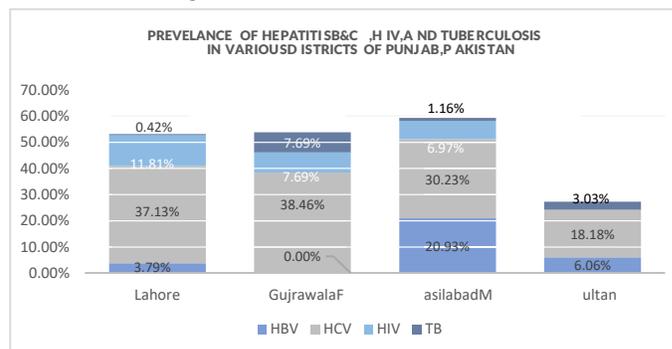


**Figure 1: Data collection method and Response rate from Lahore, Gujranwala, Multan, Faisalabad region rehabilitation centers in Punjab, Pakistan.**

An analysis of the data gathered from 21 centers revealed that almost of all these centers were either privately running or NGO running. Those who responded, mainly were administrative staff. Almost all of them had visiting doctors in the center or had a consultant doctor for regular examinations of the inmates, in case of rehabilitation centers. Data for a total of 364 IDUs' was

collected. A total of 29 (7.96%) IDUs were reported positive for HBV, while 35 (9.61%) for HIV, and 3 (0.82%) for TB. The highest prevalent disease amongst all was HCV, with 119 (32.69%) reported positive.

District wise prevalence is given in Figure 2. What was worrisome was the absence of proper periodic screenings of these patients for these and other potential infections. While interviewing the staff and patients it was also revealed that most of the IDUs are refused admission into these rehabilitation centers which aggravates the problem further, leaving them and their families helpless. While answering the question regarding infected IDUs' spouse and immediate family members' periodic screening, all the interviewees responded positively and agreed to recommending the same to the inmates.



**Figure 2: Prevalence of Hepatitis B & C, HIV, and Tuberculosis in various districts of Punjab, Pakistan. HCV appears to be the highest prevalent viral infection amongst all others. While prevalence of HBV is the highest in Faisalabad region, whereas it is absent amongst IDUs of Gujranwala region.**

**Discussion**

This study is first of its kind as in number of cities, number of rehabilitation centers, and number of infections studied. Correct estimation of disease prevalence is the first step for nationwide policy making to prevent burden on health economy of the country. Surveillance programs are thus at the core of health intervention measures in a number of developed countries.

For instance, some of the biggest government run surveillance programs include but are not limited to Global Hepatitis Surveillance Technology (GHOST) by Centers for Disease Control and Prevention, USA,<sup>7</sup> The HIV and AIDS Reporting System (HARS), UK., etc.<sup>8</sup> Pakistan, although a home to a number of these microbial disease, lacks majorly in disease surveillance and epidemiological studies programs. There are some of these programs being led by Government of Pakistan, but are quite not fulfilling the need and inconsistent in operation. Some of the independent research groups have worked on these particular diseases on their own, but once again these studies are few and far between. Thus, making it difficult to come up with exact prevalence of these infectious diseases. Therefore, it is not only desirable but a dire need of time to conduct these studies as many as possible and from all over the country.

Injection Drug users are a marginal community of the society, which acts as a breeding ground and a reservoir for blood borne pathogens. Surveillance studies amongst them in Pakistani population is even farfetched. There are only around ten

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studies reported since 2003, with either one of the diseases discussed here, or with two of these, from a single city in Pakistan. Mohammad Abrar Ahmed et. al., in 2003 have reported unsafe practices, blood donation practices, and HIV/AIDS risk behaviors amongst IDUs of three cities, i.e., Quetta, Peshawar, and Rawalpindi.<sup>9</sup> Sindh AIDS control program has reported an AIDS outbreak in IDUs of a small town, Larkana in Sindh as early as in 2004.<sup>10</sup> A very high incidence of 88% HCV positivity was reported amongst IDUs of Lahore and Quetta areas.<sup>11</sup> Similarly, a very high incidence of 60% for HCV, 24% for HBV, alarming 6% of HIV has been reported from Quetta IDUs in 2007.<sup>12</sup> HIV was reported to be highly prevalent amongst IDUs of Hyderabad (8.5%) and Sukkur (33.6%).<sup>13</sup> An increase of 5-12% was suggested in 2009 by a transmission model<sup>14</sup>, while Platt et., al. have reported a probable sexually transmitted infections (STIs) epidemic in Rawalpindi area with major focus on HIV.<sup>15</sup> A seroprevalence of HCV of more than 36% was found in 2016 amongst IDUs in Lahore area.<sup>16</sup> A rather recent study of 2017 from Rawalpindi IDUs, but with smaller sampler size (n=100) has reported a staggering 72% seroprevalence of HCV<sup>17</sup>, while another from 2020 has reported 68.3% prevalence.<sup>18</sup>

Our study covered rather a broader area in Punjab, focused on rehabilitation centers, and random sampling method have helped us generate valuable data with bigger sample size. We found a 32.69% prevalence of HCV, which falls in the range of 57±17.7% suggested by a systematic review published in 2009 regarding HCV in IDUs in Pakistan<sup>19</sup>; and agrees with the 36% reported in 2016 (16). Whereas, our found 9.61% presence of HIV amongst IDUs in Punjab falls in between previously reported prevalence from Sukkur and Hyderabad.<sup>13</sup> TB although is not a viral infection but according to WHO is becoming a pandemic anyway in Pakistan<sup>20</sup>, which itself raises big concern.

**Conclusion:**

We have found significant prevalence of viral infections amongst IDUs of surveyed rehabilitation centers in Punjab, Pakistan. Various factors might be contributing to this incidence, including but not limited to injection drugs abuse, reuses, and shared uses of drug syringes amongst different users, lack of screening and treatment facilities. The lack of rehabilitation/treatment facilities for these marginalized members of the society increases even more when those with infections are refused to be admitted at the available scarce ones. Given these conditions and results, it is need of the time for state run surveillance programs for infectious diseases on a country wide scale for correct estimation and mitigation. It is also needed to make and promote rehabilitation centers which help those with injection drug addiction and active viral infections, with best possible doctors and facilities available, so that these marginalized members of the society be helped converted into useful and respected ones.

**Author Contribution:**

RN has conceived the study, RN, HS, MS, and AA have drafted Questionnaire, RN, SS, UM have supervised data collection, HS, FR, SA, AR, RR, MUK, AJ, and MS have collected the data, RN have performed analysis, written the manuscript, conceived and supervised the study. All authors have read and approved the manuscript.

**Conflict of interest:**

Authors declare no conflict of interest.

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