

## Risk factors of HIV/AIDS in Sindh province, Pakistan – A Systemic Review

YASIR AKBAR JAMALI<sup>1</sup>, IMRAN ALI JAMALI<sup>2</sup>, SHAKEEL AHMED SHAIKH<sup>3</sup>, WALI MUHAMMAD MANGRIO<sup>4</sup>, BHANWRIO MENGHWAR<sup>5</sup>, JAMSHED WARS<sup>6</sup>, MUSHAHID HUSSAIN MALIK<sup>7</sup>

<sup>1,6</sup>Institute of Microbiology, Shah Abdul Latif University, Khairpur – Pakistan

<sup>2</sup>Department of Community Medicine, People's University of Medical Health Science for Women Nawabshah – Pakistan

<sup>3,5</sup>Department of Physiology, Suleiman Roshan Medical College, Tando Adam – Pakistan

<sup>4</sup>Department of Zoology, Shah Abdul Latif University, Khairpur – Pakistan

<sup>7</sup>Department of Physiology, University of Sindh, Jamshoro - Pakistan

Correspondence to: Yasir Akbar Jamali, E-mail:- [yasirakbarjay@gmail.com](mailto:yasirakbarjay@gmail.com), Mobile # 0334-3513300

### ABSTRACT

**Background:** - The Acquired Immunodeficiency Syndrome (AIDS) is one of the most challenging health problems in medicine today. Epidemiologic, virologic, serologic, and immunologic studies have strongly implicated that the human immunodeficiency virus (HIV) is the causal cause of this newly identified fatal disease. Although AIDS has been identified in all the major continents of the world.

**Methods:** - We conducted a comprehensive literature search using PubMed and google scholar. Papers were included from January 2000 to December 2021. For the search strategy, combinations of the following keywords and medical subject heading (MeSH) terms were used: Risk factors of HIV in Sindh', 'Risk factors of AIDS in Sindh', 'risk factors of HIV/AIDS in Sindh, epidemic of HIV in Larkana', 'AIDS in children in Sindh'.

**Results:** - The major risk factor for HIV in Sindh unsafe Injection Drug users, Hijra Sex workers, and male to male sex workers followed by heterosexual contact and blood transfusion. Larkana city was an epicenter of HIV outbreaks in the past two decades. HIV infection also spread via the renal dialysis machine in Larkana.

**Conclusion:** - Government should take serious steps for the prevention of HIV infection and open AIDS control programs in every district of Sindh and available antiviral therapy for all patients as early as possible.

**Keywords:** HIV infection, AIDS, communication, Sindh

### INTRODUCTION

In Pakistan, the first case of AIDS was discovered in 1986, and the disease has since spread around the world. Since then, HIV has continued to spread across the nation, but at a slower rate. The HIV pandemic in Pakistan has mostly affected adults, particularly those who engage in high-risk behavior, such as persons who inject drugs (PWID), males who have sex with other men, transgender individuals, and sex workers<sup>1,2</sup>. In 2018, an estimated 160 000 persons in Pakistan were reported to be HIV positive, with 2.2 percent being children under the age of 15<sup>3</sup>.

There are a variety of variables that are contributing to the spread of the HIV/AIDS virus in Sindh, and these very elements provide a bigger challenge for healthcare professionals in their efforts to combat the pandemic. Sindh is Pakistan's most populous province and has a literacy rate of 62 percent, making it one of the country's most populous provinces<sup>7</sup>. The absence of family planning and the underuse of contraceptives are two of the most significant contributors to this rapid population expansion. It is exceedingly difficult to treat and prevent HIV/AIDS in developing countries due to a lack of information and cultural stigmas associated with contraception and family planning<sup>8</sup>.

The study aimed to conduct a systemic review of available published literature on HIV/AIDS and its risk factors in Sindh.

### METHODOLOGY

We conducted a comprehensive literature search using PubMed and google scholar. Papers were included from January 2020 to December 2020. For the search strategy, combinations of the following keywords and medical subject heading (MeSH) terms were used: 'Risk factors of HIV in Sindh', 'Risk factors of AIDS in Sindh', 'risk factors of HIV/AIDS in Sindh, epidemic of HIV in Larkana', 'AIDS in children in Sindh', 'HIV in children in Sindh', 'HIV in jail prisoners in Sindh', 'AIDS in jail prisoners in Sindh', 'HIV/AIDS in jail prisoners in Sindh', 'HIV/AIDS in sex workers in Sindh', 'HIV/AIDS in hijra sex workers in Sindh', 'Risk factor of HIV/AIDS in Sindh WHO', 'HIV/AIDS in Sindh and Sindh government', 'prevalence of HIV/AIDS in Sindh'.

### REVIEWS

The epidemic of Human immunodeficiency virus (HIV) has been rapidly increasing from low to high levels. In fact, the cause of this rapid increasing is injection drug users<sup>4</sup>. Male sex workers are

another high-risk category that is increasingly emerging as the most susceptible to HIV, with transgender sex workers pushing the virus into the general community<sup>5</sup>. It has been estimated that a total of 30,192 persons have been examined for HIV between April 25 and June 28, 2019, with 876 people testing positive. Eighty-two percent (719/876) of those surveyed were under the age of fifteen years. People who went through the screening process found a lot of things that were dangerous, like improper intravenous injections, unsafe child delivery practices, unsafe practices at blood banks, inadequately-implemented infection control programs, and improper storage, collection, and disposal of hospital waste.

During the initial HIV epidemic in Larkana in 2004, 17 IDUs were determined to be HIV positive. This number eventually grew to 45<sup>5</sup>. The incidence of HIV infection among IDUs in Sukkur (19.2 percent) and Hyderabad (25.4 percent) is worrying<sup>13</sup>.

In Larkana, Pakistan, 17 out of 183 drug users tested positive for HIV as part of a regular monitoring program. Study participants who used a syringe previously used by a companion, had intercourse with prostitutes, had several sexual partners, and began sexual activity at a young age were more likely to have HIV<sup>6</sup>.

In Landhi Jail Seven prisoners who are IDUs were reported HIV positive. Seven drug addicts in Karachi's Central (Male) Jail have tested positive for HIV. Two of them were unmarried, four of them had STI histories, and they were all between the ages of 22 and 32.

Seven inmates in Sukkur proved HIV positive and ranged in age from 35 to 50. Five of them had been married while three of them already knew they had HIV. In Hyderabad, three inmates were found to be HIV positive. They were between the ages of 27 and 46. Only one of them was married. The person who tested positive for HIV had already known about his HIV status and was married at the time of the test<sup>7</sup>.

Four inmates in Larkana tested positive for HIV. They were between the ages of 28 and 40. Only one of the three was allegedly married and had a history of STI. Two inmates at Shikarpur tested positive for HIV, and both were previously aware of their HIV status. They were 41 and 42 years old, respectively. The 42-year-old single also revealed a history of STIs. Female convicts' statistics should be evaluated with care. Foreigners detained on drug trafficking charges were among the three girls who tested positive at Karachi's Central (female) Jail. None of the local female inmates tested positive for HIV<sup>7</sup>.

Twenty-two percent said they had previously had STIs. HIV prevalence was 2.6 percent among persons who had previously had STIs, compared to a general incidence of one percent. There was a substantial difference between those who reported STI infection in the past and those who were single or married. The single subjects reported a higher prevalence of HIV 3.7 percent as compared to those who were married 1.7 percent. One HIV-positive adolescent prisoner was present. This person had a history of STIs, had spent the previous six months in jail, and had never been tested for HIV<sup>7</sup>.

In Karachi, 3.6 percent (n = 8) and Larkana 27.6 percent (n = 55) of Hijras sex workers are between the ages of 20 and 24. In Larkana, 199 hijras sex workers were interviewed, and their characteristics were compared to those of 420 HSWs in other cities around the country. The average age of HSWs in Larkana was 26.42 ± 5.4. Sindhi was the most common ethnicity (79.9%). The majority of hijras sex workers were illiterate and single (67.8 percent) (96.5 percent). Eighty-four percent relied only on sex work for cash, and sixty-three percent lived outside their families' homes<sup>8</sup>.

In Karachi, HIV was transferred heterosexually from a 34-year-old high-risk guy to a 29-year-old female and epigenetically (perinatally or transplacentally) to the kid (13 months). Furthermore, HIV transmission to the drug addict's faithful wife seems to have occurred recently. Because only the fifth of this couple's five children tested positive for HIV, the husband most likely acquired the virus within the previous 3.5 years. HIV must have been transmitted to the woman shortly after the fourth kid

was born. In contrast, HIV was only transmitted to one of the five children born to an HIV-positive mother<sup>9</sup>.

In 2003, the first HIV epidemic in Larkana occurred among individuals who inject drugs (PWIDs), with 17 out of 175 (9.7%) PWIDs testing positive<sup>10</sup>.

The city of Larkana faced a new HIV epidemic in October 2016, but this time the virus propagated in an entirely unexpected manner. This time, HIV infection spread using renal dialysis equipment at Chandka Medical college's dialysis unit. The identified index case in this epidemic was a patient who sought HIV testing at a nearby laboratory. All dialysis patients were tested for HIV after he told the Dialysis Unit Physician-in-Charge of his seropositive status. HIV quick test kits (ImuMedOne Step Diagnostic Test) were used to screen dialysis patients from September 27 to October 8, 2016. HIV was found in 56 of 205 people (27.3 percent). Twenty were chosen at random and nineteen out of the twenty (95%) were found to be HIV positive by Western Blot Testing at the Referral Laboratory of Sindh AIDS Control Program in Karachi<sup>11</sup>.

Sindh AIDS control program reported 700 children with HIV positive in Larkana in 2019. From them, 82% of positive cases were below the age of 15 years. HIV transmitted through these children via unsafe child delivery, unsafe practices at blood banks, and unsafe intravenous injections. The Government AIDS control program does not work properly, and it is also the main factor in the spread of HIV infection<sup>12</sup>.

Table 1: HIV/AIDS review of literature

Author	District area	Year of Publication	Study type	Sample Size	Overall Prevalence	Age-wise prevalence	Gender wise prevalence	Risk factor wise prevalence
Aysha Zahidie <sup>2</sup> et al. <sup>8</sup>	Karachi, Hyderabad, Larkana, Faisalabad, Lahore, Peshawar	2012	Cross sectional study	1181	(1181) (6.4%)	20 – 24 years	Hijra sex workers	Sex
Altaf et al. <sup>13</sup>	Hyderabad, Sukkur	2005	Cross sectional study	800	178 (22.25%)	< 38 years	male	unsafe Injection
Mir et al. <sup>14</sup>	Larkana	2019	Cross sectional study	31239	930 (3%)	< 49 years	Boys and girls	Sexual intercourse, unsafe injections
Siddiqui et al. <sup>15</sup>	Larkana	2020	Case control study	802	401 (50%)	< 15 years	Boys and girls	Unsafe injection and blood transfusion
Amna R Siddiqui et al. <sup>15</sup>	Larkana	2020	Case control study	812	406 (50%)	< 16 years	Boys and girls	Unsafe injection
Safdar et al. <sup>7</sup>	Karachi jail, Karachi central male, Karachi Central, Female, Hyderabad jail, Sukkur jail, Khairpur Jail, Larkana Jail, Shikarpur	2009	Cross sectional study	4897	49 (1%)	18 - 59 + years	Male and Female	Unsafe injection, sex
Hasnain et al. <sup>16</sup>	TB centers in Sindh	2012	Cross sectional study	12542	42 (0.33%)	16 – 60 years	Male and Female	Sexual intercourse and unsafe injection use
Nadeem et al. <sup>6</sup>	Larkana	2004	Cross sectional study	183	17	16 – 60 years	Male	injection sharing in groups, Reusing a syringe of another IDU, Sex with CSWs, multiple sex partners, Initiation of sex at <18 years

## CONCLUSION

Government should take serious steps for the prevention of HIV infection and open AIDS control programs in every district of Sindh and available antiviral therapy for all patients as early as possible.

**Conflicting interests:** The authors declare no conflict of interest.

## REFERENCES

1. Y. Bhurgri, "HIV/AIDS in Pakistan," *J-Pak. Med. Assoc.*, vol. 56, no. 1, p. 1, 2006.
2. National AIDS Control Program Pakistan, "Integrated biological and behavioral surveillance in Pakistan 2016-2017," 2018.
3. UNAIDS, "Country Factsheets. Pakistan, Geneva, Switzerland: UNAIDS," 2018.
4. N. A. C. Program, HIV Second Generation Surveillance in Pakistan. National Report Round III, 2008. Ministry of Health Islamabad, 2008.
5. A. Altaf, S. Abbas, and H. A. Zaheer, "Men who have sex with men: new emerging threat of HIV/AIDS spread in Pakistan," *JPMA J. Pak. Med. Assoc.*, vol. 58, no. 8, p. 419, 2008.
6. N. ur Rehman, F. Emmanuel, and S. Akhtar, "HIV transmission among drug users in Larkana, Pakistan," *Trop. Doct.*, vol. 37, no. 1, pp. 58–59, 2007.
7. S. Safdar, A. Mehmood, and S. Q. Abbas, "Prevalence of HIV/AIDS among jail inmates in Sindh," *J Pak Med Assoc.*, vol. 59, no. 2, pp. 111–2, 2009.

8. A. Altaf, A. Zahidie, and A. Agha, "Comparing risk factors of HIV among hijra sex workers in Larkana and other cities of Pakistan: an analytical cross sectional study," *BMC Public Health*, vol. 12, no. 1, p. 279, 2012.
9. R. M. Khanani, A. Hafeez, S. M. Rab, and S. Rasheed, "Human immunodeficiency virus-associated disorders in Pakistan," *AIDS Res. Hum. Retroviruses*, vol. 4, no. 2, pp. 149–154, 1988.
10. S. A. Shah, A. Altaf, S. A. Mujeeb, and A. Memon, "An outbreak of HIV infection among injection drug users in a small town in Pakistan: potential for national implications," *Int. J. STD AIDS*, vol. 15, no. 3, p. 209, 2004.
11. A. Altaf, S. Pasha, S. H. Vermund, and S. A. Shah, "A second major HIV outbreak in Larkana, Pakistan," *J Pak Med Assoc.*, vol. 66, no. 12, pp. 1510–1511, 2016.
12. A. Mehnaz, "Emerging threat of HIV/AIDS in children in Pakistan," *JPMA*, vol. 2020, 2020.
13. A. Altaf, N. Saleem, S. Abbas, and R. Muzaffar, "High prevalence of HIV infection among injection drug users (IDUs) in Hyderabad and Sukkur, Pakistan," *J Pak Med Assoc.*, vol. 59, no. 3, pp. 136–40, 2009.
14. F. Mir et al., "Hiv infection predominantly affecting children in Sindh, Pakistan, 2019: a cross-sectional study of an outbreak," *Lancet Infect. Dis.*, vol. 20, no. 3, pp. 362–370, 2020.
15. A. R. Siddiqui et al., "Investigation of an extensive outbreak of HIV infection among children in Sindh, Pakistan: protocol for a matched case-control study," *BMJ Open*, vol. 10, no. 3, p. e036723, 2020.
16. J. Hasnain, G. N. Memon, A. Memon, A. A. Channa, J. Creswell, and S. A. Shah, "Screening for HIV among tuberculosis patients: a cross-sectional study in Sindh, Pakistan," *BMJ Open*, vol. 2, no. 5, 2012.