

HIV-1 in Pakistan: Where we stand? Where we will go?

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Abstract

Adherence to Islamic beliefs and being home to more than 190 million Muslims made many to believe that Pakistan was protected from human immunodeficiency virus or acquired immunodeficiency syndrome (HIV/AIDS). More than 30 years of HIV-1 epidemic, the reality is totally different now. HIV/AIDS is not only becoming a major health concern of Pakistan, but also in several other Muslim-majority countries like Malaysia, Iran and Indonesia having prevalence rates of 0.4%, 0.2% and 0.3%, respectively. While in most parts of the world, HIV-1 infections have decreased or stabilised. However, the countries where HIV-1 prevalence is increased by 25-35% has Muslim majority. The high-risk populations in these countries are drug users and immoral sexual behaviours that include practices forbidden in Islam.

Keywords: HIV-1, AIDS, IDUs, cART, Epidemiology.

Introduction

Human immunodeficiency virus (HIV), the causative agent of acquired immunodeficiency syndrome (AIDS), was identified in 1983.¹ There are two types of HIV: HIV-1 and HIV-2. HIV-1 is assumed to have arisen from cross-species transmission of a chimpanzee virus Simian immunodeficiency virus (SIVcpz) to human and HIV-2 from cross-species transmission of a sooty mangabey virus (SIVsmm).^{2,3} Worldwide, the predominant virus is HIV-1 while HIV-2 is concentrated in West Africa. HIV-1 can be classified into four groups: M (main or major), O (outlier), N (non-M, non-O), and P (pending). More than 90% of HIV-1 infections belong to group M. The group M is subdivided into 9 subtypes (A, B, C, D, F, G, H, J and K) and various circular recombinant forms (CRFs). Subtype B is predominant in America, Western Europe and Australia.² While subtype A and subtype G along with various CRFs, such as CRF35_AD, CRF01_AE and CRF02_AG are circulating in Pakistan.⁴⁻⁷ A significant presence of

subtype C and D has been recently reported in the country.⁵ However, combination antiretroviral therapy (cART) is effective against a wide range of subtypes. The rebound viremia occurs in less than two weeks when cART is interrupted.⁸ HIV-1 infects and destroys the vital immune cells such as CD4+ T cells and monocytes/macrophages thus preventing the body's immune system to work properly which increases the probability of the individuals to infect with a wide range of pathogens. Among several factors of HIV-1 pathogenesis, three features: i) high mutation rate, ii) integration of viral DNA into host genome and iii) formation of latent viral reservoirs; have made HIV-1 eradication and vaccine development extremely challenging.⁹

Epidemiology of HIV-1 in Pakistan

HIV-1 is a global pandemic causing HIV/AIDS to 36.7 million people. Worldwide, each year 2.1 million people are infected with HIV and 1.1 million die of AIDS.¹⁰ First case of HIV-1 was identified in Pakistan in 1987.¹¹ Till now, 97400 cases of HIV/AIDS have been documented by National AIDS Control Programme (NACP). HIV-1/AIDS epidemic in Pakistan has been well recognised and increasing in high-risk groups: injecting drug users (IDUs) and sex workers (SWs). The IDUs and SWs comprise the core of HIV-1 epidemic in Pakistan.^{12,13} To tackle the HIV-1 epidemics among core groups, Pakistan is following the Asian Epidemic Model (AEM). The AEM is semi-empirical model which may provide useful tools for policy making and programme analysis in national epidemics of HIV/AIDS. However, a sufficient and accurate epidemiological and behavioural data is required for the successful implication of AEM in the country.^{14,15} The injection drug use, immoral sexual behaviours, poverty due to economic instability, social discrimination surrounding people living with HIV-1, low awareness of HIV-1 infection, labour migration among the nations, unemployment and porous borders are the major hurdles that has fuelled HIV-1 epidemic in the country.¹² In general population, the prevalence of HIV-1 infection is low. In adult population (ages 15-49 years), the prevalence of HIV-1 infection is 0.1%.^{5,16} However, most of time, HIV-1 infections are not reported due to social taboos and fear of

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discrimination. Epidemic of HIV-1 infections can be categorised into three evolving phases. The first phase of low prevalence reflects <5% of HIV-1 infections in high-risk groups. This low prevalence epidemic phase of HIV-1 persistence occurred from 1987 to 2003. In the second phase, the proportion of HIV-1 infections are >5% in high-risk groups. Final phase occurs when HIV-1 prevalence is >1% in the general population. It seems that the country is evolving from phase 1 of low prevalence to high proportion of phase 2. HIV-1 infections are mostly concentrated among IDUs in most of the cities, while HIV-1 persists among SWs in major cities.^{15,17,18} According to United Nations Office on Drugs and Crime (UNDOC), there are likely 6.7 million drug users (men: 78% and women: 22%) in the country. The number of IDUs has also increased from 90000 in 2007 to 500000 by 2014. The annual rise in the number of drug users is 40000. This increase has been positively associated with the increase in HIV-1 infections. HIV-1 prevalence among IDUs was 40% in 2011 compared to 11% in 2005. The IDUs often share needles having injection frequency 2-3 injections per day. Further, their interaction with commercial and non-commercial partners enhances HIV-1 transmission among the general population directly or indirectly. In the country, more men than women are infected with HIV-1 having 5:1 male-to-female ratio. More than 80% HIV-1 infections have occurred in urban population. However, urban area is usually more focussed for epidemiological studies and thereby misleads the actual picture of HIV-1 prevalence in the country.^{16,19}

According to NACP, HIV-1 prevalence was 0.052% and 0.064% in 1992 and 1995, respectively.²⁰ In 2001, the prevalence rose to 0.1% in the general population.²¹ However, the current investigation shows the prevalence of HIV-1 is 0.54% in the general population of the country.^{5,16} According to a report from the joint United Nations Programmes on HIV/AIDS (UNAIDS), the prevalence of HIV among IDUs in the country has increased from 11% in 2005 to 21% in 2008. According to this study, one in five people who inject drugs in Pakistan are HIV-1 positives. The key population of IDUs in the country is young (under the age of 25). Regionally, the prevalence of HIV-1 in Karachi, Lahore and Peshawar has been documented 0.70%, 0.06% and 0.1%, respectively.^{22,23} Further, reports indicate that majority of people living with HIV in the country belongs to Sindh, 80% of them from Karachi. The prevalence of HIV among IDUs in Karachi has reached up to 30%. It is important to mention that four major cities of Sindh — Karachi, Hyderabad, Sukkur and Larkana — are the home of high-risk population for

HIV-1. The prevalence of HIV among IDUs, transgenders and SWs (male/female) in Pakistan has reached up to 27.2%, 6.1% and 0.90%, respectively.^{5,24,25} To get the comprehensive status about HIV-1 epidemics, Pakistan has developed second-generation surveillance (SGS) system. To this end, a collaborative project between NACP and Canadian International Development Agency (CIDA) was carried out between 2004 and 2012 in key high-risk populations followed by an Integrated Behavioural and Biological Surveillance (IBBS) in all the major cities of the country.²⁶ The estimated size of highly vulnerable population was 46315 IDUs and 131614 SWs (all types of SWs). According to this study, HIV-1 prevalence was 37.8% in IDUs, followed by 7.2% among transgenders (HSWs), 3.1% among male SWs (MSWs) and 0.8% in female SWs (FSWs). A gradual increasing trend of HIV-1 prevalence has been observed from IDUs to SWs.²⁶ More than 30 years of conflict in Afghanistan has led many Afghans to migrate to Pakistan and HIV-1 prevalence among Afghan refugees is 6% that may also represent a high-risk group for HIV-1 transmission and its spread.²⁷ Further, international labour migrants are the main risk factor and major threat of HIV-1 epidemic in the country. These people are away from their spouses, families and society that can lead to sexual practices which may increase the chance of getting HIV-1. HIV-1 +ve workers are deported but they return to Pakistan and represent a high-risk group for HIV/AIDS.^{4,28}

In this regard, the World Bank is assisting the government's HIV-1/AIDS prevention and control efforts through providing financial support of US\$37.1 million. In addition, the World Bank is also working with other partners, including the Department for International Development (DFID), Canadian International Development Agency (CIDA), the United States Agency for International Development (USAID) and UN agencies, to strengthen the HIV-1/AIDS surveillance and prevention projects.²⁹ In addition, the Global Fund, an international financing organisation, created in 2002 to fight against HIV-1/AIDS, tuberculosis and malaria. Since 2004, this organisation has contracted total grants of US\$309.1 million, in which US\$37.5 has been allocated for the control and prevention of HIV-1/AIDS. Further, the application of Global Fund in Pakistan is contributing a lot as more than 5200 HIV-1 infected patients taking combination antiretroviral therapy (cART) from established cART centres (public and private health facilities) in all four provinces.³⁰

The problems in the way of HIV-1 prevention

The prevention of HIV/AIDS in the country is complicated by several issues: Firstly, there is no infrastructure to measure the rate of incidence, spread and mortality. Further, the government does not conduct health survey on regular basis and the conducted data sets are not transparent in describing the statistical numbers about the true prevalence of HIV/AIDS in the country. Secondly, most of the times people are unaware or ignorant about HIV transmission, including immoral sexual behaviours. The transmission can occur through mother to child, contact with HIV-contaminated blood (including intravenous drug users) and through extra-marital or intra-marital sexual contact with an infected partner.^{31,32} In spite of Islamic teachings, citizens do engage in above-mentioned activities that result in acquiring and spreading of HIV. The medical counselling services are hardly available and HIV-1 +ve people make uninformed decisions. HIV-1 infected people, particularly women, experience social death. HIV-1 +ve people are human beings and they need care and support; not discrimination and isolation. There is an urgent need for developing and implementing policies and effective programmes that raise the AIDS education and awareness that will prohibit the stigma in society.^{32,33}

Conclusion

We have to realize the possibility of an epidemic and its terrible consequence on the country. Due to its geographic location in South Asia, it is very likely that the country will experience high HIV-1 prevalence. A number of necessary actions have been taken by the government but the successes are on small scales and the prevalence of HIV-1 continues to rise at a fast rate. A lot more needs to be done and done fast. Getting to zero new HIV-1 infections in Pakistan, HIV programmes must be sufficiently resourced and efficiently focussed on high-risk populations. The high prevalence of HIV-1 among IDUs indicates that the public should be educated urgently about hazardous reuse of syringes. The prevailing evidence is that HIV-1 is disseminating widely in the population and this article may be helpful in restricting its further spread; and will accelerate the momentum in the fight against HIV/AIDS in the country. If we do not invest today, we will have to pay several times more in the future.

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