

Epidemiological Dynamics of HIV Infection and the Proportion of Injection Drug Users in the Republic of Uzbekistan during 2020–2022 and Their Impact on the Psychology of Patients Living with HIV/AIDS

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ABSTRACT

This study analyzed the epidemiological dynamics of HIV infection in the Republic of Uzbekistan during 2020–2022 and the first six months of 2023, the proportion of people who inject drugs (PWID), and the impact of these changes on the psychology of patients living with HIV/AIDS. Retrospective statistical analysis methods were applied. The results showed that from 2020 to 2022, the overall incidence of HIV infection increased by 38%, while the proportion of PWID decreased from 3.0% to 2.1%, reaching 1.35% in the first half of 2023. Changes in the epidemiological structure significantly affect stigma, anxiety, and processes of social adaptation. The study demonstrates the necessity of an integrative epidemiological and psychological approach.

Keywords:

HIV infection, epidemiology, injection drug users, psychological impact, stigma, social adaptation, Uzbekistan.

1. Introduction

HIV infection remains one of the most pressing problems of the global healthcare system. The modern epidemiological process is closely associated not only with medical and biological factors but also with social and psychological determinants. The stages of HIV epidemic development vary across regions, and changes in transmission routes directly affect the psychological condition of patients.

In the early stages of the HIV epidemic in the Republic of Uzbekistan, people who inject drugs (PWID) constituted the primary risk group. However, significant changes in the epidemiological structure have been observed in recent years. These transformations influence public attitudes toward people living with HIV/AIDS and contribute to changes in the level of social stigma.

The purpose of this study was to analyze the dynamics of HIV infection and changes in the proportion of PWID in Uzbekistan during 2020–2022 and to provide a scientific basis for

understanding the impact of this epidemiological transformation on patient psychology.

2. Materials and Methods

2.1 Study Design

The study was conducted using a retrospective epidemiological and analytical approach. Statistical data were examined through dynamic series analysis.

2.2 Data Sources

Official epidemiological reports from 2020, 2021, 2022, and the first six months of 2023 were used as the primary data sources. The analysis included the following indicators:

- Total number of HIV cases
- Number of male and female PWID
- Proportion of PWID (%)
- Annual growth rates

2.3 Statistical Analysis

Descriptive statistics, relative indicators, and dynamic growth rates were calculated. The growth rate was determined using the following formula:

Growth (%)=(New value-Previous value) / Previous value×100 Psychological analysis was carried out based on the theoretical and analytical interpretation of epidemiological changes.

3. Results

3.1 Dynamics of Overall HIV Incidence

In 2020, 2817 HIV cases were registered, whereas in 2022 this number reached 3,889, representing a 38% increase.

Year	Total HIV Cases	Total PWID	PWID Proportion (%)
2020	2817	85	3.0%
2021	3289	71	2.1%
2022	3889	82	2.1%
2023(6 months)	1930	26	1.35%

The analysis demonstrated that:

- Overall HIV incidence increased by 38% between 2020 and 2022.
- Compared to 2020, the increase in 2021 amounted to 16.7%.
- Compared to 2021, incidence increased by 18.2% in 2022.

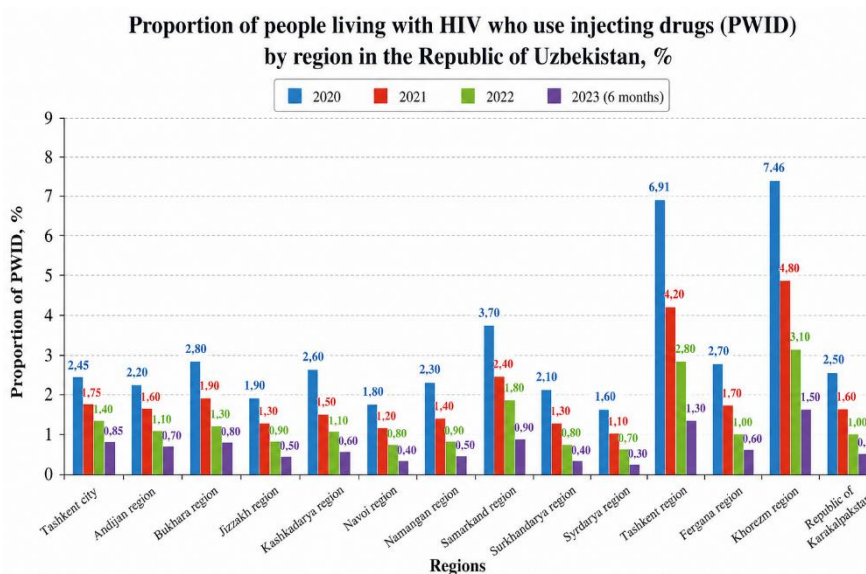
3.2 Changes in the Proportion of PWID

- 2020 – 3.0%
- 2021 – 2.1%
- 2022 – 2.1%
- 2023 (first 6 months) – 1.35%

Regional Differences

In 2020, the regions with the highest proportion of PWID were:

- Khorezm Region – 7.46%
- Tashkent Region – 6.91%
- Samarkand Region – 3.70%



Note: Figures are presented as percentages (%). Data for 2023 are for the first 6 months (January–June).

Figure 1. Proportion of people living with HIV who use injecting drugs (PWID) by region in the Republic of Uzbekistan, 2020–2023.

By 2022, the proportion of PWID had declined in most regions. During the first six months of 2023, PWID indicators reached minimal levels in the majority of regions. The consistent decline in the proportion of PWID indicates an ongoing transformation in the epidemiological structure.

- **Blue line** – total HIV incidence cases
- **Red line** – HIV cases associated with PWID

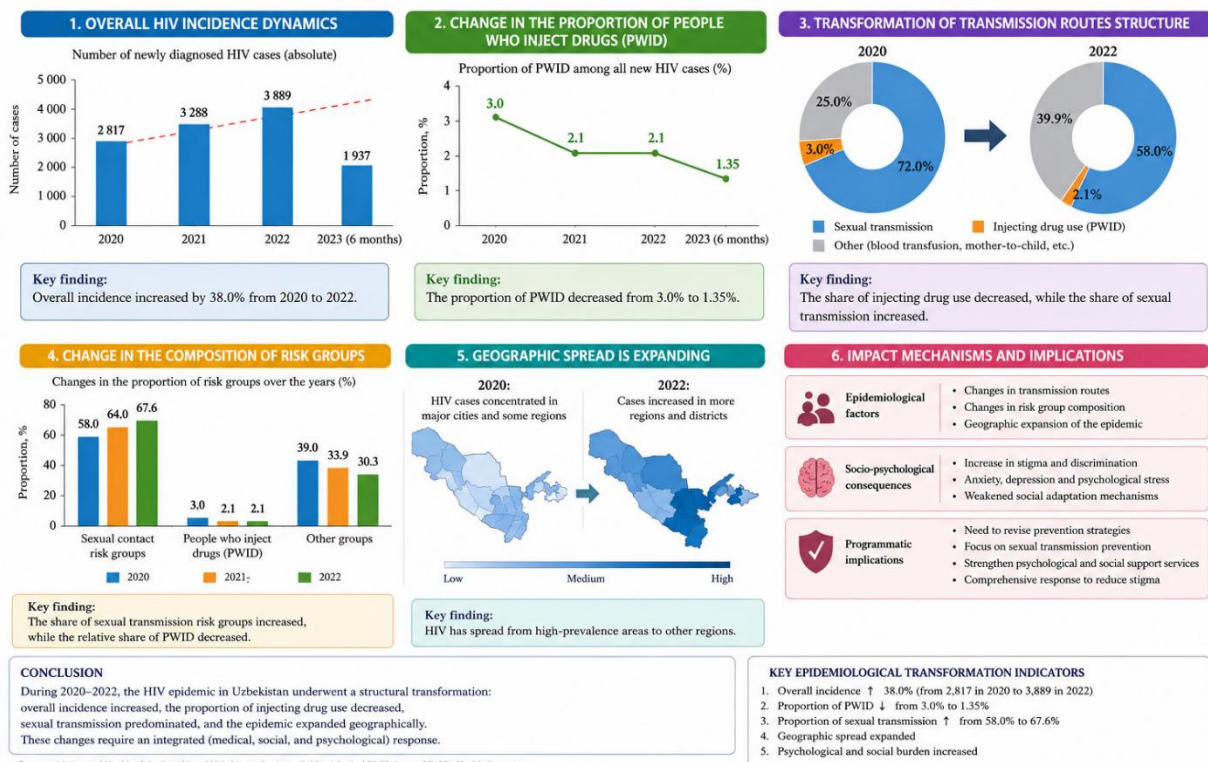
3.3 Epidemiological Transformation

While the overall incidence of HIV infection continues to rise steadily across the Republic of Uzbekistan, the declining proportion of people who inject drugs (PWID) among newly registered HIV cases indicates a significant structural transformation in the epidemiological pattern of HIV transmission. This trend suggests that the epidemic is gradually shifting from being predominantly

concentrated within traditional high-risk groups toward broader transmission within the general population, particularly through sexual contact. The relative increase in sexually transmitted HIV infections may be associated with changing behavioral patterns, insufficient awareness regarding safe sexual practices, labor migration processes, and the persistence of social stigma that limits timely testing and preventive interventions. Furthermore, the observed epidemiological transformation reflects not only changes in transmission routes but also broader socio-demographic and psychosocial dynamics influencing the spread of HIV. These findings emphasize the urgent need to strengthen comprehensive prevention strategies focused on sexual health education, early diagnosis, psychosocial support, stigma reduction, and community-based interventions aimed at vulnerable populations.

EPIDEMIOLOGICAL TRANSFORMATION: STRUCTURAL CHANGES IN THE HIV EPIDEMIC IN UZBEKISTAN, 2020–2022

Epidemiological transformation refers to the dynamics of infection spread, changes in transmission routes, risk group composition, geographic distribution and social context. The HIV epidemic in the Republic of Uzbekistan underwent significant structural transformation during 2020–2022.



3.4 Psychological Effects

The epidemiological transformation of HIV infection observed in recent years has had a profound impact not only on public health indicators but also on the psychological well-being of people living with HIV/AIDS (PLWHA).

Changes in transmission patterns, increasing incidence rates, and persistent social stigma contribute to complex emotional, cognitive, and behavioral consequences among affected individuals.

According to Erving Goffman, stigma represents a socially constructed process through which individuals are labeled, discriminated against, and socially excluded. In the context of HIV/AIDS, stigma remains one of the most significant psychosocial burdens affecting patients' quality of life. HIV-positive individuals frequently experience fear of rejection, social isolation, shame, and self-stigmatization, which negatively influence their psychological adaptation and treatment adherence.

Numerous international studies demonstrate that people living with HIV are at considerably higher risk of developing anxiety disorders, depressive symptoms, and chronic psychological stress. Susan Kippax emphasized that HIV-related stigma and discrimination often lead to reduced social support and increased emotional vulnerability among patients. Similarly, Judith G. Rabkin reported that depressive disorders are among the most common psychiatric conditions observed in HIV-positive populations, particularly among socially marginalized groups.

The decreasing proportion of people who inject drugs (PWID) alongside the growing predominance of sexual transmission may also influence patients' psychological perceptions of the disease. Historically, HIV infection was strongly associated with specific "high-risk" groups, particularly injecting drug users. However, as sexual transmission becomes more dominant, the epidemic increasingly affects broader segments of the population, including married individuals, labor migrants, women, and young adults. This epidemiological shift changes the social meaning of HIV infection and may intensify fear, uncertainty, and identity-related psychological conflicts among newly diagnosed patients.

From a psychosocial perspective, HIV diagnosis is often perceived as a traumatic life event. According to Richard S. Lazarus, chronic illnesses may trigger long-term cognitive and emotional stress responses, especially when accompanied by social stigma and uncertainty regarding the future. Patients frequently experience denial, emotional shock, hopelessness, anger, and difficulties in

accepting their diagnosis during the initial stages after diagnosis.

In addition, social discrimination and fear of disclosure significantly reduce patients' willingness to seek psychological or medical support. Jonathan M. Mann argued that the social dimensions of HIV infection are often as destructive as the biological effects of the virus itself. Lack of family support, unemployment, economic instability, and fear of social exclusion further aggravate mental health outcomes among PLWHA.

Research also indicates that psychological distress negatively affects antiretroviral therapy (ART) adherence. Anxiety and depressive symptoms may reduce treatment motivation, impair cognitive functioning, and weaken patients' ability to maintain long-term medical routines. Consequently, psychological support services should be considered an essential component of HIV prevention and treatment programs.

The current epidemiological transformation in Uzbekistan therefore requires not only biomedical interventions but also integrated psychosocial strategies aimed at improving mental health, strengthening resilience, reducing stigma, and enhancing social adaptation among people living with HIV/AIDS.

Epidemiological changes lead to the following psychological consequences:

1. Dynamics of Stigma

Although stigma associated with PWID has decreased, the spread of HIV within the general population increases social fear and anxiety.

2. Anxiety and Depressive Reactions

The growth in HIV incidence intensifies patients' fear of the future, social isolation, and self-stigmatization mechanisms.

3. Social Adaptation

Patients not belonging to the PWID group demonstrate relatively higher levels of disease acceptance; however, general social stigma remains persistent.

4. Discussion

The results indicate that the HIV epidemic in the Republic of Uzbekistan is entering a new stage. The reduction in the proportion of PWID

reflects the effectiveness of harm-reduction programs and preventive measures.

However, the increase in overall HIV incidence demonstrates that the infection is spreading more widely within the general population. This trend deepens social and psychological consequences.

The epidemiological transformation requires reconsideration of psychological service systems. Patient support, stigma reduction, and psychological rehabilitation programs should become integral components of epidemiological strategy.

5. Conclusion

1. HIV incidence increased by 38% during 2020–2022.

2. The proportion of PWID decreased from 3.0% to 1.35%.

3. Significant transformation is occurring in the epidemiological structure.

4. These changes directly affect patient psychology.

5. An integrative epidemiological and psychological approach is necessary.

Practical Recommendations

- Improve epidemiological monitoring systems

- Expand psychological rehabilitation programs

- Strengthen social campaigns aimed at stigma reduction

- Develop differentiated approaches for youth and high-risk groups

This information was developed based on research conducted at the “Republican Specialized AIDS Control Center”.