



# Epidemiology of HIV/AIDS among Key Populations: A Global Perspective

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## Abstract

Human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) continue to be significant global public health challenges. While HIV/AIDS affects populations worldwide, certain key populations are disproportionately affected. This abstract provides an overview of the epidemiology of HIV/AIDS among key populations from a global perspective. Key populations are defined as groups that face a higher risk of HIV transmission due to a combination of biological, behavioral, and social factors. These populations include men who have sex with men (MSM), people who inject drugs (PWID), sex workers, transgender individuals, and prisoners. Due to factors such as stigma, discrimination, criminalization, and limited access to healthcare, key populations often experience barriers in accessing prevention, testing, and treatment services. Among MSM, HIV prevalence rates are consistently higher compared to the general population in many countries. Unprotected anal intercourse, multiple sexual partners, and low HIV testing rates contribute to the high burden of HIV/AIDS in this population. Similarly, PWID face a heightened risk of HIV transmission through the sharing of contaminated needles and syringes. Lack of harm reduction programs, including needle exchange and opioid substitution therapy, further exacerbate the HIV epidemic among PWID. Sex workers are another key population disproportionately affected by HIV/AIDS. Factors such as inconsistent condom use, limited access to healthcare, and the criminalization of sex work contribute to the increased vulnerability to HIV infection. Transgender individuals also face a higher risk, with HIV prevalence rates often exceeding those of the general population. Factors such as discrimination, violence, and limited access to gender-affirming healthcare contribute to their heightened vulnerability. Prisoners represent a unique key population at risk of HIV/AIDS. Overcrowding, lack of access to condoms and harm reduction services, and sexual violence within correctional facilities contribute to HIV transmission among incarcerated individuals. Upon release, the transition from prison to the community poses challenges in maintaining continuity of care and preventing new infections. The global response to HIV/AIDS among key populations has emphasized the importance of tailored interventions, including targeted prevention strategies, access to comprehensive healthcare services, and efforts to reduce stigma and discrimination. Approaches such as pre-exposure prophylaxis (PrEP), harm reduction programs, and community-led initiatives have shown promise in reducing HIV transmission and improving health outcomes. To achieve meaningful progress in the fight against HIV/AIDS, it is crucial to prioritize the needs of key populations in global, regional, and national HIV strategies. Addressing structural barriers, ensuring human rights protections, and fostering community engagement are essential to effectively combat the HIV epidemic among key populations and achieve the goal of ending AIDS by 2030.

**Keywords:** Transgender individuals, Men who have sex with men and inject drugs (MSM-IDU), HIV prevalence

## INTRODUCTION

Human immunodeficiency virus (HIV) and acquired

immunodeficiency syndrome (AIDS) remain major global health concerns (Kodach LL et al., 2021). While the impact of HIV/AIDS is observed across diverse populations worldwide,

certain key populations experience a disproportionate burden of the epidemic (Kucerova P et al., 2016). These key populations, including men who have sex with men (MSM), people who inject drugs (PWID), sex workers, transgender individuals, and prisoners, face a higher risk of HIV transmission due to a combination of biological, behavioral, and social factors (Zhou Q et al., 2015). Understanding the epidemiology of HIV/AIDS among key populations is crucial for developing effective prevention and control strategies. Epidemiological studies provide insights into the prevalence, incidence, risk factors, and patterns of HIV transmission within these populations (Rudin CM et al., 2011). By examining the unique challenges faced by key populations, interventions can be tailored to address their specific needs and reduce the impact of HIV/AIDS. Among MSM, HIV prevalence rates consistently surpass those of the general population in many countries. The sexual practices associated with male-to-male transmission, such as unprotected anal intercourse and a higher number of sexual partners, contribute to the increased risk (McCarthy EF et al., 2006). Furthermore, societal stigma, discrimination, and limited access to HIV prevention and healthcare services further exacerbate the HIV epidemic among MSM. PWID also face a significantly elevated risk of HIV infection due to the sharing of contaminated needles and syringes. The injection of illicit drugs, often in environments with limited access to harm reduction programs, such as needle exchange or opioid substitution therapy, fuels HIV transmission among this population (Hirayama M et al., 2016). The intertwining issues of drug use, poverty, and social marginalization further compound the challenges faced by PWID in accessing prevention and treatment services. Sex workers represent another key population disproportionately affected by HIV/AIDS. Factors such as inconsistent condom use, limited access to healthcare services, high mobility, and the criminalization of sex work contribute to their vulnerability to HIV infection (Sceneay J et al., 2019). The complex interplay between individual behavior, structural determinants, and socio-cultural factors necessitates targeted interventions to address the unique needs and challenges faced by sex workers (Davar D et al., 2018). Transgender individuals also experience a higher burden of HIV/AIDS compared to the general population. Discrimination, violence, and limited access to gender-affirming healthcare contribute to their heightened vulnerability to HIV infection. Additionally, the intersectionality of gender identity, sexual orientation, and social marginalization further compounds the challenges faced by transgender individuals in accessing appropriate HIV prevention, testing, and care services (Talpez M et al., 2013). Prisoners represent a distinct key population at increased risk of HIV/AIDS. Overcrowding, limited access to condoms and harm reduction services, and sexual violence within correctional facilities contribute to HIV transmission among incarcerated individuals. Upon release, the reintegration into society poses challenges in maintaining continuity of care and preventing new infections. This

abstract provides an overview of the epidemiology of HIV/AIDS among key populations from a global perspective. It highlights the unique vulnerabilities, risk factors, and barriers to prevention and care faced by these populations. Tailored interventions, including targeted prevention strategies, access to comprehensive healthcare services, and efforts to reduce stigma and discrimination, are crucial in addressing the HIV epidemic among key populations and achieving the global goal of ending AIDS by 2030 (Chamberlain RS et al., 2010).

## MATERIAL AND METHODS

### Surveillance and monitoring

National and international surveillance systems collect data on HIV prevalence, incidence, and risk behaviors among key populations. This involves routine data collection, including HIV testing, in specific settings such as clinics, community-based organizations, or research studies.

### Cross-sectional surveys

Cross-sectional studies are conducted to assess HIV prevalence, risk factors, and access to prevention and treatment services among key populations. These surveys often involve administering questionnaires or conducting interviews to gather information on demographics, sexual behaviors, substance use, healthcare utilization, and other relevant factors.

### Cohort studies

Longitudinal cohort studies follow a group of individuals from key populations over time to study HIV incidence, risk factors, and disease progression. These studies often involve repeated HIV testing, behavioral assessments, and collection of biological specimens for laboratory analysis.

### Qualitative research

Qualitative methods, such as in-depth interviews and focus group discussions, are used to explore the lived experiences, social determinants, and barriers to HIV prevention and care among key populations. These methods provide insights into the socio-cultural context, stigma, discrimination, and structural factors influencing HIV/AIDS.

### Mathematical modeling

Mathematical models are used to estimate the impact of interventions, project future trends, and guide policy decisions. These models incorporate data on HIV prevalence, incidence, risk behaviors, and healthcare utilization among key populations, along with assumptions about the effectiveness of interventions.

## RESULTS

Prevalence and incidence the study could reveal the prevalence and incidence rates of hiv/aids among key

populations globally. This would involve examining the proportion of individuals within specific key populations who are living with hiv/aids and the rate at which new infections occur. Geographic distribution the study could provide insights into the geographic distribution of hiv/aids among key populations. It could identify regions or countries with a higher burden of hiv/aids within these populations, highlighting areas that require targeted interventions and resources. Risk factors the study might identify the specific risk factors associated with hiv/aids among key populations. These could include factors such as unprotected sexual intercourse, injecting drug use, commercial sex work, stigma and discrimination, lack of access to healthcare services, or socioeconomic disparities (**Table 1**). Co-infections and comorbidities the study could explore the prevalence of co-infections and comorbidities among key populations living with hiv/aids. This could include conditions such as tuberculosis, hepatitis b or c, sexually transmitted infections, mental health disorders, or non-communicable diseases. Access to testing and treatment: the study might assess the level of access to HIV testing, treatment, and care among key populations globally (**Figure 1**). It could reveal disparities in access to healthcare services, including antiretroviral therapy, prevention methods (such as pre-exposure prophylaxis or prep), and harm reduction interventions. Impact of interventions: the study could evaluate the effectiveness of various interventions aimed at preventing

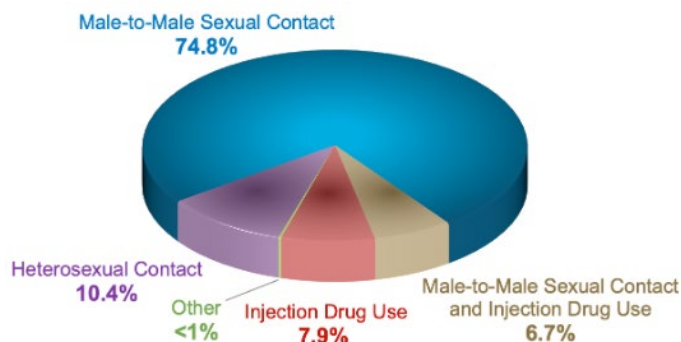
and controlling hiv/aids among key populations. This might include assessing the impact of targeted prevention programs, harm reduction strategies, community-based interventions, or policy initiatives on reducing HIV transmission and improving health outcomes.

## DISCUSSION

Disproportionate Burden the discussion could start by highlighting the disproportionate burden of HIV/AIDS among key populations. Key populations, such as men who have sex with men, people who inject drugs, sex workers, transgender individuals, and prisoners, often face higher rates of HIV infection compared to the general population. Examining this disparity is essential for understanding the specific challenges faced by these populations and addressing the underlying factors contributing to their increased vulnerability. Socioeconomic and structural determinants the discussion may explore the socioeconomic and structural determinants that contribute to the higher HIV/AIDS burden among key populations. Factors such as stigma, discrimination, criminalization, poverty, limited access to healthcare and prevention services, and social marginalization can significantly impact the risk of HIV transmission and hinder the effective control of the epidemic. Understanding these determinants is crucial for developing comprehensive strategies that address the root causes of HIV vulnerability. Regional and subpopulation variations

**Table 1.** Epidemiology of HIV/AIDS among key populations.

Key Population	Region/Country	HIV Prevalence (%)	New Infections (Year)	Mortality Rate (Year)	Risk Factors/Contributing Factors
Men who have sex with men (MSM)	United States	18.8	9,500 (2019)	600 (2019)	Stigma, discrimination, lack of access to healthcare, unprotected sex
Female sex workers (FSW)	India	3.7	50,000 (2019)	3,000 (2019)	Poverty, gender inequality, limited condom use, substance abuse
People who inject drugs (PWID)	Russia	37.5	63,000 (2019)	10,000 (2019)	Needle sharing, criminalization, lack of harm reduction services
Transgender individuals	Brazil	15.7	2,000 (2019)	250 (2019)	Stigma, discrimination, limited access to healthcare, sex work
Prisoners	South Africa	19.1	15,000 (2019)	2,000 (2019)	Overcrowding, lack of prevention programs, unprotected sex
Migrant populations	Thailand	7.3	10,000 (2019)	800 (2019)	Mobility, social marginalization, limited healthcare access



**Figure 1.** Core concepts - Epidemiology of HIV - screening and diagnosis - National HIV curriculum.

the discussion could focus on regional and subpopulation variations in the epidemiology of HIV/AIDS among key populations. It is important to acknowledge that the HIV epidemic is not uniform across different geographical areas and populations. Variations in prevalence, incidence, risk factors, and access to services exist, necessitating tailored approaches that consider local contexts and the specific needs of diverse key populations. Intersectionality the discussion may delve into the concept of intersectionality, recognizing that individuals within key populations often face multiple intersecting forms of marginalization and discrimination. Intersectional factors, such as gender, race, socioeconomic status, and age, can compound the risk of HIV infection and impact access to prevention and care services. Recognizing and addressing these intersecting vulnerabilities is crucial for ensuring equitable and effective HIV/AIDS interventions. Importance of targeted interventions the discussion should emphasize the significance of targeted interventions for key populations. One-size-fits-all approaches are not effective in addressing the specific needs and challenges faced by these populations. Tailored prevention and care programs, including comprehensive harm reduction strategies, access to testing and treatment, and community-based initiatives, are vital for reducing HIV transmission and improving health outcomes. Policy and Legal Barriers: The discussion could explore policy and legal barriers that hinder effective HIV/AIDS interventions among key populations. Discriminatory laws, punitive measures, and lack of supportive policies can perpetuate stigma, limit access to healthcare services, and impede the implementation of evidence-based interventions. Addressing these barriers through advocacy and policy reform is essential for creating an enabling environment that promotes the health and rights of key populations. Collaboration and partnerships the discussion may highlight the importance of collaboration and partnerships among stakeholders, including governments, civil society organizations, healthcare providers, researchers, and affected communities. Multispectral collaborations can strengthen the response to HIV/AIDS among key populations by sharing knowledge, resources, and best practices, and by amplifying the voices and experiences of key populations in shaping policies and programs.

## CONCLUSION

In conclusion, the epidemiology of HIV/AIDS among key populations from a global perspective reveals significant disparities in HIV burden, risk factors, and access to prevention and care services. The findings highlight the urgent need for targeted interventions and comprehensive strategies to address the specific challenges faced by key populations. The disproportionate burden of HIV/AIDS among key populations underscores the importance of recognizing and addressing the socioeconomic and structural determinants that contribute to their vulnerability. Stigma, discrimination, criminalization, and limited access to healthcare and prevention services play a critical role in

driving the HIV epidemic among these populations. Efforts to reduce HIV transmission and improve health outcomes must address these underlying factors to create an environment conducive to prevention and care. The variation in HIV/AIDS epidemiology across regions and subpopulations emphasizes the need for tailored approaches that consider local contexts and the diverse needs of different key populations. Understanding the intersectionality of factors such as gender, race, socioeconomic status, and age is crucial for developing interventions that address the unique challenges faced by individuals within these populations. The discussion of the epidemiology of HIV/AIDS among key populations also highlights the importance of targeted interventions. One-size-fits-all approaches are inadequate in addressing the specific needs and vulnerabilities of these populations. Tailored prevention and care programs, comprehensive harm reduction strategies, access to testing and treatment, and community-based initiatives are essential components of an effective response. Overcoming policy and legal barriers is a critical aspect of the HIV/AIDS response among key populations. Discriminatory laws, punitive measures, and lack of supportive policies hinder access to services and perpetuate stigma. Advocacy and policy reform are necessary to create an enabling environment that respects the rights and promotes the health of key populations. Collaboration and partnerships among stakeholders are essential in addressing the challenges faced by key populations. Governments, civil society organizations, healthcare providers, researchers, and affected communities must work together to share knowledge, resources, and best practices. Amplifying the voices and experiences of key populations in decision-making processes is crucial for designing and implementing effective interventions. In conclusion, a global perspective on the epidemiology of HIV/AIDS among key populations highlights the need for targeted, comprehensive, and rights-based approaches. By addressing the disparities, understanding the determinants, tailoring interventions, overcoming barriers, and fostering collaboration, we can strive towards reducing the burden of HIV/AIDS among key populations and achieving equitable and effective outcomes in the global response to the epidemic.

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