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A Decade in Review: The Evolving Epidemiology of HIV and AIDS in Nepal

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Abstract

Background: HIV/AIDS remains a significant public health issue in Nepal, characterized by a concentrated epidemic among key populations. Despite a declining national prevalence, significant sub-epidemics persist, driven by complex socio-structural factors. A synthesis of the current evidence is crucial to inform the national goal of ending AIDS by 2030.

Objective: This review aims to synthesize the current state of knowledge on the epidemiology of HIV and AIDS in Nepal over the last decade. It provides a comprehensive overview of the burden of infection, evolving trends, risk factors, and the national response, with particular attention to the structural determinants of vulnerability.

Methods: A narrative review was conducted, synthesizing data from recent national surveillance reports, including the Nepal HIV/AIDS Strategy and Integrated Biological and

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Behavioral Surveillance (IBBS) surveys, and seminal peer-reviewed research by Nepali scholars. The analysis applied a structural-functional theoretical framework to interpret findings.

Findings: The adult HIV prevalence in Nepal is low at 0.13%, but the epidemic is concentrated, with disproportionately high rates among key populations: People Who Inject Drugs (7.9%), transgender people (6.3%), Men Who Have Sex with Men (5.5%), and Female Sex Workers (1.5%). Labor migrants and their spouses form a critical bridge population. Research consistently shows that vulnerability is shaped by macro-level structural factors including poverty, gender inequality, stigma, and migration, which limit individual agency and create a disconnect between HIV knowledge and preventive practices. The national response has scaled up antiretroviral therapy (73% coverage) and targeted interventions, but challenges like stigma, inequitable access, and sustainable funding persist.

Conclusion: HIV in Nepal is a concentrated epidemic sustained by high prevalence among key populations and fueled by deep-seated structural determinants. While the national response has made progress in treatment, a persistent gap between knowledge and practice underscores the need for interventions that address the underlying social, economic, and cultural drivers of transmission.

Implementation: To end AIDS as a public health threat, Nepal must intensify combination prevention, systematically address stigma and discrimination, strengthen the integration of HIV services into primary healthcare, invest in strategic information to track emerging trends, and ensure financial sustainability through increased domestic investment.

Keywords: HIV/AIDS, Nepal, Key Populations, Structural Determinants, Epidemiology

1. Introduction

Human Immunodeficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) remain significant public health challenges globally. In Nepal, a low-income country nestled in the Himalayas, the epidemic has followed a unique trajectory, initially concentrated among key populations before showing signs of a more generalized spread in certain geographic pockets. Understanding the prevalence, trends, and determinants of HIV in Nepal is crucial for tailoring effective prevention and control strategies. This review article aims to synthesize the current state of knowledge on the epidemiology of HIV and AIDS in Nepal over the last decade, drawing on the latest research to provide a comprehensive overview of the burden of infection, evolving trends, risk factors, and the national response.

The article will pay particular attention to the seminal work of Nepali researchers, whose studies have extensively documented the epidemic among key populations and the general populace. The research of Karki, conducted between 2014 and 2015, provides a critical sociological examination of the HIV epidemic in Nepal, consistently demonstrating that vulnerability is a product of social structures rather than just individual choices. His work, often co-authored, applies a structural-functional theory to reveal how macro-level societal dysfunctions—including poverty, gender inequality, and migration—compromise social

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cohesion and create environments that facilitate HIV transmission by limiting individual agency (Karki & Gartoulla, 2017). This theoretical framework is substantiated by empirical findings, which show a significant disconnect between knowledge, attitude, and practice (KAP); despite high levels of HIV awareness and positive attitudes toward prevention, this often fails to translate into consistent safe practices (Karki, 2014). This critical gap is powerfully explained by intervening socio-cultural factors such as pervasive stigma, peer pressure, and deeply entrenched gender norms that restrict personal autonomy (Karki, 2015a). This gendered dynamic is further illuminated through a feminist perspective, which critiques patriarchal structures for rendering women economically and socially dependent, thereby stripping them of the power to negotiate condom use and making them disproportionately vulnerable to infection, often from the high-risk behaviors of their male partners (Karki, 2015b). Collectively, Karki's work argues that an effective response to HIV in Nepal must target these foundational structural and cultural determinants to genuinely reduce vulnerability. By consolidating this evidence, we seek to highlight the progress made, identify persistent gaps, and suggest future directions for achieving the goal of ending AIDS as a public health threat in Nepal by 2030.

The first case of AIDS in Nepal was reported in 1988. Since then, the epidemic has evolved, with surveillance data indicating a concentrated epidemic among people who inject drugs (PWID), female sex workers (FSW), men who have sex with men (MSM), transgender people, and migrants (NCASC, 2023). The government of Nepal, supported by international partners, has implemented various strategies under the National Centre for AIDS and STD Control (NCASC). Despite these efforts, challenges such as stigma, discrimination, limited access to healthcare in remote areas, and the mobile nature of key populations continue to hinder the national response. This review will delve into the data that underpins these challenges and successes.

2. National Prevalence and Overall Trends

According to the latest estimates from the Nepal HIV/AIDS Strategy 2023-2030, approximately 30,000 people were living with HIV in Nepal in 2022, with an adult (15-49 years) prevalence of 0.13% (NCASC, 2023). This figure represents a significant decline from the peak of the epidemic and reflects the success of scaled-up interventions. The national incidence rate was estimated at 0.03 per 1000 uninfected population, indicating a slowing of new infections. AIDS-related deaths have also seen a steady decline, largely attributable to the expansion of Antiretroviral Therapy (ART) services. By the end of 2022, over 22,000 people were receiving lifelong ART, reflecting a treatment coverage of around 73% among diagnosed people living with HIV (PLHIV) (NCASC, 2023).

The overall trend suggests a maturing yet stable epidemic. However, national averages often mask significant heterogeneity. The prevalence is not uniformly distributed across the country or among different demographic groups. The Terai region, which shares an open border with India, has historically reported a higher burden of HIV compared to the hilly and mountainous regions (Kakchapati et al., 2017). This disparity is linked to cross-border migration, sex work,

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and transportation networks. Furthermore, while the general population prevalence remains low, the sustained high prevalence among key populations sustains the epidemic. The decline in national prevalence is a positive sign, but it necessitates a deeper investigation into the sub-epidemics driving these numbers to ensure the response is precisely targeted.

3. The Concentrated Epidemic: Prevalence among Key Populations

The HIV epidemic in Nepal is unequivocally concentrated among key populations. Surveillance data and numerous research studies consistently show disproportionately high prevalence rates among these groups.

3.1. People Who Inject Drugs (PWID)

PWID constitute one of the most at-risk populations. The Integrated Biological and Behavioral Surveillance (IBBS) survey 2022 reported an HIV prevalence of 7.9% among PWID, a slight increase from 6.2% in 2017 (NCASC, 2023). This is over 60 times higher than the national adult prevalence. The work of Karki and colleagues has been instrumental in understanding the drivers of this high prevalence. A study found that risk behaviors such as sharing of needles and syringes, inconsistent condom use, and a lack of comprehensive knowledge about HIV were pervasive among PWID in the Kathmandu Valley (Damas et al., 2021). The study highlighted that despite the presence of harm reduction programs, such as needle-syringe programs (NSP) and Opioid Substitution Therapy (OST), coverage and utilization remained suboptimal, leading to ongoing transmission (Platt et al., 2017).

3.2. Female Sex Workers (FSW)

FSW face a heightened risk of HIV acquisition and transmission. The IBBS 2022 reported an HIV prevalence of 1.5% among street-based FSW and 0.7% among establishment-based FSW (NCASC, 2023). While these figures represent a decline from previous years, they remain significantly elevated. Research indicates that the vulnerability of FSW is compounded by factors such as mobility, clients' refusal to use condoms, violence, and limited access to justice and health services (Glick et al., 2020). IBBS survey among FSW in the Terai highway regions, noting that those who frequently migrated for work had lower rates of HIV testing and were less likely to be reached by prevention programs, creating critical gaps in the continuum of care (New ERA, 2004).

3.3. Men Who Have Sex with Men (MSM) and Transgender People

MSM and transgender people are another key population with a substantial HIV burden. The IBBS 2022 reported an HIV prevalence of 5.5% among MSM and 6.3% among transgender people (NCASC, 2023). Stigma, discrimination, and criminalization of same-sex relationships drive this population underground, limiting their access to HIV prevention and testing services. A study explored the sexual behaviors and HIV risk among MSM in Pokhara, revealing a high proportion of bisexual behavior and low consistent condom use with both male and female partners. This "bridging" behavior is a critical epidemiological link, potentially facilitating transmission from high-prevalence key populations to the lower-prevalence general female population (A. Wagle & Karki, 2024).

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3.4. Migrants

Labor migrants, particularly those returning from India and other high-HIV-prevalence countries, play a pivotal role in Nepal's epidemic. It is estimated that a substantial proportion of all HIV infections in Nepal are among migrants and their spouses (Vaidya & Wu, 2011). Migrants often face isolation, engage in high-risk behaviors abroad, and return home unaware of their HIV status. A comprehensive study on returned labor migrants found that HIV testing uptake before and after migration was low, and there was a significant association between duration of stay abroad and engagement in risky sexual behavior. This population group is not homogenous, and their risk varies based on destination, type of work, and social support (S. Wagle et al., 2011).

4. Bridging the Gap: Prevalence in Bridge Populations and Spouses

The concept of "bridge populations" is central to understanding the dynamics of a concentrated epidemic transitioning towards a generalized one. Spouses of high-risk individuals, particularly wives of PWID and migrants, constitute a critical bridge population. Several studies by Karki and others have documented the alarming prevalence of HIV among the wives of PWID. Karki et al. (2016) conducted a study specifically on the wives of PWID, finding an HIV prevalence of 9.4%, a staggeringly high figure for a group typically considered part of the "general population." This transmission is primarily driven by the husbands' high-risk behaviors, including sharing needles and unprotected sex with sex workers, and subsequent unprotected sex within marriage.

Similarly, the spouses of returning migrants are also highly vulnerable. A study found that a significant number of women diagnosed with HIV in Nepal reported their only risk factor was being married to a migrant worker (Poudel et al., 2021). This highlights the "innocent victim" narrative, which, while problematic, underscores the lack of agency and knowledge these women have regarding their sexual health. The low rate of condom use within marital relationships, driven by desires for procreation and trust, creates a perfect storm for HIV transmission. These findings necessitate a paradigm shift in HIV prevention programs, moving beyond individual key populations to include their regular partners in a dyadic approach to testing, counseling, and prevention.

5. Socio-Demographic and Structural Determinants

The high prevalence of HIV among key and bridge populations is not a matter of chance but is driven by a complex interplay of socio-demographic and structural factors.

5.1. Poverty and Labor Migration: Poverty is a primary driver of labor migration and engagement in sex work. The economic vulnerability forces individuals into situations where they have little power to negotiate safe sex or safe injecting practices.

5.2. Stigma and Discrimination: Widespread stigma against PLHIV and key populations, particularly MSM, transgender people, and PWID, prevents them from seeking testing, treatment, and support services. Fear of social ostracization and family rejection drives the epidemic underground (Karki et al., 2020).

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5.3. Gender Inequality: Deep-rooted gender norms disempower women, making it difficult for them to refuse unprotected sex or seek healthcare without their husband's permission. This is particularly evident among the wives of PWID and migrants.

5.4. Legal and Policy Environment: While Nepal has progressive HIV-related policies, the legal environment for key populations remains challenging. The criminalization of same-sex relationships and drug use creates a barrier to service access, as individuals fear legal repercussions.

5.5. Geographic Inaccessibility: Reaching remote and rural populations with consistent HIV testing, prevention, and treatment services remains a logistical and financial challenge for the health system. As noted by Karki et al. (2018), mobility of high-risk groups themselves also creates geographic hotspots that are difficult for static health facilities to cover effectively.

6. The National and International Response

Nepal's response to HIV/AIDS has been multi-faceted, involving the government, non-governmental organizations (NGOs), and international partners.

6.1. Prevention Programs: Targeted interventions for key populations form the cornerstone of prevention. These include condom promotion, harm reduction (NSP and OST) for PWID, behavior change communication, and pre-exposure prophylaxis (PrEP) for individuals at substantial risk. The government, through NCASC, supports over 150 NGOs to run these targeted interventions across the country.

6.2. Testing and Counseling: Nepal has expanded HIV testing services through various channels, including government hospitals, voluntary counseling and testing (VCT) centers, and community-based testing led by NGOs. The "Test and Treat" policy, adopted in 2017, mandates that anyone diagnosed with HIV is immediately eligible for ART, regardless of CD4 count, improving health outcomes and reducing transmission.

6.3. Treatment and Care: The scale-up of ART has been a major success story. Free ART is provided through 102 sites across the country. The viral load suppression rate among those on ART for at least 6 months was over 90% in 2022, which is excellent for preventing onward transmission and reducing mortality (NCASC, 2023).

6.4. Strategic Information and Research: The regular conduct of IBBS surveys, size estimation of key populations, and operational research by institutions and researchers like Karki have been vital in guiding evidence-based policy and program planning.

7. Gaps and Challenges in the Current Response

Despite notable progress, significant gaps and challenges persist.

- **Inequitable Access:** Key populations outside major urban centers, adolescents, and people in remote areas still have limited access to prevention and testing services.
- **Stigma and Discrimination:** This remains one of the most formidable barriers. Health service providers themselves sometimes hold stigmatizing attitudes, deterring key populations from seeking care.

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- **Sustainable Funding:** Nepal's HIV response is heavily reliant on international donors, primarily The Global Fund to Fight AIDS, Tuberculosis and Malaria. The transition towards domestic funding and ensuring program sustainability is a major concern.
- **Data Gaps:** While IBBS data is robust, there are gaps in data on adolescents living with HIV, the children of key populations, and the long-term impact of migration.
- **Integration of Services:** The integration of HIV services with other health services, such as sexual and reproductive health, mental health, and non-communicable diseases, is still in its infancy. As noted in the work of Karki et al. (2019), the specific health needs of returned migrants, including mental health and substance use, are often not addressed in a comprehensive manner.

8. Conclusion and Future Directions

In conclusion, the prevalence of HIV in Nepal reflects a complex and concentrated epidemic, disproportionately affecting key populations—PWID, FSW, MSM, transgender people, and migrants—and their spouses. The research of Nepalese authors have been critical in illuminating the specific vulnerabilities and risk environments of these groups. While the national response has made impressive strides in scaling up treatment and targeted prevention, leading to a decline in overall prevalence and mortality, the fight is far from over.

To end the AIDS epidemic by 2030, Nepal must adopt a more focused and resilient approach. Future directions should include:

1. **Intensifying Combination Prevention:** Scaling up PrEP, strengthening harm reduction, and promoting condom use within the context of relationships, not just commercial sex.
2. **Addressing Stigma Systematically:** Implementing mandatory anti-stigma and discrimination training for all healthcare workers and launching national campaigns to reduce societal stigma.
3. **Strengthening Health Systems:** Improving the integration of HIV services with primary healthcare to improve accessibility and sustainability.
4. **Investing in Strategic Information:** Continuing to fund operational research to understand emerging trends, such as the impact of COVID-19 on the HIV epidemic and the needs of aging PLHIV.
5. **Ensuring Financial Sustainability:** The government must gradually increase its domestic investment in the HIV response to safeguard the gains made and prepare for a future with reduced external funding.

By focusing on equity, evidence, and human rights, Nepal can overcome the remaining challenges and achieve the goal of an AIDS-free generation.

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