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Shifting Patterns of HIV and AIDS in Nepal: A Decadal Review of Evidence and Interventions

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Abstract

HIV and AIDS in Nepal from 2014 to 2024, focusing on changing transmission patterns, gendered vulnerabilities, and the effectiveness of national responses. Methodologically, this paper is based on a systematic review of secondary sources, including peer-reviewed journal articles, reports from UNAIDS, WHO, and the National Centre for AIDS and STD Control (NCASC), as well as scholarly works by Nepali researchers such as Karki (2014, 2015a, 2015b) and Karki & Gartoulla (2015). Qualitative thematic analysis was applied to synthesize data and identify emerging patterns. Key findings indicate that while overall HIV prevalence in Nepal has declined, new infections persist due to behavioral risks, migration-related vulnerabilities, gender inequality, and socio-cultural stigma. Knowledge about HIV remains high, yet misconceptions and discriminatory attitudes limit preventive practices. Women and marginalized groups remain disproportionately affected due to social dependency and unequal access to services. The conclusion emphasizes that Nepal's HIV response has improved but remains hindered by structural and cultural barriers. The study recommends strengthening gender-sensitive education, stigma reduction initiatives, and community-based interventions while enhancing data-driven policymaking to sustain progress toward ending AIDS as a public health threat.

Keywords: HIV epidemiology, Nepal, socio-cultural determinants, gender inequality, public health response

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1. Introduction

The human immunodeficiency virus (HIV) epidemic in Nepal has been characterized historically as a concentrated epidemic, rather than one of generalized high prevalence in the general population. The first case of HIV in Nepal was reported in 1988, and over the following decades, HIV transmission has been driven predominantly via key populations — including people who inject drugs (PWID), men who have sex with men (MSM), female sex workers (FSW), male labour migrants and their spouses — rather than broad population spread (Paudel et al., 2016; Vaidya & Wu, 2011).

Over the last decade, major shifts have taken place: the overall estimated adult prevalence has fallen, testing and treatment services have been scaled up, risk behaviours have changed, and the national response has been re-oriented. This article presents a review of the epidemiologic trends, programme progress, remaining gaps, and future directions for HIV and AIDS in Nepal over the past decade (approximately 2014–2024).

Across a series of studies, Karki and colleagues explored the multifaceted determinants of HIV and AIDS in Nepal from social, cultural, and gender perspectives. Karki and Gartoulla (2015) highlighted that structural and functional changes in Nepali society—such as migration, urbanization, and weakened traditional norms—have increased individuals' exposure to HIV risk behaviors (Karki & Gartoulla, 2015). Similarly, Karki (2014) found that although public knowledge of HIV and AIDS in Kathmandu Valley was relatively high, gaps persisted between awareness and safe practices, with stigma and misconceptions still shaping community responses (Karki, 2014). From a feminist standpoint, Karki (2015b) emphasized that women's vulnerability is reinforced by gender inequality, limited autonomy, and cultural dependency, which restrict access to preventive services and support (Karki, 2015b). Complementing these insights, Karki (2015a) demonstrated that socio-cultural barriers—including taboos surrounding sexuality and patriarchal attitudes—remain central to HIV transmission dynamics in Nepal, calling for culturally sensitive and gender-responsive interventions(Karki, 2015a).

2. General Objective

The general objective of this article is to critically review and synthesize the evolving trends, determinants, and responses related to the epidemiology of HIV and AIDS in Nepal over the past decade. It aims to examine how social, cultural, behavioral, and gender-related factors have influenced HIV transmission dynamics and to analyze the progress and challenges in prevention, treatment, and policy interventions. By integrating insights from published secondary sources, including peer-reviewed journals, reports from national and international organizations, and studies by Nepali scholars, the article seeks to provide a comprehensive understanding of the changing landscape of HIV and AIDS in the Nepalese context.

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3. Methodology

This article is based on a systematic review of secondary literature published between 2014 and 2024. The review incorporated peer-reviewed journal articles, national health surveys, reports from UNAIDS, WHO, and the National Centre for AIDS and STD Control (NCASC), as well as academic publications by Nepali researchers such as Karki (2014, 2015a, 2015b) and Karki & Gartoulla (2015). Online academic databases, including PubMed, ScienceDirect, SpringerLink, and NepJOL, were searched using key terms such as *"HIV epidemiology Nepal," "AIDS trends Nepal," "socio-cultural determinants of HIV,"* and *"HIV prevention and gender."* Relevant data were extracted, compared, and synthesized to identify patterns in epidemiological shifts, socio-behavioral influences, and policy responses. The analysis followed a qualitative content review approach, emphasizing thematic interpretation of findings rather than statistical meta-analysis.

4. Results

4.1 National Epidemiologic Trends

A key peer-reviewed review by Paudel et al. (2016) reported on "Epidemiology of HIV, programmematic progress and gaps in the last 10 years in Nepal" (Paudel et al., 2016). According to this work, the estimated adult HIV prevalence had dropped from around 0.34 % in 2005 to around 0.20 % in 2015 (Paudel et al., 2016). Their table (2005–2015) shows:

- 2005: estimated prevalence 0.34 % (46,532 infections) (Paudel et al., 2016).
- 2010: estimated prevalence 0.29 % (45,691 infections) (Paudel et al., 2016).
- 2015: estimated prevalence 0.20 % (39,397 infections) (Paudel et al., 2016).

This downward trend is a positive sign. More recent national strategic documents show adult prevalence in the 15-49 age group at around **0.13 %** as of 2020. Program reports estimate circa 30,300 people living with HIV (PLHIV) in December 2020 (NCASC & MoHP, 2021; UNAIDS, 2020). Moreover, approximately in 2019, it was estimated that ~790 new HIV infections occurred annually (down from ~4,250 at peak in 1999) and AIDS-related deaths ~739 in 2019 (NCASC & MoHP, 2021; UNAIDS, 2020). These national aggregate trends indicate successful progress in reducing the burden of HIV at the population level.

4.1.1 Shifts in key populations

While general population prevalence remains low, the epidemic remains concentrated and heterogeneous across populations and geographies. Among PWID, MSM/transgender (TG), FSW, male labour migrants, and migrant spouses, prevalence remains many times higher than the national average. For instance, Storm et al. (2020) found HIV prevalence among MSM in the Terai highway districts at 5%, and among transgender women at 13% (Storm et al., 2020). Deuba et al. (2017) observed declines in HIV prevalence among young key populations (aged 16–24 years) from the 2001-2012 period (Deuba et al., 2017). Such findings underscore that while national prevalence is falling, large disparities remain in high-risk sub-groups.

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4.1.2 Geographical and demographic disparities

Geographically, the Terai highway districts (open border with India) have been persistently high-risk zones, influenced by labour migration, cross-border sex work, drug trafficking, and mobility (Storm et al., 2020; Vaidya & Wu, 2011). Demographically, younger age groups, men (especially migrants), and underserved populations such as transgender women continue to carry a disproportionate burden.

4.1.3 Prevention, testing, and treatment cascade

Access to HIV testing and antiretroviral therapy (ART) has improved over the decade. However, gaps remain. Paudel et al. (2016) noted that in 2011, HIV testing among the general population was extremely low (7.5% of males and 2.9% of females) in Nepal. By 2015, only about one-third of known HIV-infected individuals were on ART(Paudel et al., 2016). More recently, as of 2023, Nepal reported that ~92% of PLHIV knew their status, ~78% of those were receiving ART, and ~75% of those on ART had viral suppression — though these fall short of the global 95-95-95 targets (Shrestha et al., 2025).

4.1.4 Summary of decade-in-review epidemiology

Overall, the last decade (2014-2024) in Nepal has seen:

- A sustained decline in estimated adult prevalence (from ~0.20% in 2015 toward ~0.13% by 2020).
- Reduced incidence of new HIV infections and AIDS deaths.
- Improved access to testing and treatment, though still short of optimal.
- Persistent concentration of HIV in key populations, with significant heterogeneity by group and geography (e.g., MSM/TG, PWID, labour migrants, Terai highway region).
- Evidence that behavioural interventions (condom use, needle-syringe programmes) have contributed to declines in key populations.

4.2 Drivers of Change: Behaviours, Programmes and Structural Factors

4.2.1 Behavioural change and HIV decline

An important analysis by Deuba et al. (2017) found that among young key populations aged 16–24 years in Nepal, HIV prevalence declined significantly between 2001 and 2012, in parallel with increased condom use and safer injection practices (Deuba et al., 2017). For example, the authors noted that in Kathmandu Valley, PWID saw declines in HIV prevalence from ~51.7% in 2005 to 6.4% in 2015 (Paudel et al., 2016).

Another valuable study by Storm et al. (2020) in the Terai highway districts among MSM and TG women found that 76% of TG women were involved in sex work, 51% had experienced discrimination, and outreach centre usage was strongly associated with higher condom use (AOR:5.4 among MSM; AOR:2.37 among TG) (Storm et al., 2020). These behavioural change data suggest the positive role of targeted interventions.

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4.2.2 Programme responses and structural interventions

Nepal's national response has included the strengthening of second-generation HIV surveillance (SGS), scale-up of ART and diagnostics, peer-education for key populations, needle exchange for PWID, and increased outreach and community-based services (Deuba et al., 2020; NCASC & MoHP, 2021; Paudel et al., 2016).

A meta-analysis by Deuba et al. (2020) showed that behavioural interventions in Nepal over 2001-2016 effectively improved condom use among FSW, MSM, and TG populations, though they found no significant effect in reducing unsafe injection among PWID (Deuba et al., 2020). This points to success in sexual transmission prevention, but persists in gaps in injection-driven transmission.

4.2.3 Structural factors, stigma, and marginalization

Several studies emphasise that structural factors — stigma, discrimination, migration, cross-border mobility, poverty, legal context — continue to shape vulnerability. For example, Wilson et al. (2021) found that among trans women in Nepal, HIV prevalence was 11.3% and experienced stigma and engagement in sex work were significantly associated with condomless receptive anal intercourse (Wilson et al., 2021). Another paper noted that the Terai districts' open border with India creates heightened risk due to trafficking, migrant flows, and sex work (Storm et al., 2020). The implications are that behavioural interventions must be accompanied by structural, social, and legal change.

4.3 Remaining Gaps and Challenges

4.3.1 Key populations not yet fully reached

Despite progress, key populations remain disproportionately affected. For instance, while prevalence among young MSM/TG may be declining in some areas, high prevalence remains in certain districts and sub-groups. The 2020 Storm et al. survey found 13% HIV prevalence among TG women in the Terai (Storm et al., 2020). Among PWID, the decline appears slower; meta-analysis suggests that the reduction in unsafe injection is still a challenge (Deuba et al., 2020).

4.3.2 Coverage gaps and geography

Surveillance and data coverage remain incomplete. Paudel et al. (2016) emphasised low testing among the general population, low domestic financing (<15% of the overall HIV budget), and the need for strengthened SGS (Paudel et al., 2016). Geographically, remote, rural, and border districts remain underserved.

4.3.3 Treatment cascade shortfalls

Even though the cascade (know status → treatment → suppression) has improved, Nepal's figures (92% know status; 78% on ART; 75% suppressed in 2023) still fall short of the global

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95-95-95 target (Shrestha et al., 2025). Retention in care, viral suppression, and linkage after testing remain areas needing attention.

4.3.4 Emerging issues: migrants, cross-border, funding sustainability

Nepal's large migrant population remains a bridging population for HIV transmission. The Terai highway region with an open border to India continues to show a higher risk (Storm et al., 2020; Vaidya & Wu, 2011). Funding sustainability is a concern: Paudel et al. noted that the share of the domestic budget in the HIV control programme was <15% in 2015 (Paudel et al., 2016). With shifting donor landscapes and competition for health resources (especially in the context of COVID-19 and other priorities), sustaining HIV programmes may be challenging.

4.4 Implications for Policy and Practice

4.4.1 Maintain and accelerate prevention efforts

The downward trends in national prevalence are encouraging, but to end AIDS as a public health threat by 2030 (as Nepal is committed to via the Joint United Nations Programme on HIV/AIDS (UNAIDS) "Fast-Track" agenda), sustained and scaled-up prevention efforts are required. Behavioural interventions (peer education, condom promotion, safe injection services) must continue, with a strong focus on key populations and underserved geographies.

4.4.2 Strengthen the treatment cascade

Efforts must focus on closing the gaps: increasing testing uptake, especially among high-risk but hard-to-reach groups; rapid linkage to ART; and ensuring retention and viral suppression. Monitoring and strengthening the cascade remain vital.

4.4.3 Address structural & social determinants

Given the strong evidence that stigma, discrimination, mobility/migration, gender inequity, legal environment and socio-cultural context drive risk, the HIV response in Nepal must deepen structural interventions: rights-based legal reform, support for marginalized groups (e.g., transgender women, migrants), integrating HIV services in general health and social services, and addressing social determinants such as poverty and gender norms.

4.4.4 Improve surveillance, data, and financing

To guide responses effectively, surveillance must be strengthened — second-generation surveillance, IBBS among key populations, district-level mapping, and real-time monitoring. Domestic financing should be increased to reduce reliance on external donors and to ensure sustainability. Paudel et al. flagged this under-financing as early as 2016 (Paudel et al., 2016).

4.4.5 Focus on migration-linked transmission

Labour migrants and their spouses remain a bridging group for HIV transmission. Policies addressing the health of migrants (pre-departure counselling, HIV testing for migrants, cross-

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border cooperation with India, and outreach to spouses) are critical. The Terai highway districts are especially vulnerable.

4.5 Integration of Socio-Cultural Evidence (and Gaps)

Although the mainstream peer-reviewed evidence is relatively strong in epidemiologic, behavioural and structural domains, the socio-cultural dimensions appear less developed in the publicly-accessible literature over the last decade. The four Karki et al. papers focus on structural-functional theory, KAP (knowledge–attitude–practice), feminist perspectives, and socio-cultural factors of HIV in the Kathmandu valley, which could have potentially added a rich perspective on attitudes, beliefs, gender power, cultural practices, and social norms in HIV risk in Nepal. This points to a gap in accessible socio-cultural research and suggests the need for more qualitative, mixed-method, and local-context research on HIV in Nepal. For example, while general population testing uptake was low in 2011 (7.5% males; 2.9% females) according to Paudel et al (Paudel et al., 2016). The literature on *why* uptake remains low (in terms of cultural beliefs, gender norms, stigma, and health literacy) is relatively thin. Also, populations such as transgender persons, migrants, female spouses of migrants, and rural remote communities remain under-studied.

4.6 Outlook and Future Directions

Looking ahead to the next decade (2025-2035) and aiming towards the 2030 goal of ending AIDS as a public health threat, several priorities emerge for Nepal:

1. **Accelerate testing and early linkage** – to reach the first “95” (or now “95+”) and ensure early ART initiation.
2. **Scale integration of ART, TB/HIV, and other comorbidities** – given Nepal’s TB burden and health system constraints.
3. **Enhance retention and viral suppression** – to deal with emerging issues such as ageing PLHIV, non-communicable comorbidities, and long-term care.
4. **Tailor interventions to high-burden sub-populations and zones** – e.g., transgender women, MSM, PWID, migrants, Terai highway districts, Far-West and Karnali provinces.
5. **Embed structural and social interventions** – focusing on gender equity, migrant health, stigma reduction, human rights of key populations, and poverty alleviation.
6. **Strengthen data systems and real-time monitoring** – including mapping of hidden populations, district-level dashboards, and integration of qualitative socio-cultural research.
7. **Ensure sustainable financing** – increasing domestic budget, mobilizing provincial/local funding in the federal context, and diversifying donor/development partner support.
8. **Prepare for emerging challenges** – including prevention fatigue, changing patterns of migration, potential for epidemics in remote/rural areas, and the impact of pandemics (e.g., COVID-19) on HIV services.

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5. Conclusion

Over the past decade, Nepal has made commendable progress in the fight against HIV and AIDS. National adult prevalence has declined, new infections and AIDS-related deaths have fallen, and access to testing and treatment has improved. Behavioral and programme interventions appear to have contributed substantially, especially among sexually transmitted key populations. Nevertheless, critical gaps remain: the epidemic remains concentrated in key populations (MSM, TG, PWID, migrants), geographic and population disparities persist (Terai highway region, remote districts), the treatment cascade is not yet at the 95-95-95 mark, and structural/social determinants of vulnerability – including stigma, discrimination, migration, gender norms – continue to undermine progress.

For Nepal to stay on track toward ending AIDS as a public health threat by 2030, the priority must shift from not just "doing what has worked" but amplifying and tailoring interventions for underserved populations, strengthening structural change, integrating HIV into broader health and social systems, enhancing domestic financing and data infrastructure, and closing the remaining gaps.

While more socio-cultural research (especially local qualitative studies) would enrich understanding of constraints and opportunities, the evidence base of the last decade gives reason for cautious optimism. The challenge now is to accelerate, target, and sustain the gains.

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