Migration, Mobility, and HIV/AIDS: Insights from Truck Drivers and Migrant Workers

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Abstract*—HIV/AIDS remains a significant global health issue, disproportionately impacting mobile groups, including truck drivers and migrant laborers. This research examines the nexus of migration, mobility, and HIV transmission using secondary data, global health reports, and existing literature. Using theoretical approaches such as the Push-Pull Theory of Migration and Social Network Theory, this research investigates how migration patterns contribute to the spread of HIV/AIDS. UNAIDS, WHO, and India's National AIDS Control Organization (NACO) have issued publications outlining risk behaviors, structural vulnerabilities, and policy responses. The analysis shows that, while movement is not intrinsically dangerous, the socioeconomic and structural elements associated with migration greatly increase vulnerability to HIV/AIDS. Findings indicate that while mobility itself is not a direct cause of HIV infection, it increases exposure to risky environments and limits access to prevention and care services. The paper concludes by emphasizing the role of targeted interventions, mobile health infrastructure, and social work advocacy in addressing HIV vulnerability among truck drivers and migrant workers.

Index Terms*—HIV/AIDS, migration, mobility, migrant workers, truck drivers, HIV transmission, structural vulnerability, risk behaviors, social network theory, social work advocacy, socioeconomic factors, push-pull theory of migration.

I. Introduction

The virus known as HIV (human immunodeficiency virus) targets cells that aid the body in fending off infections, increasing a person's susceptibility to various illnesses and infections. It is transmitted via sharing injection equipment or coming into contact with specific bodily fluids of an infected individual, most frequently during unprotected sex. HIV can cause AIDS (acquired immunodeficiency syndrome) if treatment is not received. HIV cannot be eliminated by the body, and there is currently no proven treatment for the virus. Therefore, HIV is a lifelong condition.

Fortunately, antiretroviral therapy (ART) is an effective HIV medication. HIV medication can drastically lower the viral load if taken as directed. When a person's viral load is so low that it cannot be detected by a standard lab test, this is referred to as viral suppression. Individuals with HIV can live long, healthy lives and prevent HIV transmission to their HIV-negative partners if they take HIV medication as directed and maintain an undetectable viral load.

It is becoming increasingly acknowledged that mobility and migration are important factors influencing HIV risk. Occupational pressures, extended time away from family, substandard living circumstances, and restricted access to healthcare around transit corridors and work locations present particular risk situations for mobile populations, including migrant workers and long-distance truck drivers. HIV prevalence among truck drivers is many times greater than in the general male population, according to systematic reviews. Similarly, migrant workers frequently face structural and social vulnerabilities — economic precarity, stigma, and lack of access to formal healthcare — which increases their risk of HIV, especially those working in construction, industrial, and informal sectors.

A. *Objectives of the Study*

This study is guided by the following objectives:

- To examine the relationship between migration, mobility, and the spread of HIV/AIDS among truck drivers and migrant workers using secondary data and existing literature.
- To analyze structural, social, and behavioral factors that contribute to HIV vulnerability in mobile populations.
- To apply relevant theoretical frameworks — Push-Pull Theory of Migration and Social Network Theory — in understanding HIV risk dynamics.
- To understand the impacts and risk factors on the spouses of truck drivers and migrant workers.
- To review policies and interventions targeting truck drivers and migrant workers and assess their effectiveness.

II. Brief Review of Literature

Individual risk and systemic vulnerability intersect in a complicated way in the relationship between human mobility and the spread of HIV/AIDS. Migration is not a risk factor in and of itself; rather, the unstable circumstances of the migration process — such as poverty, social isolation, and restricted access to healthcare — create settings favorable to transmission (IOM, 2021). Research repeatedly demonstrates that migrant workers' rates of multi-partner sexual conduct are frequently higher due to the disruption of stable family structures and the strain of adapting to new environments (MDPI, 2024).

According to the latest estimates, 40.8 million individuals worldwide were living with HIV in 2024, with around 1.3 million new infections that year and 630,000 deaths from AIDS-related causes. WHO, the Global Fund, and UNAIDS all have global HIV strategies aligned with SDG target 3.3 of ending the HIV epidemic by 2030. In 2024, 87% of people living with HIV knew their status, 77% were receiving antiretroviral therapy, and 73% had suppressed viral loads (WHO, 2024).

Truck drivers are the backbone of the transportation system and are essential to regional trade. Risky sexual behaviors — including having several sexual partners and not

using condoms — have been linked to high prevalence of STDs like HIV in low- and middle-income nations. Truck drivers are more likely to acquire HIV because their occupation necessitates frequent travel across geographical areas, facilitating network transmission (Mehraeen et al., 2023). About 281 million people, or 3.6% of the world's population, are international migrants, of which 169 million are migrant workers (IOM, 2021).

A. Global HIV Statistics (UNAIDS, 2024)

40.8 million [37.0-45.6 million] people globally were living with HIV in 2024.

1.3 million [1.0-1.7 million] people became newly infected with HIV in 2024.

630,000 [490,000-820,000] people died from AIDS-related illnesses in 2024.

31.6 million people were accessing antiretroviral therapy in 2024.

New HIV infections have been reduced by 61% since the peak in 1996.

AIDS-related deaths have been reduced by 70% since the peak in 2004 and by 54% since 2010.

53% of all people living with HIV were women and girls in 2024.

B. The Epidemiology of Mobility and Bridge Effects

Migrant workers and long-distance truck drivers occupy the role of high-risk "bridge populations" — connecting high-prevalence urban hubs with low-prevalence rural origin communities. Mobility-induced factors such as social fragmentation, roadside "risk zones," and disruption of stable domestic environments facilitate the spread of HIV across geographic borders (Mehraeen et al., 2023). Systemic barriers to prevention, including the absence of portable healthcare services and socio-legal challenges faced by undocumented migrants, frequently result in delayed diagnosis and treatment noncompliance (PubMed Central, 2024). The gendered effects of migration are also significant: male workers' mobility indirectly increases the vulnerability of their "left-behind" partners through circular transmission paths.

III. Structural Factors: Vulnerability in Migrant Workers and Truck Drivers

The vulnerability of migrant workers and truck drivers to HIV is deeply embedded in structural factors — the economic, social, and political environments that constrain their options. Poverty and lack of stable job opportunities are primary drivers of mobility, and the resulting financial insecurity can force individuals into high-risk activities like transactional sex. Unstable or informal living conditions, such as crowded temporary housing, disrupt social support networks and create barriers to consistent healthcare access.

For long-distance truck drivers, the mobile nature of their work creates a "fragmented life" characterized by social isolation and absence of stable family support, which drives them toward high-risk "halt points" where commercial sex and substance use are prevalent (Ward & Fauk, 2025). Migrant workers often face "legal precarity" — their residency status or lack of formal contracts makes them fearful of state-run health facilities, pushing them toward unregulated providers who may not offer adequate preventive services (Fauk et al., 2022).

The intersection of economic instability and social displacement further amplifies vulnerability. Migrant labor systems rely on separating the worker from their home community, leading to breakdown of traditional social norms and adoption of "survivalist" behaviors (UNAIDS, 2024). Because these workers are often excluded from national health schemes or are in transit during clinic hours, they face significant institutional barriers to testing and treatment (Knipper et al., 2025; Ward & Fauk, 2025).

IV. Social Factors: Vulnerability in Migrant Workers and Truck Drivers

The loss of civic identity and breakdown of established support networks are the main causes of social vulnerability among migrant and transport workers. Many experience "institutional invisibility" — denied access to welfare services such as subsidized food and housing due to a lack of portable identification (Ward & Fauk, 2025). Social discrimination in host communities, xenophobia, and nativist attitudes further marginalize migrants and can escalate into stigmatization during public health emergencies, isolating them from the official healthcare system.

Long-term social isolation from family and regular partners results in loneliness and mental health problems including anxiety and depression. Many workers resort to high-risk coping strategies — substance misuse and unprotected sexual encounters at "halt points" — when family-based social supervision is absent. Without sufficient legal redress or support networks, many migrants endure excessive work hours, hazardous living conditions, and exploitation by employers.

Social protection — a set of regulations and programs intended to prevent poverty and vulnerability — guarantees access to healthcare and financial stability. People who lack social protection are more susceptible to poverty, inequality, and social exclusion throughout their lives; universal social protection is essential for this population (ILO).

V. Behavioral Factors: Vulnerability in Migrant Workers and Truck Drivers

Migrant workers and long-distance truck drivers exhibit behavioral vulnerabilities shaped by unstable working conditions, social isolation, and environmental influences. High-risk sexual conduct, substance misuse, and poor health management are common, often resulting from loneliness, occupational stress, and the need for coping mechanisms while away from home.

A. High-Risk Sexual Behavior

Many truck drivers and migrant workers engage in sexual relations with multiple casual partners or commercial sex workers (CSWs) during extended periods of separation from their spouses. This is commonly reported as a coping mechanism for loneliness and sexual deprivation.

B. Low Condom Usage

Inconsistent condom use is driven by the desire for maximum pleasure, a lack of confidence in condom quality, or — among married workers — the belief that condom use implies infidelity. This is particularly pronounced with marital or regular partners, creating a direct bridge for transmission.

C. Substance Abuse

Drugs and alcohol are frequently used to stay awake on long-haul drives or to overcome fatigue, stress, and monotony. Substance use also serves as a coping strategy for loneliness and depression. Among people who inject drugs (PWID), needle sharing due to scarcity of clean equipment significantly elevates HIV transmission risk.

D. Peer Influence

Social networks among truck drivers and migrant workers create opportunities for peer pressure regarding injectable drug use. Peer introduction to drugs, joint drug use, and needle sharing to reduce costs are well-documented. The absence of sterile injecting supplies in work environments normalizes

needle sharing, substantially increasing HIV transmission risk (Ward & Fauk, 2025).

VI. Theoretical Framework

A. *Push-Pull Theory of Migration*

The push-pull theory contends that conditions at the place of origin — such as unemployment, poverty, and limited services — drive people to relocate to destinations offering better opportunities and quality of life (PRB). This theory explains how economic, demographic, and political factors together shape migration decisions. The table below summarizes the key push and pull factors relevant to migration and HIV vulnerability.

Table I: Push and Pull Factors of Migration

Push Factors	Pull Factors
Natural disasters (floods, droughts)	Less exposure to natural disasters
Lack of educational opportunities	Better quality of education
Poor medical facilities	Better medical facilities and hospitals
Unemployment, poverty and crop failure	More opportunities in industry and services
Lower wages and limited access to resources	Higher wages and better employment
Limited social facilities and services	Urban lifestyle and greater social exposure

B. *Social Network Theory*

Social Network Theory posits that an individual's social connections significantly shape their behavior, beliefs, and health outcomes. People tend to associate with others who share similar characteristics, and these networks influence the spread of both information and risk behaviors (Tucker et al., 2012). In the context of HIV, network features such as size, composition, and density are linked to risk behaviors including needle sharing, unprotected sex, multiple concurrent partnerships, and transactional sex.

Network intervention research in HIV prevention has primarily targeted injectable drug users, but has also been extended to female sex workers and high-risk populations. Social network analyses have explained the role of social capital in HIV risk among people who inject drugs (PWID), the overlap of drug and sexual networks, and demographic disparities in HIV burdens among truck drivers and migrants relative to other target groups (Latkin et al., 2013).

VII. Risks to Spouses of Truck Drivers and Migrant Workers

A. *Psychological and Mental Health*

Long-term separation, increased household responsibility, and social isolation pose serious psychological challenges for the spouses of migrants and long-distance truck drivers. Research shows that "left-behind" wives report significantly higher levels of anxiety, sadness, and hopelessness compared to wives of resident husbands (Manandhar et al., 2023). Contributing factors include limited communication with husbands, financial insecurity, sole responsibility for childcare, and dependence on in-laws. Women cope by maintaining family and community networks, keeping occupied with daily tasks, and rationalizing separation as necessary for family welfare (Arokkiaraj et al., 2021).

B. *Sexual Health and STI Risk Factors*

Spouses of migrants and truck drivers face a distinctive set of STI vulnerabilities. Migrant workers living away from their families are approximately 3.6 times more likely to engage in extramarital sexual relationships, while truck drivers frequently report sexual encounters with commercial sex workers (CSWs) at highway stops. Although condoms may be used during high-risk encounters, they are rarely used with wives, often due to marital trust norms or the misconception that condoms are only for family planning purposes.

Many wives have limited awareness of their husbands' high-risk behaviors. Due to cultural norms, trust within the marital relationship, and lack of open communication about sexual health, wives often do not perceive themselves to be at risk of STIs or HIV. This reduces their likelihood of seeking testing or negotiating condom use (Maity et al., 2014). Access to healthcare is further limited in rural areas due to inadequate infrastructure, financial constraints, transportation barriers, and social stigma surrounding sexual health services.

VIII. Discussion

The analysis confirms that structural determinants — poverty, legal precarity, precarious employment, and inadequate social protection — are the primary drivers of HIV vulnerability among truck drivers and migrant workers, rather than individual behavioral choices. Economic hardship compels migration and can push individuals into transactional sex, while fear of state authorities deters them from accessing formal healthcare.

The "fragmented life" of truck drivers — characterized by social isolation, long absences from family, and exposure to high-risk halt points — creates a fertile environment for substance use and commercial sex as coping strategies. Low condom use with regular partners, peer influence normalizing injectable drug use, and scarcity of sterile equipment compound transmission risks. The gendered dimension is equally critical: wives left behind bear both indirect HIV risk through their partners' behaviors and direct psychosocial harm through isolation, economic insecurity, and lack of support.

These findings reinforce that effective responses must address structural root causes and not focus solely on individual behavior change. Multi-level interventions combining targeted prevention, harm reduction, social protection, and legal empowerment are essential.

IX. Policies and Interventions

Effective interventions must be multi-level, combining biomedical, behavioral, structural, and policy approaches tailored to the specific vulnerabilities of mobile populations.

A. *Social Security: e-Shram Initiative*

The Ministry of Labour and Employment launched the e-Shram "One-Stop-Solution" on 21st October 2024, enabling unorganized workers — including migrant workers — to access various social security schemes through a single portal. Fourteen Central Ministry schemes have been integrated, including Ayushman Bharat (AB-PMJAY), One Nation One Ration Card (ONORC), PM-KISAN, and PMSBY, substantially improving social security coverage for this population.

B. *Condom Promotion and Risk Reduction*

Despite relatively high HIV awareness among truck drivers, condom use with regular and marital partners remains inconsistent (Pandey et al., 2012). Key interventions include: (i) Free or subsidized condom vending machines at fuel stations, transport depots, and halt points, which reduce access barriers and stigma (NACO, 2015); (ii) Couple-Based HIV Counseling and Testing (CHCT), which promotes joint decision-making and mutual disclosure, reducing transmission between mobile workers and their spouses (WHO, 2012; Saggurti et al., 2008); and (iii) Behavior Change Communication (BCC) campaigns using culturally relevant messaging via posters, SMS, and peer outreach, which have

demonstrated significant increases in consistent condom use (Saggurti et al., 2012; UNAIDS, 2014).

C. Access to Justice for Migrant Workers

Migrant workers' access to justice is a fundamental right enabling them to recover unpaid wages, resist exploitation such as bonded labour, and address abuse. Labour departments must ensure effective implementation of labour codes, lead grievance redressal mechanisms, and maintain a responsive legal aid system capable of handling cases involving limited documentation and language barriers.

D. Harm Reduction for Substance Use

Harm reduction programs are essential given that needle sharing among people who inject drugs (PWID) is a major HIV transmission driver in this population (Ward & Fauk, 2025). Core interventions include:

- Needle and Syringe Exchange Programs (NSPs): High-coverage NSPs (reaching over 50% of local PWID) have reduced HIV prevalence by 3-15% in low- and middle-income countries (Des Jarlais et al., 2013).
- Opioid Substitution Therapy (OST) for those dependent on opioids.
- Counseling for alcohol dependence and mental health support.
- Substance-use screening at highway clinics and transport hubs.

X. CONCLUSION

This study establishes that HIV vulnerability among truck drivers and migrant workers is not a product of individual moral failure but of deeply embedded structural, social, and behavioral determinants. The mobile nature of these occupations creates conditions — social isolation, economic precarity, restricted healthcare access, and peer-driven risk behaviors — that collectively amplify susceptibility to HIV/AIDS.

Effective responses must address the root causes: poverty, legal precarity, lack of social protection, and systemic exclusion from health and welfare services. Multi-level strategies integrating targeted prevention, couple-based counseling, harm reduction, social security, and access to justice are essential. The "left-behind" spouses of these workers represent a critical and often overlooked at-risk group requiring tailored prevention, testing, and psychosocial support.

Social work has a pivotal role to play in advocating for the rights of these populations, facilitating access to services, and working toward structural changes needed to create safer conditions for mobile workers. Ending HIV vulnerability among these communities requires sustained political will, cross-sectoral collaboration, and meaningful involvement of affected groups in policy design and implementation.

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