

EPIDEMIOLOGY AND PREVENTION OF HIV INFECTION

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Introduction: Human Immunodeficiency Virus (HIV) remains a major global public health issue, with approximately 38 million individuals currently living with HIV worldwide [1]. Despite significant progress in HIV treatment and prevention, new infections continue, particularly among high-risk populations such as men who have sex with men (MSM), intravenous drug users (IDUs), sex workers, and young adults [2, 3]. Effective preventive strategies require a clear understanding of HIV epidemiology, transmission dynamics, and targeted interventions.

Methods: A systematic literature review was conducted, examining global epidemiological data and prevention strategies published between 2018 and 2023. The databases PubMed, WHO reports, and UNAIDS statistical releases were searched using keywords "HIV epidemiology," "HIV prevention strategies," and "high-risk populations." Emphasis was placed on data from sub-Saharan Africa, Eastern Europe, Central Asia, and Southeast Asia, regions identified with significant HIV burdens.

Results: Globally, the number of new HIV infections decreased by approximately 32% from 2010 to 2022, largely due to expanded antiretroviral therapy (ART) access, increased awareness, and preventive measures like Pre-exposure Prophylaxis (PrEP) [1, 4]. However, certain populations and regions remain disproportionately affected. Sub-Saharan Africa accounts for two-thirds of all global HIV infections, with young women and adolescent girls exhibiting higher infection rates due to gender inequality and limited access to prevention services [5]. Eastern Europe and Central Asia experience rising HIV incidence, primarily driven by injecting drug use and stigma against marginalized populations [6]. Effective preventive interventions, including needle-exchange programs, condom distribution, and PrEP, have significantly reduced HIV transmission rates in various settings, yet their scale-up remains inconsistent globally [7, 8].

Discussion: Effective HIV prevention requires addressing both biomedical and social determinants of health. While PrEP and ART demonstrate efficacy in reducing HIV transmission, structural barriers such as stigma, discrimination, and poor health infrastructure significantly limit their effectiveness [9]. Epidemiological patterns suggest the necessity for region-specific interventions—such as harm reduction services for IDUs in Eastern Europe and gender-sensitive health programs for women in sub-Saharan Africa—to effectively target vulnerable populations [10]. Continuous epidemiological surveillance and timely adaptation of prevention strategies are essential for managing and potentially eliminating HIV transmission.

Conclusion: Comprehensive HIV prevention strategies, tailored to regional and population-specific epidemiological contexts, are critical in reducing new infections. Strengthening healthcare infrastructure, reducing stigma, and ensuring equitable access to proven prevention interventions remain priorities in global efforts against HIV.

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