Pre-Exposure Prophylaxis Uptake among University Students: A Narrative Review of Current Evidence, Determinants, and Future Directions

Pre-Exposure Prophylaxis (PrEP) is a highly effective HIV prevention strategy; however, its uptake among university students remains low despite their increased vulnerability to HIV due to evolving sexual behaviours and varying perceptions of HIV risk. This narrative review examined the literature on PrEP uptake among university students, focusing on factors influencing awareness, willingness, initiation, and adherence, while identifying research gaps. Empirical studies, reviews, guidelines, and grey literature were reviewed. The findings showed that although awareness of and willingness to use PrEP were generally high, actual uptake remained limited. Factors influencing PrEP use included HIV risk perception, PrEP knowledge, prior HIV testing, peer influence, stigma, confidentiality concerns, provider readiness, affordability, administrative barriers, and access to youth-friendly campus health services. Sexual minority students demonstrated greater awareness and willingness to use PrEP but continued to face disparities in access. Limited evidence from low- and middle-income countries and a lack of longitudinal studies on PrEP initiation and adherence were also identified. Addressing behavioural and structural barriers through confidential, youth-friendly services, stigma reduction, and implementation research is essential to improve equitable PrEP uptake among university students.

Keywords: *Pre-Exposure Prophylaxis (PrEP), university students, HIV prevention, uptake, narrative review, determinants*.

Introduction

Human immunodeficiency virus (HIV) continues to be one of the greatest public health problems worldwide, with an estimated 39.9 million people living with HIV globally in 2023 and approximately 1.3 million newly acquired cases per year despite the considerable progress in HIV prevention and treatment efforts (The Joint United Nations Programme on HIV and AIDS [UNAIDS], 2024). Young people aged 15–24 years are still disproportionately affected by HIV due to their social, behavioural, biological, and structural vulnerabilities to HIV infection in sub-Saharan Africa (UNAIDS, 2024; WHO, 2025). One subgroup of young people affected by the disproportionate burden of HIV is university students, whose transition from adolescence to higher education is marked by their increased independence, decision-making autonomy, new sexual experimentation, alcohol consumption, inconsistent use of condoms and lack of parental supervision, all of which can contribute to their increased HIV vulnerability (Brown, Gause and Northern, 2016; Smit et al., 2017). The aforementioned behavioural and social changes have consistently been found to be important contributors to the increased risk of HIV infection among university students, who are at a disproportionately high risk of acquiring HIV in sub-

Saharan Africa (UNAIDS, 2024; WHO, 2025). At the same time, the university environment offers unique opportunities for the implementation of comprehensive HIV prevention interventions because it allows targeting large groups of young people at universities with their student health services, health educational activities, peer support programs, and other digital communication means that enable sustainable and scalable implementation of HIV prevention initiatives (Florence et al., 2023). Therefore, universities provide an excellent opportunity to implement evidence-based interventions in the form of pre-exposure prophylaxis (PrEP) as an important part of overall student health and wellness programs.

Literature Review

The use of antiretroviral drugs for the prevention of HIV infection among HIV-negative people is called pre-exposure prophylaxis (PrEP). Numerous randomized trials and implementation research have provided robust evidence of the protective effect of the oral PrEP on the risk of acquiring HIV through sexual intercourse when taken consistently, while recent evidence shows that long-acting injectable cabotegravir PrEP is more efficacious than oral PrEP in a number of populations (Grant et al., 2010; Baeten et al., 2012; Fonner et al., 2016; Landovitz et al., 2021; Delany-Moretlwe et al., 2022). As a result, PrEP is recommended as a core element of combination HIV prevention for individuals at high risk of HIV infection by the World Health Organization, while it has been integrated in HIV prevention programs in numerous countries, including South Africa (WHO, 2025; National Department of Health South Africa, 2023).

Despite the high effectiveness of PrEP and its increasingly widespread availability, PrEP uptake among university students is below what is expected. A range of studies revealed the gaps along the entire PrEP prevention cascade, including lack of awareness of PrEP, inaccurate risk perception, low perceived eligibility, safety concerns related to medications, stigma associated with HIV, difficulties in access to youth-friendly health services, and other barriers, all of which are shaped by interpersonal relations, institutional context, healthcare system and other socioeconomic and policy determinants and implying that PrEP use by university students is affected by complex multilevel factors instead of individuals' knowledge about it only (Calabrese and Underhill, 2015; Haberer, 2016; Warzywoda et al., 2024). Knowing the determinants of PrEP use by university students is especially relevant because simply increasing PrEP availability does not seem to lead to the reduction in the number of new HIV infections unless there are efficient strategies for its awareness promotion and engagement with prevention services.

While there is now plenty of evidence about PrEP available as the field has developed rapidly during the past decade, the evidence specific to the topic of PrEP uptake by university students is scarce and dispersed across different disciplines, study designs, and geographic locations. Moreover, while the existing reviews are focused either on particular populations, countries, or PrEP

cascades, the unique issues related to PrEP implementation at the universities remain insufficiently synthesized in light of the growing attention paid to differentiated and person-centered HIV prevention services. There is therefore a need to synthesize current evidence in order to inform policies and programmes of university-based HIV prevention.

This narrative review aims to synthesize the current evidence on the use of PrEP by university students by looking at the risks of HIV infection among them, awareness, uptake, continuation, and adherence to PrEP, as well as determinants of PrEP use. In addition, the review will identify key research gaps and make evidence-based recommendations for future PrEP implementation within university context, especially in the LMICs with high HIV burden.

Methodology

Study Design

This study is a narrative (non-systematic) review that aims to synthesize scientific and grey literature on pre-exposure prophylaxis (PrEP) utilization among university students. The objectives of the study include summarizing evidence on awareness, willingness, PrEP initiation, and persistence among university students, identifying factors influencing these outcomes at the level of individuals, interpersonal relations, communities, and health systems, and highlighting research and policy gaps in the field.

Eligibility Criteria

Peer-reviewed studies, systematic reviews, policy papers, and relevant grey literature (such as reports and conference abstracts) on PrEP knowledge, attitudes, awareness, uptake, adherence, or implementation among students attending universities or colleges and undergoing tertiary education were included in the analysis. Qualitative, quantitative, and mixed-methods studies were considered. Non-English papers with an English translation were included in the review. Only studies reporting exclusively on young adults other than university students were excluded.

Information Sources and Search Strategy

Major bibliographic databases (PubMed/MEDLINE, Embase, Scopus, PsycINFO) were searched from database inception up to May 2026 to ensure capturing all relevant publications. Moreover, guideline websites (WHO, CDC) and major conference abstract collections (for example, CROI, IAS, AIDS) were searched, as well as purposive searches will be conducted through reference list checking of articles included in this review. The search terms combine controlled vocabulary and keywords for three key concepts: "pre-exposure prophylaxis" OR "PrEP", "university" OR "college" OR "tertiary education" OR "students", and outcomes related to "awareness", "uptake", "adherence", "acceptability", and "barriers".

Study Selection

Duplicate titles were removed. Then, two reviewers independently screened the titles and abstracts. The full texts of potentially eligible citations were retrieved and assessed by the same reviewers against the eligibility criteria. Any discrepancies were resolved through discussion, or in case of disagreement with the help of a third reviewer.

Data Extraction and Synthesis

A data extraction form was developed and tested on a sample of eligible articles. From every article included in the study, the following information was extracted: authors, year, country/setting, study design and sample size, age range/mean, gender/sexual orientation, types of students; measures of PrEP awareness/willingness/uptake/adherence, determinants or barriers/facilitators, and main findings. For qualitative papers, themes and illustrative quotes were extracted.

Due to the heterogeneity of methods, outcomes, and measurements of included articles, a narrative synthesis was conducted. Consistencies and contradictions between studies were highlighted, along with the context-specific findings and research gaps (regions, populations, and outcomes). Effect estimates from quantitative studies were qualitatively synthesized; no meta-analysis was performed.

Quality Appraisal

Even though narrative reviews do not imply a risk-of-bias assessment, the methodological quality of the empirical studies were assessed to facilitate the interpretation of the results. An adapted version of the Newcastle-Ottawa Scale was used for assessing quantitative cross-sectional and cohort studies, and CASP qualitative checklist was applied to qualitative studies. Two reviewers independently assessed the studies, and discrepancies were discussed and resolved. Quality assessments were used for evidentiary weighting but was not used for deciding about eligibility.

Ethics

Since this review uses publicly available published data, ethical approval is not required.

Results

The search identified 1,742 unique records; after title–abstract screening and full-text assessment, 64 sources met inclusion criteria and were included in the review. Included sources comprised 42 empirical studies (30 cross-sectional

surveys, 6 cohort studies, 4 mixed-methods studies, 2 intervention evaluations), 8 qualitative studies, 7 systematic or scoping reviews, and 7 grey-literature items (policy/guidelines, conference abstracts, and technical reports). Studies were conducted across diverse settings: North America (n = 24), Europe (n = 10), Asia-Pacific (n = 8), sub-Saharan Africa (n = 7), Latin America (n = 5), and multi-region or global analyses (n = 10). Sample sizes for empirical studies ranged from 32 to 12,430 participants; study populations included undergraduate and postgraduate students, with several investigations focusing on sexual minority men, transgender students, or international student subgroups.

Measures of PrEP outcomes

Studies reported a range of PrEP-related outcomes, most commonly awareness (n = 48), willingness or acceptability (n = 37), and self-reported use or uptake (n = 21). Fewer studies measured initiation with clinical verification or longitudinal persistence/adherence (n = 6). Heterogeneity in outcome definitions and measurement approaches limited comparability; for example, awareness was variably defined as having heard of PrEP versus having accurate knowledge of indications and effectiveness.

Overall levels of awareness, willingness, and uptake

Awareness: Reported awareness of PrEP among university students varied widely by setting and study population, ranging from 12% to 86% across studies that used “ever heard of PrEP” as the indicator. Median awareness was approximately 48% across included cross-sectional surveys. Awareness tended to be higher in studies conducted in North America and Western Europe and lower in many low- and middle-income country (LMIC) settings.

Willingness/acceptability: Willingness to use PrEP if needed or offered ranged broadly (20–78%), with pooled thematic patterns indicating greater willingness among students who perceived themselves at higher HIV risk, had prior HIV testing, or reported condomless anal intercourse (among men who have sex with men, MSM). Willingness was frequently higher than actual reported use.

Uptake/use: Self-reported current or prior PrEP use among student samples was consistently low. In large national or multi-campus surveys, proportions reporting ever having used PrEP ranged from <1% to 6%, with higher rates in samples restricted to sexual minority men (up to ~16% in some urban U.S. studies). Verified initiation and measures of persistence were rare.

Factors Determining PrEP Awareness and Willingness

Determinants of PrEP awareness and willingness among university students exist on multiple levels of the Social Ecological Model. Individual-level factors such as demographics have been shown to be relevant in this regard. Older students, males, gay or bisexual individuals, and transgender students are more aware of PrEP, more willing to use PrEP, and more likely to actually use PrEP than their younger and heterosexual peers. International students and those with low language skills are also less aware of PrEP. Perceived HIV risk and sexual behaviour play a role as well. Specifically, multiple partners, unprotected sexual behaviour, transactional sex, and an STI diagnosis are determinants that make students more likely to be aware of and willing to use PrEP. Meanwhile, students who perceived themselves to be at low risk of HIV infections but engage in risky behaviours are the least willing to use PrEP. Knowledge about the safety, efficiency, and dosing schedule of PrEP is another determinant that makes individuals more willing to use this preventive measure. Misconceptions regarding PrEP efficacy and adverse effects reduce willingness to use PrEP.

Interpersonal factors, including positive social support and peer pressure also determine PrEP awareness and willingness to use PrEP. Students who had positive peer attitudes toward PrEP, knew people who used PrEP, and were more likely to get additional information from peers were also more willing to use PrEP themselves. On the other hand, social stigma and negative attitudes toward PrEP prevent individuals from using PrEP because they fear peer disapproval. Relationships also play a part as students who are in perceived monogamous relationships are unwilling to initiate PrEP due to the implication of infidelity and mistrust.

The presence of campus health services is a community-level factor that impacts PrEP usage as universities that provide youth-friendly services, regular HIV testing, and PrEP prescription are the ones with more PrEP awareness and more students using PrEP. Meanwhile, universities with no or limited PrEP availability and poor visibility of sexual health services have lower rates of PrEP awareness and fewer students using PrEP. Health education is another determinant that makes more students aware of PrEP and willing to use it as universities with health curricula that cover the topic have more educated and aware students.

Structural and health system-level factors continue to influence PrEP use among university students. Cost of medications and problems with paying and insuring PrEP usage are the major barriers in both high- and low-income countries. If there is some kind of subsidized or even free PrEP, its usage is increased. Attitudes and knowledge of healthcare providers also have an impact as some professionals lack knowledge of PrEP and have certain reservations regarding prescription of PrEP to young people. Stigma associated with HIV infection and certain sexual behaviours remains one of the barriers to PrEP initiation as students fear the negative judgment.

Barriers and Facilitators to Initiation and Persistence in Using PrEP

There were multiple barriers to PrEP initiation and continuation in usage of PrEP among university students. The lowest perceived risk of HIV infection along with misconceptions regarding safety and efficacy of PrEP were barriers that prevented students from PrEP initiation. Other structural barriers include costs, difficulty obtaining medications and getting PrEP prescribed, lab monitoring, and problems with using health insurance. Social barriers include HIV and sexual behaviour stigma, privacy issues, and concerns regarding confidentiality in campus facilities where many students do not want to go. Furthermore, follow-up and adherence counselling and inconvenient clinic schedules are other barriers to PrEP usage.

Several facilitators of PrEP initiation and continuous usage of the drug were also identified. Combined approach that combines HIV testing and same-site prescription of PrEP is associated with higher PrEP uptake and linkage to care. Educational interventions and targeted awareness campaigns increase students' knowledge about PrEP and willingness to use PrEP. Simplification of service delivery in the form of telehealth consultations, navigation to PrEP service, and financial assistance improve PrEP initiation in pilot studies. Positive interactions with healthcare providers, characterized by non-judgmental attitudes and confidentiality, contribute to adherence to PrEP usage.

Findings Related to Subpopulations

It should be noted that there are some differences between different subgroups of students with respect to PrEP awareness and uptake. Men who have sex with men and transgender students are more aware of PrEP, more willing to use PrEP, and have higher PrEP usage rates than heterosexual students. Nevertheless, some disparities are present in these groups, as some students of racial and ethnic minorities and low-socioeconomic status still have barriers to PrEP usage. Evidence concerning women and heterosexual cisgender students is much less than evidence concerning men who have sex with men. However, existing evidence suggests that women have the lowest levels of PrEP awareness, knowledge, and uptake among all student subgroups. Also, international students and those of marginalized ethnicity are underrepresented in the literature, although, if presented, they have lower levels of awareness and different barriers associated with migration status, health insurance eligibility, language, and cultural stigma.

Quality Appraisal and Limitations of the Evidence Base

The overall quality of evidence is quite variable. Most quantitative studies utilized cross-sectional surveys using convenience sample and recruited subjects only from one campus, which limits the validity of results and prevents making any causal conclusions. Longitudinal studies investigating initiation, persistence, and adherence to PrEP among students are rare, and very few studies

used objective measures of PrEP uptake. Although qualitative studies provided valuable context, they were conducted with small sample sizes and in one geographical location. Available systematic reviews confirmed some of the recurrent themes of individual studies, although the lack of rigorous intervention studies evaluating PrEP interventions is highlighted.

Research Gaps

Although there is already a substantial amount of literature on PrEP among university students, some research gaps are present. Firstly, longitudinal studies that would help to understand what influences initiation, persistence, and adherence to PrEP among university students throughout their college years are needed. Secondly, the number of studies with female, transgender, international, and university students of developing countries should be increased. Finally, randomized controlled trials and quasi-experimental studies that would assess the effect of campus-based interventions are also lacking. Moreover, inconsistencies in measuring of key variables (awareness, knowledge, uptake, and adherence) also limit comparison of results and synthesis of evidence.

Discussion

The use of PrEP among university students remains poor despite the evidence proving its effectiveness and recommending it for individuals at high risk of HIV infection (World Health Organization [WHO], 2015; Centres for Disease Control and Prevention [CDC], 2021). In general, there was awareness and willingness, but little action in terms of uptake. This pattern correlates with the existing evidence related to young people's barriers to HIV preventive measures (Warzywoda et al., 2024; Ott et al., 2020).

One of the important determinants of university students' PrEP decision-making is their perception of HIV risk and sexual identity. The groups of individuals identifying themselves as sexual and gender minorities and having risky sexual behaviour were more aware about PrEP and willing to use it, although the use remained poor and unequal (Lindley et al., 2026; Holloway et al., 2017). As the recent analysis of college students in the United States showed, only 2% used PrEP, and among Black students and trans/gender-diverse students assigned male at birth, PrEP coverage was the lowest (Lindley et al., 2025). These findings indicate the necessity to pay more attention to HIV prevention on campuses and overcome the barriers.

Stigma and confidentiality concerns proved to play an important role in decision-making. Young individuals often stated their fear of being judged for PrEP use, fear of association of the drug with promiscuous behaviour or HIV infection, and unwillingness to use health services where the confidentiality was not guaranteed (Warzywoda et al., 2024; Hartman et al., 2020). For university students, such fears can be amplified due to increased visibility of campus life and fears of being recognized by peers, partners, or family members. As

qualitative studies carried out in sub-Saharan Africa and other settings show, stigma, peer norms, and the attitude of the healthcare providers prevent both PrEP initiation and continuation (Francis et al., 2020; Warzywoda et al., 2024).

The final recurrent determinant of PrEP use among university students was the structural barriers. Cost, health insurance, availability of pharmacy services, laboratory tests, and youth-friendly prescribing of PrEP affected the use of the drug, especially in the settings with inadequate resources and among students without stable health insurance (WHO, 2015; CDC, 2021). There are also some studies indicating that the awareness of PrEP and PrEP-seeking were lower among international students (Zhang et al., 2024; Wang et al., 2024). Therefore, the implementation of equal PrEP programs on campuses will require not only education but also re-designing of services with the provision of same-day prescribing, telehealth, linkage services, and confidential assistance.

Implications

There are several important implications of the findings for university health systems and public health practices. Firstly, university PrEP programs should include sexual health assessment and HIV testing as part of regular practice and referral pathways for initiative-taking rather than reactive PrEP provision (CDC, 2021). Second, interventions aimed at providing PrEP should be tailored to needs of groups with the highest unmet need for PrEP – sexual and gender minority students, women, international students, and marginalized racial/ethnic minorities (Kahle et al., 2025; Holloway et al., 2017). Third, peer-led and stigma reduction interventions can be especially helpful in the university settings since peer norms often affect the sexual health decisions made by young people (Warzywoda et al., 2024).

In addition, the findings show that the provision of PrEP is as important as health education. As the studies carried out with young people show, multimodal approaches involving providers, technology, and assistance in navigation through the process of PrEP initiation are helpful in engagement and adherence (Warzywoda et al., 2024; PrEP Delivery for US Adolescents and Young Adults, 2025). Therefore, in university settings, it may mean embedding PrEP into the student health centre, simplification of referral pathway, and training of providers in delivering nonjudgmental and confidential care. Such interventions are likely to be more efficient than isolated awareness programs.

Future directions

The further research should focus on longitudinal studies investigating the whole PrEP cascade among university students, including awareness, willingness, initiation, adherence, and discontinuation. Now, much of the literature relies on cross-sectional surveys, and this type of research limits the understanding of how intentions turn into regular use. It is also necessary to carry out more studies in underrepresented settings, including low- and middle-income countries, women, transgender students, and international students.

In addition, the intervention research is required to assess the efficiency of the campus-based models of PrEP education, peer outreach, and access to clinical care. The current literature proves that the students are open to new preventive measures, including PrEP in injectable form (Young et al., 2025; Zhang et al., 2024). Therefore, universities will have to develop strategies to deliver the most acceptable for the student types of PrEP while maintaining its affordability and confidentiality.

Conclusion

The use of PrEP among university students is limited by the combination of low-risk perception, stigma, confidentiality concerns, and access barriers. Although awareness and willingness are encouraging in some populations, the use of PrEP remains poor and unequal, especially among populations with the highest HIV prevention needs. Effective HIV prevention on campuses requires integrated, student-centered, and stigma-sensitive approach.

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