

# Barriers and facilitators to pre-exposure prophylaxis among African migrants in high income countries: a systematic review

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**Abstract.** *Background:* The aim of this review is to explore acceptability, barriers, and facilitators to PrEP use among African migrants in high-income countries. *Methods:* A systematic review was conducted to explore reasons that contribute to low PrEP uptake in this population. Three online databases, abstracts from key conferences and reference lists of relevant studies articles published between the 2 July 2018 and 3 March 2019 were searched. Narrative synthesis was performed on quantitative data and thematic synthesis was performed on qualitative data. *Results:* Of 1779 titles retrieved, two cross-sectional studies (United States (US) ( $n = 1$ ), United Kingdom (UK) ( $n = 1$ )) and six qualitative studies (US ( $n = 2$ ), UK ( $n = 3$ ), Australia ( $n = 1$ )) met inclusion criteria. PrEP acceptability was reported in one cross-sectional article and two qualitative articles. Cross-sectional studies measured acceptability and willingness to use PrEP; in one study, 46% of African migrant men found PrEP use acceptable, and following PrEP education, another study categorised 60% of participants as willing to use PrEP if it were cost-free. Qualitative studies reported mixed acceptability, with higher acceptability reported for serodiscordant couples. Barriers and facilitators to PrEP use were coded into five themes: cultural aspects of stigma; knowledge gap in health literacy; risks unrelated to HIV transmission; practical considerations for PrEP use; and the impact of PrEP use on serodiscordant couples. *Conclusions:* Several common barriers to PrEP use, including stigma, health literacy and risk perception and cost, were identified. Findings were limited by there being no published data on uptake. Additional work is needed to understand PrEP acceptability and uptake among African migrants.

**Keywords:** acceptability, Africa, barriers, facilitators, HIV, migrant, PrEP, willingness.

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## Introduction

HIV pre-exposure prophylaxis (PrEP) is a highly efficacious HIV prevention strategy.<sup>1–10</sup> Research is now focusing on PrEP implementation, including the obstacles and facilitators of PrEP use.<sup>1,2</sup> Although publicly funded PrEP is available in some countries, many people can only access PrEP through demonstration studies, despite the fact that the World Health Organization has recommended PrEP for all people at substantial risk of HIV infection.<sup>11–15</sup>

Although gay, bisexual and other men who have sex with men (GBM) populations have been identified as priority populations for HIV prevention in high-income countries, such as Australia, the United Kingdom (UK) and Canada, other key groups have been identified, including African migrants.<sup>16–19</sup> In the UK in 2016, Black African migrants were reported as having the second highest prevalence of HIV.<sup>20</sup> In Australia in 2018, the HIV notification rate was approximately three-fold higher in people born in Sub-Saharan

Africa compared with Australian-born people.<sup>16</sup> In New Zealand, African migrants were consistently over-represented in new HIV diagnoses among heterosexual people in 2016–19.<sup>21</sup> In Canada, of the 32% of HIV infections attributed to heterosexual sex in 2018, 15% were among people were from high-prevalence countries, mostly from sub-Saharan Africa and the Caribbean.<sup>22</sup>

These data highlight the importance of preventative measures including PrEP, being made available and accessible to African migrant populations. However, there is limited research on PrEP uptake and implementation research among African migrants in high-income countries.<sup>2,23,24</sup> The majority of studies that have evaluated PrEP in terms of acceptability, willingness to use, barriers and facilitators for African migrants in high-income countries have been qualitative studies; there has been only a few quantitative studies.<sup>11,25–30</sup> We conducted a systematic review to explore acceptability, willingness to use, and barriers and facilitators to PrEP among African migrants living in high-income countries with the aim of identifying areas to target to improve uptake in this population of which there is no existing data.

## Methods

The systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)<sup>31</sup> and assessment of multiple systematic reviews (AMSTAR) measurement tool.<sup>32</sup> We registered the protocol review prospectively (PROSPERO registration number 2019: CRD42019125740).

### Eligibility criteria

Studies were included/excluded according to the criteria below.

#### Study type

We included all quantitative studies and qualitative studies. Review papers, commentaries and case-studies were excluded. Grey literature, such as non-peer reviewed reports, were not part of this search strategy; however, four papers included in this review were projects conducted in collaboration with community organisations.<sup>11,25,27,30</sup>

#### Population

Studies among African migrants were included. In this paper, the term ‘African migrants’ includes refugees and asylum seekers, economic migrants and students who have migrated to high-income countries outside of Africa. If African migrants were part of a larger study population, disaggregated data relating to African migrants were extracted where possible. We included disaggregated data where African migrants represented ~75% or more of the study population.

#### Outcome

We included studies reporting one or more of the following outcomes:

- (1) Acceptability of PrEP;
- (2) Willingness to use PrEP; and

- (3) Barriers and/or facilitators to PrEP.

In this paper, ‘Acceptability’ and ‘Willingness to Use PrEP’ were not defined but extracted according to author reported outcomes of acceptability and/or willingness to use PrEP.

### Exclusion criteria

Studies were excluded in a hierarchical manner. The criteria were as follows:

- (1) Studies that did not include African migrants, or where disaggregated data specific to African migrants could not be obtained – where African migrants did not represent ~75% or more of the study population;
- (2) Studies that did not report on our outcomes of interest; and
- (3) Studies that did not take place in a high-income country.

### Search strategy

We searched three online databases, EMBASE, Medline and Web of Science, for studies published. The search was conducted between 2 July 2018 up to 3 March 2019. We did not include a minimum date range as we wanted to include all papers published since PrEP was first licenced for use in 2012 to the date of the search.<sup>11</sup> A combination of medical subject headings (MeSH) and keywords were used (see Supplementary File S1, Appendix 1 for full search strategy).

Search strings included terms related to:

- (1) African countries and major cities;
- (2) Migrants (migration, emigration, immigration, emigrants, immigrants, refugees, asylum seekers, communities); and
- (3) Pre-exposure prophylaxis (PrEP, truvada, tenofovir, emtricitabine and tenofovir, emtriva and viread, Tenvir EM, Adco-Emtevir, Ricovir EM).

Six authors were contacted for further information regarding availability of disaggregated data related to African migrants. They were followed up after a 2-week period. Five of six authors responded and provided information that led to the inclusion or exclusion of their study.

No restrictions were made on language or publication date. Reference lists of all relevant studies and abstracts from the International AIDS Conference, the IAS Conference on HIV Science, the Joint Conference of the British Association for Sexual Health and HIV with the British HIV Association, and the Australasian HIV & AIDS Conference were manually searched between January 2012 and March 2019.

Results were exported into EndNote X9 (Clarivate Analytics). Two reviewers independently screened titles and abstracts against the eligibility criteria. Full-texts were retrieved for studies reporting at least one outcome of interest in the abstract. Where data from the same study cohort was reported in multiple publications, we included publications if they independently reported an outcome of interest.

The review was completed on 8 July 2019.

### Quality assessment

Critical appraisal was conducted on the methodology of included studies using a modified CASP Qualitative

Checklist<sup>33,34</sup> and Joanna Briggs Institute Checklist for Analytical Cross-Sectional Studies.<sup>35</sup>

#### Data extraction

Data were extracted independently by two reviewers using a standardised Microsoft® Excel® spreadsheet (Microsoft Corporation). The following study characteristics and outcomes were extracted: (1) basic study information (including first author, year of publication, study location); (2) study design (including recruitment method, sample size and proportion of African migrants in mixed population studies); (3) participant demographics (including countries of origin, gender distribution, age, sexual orientation, education level, PrEP use); and (4) outcome measures. Discrepancies were resolved by consensus.

#### Data synthesis and analysis

For quantitative data, we performed a narrative synthesis. For qualitative data, thematic synthesis was performed by two investigators using NVivo 11 (QSR International).<sup>36,37</sup> Thematic synthesis aligns with the methodology of meta-ethnography, allowing us to describe findings thematically and establish an analytical framework to identify emerging themes.<sup>36,37</sup> All data in the results or equivalent section were coded – this included all quotes and authors' interpretations.

Themes were then generated using an inductive process to identify pre-defined and emerging themes based on authors' interpretations.<sup>37,38</sup> The initial themes were then grouped into 'sets' and then into more encompassing themes and sub-themes.

No statistical analysis was undertaken as there was insufficient, heterogeneous data in the extracted quantitative papers. The research did not require an ethical statement as it is a review.

## Results

### Included studies

The initial search returned 1780 results; 495 duplicates were removed; 944 titles and abstracts were screened, and 65 full-text articles were reviewed for eligibility. Fifty-eight studies were excluded as they did not include African migrants, had mixed populations where data were not disaggregated by migration status, or <75% of the study population were African migrants, or acceptability, willingness to use PrEP, barriers and/or facilitators were not reported (Supplementary File S1, Appendix 2).

Eight studies met inclusion criteria and were included in the review: five journal articles and three conference abstracts (Fig. 1, Tables 1 and 2). Included studies were published

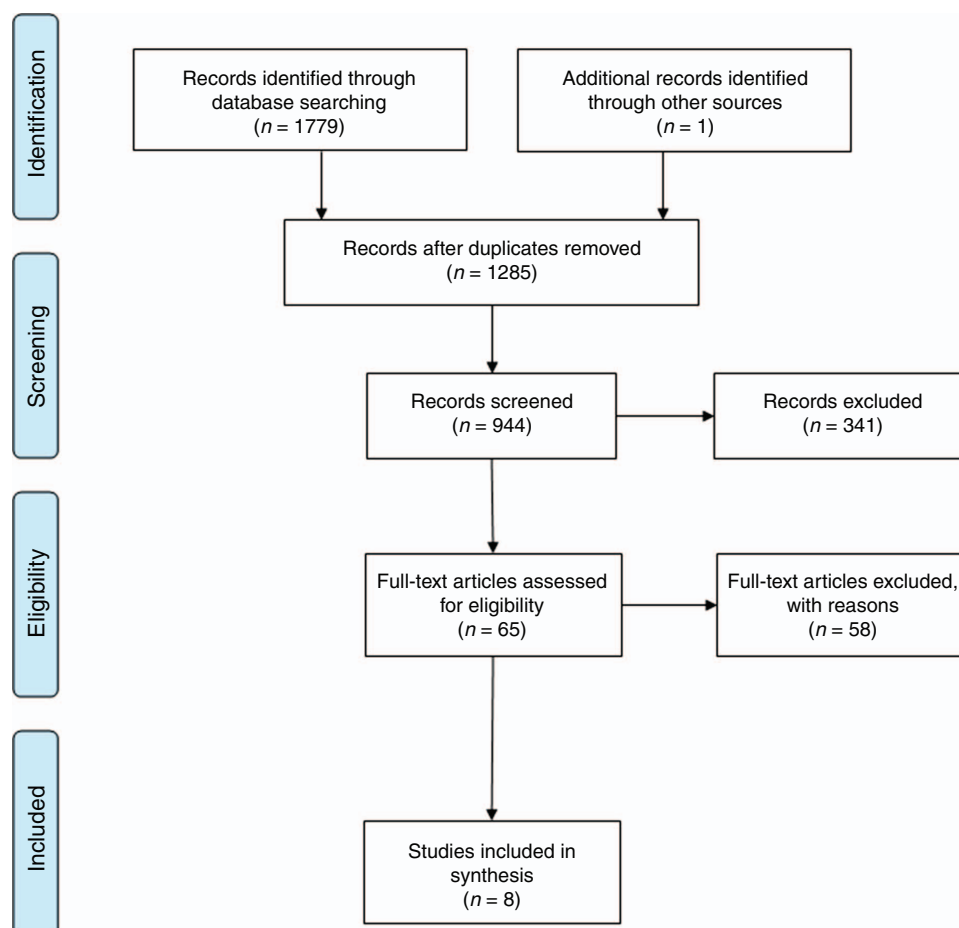


Fig. 1. PRISMA flow diagram of results and the screening process.

Table 1. Characteristics of quantitative studies included in the review

Author (year)	Setting	Study type	Recruitment method	Sampling method	Sample size ( <i>n</i> =); proportion of African migrants (%)	Participants	Sample characteristics					Proportion reporting PrEP use
							Age (mean/ range)	Gender distribution (%)	Sexuality distribution (%)	Socioeconomic distribution	Education distribution	
Ekong <i>et al.</i> (2018) <sup>26</sup>	UK	Cross-sectional	Circulating questionnaires at two football tournaments	Time-location	<i>n</i> = 75; 77%	Attendees of football tournament	15 – 75	95% male; 5% female	93% heterosexual; 4% GBM	nr	nr	nr
Kwakwa and Wahome (2014) <sup>25</sup>	US	Cross-sectional	Community-based HIV screening program	Convenience	<i>n</i> = 1324; 56%	Community members	nr	49% female	nr	nr	nr	nr

between 2014 and 2019. Two studies were abstracts of cross-sectional studies conducted in the US and UK. Six qualitative studies reported data from interviews and focus group discussions (FGD) conducted in the US ( $n = 2$ ), UK ( $n = 3$ ) and Australia ( $n = 1$ ). One UK study was a published conference abstract. The eight cross-sectional and qualitative studies included had a total of 1580 participants, including 906 African migrants. Age varied across studies and ranged from 15 to 75 years. Two studies reported participants' country of origin, which included Rwanda, Uganda, Ghana, Zimbabwe, Burundi, Eritrea, South Sudan, Tanzania, and Kenya.<sup>30,39</sup>

### Quantitative studies

One small 2018 UK cross-sectional study reported on awareness of and willingness to use PrEP among black minority and ethnic community members recruited at two football tournaments.<sup>26</sup> The other larger cross-sectional study was conducted in Philadelphia, US in 2014 and reported on views and PrEP acceptability among community-recruited Caribbean and African migrants.<sup>25</sup>

### Qualitative studies

Two US qualitative studies were conducted in 2017 and 2019. One explored views on PrEP among serodiscordant heterosexual couples in Boston through semi-structured qualitative interviews<sup>39</sup> and another reported on PrEP use and sexual health outcomes among African-born migrants in Minnesota through FGD, structured interviews, and self-administered questionnaires.<sup>27</sup> A qualitative study conducted in Australia in 2018 had several aims, including gaining insight on PrEP use as an additional HIV prevention tool through a community forum, describing the risk of HIV infection among people travelling between Africa and Australia.<sup>30</sup> Three qualitative studies were conducted in the UK and one, conducted in 2018, explored factors influencing acceptability of PrEP services for Black GBM through in-depth interviews. Approximately half of the participants were African migrants.<sup>28</sup> The second UK study utilised the same study population and reported barriers and facilitators to PrEP use.<sup>29</sup> The third study, conducted in Scotland, reported acceptability, facilitators, and barriers to PrEP among two priority groups; African migrants and GBM.<sup>11</sup>

### Quantitative data: acceptability and willingness to use

A 2014 US cross-sectional study reported 46% of African migrant men found PrEP acceptable for HIV prevention (Table 3).<sup>25</sup> A 2018 cross-sectional UK study did not report disaggregated data for African migrants, but they represented >75% of study participants.<sup>26</sup> Results highlighted that 60% of participants reported they were willing to use PrEP following further explanation of PrEP education and if PrEP were provided for free. However, it was not clear from the results if PrEP knowledge impacted acceptability and use (Table 3).<sup>26</sup>

### Qualitative data: acceptability, barriers and facilitators

#### Cultural aspects of stigma on discussions about PrEP

A theme across most qualitative papers was the impact of African migrants' culture on their perceptions of, and

**Table 2. Characteristics of qualitative studies included in the review**

nr, not reported; FGD, focus group discussions; IDI, in-depth interviews; GCSE, General Certificate of Secondary Education; LGBT, lesbian, gay, bisexual and transgender; GBM, gay, bisexual, and other men who have sex with men

Author (year)	Setting	Interview type	Recruitment method	Sampling method	Sample size ( <i>n</i> =); proportion of African migrants (%)	Participants	Age (mean/ range)	Gender distribution (%)	Sexuality distribution (%)	Socioeconomic distribution ( <i>n</i> =)	Education distribution ( <i>n</i> =)	Number reporting PrEP experience ( <i>n</i> =)
Bazzi <i>et al.</i> (2017) <sup>39</sup>	US	Semi-structured interviews	Through parent study, 'PrEPception'	Convenience	<i>n</i> = 11; 45%	Serodiscordant couples	37	45% male	100% heterosexual	Participants employed part-time or unemployed, <i>n</i> = 5	Completed high school ( <i>n</i> = 4); some college education ( <i>n</i> = 3); completed college ( <i>n</i> = 4)	<i>n</i> = 5
Mullens <i>et al.</i> (2018) <sup>30</sup>	Australia	FGD <sup>2</sup>	Community forum	Purposeful	<i>n</i> = 23; 91%	Community members and leaders, health, and community workers	22 – 71	61% male; 39% female	nr	nr	High school ( <i>n</i> = 3); diploma ( <i>n</i> = 3); some university ( <i>n</i> = 3); university graduate ( <i>n</i> = 8); post-graduate university ( <i>n</i> = 3)	nr
Okoro and Whitson (2019) <sup>27</sup>	US	FGD, self- administration, structured interviews	Through existing relationships	Purposeful, snowball	<i>n</i> = 30; 93%	Physicians, Prep case managers, medical case managers, program directors for community organisation, community advocates, a HIV tester, a HIV outreach coordinator, a drug, and alcohol counsellor	nr	27% male	nr	nr	nr	nr
Witzel <i>et al.</i> (2018) <sup>38</sup>	UK	IDI	The PROUD study mailing list, gay-specific geolocation social networking applications, social media	Online snowball	<i>n</i> = 25; 56%	Community members	31	100% male	76% Gay; 20% Bisexual; 4% Other	nr	Degree or higher ( <i>n</i> = 15); below degree or A level ( <i>n</i> = 9); GCSE and below ( <i>n</i> = 1)	<i>n</i> = 5
Witzel <i>et al.</i> (2017) <sup>29</sup>	UK	Semi-structured interviews	Social sexual applications	nr	<i>n</i> = 25	Community members	18 – 45	100% male	100% GBM	nr	nr	nr
Young <i>et al.</i> (2014) <sup>11</sup>	UK	Mixed methods – FGD, IDI	FGD – community groups, sexual health and LGBT organisations; IDI – flyers, posters, community organisations	FGD – convenience; IDI – convenience, snowball	<i>n</i> = 67; 37%	Community members	FGD, 18 – 75; IDI, 19 – 60	27% female	GBM 63%; Heterosexual 37%	nr	nr	nr



**Table 3. Major findings from quantitative studies of acceptability and willingness to use PrEP**  
nr, not reported; nd, disaggregated data not reported

Author (year)	Major findings Acceptability	Willingness to use PrEP (%)	Awareness of PrEP	Correlates of acceptability/ Willingness to use	Reasons for acceptability/ rejection	Awareness and use of Post-exposure Prophylaxis
Ekong <i>et al.</i> (2018) <sup>26</sup>	nr	60% willing to use PrEP following further explanation and if provided for free nd	nd	nd	nr	nd
Kwakwa and Wahome (2014) <sup>25</sup>	46% African migrant men	nr	nr	nd	nd	nr

likeliness to use PrEP. Although participants' country of origin varied, a reluctance to discuss sex and sexual health was generally observed as a barrier to community engagement. An emphasis on community and family, the influence of specific religious and cultural beliefs, and intergenerational differences in attitudes contributed to sex and sexuality being seen as taboo, limiting community dialogue about PrEP.<sup>27,28,30,39</sup>

*'For many generations and in many traditional settings, the lifestyle of the African does not allow for conversations about sex. Young people have been left to make decisions on their own about sexual activates and behaviours. Now that there is a prevention in place with PrEP the conversation can come up and be talked about. Talking about sex in the African Born community is a challenge, now add LGBTQ, and young people and HIV into the mix, no one is talking.'* (Medical Case Manager in the US).<sup>27</sup>

All qualitative studies reported stigma as a barrier to African migrants' PrEP uptake (Table 4). Of concern was fear that PrEP would be misconstrued as HIV treatment, thus people taking PrEP would be misconstrued as being HIV positive.<sup>11,27–30,39</sup> Additionally, there were concerns that the community would make negative other assumptions about a person taking PrEP, such as promiscuity, infidelity and being involved in sex work.<sup>27,29,30</sup>

Specific barriers were also reported for African GBM. Taking PrEP could result in further marginalisation, due to assumptions of promiscuity and experience of homophobia from the Black community when accessing PrEP services linked to the Black community; services may be linked to the Black community through staffing, high patient case load or proximity to Black communities.<sup>28,29</sup>

#### Knowledge gap in health literacy

Most papers reported a knowledge gap in sexual health literacy among African migrants related to HIV self-risk perception and PrEP knowledge (Table 4).<sup>11,27,29,30</sup> HIV self-risk refers to how an individual perceives their probability of HIV infection based on knowledge and behaviours.<sup>11</sup>

Approximately half of the papers reported that low HIV self-risk perception created a barrier to PrEP use.<sup>11,27,29</sup>

*'If someone really has the disease, there is an expectation that he or she should be a skinny person as seen in patients in some African countries however this is rarely the case with HIV in the United States.'* (FGD participant in the US).<sup>27</sup>

Approximately half of the papers reported that lack of PrEP knowledge created further barriers to PrEP use. There was reported uncertainty among African migrants in relation to PrEP's efficacy, the required clinical follow up, and side-effects.<sup>11,27,30</sup>

Several papers described approaches to increase PrEP knowledge, involving community initiatives that address education gaps in a culturally appropriate context for African migrants and GBM of African background. The need for a multi-pronged approach from social workers, community, and clinicians was emphasised.<sup>27,29,30</sup> Expanding advertising campaigns to include African migrants was suggested as a potential strategy to facilitate PrEP access to ensure that African migrants understood their HIV risk in their current country. Some participants in a US study, for example, reported that PrEP was perceived as a medication targeting gay white men.<sup>27</sup>

#### Risks unrelated to HIV transmission

Findings from approximately half of the papers revealed concerns about PrEP's short- and long-term side-effects,<sup>11,27,30</sup> and concerns that PrEP use would contribute to reduced condom use and increased rates of sexually transmissible infections (STIs) and unplanned pregnancies<sup>11,30</sup> (Table 4). *'So I think it makes people more ignorant of the other things as well. And it makes people just more focussed on just HIV and not other STIs.'* (African woman in the UK).<sup>11</sup>

Government monitoring of PrEP use was also reported as a barrier to PrEP uptake.<sup>27,30</sup> Participants reported fear of engagement with health services would identify them as undocumented migrants, which could result in their deportation.<sup>27</sup>

**Table 4. Summary of qualitative study findings of acceptability, barriers, and facilitators to PrEP**  
 ✓ represents themes identified in included studies; – represents themes that were not identified in included studies

Major findings Theme	Subtheme(s)	Author (year)					
		Bazzi <i>et al.</i> (2017) <sup>39</sup>	Mullens <i>et al.</i> (2018) <sup>30</sup>	Okoro and Whitson (2019) <sup>27</sup>	Witzel <i>et al.</i> (2018) <sup>28</sup>	Witzel <i>et al.</i> (2017) <sup>29</sup>	Young <i>et al.</i> (2014) <sup>11</sup>
Impact of cultural aspects of stigma on discussions of PrEP	Stigma	✓	✓	✓	✓	✓	✓
Knowledge gap in health literacy	Health literacy	–	✓	✓	–	✓	✓
	HIV literacy	–	–	✓	–	✓	✓
	PrEP literacy	–	✓	✓	–	–	✓
	Tailored approaches for African migrants to reduce knowledge gap	–	✓	✓	–	✓	–
Risk unrelated to HIV transmission	Side-effects	–	✓	✓	–	–	✓
	Risk compensation and sexually transmissible infections	–	✓	–	–	–	✓
	Pregnancy	–	–	–	–	✓	✓
	Fear and scepticism of authority	–	✓	✓	–	✓	✓
Practical considerations for PrEP use	Individual	–	✓	✓	–	–	✓
	Socioeconomic	–	✓	✓	–	–	✓
	Healthcare providers	–	–	✓	✓	✓	–
	Governance	–	✓	✓	–	–	✓
Impact of PrEP on serodiscordant relationships		✓	–	–	–	–	✓

#### *Practical considerations for PrEP use*

Practical considerations regarding PrEP use were reported in most papers (Table 4).<sup>11,27–30</sup> Approximately half the papers reported the need for high medication adherence and engagement in on-going care as barriers to PrEP use.<sup>11,27,30</sup> PrEP medication and associated healthcare costs were highlighted as barriers for socially and economically disadvantaged migrants, and competing demands for basic needs, such as housing, were highly prioritised.<sup>27,30</sup> Not having health insurance, particularly for undocumented migrants, was highlighted as a factor limiting PrEP access for migrants in the US.<sup>27</sup>

Several papers discussed approaches that healthcare providers and services could undertake to facilitate PrEP access.<sup>27–29</sup> The importance of healthcare providers' cultural competency in building rapport and empathy was emphasised, particularly in terms of being able to address language barriers and communicate in culturally sensitive ways to help offset the stigmatised topics of sex and sexuality and thereby have meaningful engagement with African migrants.<sup>27,28</sup> For GBM of African background, having convenient access to PrEP services away from links to the local African community would be beneficial as this may reduce experiences of community stigma and increase access at GBM peer-involved services.<sup>28,29</sup>

Finally, a few papers reported how authoritative bodies that regulate PrEP could create a barrier to uptake with study participants expressing uncertainty and concern about the means of accessing PrEP.<sup>11,27</sup> Additionally, the participants' uncertainty extended to available support for managing the

risks and side-effects of PrEP, which created a barrier to PrEP.<sup>30</sup>

#### *Impact of PrEP on serodiscordant relationships*

Two papers reported PrEP acceptability among African migrants in Australia and the UK. Acceptability was mixed, but was higher when viewed in the context of serodiscordant couples and was viewed as a good addition to the existing HIV prevention methods, including condoms.<sup>11,30</sup>

One paper focussed on the ability of PrEP to facilitate intimacy and natural conception for serodiscordant African migrant couples living in the US (Table 4). PrEP use was reported as a tool to break down stigma of people living with HIV (PLHIV) and their families by allowing them to conceive 'just like a normal family'.<sup>39</sup> However, one paper from the UK reported that HIV-positive partners in serodiscordant couples had concerns they would no longer be in control of HIV prevention if PrEP was used.<sup>11</sup> '[PrEP] is too risky for him because I don't know when he stop using it, what will happen to him.' (Participant from UK focus group study).<sup>11</sup>

#### *Quality assessment*

The two quantitative studies yielded low-level evidence (Supplementary File S1, Appendix 3). Both quantitative studies were abstracts; therefore, there were limited extractable data. Thus, synthesis of the quantitative data was not possible, with findings not generalisable beyond the samples they recruited.

The qualitative studies yielded moderate to high quality on the CASP index (Supplementary File S1, Appendix 4).

Selection and information bias likely affected the evidence. First, the studies relied on convenience and purposeful sampling. Second, only one study reported the relationship of the interviewer to the interviewees. However, the overall quality assessment determined that the qualitative studies could be synthesised.

## Discussion

We report that there are only a low number of studies related to acceptability, barriers, and facilitators of PrEP among African migrants. Further, the predominance of qualitative studies made it difficult to generalise our findings beyond the countries in which the studies were conducted.<sup>11,27–30,39</sup> There was only one substantive quantitative study that measured PrEP acceptability in African migrants in the US and one small study in the UK.<sup>25,26</sup> Notably, this low evaluable study number contrasts against the higher population prevalence of HIV among African migrants compared with the general population in high-income countries.<sup>16–19</sup> However, despite the paucity of data, several themes emerged that may limit PrEP uptake in African migrant communities in high-income countries. Programs designed to make PrEP accessible in these communities must consider HIV-related stigma, barriers to openly discussing sexual health within African migrant communities; the role of peer-led education; and providing affordable PrEP services.<sup>11,26–30,39</sup>

The influence of cultural aspects of stigma was a critical barrier to PrEP use.<sup>11,27–30,39</sup> Sex, sexuality, and HIV were negatively described within a single idea, thereby making disentanglement of PrEP from other taboo topics difficult<sup>27,28,30,39</sup> and limiting discussions about these topics in family and healthcare settings.<sup>27</sup> As PrEP is associated with sex and HIV, it was thought that PrEP use would result in judgement by other African community members, with participants describing fears of people thinking they were ‘promiscuous’ or a ‘sex worker’.<sup>11,27–30</sup>

Low HIV self-risk perception is a barrier to PrEP use in African migrants and differed by country.<sup>11,27,29</sup> Australia’s low HIV seroprevalence resulted in a perceived low HIV transmission risk; in the US, African migrants’ perception that PrEP was targeted to white GBM led to lowered self-risk perception and less willingness to consider PrEP, whereas in the UK, managing HIV risk through behaviours such as serosorting and monogamy was perceived as adequate.<sup>11,27,30</sup> Stigma may contribute to low community HIV risk perception and low PrEP uptake because African migrant communities are reluctant to discuss sex, sexual health, sexuality, and HIV.<sup>40,41</sup> Culturally tailored HIV and STI prevention programs were found to improve sexual health literacy,<sup>42</sup> and support for community-centred, tailored interventions could improve HIV literacy for African migrants.<sup>27,29,30,42</sup>

Cost was reported as a further barrier to PrEP uptake.<sup>11,27,30</sup> For some African migrants, meeting basic needs, including stable housing, would be prioritised over PrEP uptake.<sup>27,30</sup> Furthermore, the cost burden of PrEP may be compounded by limited work opportunities, limited universal healthcare access and an individual’s migration status.<sup>27,40,41</sup> For

example, Australian citizens and permanent residents are covered by universal health care, which means they have access to subsidised PrEP and HIV and STI testing, whereas some migrants on student or temporary work visas, do not have access to this support.<sup>43</sup> Therefore, efforts to improve PrEP uptake among African migrants in high-income countries requires a holistic approach to health, including equitable PrEP access, while ensuring basic needs are met.<sup>27,44</sup>

This study has several limitations. First, there was a lack of studies with high-quality data regarding PrEP implementation among African migrants in high-income countries. Data were available from only three high-income countries, with only one quantitative acceptability study in this population, which means that a true data synthesis was not possible. Second, we have synthesised our findings to discuss African migrants in general, but they were located in a low number of countries with broad cultural diversity within the populations.<sup>27,30</sup> This prevents us from understanding the applicability of findings to specific African migrant populations in diverse settings and how various factors rank in their relative importance across different countries and cultures.

## Conclusion

Given the historically generalised nature of the HIV epidemic in Africa, African migrants in high-income countries are a key population to whom PrEP should be targeted. Our systematic review has identified a large gap in the literature pertaining to the acceptability and willingness to use PrEP among African migrants. The studies we reviewed identified several common barriers to PrEP use including stigma, a lack of education, low HIV self-risk perception, and practical considerations, such as cost and contemporaneous needs such as housing.

Marginalised groups within key populations should be included in PrEP effectiveness and implementation research studies, and epidemiological surveillance systems should monitor HIV transmission and PrEP uptake among African migrant populations. Future initiatives to address barriers to PrEP access should include campaigns targeting African migrants to share information and reduce stigma. The provisions of housing, employment opportunities, and low-cost health services for African migrants, regardless of migration status, are needed to ensure equitable access to PrEP for African migrants living in high-income countries.

## Conflicts of interest

The authors declare no conflicts of interest.

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