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Access to HIV prevention, testing and care among people with a migration background in Euregio Meuse-Rhine: a needs and assets assessment

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ABSTRACT

This study addresses disparities among people with a migration background (PMB) and those in less-urban regions, across the HIV prevention and care continuum (HIVPCC). We conducted a needs assessment and assets assessment to identify gaps between existing initiatives and persisting barriers. The research was conducted in the Euregio Meuse-Rhine (EMR), encompassing bordering regions in Belgium, Germany, and the Netherlands, and involved in-depth interviews with fifteen first-generation PMB, including nine with HIV. Six factors influencing PMB access to the HIVPCC were identified: past experiences with sexually transmitted infections (STIs) or HIV; HIV stigma and social dynamics; confidence and communication with healthcare providers and social workers; healthcare system navigation; precarity; and knowledge and beliefs about HIV/STIs. Existing assets mostly target individual or interpersonal levels, are often inaccessible due to language barriers, inadequately match PMB's living conditions and culture, and are irregular and hyperlocal. Recommendations include enhancing cultural sensitivity, adopting participatory approaches, tailoring outreach activities to legal situations and cultural context, and fostering cooperation between healthcare and social work institutions. This study underscores the importance of considering societal and institutional dynamics in bridging gaps in the HIVPCC for PMB, advocating for targeted interventions that promote inclusivity and equity.

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Introduction

Over the past decades, new HIV infections in the European Union (EU) have generally declined. The combination of effective antiretroviral therapy (ART), increased testing and availability of several prevention strategies has gotten some countries close to reaching the UNAIDS 95-5-95 targets (UNAIDS, 2022) like the Netherlands (van Sighem et al., 2022). However, even within such countries, these strategies have not benefited all regions and populations equally. More optimal outcomes in terms of rapid decrease in HIV diagnoses, timely linkage to care, or higher uptake of pre-exposure prophylaxis (PrEP) have been found in larger cities of Belgium and the Netherlands, compared to less-urban regions (Deblonde et al., 2023; Evers et al., 2023; Rotsaert et al., 2024;

van Sighem et al., 2023). Less-urban regions might lack community initiatives aimed at PMB specifically. In addition, people with a migration background (PMB) in high-income European countries continue to face disproportionate challenges across all stages of the HIV prevention and care continuum (HIVPCC) (Nöstlinger et al., 2022). The “last mile” of ending the HIV epidemic includes the important challenge of reaching disadvantaged populations to address their specific needs across all the HIVPCC stages (Amon & Sun, 2019).

Literature underscores the challenges encountered by PMB in accessing prevention and healthcare in the host country after migration (Brandenberger et al., 2019), including for HIV. Reports from EU countries reveal that many new HIV diagnoses occur

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among migrant communities (Deblonde et al., 2021; Nöstlinger et al., 2022) and a growing body of evidence points to post-migration HIV acquisition, where individuals acquire HIV in the host country (Alvarez-Del Arco et al., 2017; Nöstlinger et al., 2022; Palich et al., 2024; Yin et al., 2021). This implies the persistence of underlying risk factors such as the level of social disadvantage and sexual behavior (Palich et al., 2024) which may contribute to early HIV acquisition post migration and, potentially, the emergence of new risk factors. Research also indicates that PMB remain underrepresented in pre-exposure prophylaxis (PrEP) prevention programs (Scott et al., 2019; Van Landeghem et al., 2023) and enter HIV care later than non-migrant populations, elevating the risk of onward transmission and leading to adverse health outcomes (Ross et al., 2018).

Reduced access to the HIVPCC among PMB has often been attributed to lack of information about health services (Alvarez-Del Arco et al., 2013; Manirankunda et al., 2012), prioritizing legal issues over health (Rechel et al., 2013), language constraints (Shangase & Egbe, 2015), stigma (Arrey et al., 2017b; Bedert et al., 2021; Been et al., 2016; Manirankunda et al., 2021; Stutterheim et al., 2012a; Stutterheim et al., 2013), gender-based violence (Manirankunda et al., 2021), poor health literacy (Ross et al., 2018), and low perceived HIV risk (Prost et al., 2008). Few studies have explored the needs of PMB to overcome their challenges to access HIV prevention, testing, and care services in European host countries. In a systematic review by Arora et al. (2021), some of the facilitators for linkage and retention in HIV care for migrant populations were: (a) an adaptive clinical environment; (b) sufficient social support; and (c) positive personal attitudes and traits. It is important that the identification of both barriers and facilitators in a needs assessment are balanced with an assets assessment. A needs assessment serves to identify barriers (i.e., factors impeding action) and facilitators (i.e., factors simplifying action or mitigating barriers to action) to ascertain the determinants of behaviors and environmental conditions resulting in, in this study, a lack of discussion and engagement in prevention, testing, and care. These determinants are identifiable across individual, interpersonal, institutional, and societal levels. When a needs assessment is balanced with an assets assessment, which is the identification of the external resources and capacities that communities and organizations possess and can leverage to promote health and well-being (Bartholomew Eldredge et al., 2016), we can identify where gaps exist and which resources may be harnessed for the

development of new strategies or interventions (Bartholomew Eldredge et al., 2016). This approach offers a community-based viewpoint that emphasizes valuable elements, as opposed to only focusing on deficits necessitating remediation (Luo et al., 2023).

To address these gaps, we report on the needs of PMB and assets in their surroundings in a less-urban context in high-income countries. An example of such a context is the EuRegio Meuse-Rhine (EMR) including bordering regions in the Netherlands, Belgium and Germany. All are in very close proximity and share similar characteristics such as including smaller student cities, having an industrial or mining past and citizens of diverse socio-economic and migration status. In these countries, PMB are consistently reported as disproportionately affected by HIV, with lower PrEP uptake, higher numbers of new HIV infections, late diagnosis, and lower viral suppression (Bedert et al., 2021; Deblonde et al., 2021; Manirankunda et al., 2021; Robert Koch Institute, 2017; Van Landeghem et al., 2023; van Sighem et al., 2022). The present study is a first approach for the development of context-specific public health interventions to integrate PMB into the HIVPCC in a less-urban context.

Materials and methods

Study context and design

This qualitative study used in-depth interviews (IDIs) with PMB with and without HIV to identify barriers and facilitators in accessing HIV prevention, testing and care (i.e., needs assessment) and subsequently used key informant (KI) interviews to analyze the existing initiatives in the EMR to identify gaps and unresolved barriers (i.e., assets assessment). This design increased data credibility by allowing triangulation of the information provided by participants and the KIs working with PMB.

The study was approved by the Ethics Review Committee of the faculty of Psychology and Neuroscience from Maastricht University (ERCPN; reference number 18811022018).

Participant sampling and recruitment

KIs were approached before the needs assessment phase to collect initial insights of the challenges for PBM to access sexual healthcare services in the region, to develop the interview guide and again after the IDIs to conduct the assets assessment. These KIs were recruited via snowball sampling and worked in public health or community organizations in the EMR.

For the needs assessment IDIs, we included PMB with and without HIV. They were eligible for inclusion if they (1) were at least 18 years; (2) were first-generation migrants; (3) lived in the EMR for at least six months; (4) spoke and understood one of the languages in which the interviews could be conducted (English, French, Spanish, German or Dutch); and (5) provided informed consent to participate in the study. We purposively sampled to achieve diversity in countries of origin and legal status. Potential participants were actively or passively recruited. Active recruitment involved the direct interaction of researchers or staff of sexual healthcare clinics with potential participants at participating sexual healthcare clinics. In Liège, the main researcher [AN] also joined the centers' activities to recruit participants at venues such as schools for migrant integration and asylum centers. Passive recruitment was done via posters and flyers in waiting rooms of the collaborating centers and via advertisements on their and the researcher's social media accounts (Instagram and Facebook) and a gay-dating app (Grindr). Potential participants could fill out their contact information and were later contacted by the researchers. We stopped interviews when no further themes emerged from discussions and reflections on additional interviews.

Data collection

First, an interview guide (Appendix A) was developed and shared with the collaborating centers to ensure our questions correctly assessed our research questions and piloted with native English, French, German and Dutch speakers to adjust language nuances. Next, needs assessment IDIs were conducted by five interviewers (LCK, AN, TH, LK, BK). All received an interview and sensitivity training about HIV and used the same interview guide. Interviews were held face-to-face or via zoom video conferences, depending on participants' preference. Face-to-face IDIs were done at the collaborating centers in a private space. Interviewees received a gift voucher for their participation of 10 euros for participants without HIV and 30 euros for participants with HIV. The difference in compensation was motivated by the standard rate approved by ERC PN (10€) and higher reimbursement for persons with HIV (30€) as requested by the Dutch HIV Association. IDIs were audio-recorded and transcribed. Participation was voluntary and GDPR-compliant informed consent was recorded from each participant at the beginning of the interview. We removed all identifiable information during transcription and deleted recordings after transcription.

Data analyses

We conducted a reflexive thematic analysis (TA), adhering to the six-phase approach outlined by Braun and Clarke (Braun & Clarke, 2006). TA was selected based on its methodological flexibility, since it facilitated subsequent inductive and deductive analyses (Braun & Clarke, 2021, 2022). In the inductive phase, AN familiarized herself with the data by transcribing the interviews and documenting initial thoughts and reflections. AN open coded all interviews using Atlas 9.1 by assigning preliminary codes to relevant quotes. To enhance coding credibility, a second coder (LCK, TH, LK, or BK) independently coded 30% of the interviews, and any disagreements were resolved through discussion. AN and HZ then refined the codes and categorized them until consensus was achieved. We analyzed these categories to discern patterns, key insights, and conclusions, facilitating the conceptualization of overarching themes and subthemes. To validate our interpretations, we checked the themes with KIs.

Taking an inductive approach, we initially coded all interviews without imposing a predefined framework. As the analysis progressed, we recognized that participants described barriers and facilitators relating to prevention, testing, and care in line with the status-neutral HIVPCC approach that stressed the importance of HIV testing as the entry point to care, regardless of the outcome of that test (Myers et al., 2018). Therefore, we decided to transition to a deductive approach for the subsequent phases of our analysis, and defined the phases of the HIVPCC based on our participants' descriptions:

- *Discussing and engaging in prevention*: Includes different prevention strategies, such as using condoms, abstinence, using PrEP, or asking for proof of testing from partners to avoid HIV or STI transmission.
- *Discussing and engaging in testing*: Includes the factors during the decision-making process to test as well as elements that influenced their access to testing.
- *Accessing and adhering to HIV care*: Includes linkage to appropriate care and adherence to HIV treatment. Some elements are unspecific for the HIVPCC and apply to general barriers and facilitators in accessing healthcare. We describe these nuances accordingly.

The Socio-Ecological framework (Bronfenbrenner, 1979) was integrated as a second model after the initial

round of coding, as participants described barriers and facilitators across multiple levels – ranging from personal beliefs and interpersonal stigma to systemic issues like service access and navigation. This framework provided the flexibility to capture these interactions and effectively organize findings across these levels. This framework has been previously used to understand the relevance of environmental conditions influencing individual behavior (Fernandez et al., 2019) and explain public health-related topics (Eriksson et al., 2018) including the interaction between HIV risk and precarious living conditions (Bowen, 2016), and HIV testing (Dyson et al., 2018). We defined the socioecological levels as following: the individual level as personal history, sociodemographic and psychological characteristics; the interpersonal level as close social networks with family, friends, and partners; the institutional level as structural, financial and organizational aspects; and the societal level as factors such as social and cultural norms, economic or social policies. By organizing our themes in the SEM levels, we were able to deepen our analysis and analyze interactions between barriers and facilitators across all levels, which shape PMB's access to HIV services across the prevention and care continuum: (1) previous experiences related to STIs or HIV (2) HIV stigma and social interaction within the closer circles (3) confidence and communication with health care providers (HCPs) and social workers (4) navigation of the healthcare system (5) precarity and instability, and (6) knowledge and beliefs related to HIV and STIs. This is visualized in Figure 1 and described in the results.

Finally, the assets assessment was conducted utilizing the transcriptions from the IDIs and interviews with KIs. Although there is not a standard definition of a health asset (Luo et al., 2023), for the scope of this study, health assets were external and frequently organized resources that support health promotion, and predominantly included (1) local healthcare institutions from private, public, and nonprofit sectors, (2) associations with cultural and recreational orientations, and (3) informal social gatherings fostering health and well-being. We identified initiatives and linked them to the thematic domain(s) they addressed. We then examined prevailing gaps in the barriers that remain unaddressed in the region. While the initiatives presented here may be incomplete, they are those explicitly mentioned by participants and KIs.

Quality of the analysis

AN engaged in a process of reflexivity to acknowledge the positionality and partiality (Clarke, 2022). As a

migrant, she brought an “insider perspective” to some extent, complemented by a reflective journal to mitigate potential biases. The European interviewers and coders, with personal experiences of living abroad and navigating foreign healthcare systems, enriched the process. Team discussions ensured alignment during coding and analysis, while consultations with KIs added regional nuance. We disclose the use of Large Language Models (LLMs), namely Grammarly and ChatGPT, at the final stage of proofreading of this text to improve the grammar of the results section and discussion, excluding participant quotes. All outputs were reviewed and paraphrased by the first author to ensure authenticity and avoid misinterpretation of findings.

Results

Participants

We included 15 first-generation PMB living in the EMR, of whom thirteen participants were recruited through active and two through passive recruitment. Nine were men and six were women with ages ranging from 22 to 67 years. Ten participants were living in Liège (BE), three in Maastricht (NL) and two in Aachen (DE). Other demographic characteristics are described in Table 1. All the participants with HIV reported currently being on ART, attending regular check-ups and having an undetectable viral load. Key informants (KIs) included nine individuals: volunteers ($n = 2$) and staff from sexual healthcare clinics ($n = 4$), and a physician ($n = 1$), nurse specialist ($n = 1$), and psychologist ($n = 1$) from HIV care centers.

Figure 1 describes the six overarching themes influencing PMB's behavior towards HIV prevention, testing and care in the EMR and their interactions with the socioecological levels. Table 2 describes the six themes with their respective subthemes, including representative quotes from our participants. In Table 3 we use the same themes and subthemes to report on the identified assets and gaps. In the following sections, we describe the themes and subthemes from the needs and assets assessment in detail.

1. Previous experiences related to STIs or HIV

Needs assessment (Table 2)

On the individual level (Figure 1) we found that previous experience with STIs/HIV influenced how participants dealt with prevention, testing and care services and that this differed between participants

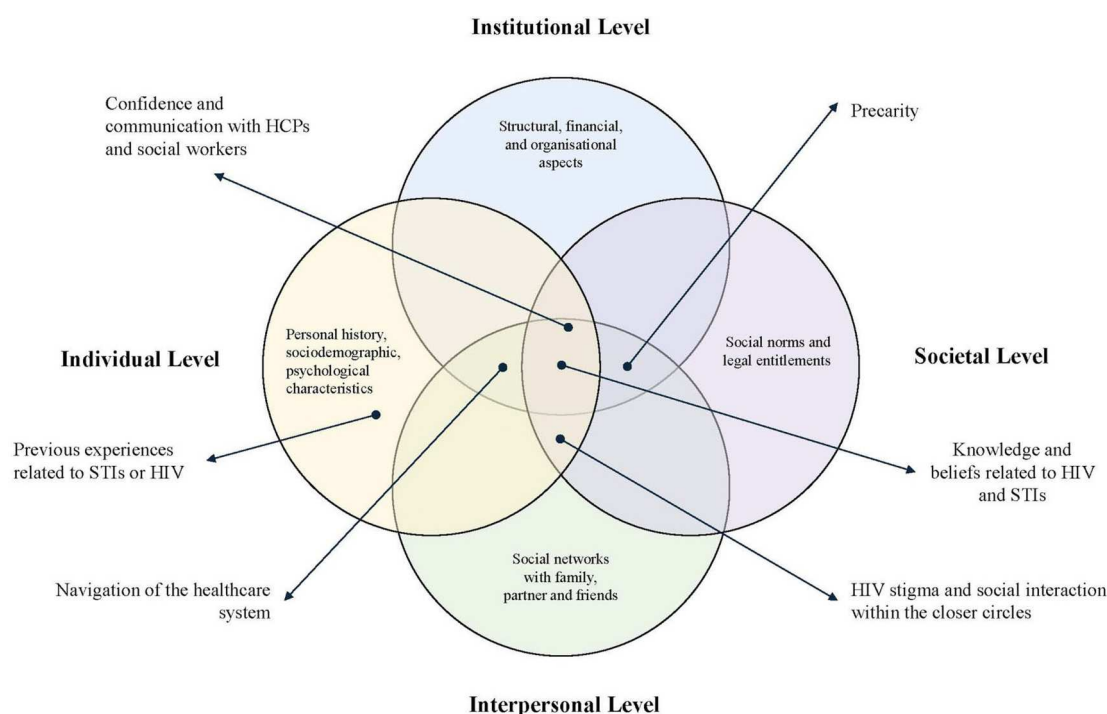


Figure 1. Factors impacting access to HIV prevention, testing and care for PMB in the EMR.

with and without HIV. Both *personal experiences with STIs/HIV* and *experiencing the death of someone close due to AIDS* were mentioned as reasons to increase discussing or using condoms (quote A.1, A.2) and testing frequency (quote B.1). Participants with HIV generally showed higher awareness of prevention, expressing a stronger inclination to discuss it with their partners and aversion to unprotected sex. However, they

narrated that despite regular attendance for STI testing and follow-up, resistance to initial testing was common. It was often linked to *traumatic experiences associated with HIV transmission* such as war or rape (quote B.2). Some participants cited *ART-related side effects*, including weight gain, bloating, and challenges in weight loss. In some cases, this was reported as a reason for interrupting treatment (quote C.1).

Table 1. Sociodemographic characteristics of participants.

Variable	Categories	Number (%)
Age	20–35	8 (53.3)
	36–50	2 (13.3)
	51–70	5 (33.3)
Region of origin	Northern Africa	1 (6.67)
	Sub Saharan Africa	10 (66.7)
	Middle East	2 (13.3)
	Western Europe	2 (13.3)
Gender	Women	6 (40)
	Men	9 (60)
Sexual Behavior	WSM	6 (40)
	MSW	3 (20)
	MSM	6 (40)
Legal status	Student visa	3 (20)
	Residence (temporary or long-stay)	5 (33.3)
	Asylum seeker	5 (33.3)
	Humanitarian visa	1 (6.67)
	Undocumented	1 (6.67)
HIV status	HIV (-)	9 (60)
	HIV (+)	6 (40)
Host city	Liège	10 (66.7)
	Maastricht	3 (20)
	Aachen	2 (13.3)

Abbreviations: W = woman; M = man; WSM = Women who have sex with men; MSM = Men who have sex with men; MSW = Men who have sex with women; HIV- = HIV-negative, HIV+ = HIV positive.

Assets Assessment (Table 3)

To tackle some of the barriers related to traumatic experiences associated with HIV transmission, some participants reported having access to psychosocial services within large healthcare centers, such as de CHU Liège (Belgium). While in Liège this was centralized, access to such services might be more difficult in the other regions. In South Limburg (the Netherlands), for example, psychological services are not centralized and people with HIV need to be referred and begin their psychosocial treatment elsewhere.

2. HIV stigma and social interaction within the closer circles

Needs Assessment (Table 2)

Our data revealed that societal norms and HIV stigma significantly influenced interpersonal and individual

Table 2. Needs assessments: Identified barriers and facilitators to access HIV prevention, testing and care among PMB living in the EMR and representative quotes per stage of the HIV prevention and care continuum.

Sub-themes	A. Prevention	B. Testing	C. Care
Theme 1: Previous experiences related to STIs or HIV			
Personal experiences with STIs/HIV	A.1 I sometimes ask people to wash their hands before getting into something, especially outside the house because I started to have germaphobia somehow because of the experiences that I had. I've caught gonorrhea and chlamydia like three times in my life and syphilis once. I've had crabs and probably had most of the STDs in my life. So, I'm, you know, cautious about it. (24-year-old-man without HIV, asylum seeker, MSM)	B.1 I gave someone a blowjob, some fluids came into my mouth, I was very scared, okay? So that's why it was the first time I got tested. (...) and then she gave me PeP, two days after we had sex. Now I get tested regularly, at least every 6 months, but most likely every 3 months. (25-year-old man without HIV, student visa, MSM)	-
Experiencing the death of someone close due to AIDS	A.2 Every time I think about it [the death of my son], I see AIDS. It's something I would never want to face. To fall stupidly in a situation like that when I can prevent it. Catching a disease is something I just cannot deal with. (67-year-old man without HIV, resident permit, MSW)	-	-
Traumatic experiences associated with HIV transmission	-	B.2 I was raped by 3 soldiers, so when I learned about this [HIV diagnosis] I thought: this is the minimum (...) After what I had lived, I said to myself: is there anything else after this? I had those thoughts in the back of my head. But going to get tested ... I didn't have the courage. (58-year-old woman with HIV, humanitarian visa, WSM)	-
ART-related side effects	-	-	C.1 The medicines made me gain a lot of weight. I was deformed ... I didn't understand why (...) Every time I looked at the mirror, it revolted me. I tossed the medicines, without telling my doctor. (58-year-old woman with HIV, humanitarian visa, WSM)
Theme 2: Stigma and social interaction within the closer circles			
Beliefs and misconceptions	-	B.3 We need to educate people, they have to know that there are people dying alone in their houses because they are ashamed to have HIV. Many of them are good, maybe their partners gave them HIV (...). It's not because they were prostitutes, it's not because they did drugs, or because they did bad things in their life, but they are now condemned to live with this. (61-year-old woman with HIV, asylum seeker, WSM)	-
Fear of social rejection	A.3 After his reaction, I decided never to disclose my status to any partner again. He cried, yelled, and even lost weight in just a few days. I tried to explain that I couldn't transmit anything, but he was out of control (...). Now I prefer it's me dealing with the risk of getting other STDs. I always ask them to use a condom, but if they don't want to and I like them, we just go through it. (57-year-old-women with HIV, asylum seeker, WSM)	B.4 I did not take her reaction badly. It was not abnormal to not immediately agree to test. It was because she didn't know if she would be negative ... Then I would know she has AIDS. Consequently, we would no longer marry, and I could also tell others about it. (67-year-old man without HIV, residence permit, MSW) B.5 When I ask them why they don't test, I know they are afraid. They are afraid of being told they have AIDS. It is better to live ignorantly, die tomorrow without knowing anything. (67-year-old man without HIV, residence permit, MSW)	C.2 Back in Africa, my mom had a friend who worked at a hospital, so she helped her to avoid making the regular queue to get my pills, so people didn't see her. (28-year-old woman with HIV, foreigner permit, WSM)

(Continued)

Table 2. Continued.

Sub-themes	A. Prevention	B. Testing	C. Care
Lack of autonomy of women to make prevention and testing-related decisions	A.4 I could not tell him to use protection because he was legally my husband. It is badly seen to imply that he is unfaithful. In my society, women don't have "the words" to talk about these things; it's tradition. (...) It is the husband who has the last word. You can either abstain or divorce, but even abstaining ... always comes with violence. (49-year-old woman without HIV, asylum seeker, WSM) A.5 I: Did you have any conversations with him to negotiate the use of condoms? P: No. Since he was my husband, I never used condoms and we never had such conversations. (49-year-old woman without HIV, asylum seeker, WSM) A.6 The initiative comes from the husband. If it's the woman, it's always a problem. Even if it's medical, we summon the husband to convince him to use condoms if there is an STI problem that needs to be treated. But it is difficult for him to respond to the summons or resist until the treatment's end. He might give up or turn against the woman with violence. (49-year-old woman without HIV, asylum seeker, WSM) A.7 I told him, no, and he said yes, he wanted to "take action". And directly, he did without ... protecting himself. It hurt me very badly because I said no at the time, and he absolutely wanted to, and he did, and I went home ... I told myself, now I absolutely must tell him I'm sick. He can't behave like that. (57-year-old woman with HIV, asylum seeker, WSM)	B.6 I: You told me about this experience of asking the person about their test results. Have you ever had negative reactions to these discussions? P: Yes, of course. Whenever I used to do it on Grindr, I used to get blocked, and (...), some people would ask me, "why you're asking that? This is weird". (24-year-old man without HIV, asylum seeker, MSM)	-
Lack of communication about sexuality	A.8 We really don't talk about sex (...), and I think that's the biggest problem and why, even until today, it [HIV] is still seen as a fatal disease. It's because parents don't talk about it. (...) The information that I had about sex I got from school. One day we were given condoms, and I gave them to my friends. Unfortunately, I left one in my bag, and when my mother saw it, it was terrible. (28-year-old woman with HIV, foreigner permit, WSM)	B.7 In Africa we do not talk about this ... it is a mystery. Thinking about having communication, specific conversations to discuss sex ... (shakes her head). Even with our children, we do not do that. (61-year-old woman with HIV, asylum seeker, WSM)	-
Theme 3: Confidence and communication with HCPs and social workers			
Distrust towards European / White information	-	B.8 They don't like that you, the white people, talk to them about AIDS because, in their minds, Europeans have invented lots of stories at the expense of African people. (67-year-old man without HIV, residence permit, MSW)	-
Concerns regarding confidentiality	-	B.9 When they come to get tested here, they are not sure that they [employees] will keep the secret. (67-year-old man without HIV, residence permit, MSW) B.10 But again, I can't do that because I don't feel it's safe. You know, being in a refugee camp, it's like a transitional place. It's not actual Belgium; it's not the same mentality you came for. So, will I just sit in the window, where there are a lot of people around you, and go ask for an STI check? [shakes head saying no]. (24-year-old man without HIV, asylum seeker, MSM)	-
Speaking the language of the host country	-	-	C.3 Maybe I was lucky because I speak French and English. And I'm aware of the situation, the medications, of the

Theme 4: Navigation of the healthcare system

Language barriers, lack of cultural competence and inconsistent/incomplete information	-	B.11 The integration sessions are just not enough. The person will talk about transport, citizenship, a little bit about healthcare, general aspects of your new life. But they are not experts, and they don't give you all the details like the people at Sidasol do, for example. Who are experts in their domain. (34-year-old man without HIV, asylum seeker, MSW) B.12 P: There are specific places you have to go to depending on the situation. They tell you in the integration sessions (...). But then, when I needed help, I had to go back to the Red Cross, and they told me where to go. I: And how did you know you had to go to the Red Cross to get all this information? P: It was by chance. Because I found a Red Cross center. It was not by choice; it was by chance. (34-year-old man without HIV, asylum seeker, MSW)	guidelines as well, but that's between me and myself. If someone else has no background for that nor speaks the language ... It's a different story. (24-years-old man without HIV, asylum seeker, MSM)
High digital literacy	-	B.13 It's not evident to all of us [PMB]. You must have that culture, the know-how, and know where you can look for information. There are some who don't know that they can look for a restaurant or an address online and follow a map until you get to a given place ... so you also need to give them that information. (34-year-old man without HIV, asylum seeker, heterosexual)	
Services' decentralization	-	B.14 P: It was also this bizarre thing where they gave me like a cup and they said: "ok now you need to go to the university hospital, then go do the test there, and then they're going to send the results back to us ..." And then it's just like, why can't I just do it here? I: And having to go back and forth (...) P: I didn't go. I was just like, I'm not going to pay all this money to go, so I just left it. And I waited it out and then actually, the problem went away. Then I got an appointment, like a month later at the GGD. (28-year-old man without HIV, resident permit, MSM)	
Saturation of health care services in refugee/asylum seeker centers	-	-	C.5 The health care personnel are quite capable. The problem is access. You have from 9 am to 12 pm to register yourself. You are on a list with 20–22 people for the same day, and if you need an appointment with a GP, there's only availability three times a week. (...) Considering there are 600 people in this center, I think it's not enough. (...) To visit the gynecologist, I started the process in July, and they gave me an appointment for October. (49-year-old woman without HIV, asylum seeker, WSM)
Lack of understanding of the health care system and insufficient institutional communication	-	-	C.6 When I went to get the prescription, it was quite challenging. I went to the pharmacy, provided them with my identification, and they told me there was no prescription for that. So then, I had to go to my refugee

(Continued)

Table 2. Continued.

Sub-themes	A. Prevention	B. Testing	C. Care
			camp and make an appointment with the doctor there, then call Sidasol and contact them with the doctor. And yeah ... So it was very challenging to get the prescription. (24-year-old man without HIV, asylum seeker, MSM)
			C.7 I: And were you already on PrEP before moving to Maastricht?
			P: Yeah, and I kept getting it from Ireland because when I tried to get it here, they basically asked me: "can you just continue to get it in Ireland?" and I was like, yeah. They were like: "if you need to get it here you need this, this, this and this". So, I basically stockpiled a lot of PrEP before I moved here. (22-year-old man without HIV, student permit, MSM)
Theme 5: Precarity			
Dependency on closest social circle	A.9 It is complicated when you do not have papers ... I could not work, and some things blocked me when I wanted to move forward with my case. With him [ex-partner], things were not really working, but he said he would help me ... Sometimes he seemed very in love. Maybe it was because of me. He saw a fragile girl, who was easy to have, that had problems, and then ... I counted on him. But for him, there were many other girls. (37-year-old woman with HIV, undocumented, WSM).	-	-
	A.10 I told myself there were things I would not do, like having a "paper-child." I did not want to do what the other girls do in the center ... they get pregnant to get their papers in order. (...) Most of the girls do that here. (37-year-old woman with HIV, undocumented, WSM)		
Fear of losing access to healthcare services because of irregular or asylum seeker legal status	A.11 The person in front of you will say: "you have put the effort to come here, I've put the effort to come here. Why would I waste my time discussing that?" But they don't know I sometimes say "no" and walk away. I apologize for the inconvenience, but it is something really important for me because I'm still an asylum seeker. I get my medical treatment via the Red Cross, and I don't have anything stable. So, I really don't want to be in a situation where I can't have access to health care. (24-year-old man without HIV, asylum seeker, MSM)	-	-
Costs of HIV treatment	-	B.15 But I would do it [test for HIV] now because I'm here (...) the guarantee of someone taking responsibility for the linkage to care, the access to treatment ... I think it would be less negative to be found sick here than there [country of origin]. (34-year-old man without HIV, asylum seeker, MSW)	-
Theme 6: Knowledge and beliefs related to HIV and STIs			
Low levels of sexual health care literacy	A.12 I appreciate PrEP as one of the greatest inventions to prevent HIV, but let's be real, it does not prevent bacteria from spreading. And this is the ugly truth that people are refusing to handle. People are not educated about bacteria	B.16 We are afraid of that story [AIDS] ... more afraid than other diseases. Because back in my country, there's no care, no guarantees. (...) You don't know if you'll survive. So going to test myself means already asking too many	C.8 At that moment [after receiving positive STI results], when reading about the symptoms of this disease, I recognized them. I don't know if it was psychological, but I felt those symptoms. Before, since I didn't know about

	resistance. As long as it's bacterial, they think you can just take the antibiotics, and they will just work like magic ... they don't know about bacteria that, at some point, will not respond to the antibiotics. (24-year-old man without HIV, asylum seeker, MSM)	questions. Many among us prefer to stay ignorant. (34-year-old man, asylum seeker, heterosexual, HIV-) B.17 Despite advertising efforts, prevention campaigns, etcetera, I think people still have in their minds that if you have this disease, you die (28-year-old woman with HIV, residence permit, WSM). B.18 So, we observe each other, we say to ourselves: "am I losing weight? How do I look? Do you think I lost weight?" This is what happens most often ... (34-years old man without HIV, asylum seeker, MSW). B.19 Even in this group which was very sexually active, they organized sex parties, and I would ask them if they tested themselves every now and then ... and they would always answer, "yes, yes, don't worry." I think there's always this idea that bad things happen to other people, not to me; I'm good, I'm healthy. I don't think they acknowledge they took a risk and should test ... they really go YOLO [you only live once] mode. (28-year-old woman with HIV, foreigner permit, WSM)	this, I told myself: This is something normal, and it will be fine. (29-year-old man without HIV, student visa, MSM)
Low-risk perception of STIs / HIV transmission	A.13 I get a lot of friends who tell me: "Yeah, I think I have a discharge or something, but I didn't have like full sex." And it's like: "Did you give a blowjob? Did you get a blowjob?" and they would tell me, "Yeah, but that wouldn't transmit anything." (24-year-old man without HIV, asylum seeker, MSM) A.14 Yes, let me be honest and say yes, I do that [have unprotected oral sex]. But the only trick that I do before doing a blowjob or receiving a blowjob, I will offer or do a Listerine throat wash to ... because I read an article, I don't know how scientific it is, but it claims that it helps to kill the chlamydia in the throat. (24-year-old man without HIV, asylum seeker, MSM)		
High-risk perception of specific situations	A.15 [While discussing when prevention strategies are needed] I: What are the things that make you want to be "more careful" with someone? P: Yes, when you have a relationship with someone who is, let's say, too present on the apps, who frequents bars a lot, who frequents places where people have sex together a lot ... sometimes also with foreigners (29-year-old man without HIV, student visa, MSM) A.16 Because in fact, when I was in my country ... there, diseases are not frequent, the sexually transmitted ones. On the other hand, here it is very frequent (...). Since I've been in Europe, I've been trying to pay more attention to preventive measures. (29-year-old man without HIV, student visa, MSM)	B.20 The last time I got tested, it was after I had unprotected sex with someone. And then she started telling me she had been with this and that other man ... After that, I told myself: I will get myself tested. (29-year-old man without HIV, asylum seeker, MSW)	
Inadequate sexual education	A.17 It would be nice if they truly took the time to explain this disease [HIV]. Because they mention the different STDs you can catch through sex ... but nothing more. They won't really take the time to explain what AIDS is, what that implies, what it means, etc. (28-year-old woman with HIV, foreigner permit, WSM)	B.21 Everything done after school is good, but it's not enough. Putting up signs, handing out flyers, etc., is not enough. I'll throw the flyers in the trash if I'm not sick. If I don't have a sexually active life, I'll throw it in the trash. So, putting up signs, giving out flyers ... it's wasted paper. (28-year-old woman with HIV, foreigner permit, WSM)	

Abbreviations: I = I; P = Participant; STIs = Sexually Transmitted Infections; HIV = Human Immunodeficiency Virus; MSM = Men who have Sex with Men; WSM = Women who have sex with men; MSW = Men who have sex with women; ART = antiretroviral therapy; GP = general practitioner; PrEP = pre-exposure prophylaxis; AIDS = Acquired immunodeficiency syndrome.

Note: This table was a tool for analysis to identify patterns between sub-themes and stages of the HIV PCC. Blank spots reflect that participants associated certain themes more strongly with specific stages, providing more detailed examples for those.

Table 3. Assets assessment: Identified initiatives in each EMR per country and sub-theme.

Sub-Themes	Liège, Belgium	Aachen, Germany	Limburg, Netherlands	Quotes
Theme 1: Previous experiences related to STIs or HIV				
Personal experiences with STIs/HIV	-	-	-	-
Experiencing the death of someone close due to AIDS	-	-	-	-
Traumatic experiences associated with HIV transmission	CHU			
- Provide continuous psychological care.	-	-	-	
ART-related side effects	Centre S - Educational activities in different settings.	PZB -Discussions with HIV care provider.	MUMC + Discussions with HIV care provider. HIV Vereniging -Webpage that provides information about HIV treatment and possible side effects.	-
Theme 2: Stigma and social interaction within the closer circles				
Sub-Themes	Liège, BE	Aachen, GE	Limburg, NL	Quotes
Beliefs and misconceptions	Centre S - Stands in different settings.			
- Educational activities in different settings.	-	-	-	
Fear of social rejection	CHU - Centralized psychological and social work services, who provide support both for PLHIV and their family/partners. - Psychological support for PWHIV and their partners/family, especially regarding the disclosure process. Centre S - Educational activities to discuss sexuality, increase STI's and HIV's awareness, discourage myths, discuss prevention and testing, etcetera.	AIDS-Hilfe - Educational activities to discuss sexuality, increase STI's and HIV's awareness, discourage myths, discuss prevention and testing, etcetera.	HIV vereniging -Webpage that provides key information about HIV prevention, testing and care. -Encourages support groups. ShivA - Webpage with information regarding HIV care. - Encourage support groups for PWHIV and has special content for migrant women.	D.1 Mrs X [the psychologist at the hospital] is the only person I speak with about my HIV. No one else close to me knows and I want to keep it that way. (57-year-old woman with HIV, asylum seeker, WSM)
Lack of autonomy of women to make prevention and testing-related decisions	-	-	-	-
Low communication about sexuality	Centre S - Stands in different settings. - Educational activities to discuss sexuality, increase STI's and HIV's awareness, discourage myths, discuss prevention and testing, etcetera. CHU and Refugee Centers Liège - Encourage support groups.	AidsHilfe - Encourage support groups.	ShivA - Webpage with information regarding HIV care. - Encourage support groups for PWHIV and has special content for migrant women. HIV vereniging -Webpage that provides key information about HIV prevention, testing and care. -Encourages support groups.	D.2 The idea is to create a women's group to discuss different topics: violence, women's autonomy, domestic violence, but also about genital mutilation and its complications, STI and HIV testing, prevention, etcetera (...) There is not a lot of information available for us, and we don't talk about these things. (49-year-old woman without HIV, asylum seeker, WSM)
Theme 3: Confidence and communication with HCPs and social workers				
Sub-Themes	Liège, BE	Aachen, GE	Limburg, NL	Quotes
Distrust towards information given by Europeans/White people	Centre S - Involving people with migrant background during outreach activities and encourage their participation in diverse events.	-	-	-
Concerns regarding confidentiality	Centre S -Reinforcing messages of data	AIDS-Hilfe and PZB -Reinforcing messages of data	-	D.3 I: how has your experience been for testing?

(Continued)

Table 3. Continued.

Sub-Themes	Liège, Belgium	Aachen, Germany	Limburg, Netherlands	Quotes
	confidentiality. -Anonymized testing services (mobile van). CHU Liège -Efforts to distribute the waiting room in a way that reinforces anonymity.	confidentiality. Test2 multiply -Anonymized testing services and advice services, far away from a common doctor's office.		<i>P:</i> I honestly, it was amazing. I really enjoyed it. Because first of all, people like tend to encourage that there is no stigma regarding STDs and testing in places, you know, like Sidasol [Centre S]. (24-year-old man without HIV, asylum seeker, MSM)
Speaking the language of the host country	Centre S -Development of pictogram system to facilitate the communication during counseling or testing procedure.	-	GGD Zuid-Limburg and MUMC + -Translation services for some languages in hospitals. - At refugee centers: in person translation.	-
Theme 4: Navigation of the healthcare system				
Sub-themes	Liège, Belgium	Aachen, Germany	Limburg, Netherlands	Quotes
Language barriers, lack of cultural competence and inconsistent/incomplete information	Centre S -Information (e.g., posters, flyers) translated. -Including translators and volunteers from the same key population to assist activities in refugee centers.	PÄZ - Provide advice on legal matters and support in emergencies in German, English and Farsi, and can ask for translation services for other languages.	-	-
High digital literacy	-	-	-	-
Services' decentralization	Centre S - Providing information sessions in refugee centers and adult schools. - Decentralized testing services (mobile van) that visits refugee centers, festivals, and other key venues). CHU Liège -All the services for people with HIV can be found in the hospital. - Staff organizes various appointments in diverse services in a single day for the persons' convenience.	-	-	D.4 I: Do you know where to get information about HIV testing or HIV and STIs in general? <i>P:</i> Yes, thanks to the integration courses and the last sessions we have had with the lab, Sidasol. (34-year-old man without HIV, asylum seeker, MSW) D.5 The process to access care once I got here [CHU, Liège] was very well organized. They gave me another room, scheduled an appointment with the cardiologist, the psychologist, the HIV doctor, to get everything under control. They did everything so I started receiving care services fast. (61-year-old woman with HIV, asylum seeker, WSM)
Saturation of health care services in refugee/ asylum seeker centers	-	-	-	-
Lack of understanding of the health care system and insufficient institutional communication	Centre S - Providing accurate information and/or referral. Social support -Close family, partner or friends already living in the region provide guidance or even economic/legal support.	AIDS-Hilfe and PZB D.6 It was my sister who told me to go with the same private GP she went with, and it was there where I got tested. She already lived here (Liège), so she went with me. (57-year-old woman with HIV, asylum seeker, WSM) D.7 There was no problem for me because my ex-husband		
- Providing accurate information and/or referral.	GGD Zuid-Limburg and MUMC + - Providing accurate information and/or referral.			
Social support -Close family, partner or friends already living in the region provide guidance or even economic/legal support.	Social support -Close family, partner or friends already living in the region provide guidance or even economic/legal support.			

(Continued)

Table 3. Continued.

Sub-Themes	Liège, Belgium	Aachen, Germany	Limburg, Netherlands	Quotes
		was German. It was never a problem for me to access [health care services] But I found my gynecologist thanks to a friend from Rwanda who was also a doctor here (in Aachen). (58 – year-old woman with HIV, humanitarian VISA, WSM)		
Theme 5: Precarity				
Sub-Themes	Liège, Belgium	Aachen, Germany	Limburg, Netherlands	Quotes
Dependency on closest social circle	-	-	-	-
Fear of losing access to health care services because of irregular or asylum seeker legal status	-	-	-	-
Costs of HIV	Treatment covered by Fedasil or Belgian government, depending on migration status.	Treatment covered by German government.	Treatment covered by Dutch government.	-
Diverse economic, housing and legal support	Fedasil – Provides different type of services and aids for migrant populations.	Cafe Zuflucht – Provide free legal counseling in asylum, residence, and social law through the counseling center. Solwodi – Provide psychosocial care for migrant women, organize medical or legal support, help them find housing and jobs, or arrange German language courses and vocational training. PÄZ – Provides support for migrants for: securing their livelihood, clarifying residence law issues, support for naturalization, assistance in applying for social benefits, support in emergency crises like separation, divorce, among others.	Humanitas Provide transport discounts for asylum seekers and refugees. Mara Project -Projects supporting migrant populations.	-
Theme 6: Knowledge and beliefs related to HIV and STIs				
Sub-Themes	Liège, Belgium	Aachen, Germany	Limburg, Netherlands	Quotes
Low levels of sexual health care literacy	Centre S – Informational stands in refugee centers, adult schools for migrants, etcetera. – Educational activities to discuss sexuality, increase STI's and HIV's awareness, discourage myths, discuss prevention and testing, etcetera. Social support -Close family, partner or friends provide information about sexual health care topics.	AIDS-Hilfe – Webpage with key information about safe sex, STIs, HIV, AIDS, HIV test, PrEP, among others. – Provide advice via chat, telephone or face to face Social support -Close family, partner or friends provide information about sexual health care topics.	GGD Zuid-Limburg – Informational stands in refugee centers HIV Vereniging -Webpage that provides key information about HIV prevention, testing and care. Shiva – Webpage with information regarding HIV care. – Encourage support groups for PWHIV and has special content for migrant women. Social support -Close family, partner or friends provide information about sexual health care topics.	D.8 It's [PrEP] not mandatory, but it's very important to have relations, to protect yourself. I haven't tried it yet, but the last time I went testing, I made an appointment for a first PrEP session. (...) when I met people in apps, they sometimes asked if I took PrEP ... Once I asked what that meant. They explained, then I looked for information on the internet, and that's why I decided to see the doctor this time. (29-year-old man without HIV, student visa, MSM)

(Continued)

Table 3. Continued.

Sub-Themes	Liège, Belgium	Aachen, Germany	Limburg, Netherlands	Quotes
Low-risk perception of STIs/HIV transmission				
High-risk perception of specific situations				
Inadequate sexual education	Centre S – Educational program for health care professionals (nurses, social assistants, physicians) to raise awareness on specific sexual topics and how to approach them with key populations.	AIDS-Hilfe – Webpage with key information about safe sex, STIs, HIV, AIDS, HIV test, PrEP, among others.	-	-

Abbreviations: CHU = Centre Hospitalier Universitaire de Liège; Centre S = Centre de Santé Sexuelle Liégois; PZB = PraxenZentrum Blondelstrasse Aachen; MUMC = Maastricht University Medical Centre;

Note: This table served as tool to identify patterns between assets, sub-themes, and stages of the HIV PCC. Blank spots indicate initiatives that participants and KIs were unaware of in the region and should not be viewed as an exhaustive list.

behaviors related to STI/HIV prevention, testing, and care. Participants described this stigma as stemming from individual *beliefs and misconceptions* associating HIV with death, stereotypical physical traits, and punishment. Some African female participants referred to suspicion of engaging in sex work or misbehavior, further linking HIV to personal responsibility and perceived punishment for norm-violating behaviors (quote B.3).

Fear of social rejection in case of testing HIV positive was therefore common and the most frequently mentioned interpersonal barrier, impacting individual testing behavior (quote B.4). Participants mentioned many people still prefer not knowing their HIV status due to such repercussions (quote B.5). They elaborated on the societal practice in numerous countries where living with HIV results in expulsion from one's community. Nonetheless participants frequently reported experiencing rejection, gossip, and avoidance within their communities in the EMR, including their own families:

I thought she would have my back, but once she knew, she did not want her children to be where I am, she does not want to see me anymore or that I visit her home. (...) It was my own daughter, but it is like ... for her, I do not exist anymore. (61-year-old woman with HIV, asylum seeker, WSM)

Most participants with HIV therefore feared rejection at the interpersonal level, which hindered disclosure and STI prevention on the interpersonal and individual level (quote A.3). While there was a strong intent to discuss prevention, it did not always translate into engagement. Furthermore, they reported challenges to conceal taking ART, sometimes impacting their adherence. KIs noted instances of individuals skipping follow-up due to encountering acquaintances in waiting rooms, a concern shared by participants traveling to home countries, limiting treatment access (quote C.2).

Female participants with HIV often cited gender norms as a factor influencing non-disclosure, creating power imbalances. They reported *lacking the autonomy to make prevention and testing-related decisions* that led to engaging in unprotected sex, even if they felt uncomfortable doing so. Participants mentioned this discomfort was usually related to fear of acquiring other STIs or fear of transmitting HIV, even when they were undetectable. However, they felt unable to negotiate condom use and did not want to risk themselves by disclosing their status. Other reasons that hindered discussing or engaging in prevention, mentioned by women with and without HIV originating from Sub-Saharan Africa, were: Fear of offending their partner because proposing prevention strategies could imply infidelity or that someone has a STI or HIV (quote A.4); the belief that stable partners should have condomless sex (quote A.5); and the belief that women should not initiate any discussion around prevention or care (quote A.6). Such beliefs were indicated to often motivate violent situations when proposing prevention strategies and disempowerment to reject unwanted sexual encounters (quote A.7). While these situations were more frequently mentioned by women, being offended when asked about testing as prevention was also mentioned by some MSM interviewees (quote B.6). These beliefs directly influence prevention-related decisions at an interpersonal level and are reinforced by societal norms surrounding gender and sexuality.

Finally, on the societal level, all participants agreed that sex is still considered taboo within their communities, which led to *lack of communication about sexuality*, negatively impacting the discussion and engagement in prevention (quote A.8) and testing (B.7) on the individual and interpersonal level. This lack of communication often continued in the host countries. For instance, participants reported rarely

discussing STI risks with partners and almost never talking about an STI or HIV diagnosis within the family.

Assets Assessment (Table 3)

Participants and KIs noted that outreach by sexual healthcare and community organizations enhanced communication on sexuality, reducing HIV stigma among PMB by fostering dialogue. Attending support groups in asylum and refugee centers and hospitals was reported by some participants to not only facilitate discussions on sexuality but also on broader issues like intramarital violence and integration into the host country (quote D.1). However, these support groups are not consistently available in all centers, often relying on the presence of a single individual and dissolving if that person leaves. Regarding fear of interpersonal rejection and gossip, some participants highlighted the role of psychological and social work services in institutions such as CHU Liège, or AID-SHilfe Aachen (quote D.2). Despite their support in disclosing one's HIV status, participants emphasized that the underlying taboo around HIV persisted.

3. Confidence and communication with HCPs and social workers

Needs Assessment (Table 2)

Lack of confidence and communication difficulties with HCPs and social workers were described as a factor primarily affecting testing, and were linked to interacting factors at the societal, institutional and interpersonal level. Some participants and KIs, especially from African communities, suggested that lack of confidence sometimes resulted from *distrust towards information given by Europeans/White people*. They described how some people believe that Europeans are guilty of the arrival of many diseases in Africa and then blame Africans for them (quote B.8), becoming untrustworthy.

Our participants also related confidence to *confidentiality*. This institutional barrier was described as a significant concern, acting as a strong deterrent to testing on an individual level, as it is closely tied to the social consequences of living with HIV, such as stigma, gossip, and rejection. A participant, in his role as a volunteer in a sexual health clinic, explained (quote B.9): "When they come to get tested here, they are not sure that they [employees] will keep the secret" (67-year-old man without HIV, residence permit, MSW). This concern often stemmed from participants' past experiences in their countries of origin. Despite feeling safer

to test in Europe, some participants expressed that this alone did not motivate frequent testing. Additionally, certain venues, like refugee centers, were perceived as "almost like home," leading participants to doubt the confidentiality (quote B.10). Some interviewees shared experiences of other PMB who were tested for HIV upon their initial arrival in the country, typically in asylum/refugee centers. They mentioned being often unaware that testing was optional and felt betrayed by the system (institutional level), which could affect their future testing behavior, at an individual level. Finally, KIs and participants identified speaking the *language of the host country* as an important facilitator to be able to communicate with HCPs and social workers (quote C.3).

Assets Assessment (Table 3)

Some participants mentioned the availability of free, anonymous testing in asylum seekers centers, and non-stigmatizing services at sexual health clinics (quote D.3), addressing concerns of lack of confidentiality. KIs reported on strategies to minimize people in waiting rooms, such as redirecting them to other floors or using wall dividers. To tackle mistrust in Europeans/White information, KIs mentioned that some sexual healthcare clinics, such as Centre S Liège, have involved PMB as volunteers to participate in outreach. Despite various language initiatives, KIs noted that many remain unknown or impractical for PMB. For instance, translation services provided by phone during HCP consultations in South Limburg may cause anxiety and delay timely access to care, especially for people with experiences of sexual violence or difficulties with discussing sexual health.

4. Navigation of the healthcare system

Needs Assessment (Table 2)

We found that barriers around navigation of the healthcare system interact on an institutional, interpersonal and individual level and primarily affect testing and care. Participants described that accessing and understanding relevant healthcare system-related information was largely affected by *language constraints, lack of cultural competence and receiving inconsistent or incomplete information*. In Liège, even when asylum seekers received integration sessions when arriving in the country, information was considered superficial and hard to follow for non-French speakers (quote B.11 and C.4). Some participants described that sometimes they received information

“by chance” from HCPs or only when they proactively sought support (quote B.12). These institutional inconsistencies were described as something that affected individual testing and care behaviors. Only younger interviewees (22–35 years old) mentioned *high digital literacy* (i.e., the ability and resources to use technology such as the internet, smartphones) as an individual level facilitator for accessing key information about healthcare services (quote B.13). However, they explained that not everyone within their community had the same skills.

Services’ decentralization was a frequently mentioned barrier, not only to accessing HIV-related services but also to general health care (quote B.14). Interviewees described this barrier varied depending on the type of care sought and whether they visited large (e.g., CHU Liège, Belgium) or smaller hospitals and refugee/asylum centers. Furthermore, participants highlighted the *saturation of healthcare services in refugee/asylum seeker centers* because of the limited number of personnel, resulting in long waiting times and restricted overall access to care (quote C.5).

Participants highlighted that apart from the decentralization of services, their access to care was hindered by a *lack of understanding of the healthcare system and insufficient institutional communication*. KIs pointed to diverse factors contributing to these challenges, such as processes related to legal status, regional regulations, language barriers, and the lack of communication between institutions like refugee centers, sexual healthcare clinics and hospitals (quote C.6). For instance, people whose migration status changes (e.g., from asylum seeker to undocumented) must also modify the administrative process to receive treatment. Our KIs in Liège, reported that by moving to a different administrative region, undocumented migrants and asylum seekers must learn which diseases/conditions are covered. Another example in South Limburg is PMB with a regular status who initiated PrEP in their country-of-origin, and travel back and forth to continue because they could not transfer their PrEP care to the Public Health Service (the institution responsible for the PrEP program) (quote C.7).

Assets Assessment (Table 3)

Due to the differences between healthcare systems, we found diverse assets depending on the country. Firstly, *institutional support*, as reported by some participants, involved refugee/asylum centers facilitating referrals, streamlining the process by guiding

individuals through the healthcare system, coordinating with care facilities, and providing explicit instructions on appointments and healthcare providers (quote D.4). However, this process is not consistently implemented across all EMR or healthcare specializations. In such cases, participants mentioned spending significant time and money moving through various centers, even when access to transportation was facilitated by some centers. Secondly, in Liège, larger institutions were generally viewed positively, especially by participants with HIV, as they offered integrated services. This allowed them to access necessary services (e.g., healthcare, social work, psychological services) in a single location, facilitating coordinated appointments on the same day (quote D.5). KIs from Liège reported that this strategy has improved the attendance of consultations among people with HIV and people with an irregular legal status. Finally, a third asset was tied to *social support within the community* (interpersonal level), often from partners, close friends or family already residing in the host cities. Acquaintance with people experienced in navigating the healthcare system can modify the person’s experience on both an individual and institutional level, by explaining the process of accessing healthcare services, suggesting specific clinics or HCPs (quote D.6, D.7), accompanying partners for testing, assisting with healthcare costs, or encouraging the use of preventive methods, such as PrEP, particularly within the gay community (quote D.8). Finally, regarding language, KIs described translation services and informative materials in multiple languages being offered in some healthcare venues, although these services are contingent upon the availability of staff or specific stakeholders, often making them temporary or insufficient.

5. Precarity

Needs Assessment (Table 2)

We observed that a state of precarity (i.e., state of persistent instability and insecurity in legal, economic, employment and housing matters) was mostly related to societal and institutional factors although some interpersonal elements, such as the existence of support networks, can mediate their effect. Precarity was often present and exacerbated many of the other barriers. For example, some participants escaped violent and traumatic contexts and could not return to their countries of origin (societal level), which they described to have taken a toll on their mental health.

This vulnerability impacted how they prioritized their needs at an individual and institutional level since arranging their legal, housing, or work situation becomes a priority, and everything else is left as a secondary need.

Precarity may also affect the way PMB develop relations in the new country. An undocumented participant explained how she started *depending more on the people closest to her*, especially on her partner, to help improve living and legal conditions (interpersonal level). However, we observed that this could also facilitate abusive relationships (quote A.9) and influence individual-level STI/HIV prevention and testing. For example, participants reported that some women put themselves in high-risk situations to get legal benefits, such as seeking to get pregnant by European men to have children (called “paper babies”) born in the host cities to be able to stay in the country (quote A.10).

The *fear of losing access to healthcare services due to an irregular or asylum seeker legal status* was mentioned as a societal facilitator to engage in individual prevention strategies in a disciplined way. Receiving a positive HIV diagnosis in some countries of origin could lead to expulsion from the country. Therefore, a positive HIV diagnosis was perceived risky, especially for asylum seekers. Additionally, certain participants expressed concerns about potential loss of healthcare access due to their irregular legal status and therefore tried to avoid any health condition (quote A.11).

Finally, whilst *the costs of HIV treatment* were not mentioned as a barrier among people with HIV, KIs reported an economic impact for PMB due to transportation costs and time dedicated to go to different clinics/hospitals during testing and care phases for other STIs and other conditions. Furthermore, amongst some participants without HIV, the knowledge that they would not have to cover HIV treatment expenses in case they needed it (societal level), increased their intention to test for HIV on an individual level (quote B.15), but did not lead to frequent testing.

Assets Assessment (Table 3)

KIs informed on institutions in all three countries (e.g., Fedasil, Café Zuflucht, PÄZ, Humanitas, Mara Project, among others) that provide *diverse economic, housing, and legal support*. While some participants acknowledged the existence of these institutions, they were rarely aware of the specific support programs available to them.

6. Knowledge and beliefs related to HIV and STIs

Needs Assessment (Table 2)

Participants’ narrations revealed that knowledge and beliefs regarding HIV and STIs could function as both barrier and facilitator in the HIVPCC across socio-ecological levels. Participants, particularly those without HIV, demonstrated a *lack of sexual health literacy*, resulting in misconceptions and fear regarding the implications of a positive HIV result, a prevalent testing barrier. For participants with an African background, their fear was partially associated with an institutional barrier, namely the lack of access to treatment in their country of origin (quote B.16 and B.17). However, despite now having guaranteed access to treatment, they still exhibited reluctance towards testing, opting for self-monitoring of symptoms as a prevention strategy (quote B.18), at an individual level. For many, HIV was considered the primary sexual health concern, hindering engagement in prevention (quote A.12) and timely access to care (C.8) for other STIs. Especially heterosexual participants displayed low knowledge levels about HIV, PrEP, and the concept of undetectable viral load (Rodger et al., 2019) (individual level), leading to a *low-risk perception* of behaviors like unprotected sex (quote A.13), ultimately hindering prevention and testing (individual level).

Participants and KIs described non-evidence-based prevention strategies, such as using mouthwash before oral sex (quote A.14), using traditional plant-made belts around the women’s waist for protection from STIs, or gauging the necessity of protection based on questions about a partner’s sex life. Interestingly, although some viewed asking about their partner’s last test as a prevention strategy, they infrequently tested themselves. People with HIV and KIs confirmed the infrequent testing, especially among young people, since they perceive low risk within their social circle, even when engaging in high-risk situations such as group sex (quote B.19). Concerning delayed access to care, some participants mentioned normalizing STI symptoms and opting for self-medication or self-diagnosis, thereby postponing testing and care-seeking.

Participants without HIV identified certain *high-risk situations* in the interpersonal level that facilitated individual prevention and testing, including engaging in casual sex (quote A.15), partners revealing multiple sexual encounters (quote B.20), using dating apps or bars, mistrusting a partner, or deeming a partner or venue unhygienic. Sex parties were described as risky due to prevalent drug use leading to unprotected sex.

Most participants viewed most drugs negatively and often reported avoiding them. Finally, beliefs about STIs and HIV prevalence affected prevention and testing in opposite ways. Some interviewees thought STIs were more common in Europe than in their home countries, promoting preventive practices (quote A.16). Conversely, others believed HIV was scarce in Europe, fostering a low-risk perception hindering prevention and HIV testing.

Most participants attributed the lack of sexual health literacy to *inadequate sexual education* in their countries of origin and the EMR (quote A.17) and insufficient public health campaigns to provide information both in general and tailored to PMB (quote B.21), which affected both prevention and testing.

Assets Assessment (Table 3)

Both participants and KIs reported on outreach educational activities for newcomers in Liège and South Limburg. KIs also reported on webpages with information regarding sexual healthcare in all regions, but participants rarely mentioned these. Educational activities included interactive sessions with experts and informational stands provided by sexual healthcare clinics at refugee and asylum centers, or adult schools for PMB. Some participants mentioned learning about various topics around prevention (e.g., PrEP), sexual healthcare, and testing, through these sessions.

Discussion

In this qualitative study we used IDIs to understand the barriers and facilitators to accessing HIV and STI prevention, testing and care among PMB in the EMR. In addition, we identified existing assets to tackle the diverse barriers and analyzed where gaps persist. In doing so, this study is one of the first that balances needs with assets for PMB and does so in a less-urban context. The needs assessment showed how socio-ecological levels affect each other and allowed us to identify six main themes that affect the access of PMB to the HIVPCC.

We identified four key gaps in existing assets, which may help explain why many of the barriers highlighted in this study are not new but instead have persisted over time. First, most initiatives are aimed at individual or interpersonal levels, but rarely at the societal and institutional level and, therefore, likely insufficient to tackle more structural barriers that persist on these levels such as HIV stigma (Manirankunda et al., 2021; Stutterheim et al., 2012b; Stutterheim et al., 2022) and

precarious circumstances (Nöstlinger et al., 2022; Rechel et al., 2013). Second, we found that many services were often unknown by PMB or deemed inaccessible because of language challenges, further reinforcing the language barrier frequently highlighted in existing literature (Been & Verbon, 2017; Manirankunda et al., 2021; Shangase & Egbe, 2015). Third, many assets were perceived inadequate to match their living conditions, culture and needs. Fourth, initiatives are highly irregular, frequently coordinated by one person in one specific organization, and hyperlocal, not even extending to other institutions within the same city. As such, our study reveals significant unaddressed barriers within current initiatives, emphasizing the need for comprehensive and coordinated interventions at societal and structural levels to ensure inclusivity and equity.

Identified gaps and recommendations

Several critical areas remain insufficiently addressed, including beliefs and misconceptions about HIV, the lack of open communication around sexuality, and the limited autonomy for women in making decisions about prevention. These factors collectively contribute to the ongoing stigmatization of HIV and extend to both anticipated (fear of rejection) and enacted (gossip) forms of stigma, leading to challenges to test and disclose HIV status (Alvarez-Del Arco et al., 2013; Arrey et al., 2017a; Dyson et al., 2018; Manirankunda et al., 2021; Rade et al., 2018; Stutterheim, Bos, Shiripinda, et al., 2012a; Stutterheim, Bos, van Kesteren, et al., 2012b; van Opstal et al., 2018). Our recommendation is to enhance accessible support services tailored for PMB living with HIV/STIs. These services should not only focus on mitigating HIV stigma but also offer support for individuals navigating precarious situations, ensuring a stigma-free and non-judgmental approach. Moreover, many individuals with HIV require psychosocial support and targeted information dissemination within their immediate social circles, while considering the potential negative consequences associated with disclosing their status when providing support. Drawing on successful outcomes in other domains such as prenatal and postnatal care, we propose leveraging support groups as a resourceful platform to destigmatize HIV and disseminate information (Riggs et al., 2017, 2021).

Regarding *communication and confidence with HCPs and social workers*, we identified mistrust towards Europeans/White people, concerns regarding confidentiality and language constraints as partially

unaddressed barriers. While Brandenberger et al. (2019) have previously described the relevance of these factors for accessing care, we found that it also affects testing. To address these gaps, we propose cultural sensitivity and competence training for staff at sexual healthcare clinics and refugee centers. Such training, as demonstrated by Renzaho et al. (2013) and Govere and Govere (2016), enhances awareness of cultural barriers, modifies provider behavior, and increases patient satisfaction. We are aware that mistrust can partially be rooted in (perceived) racism or xenophobia experienced by many PMB (Marsicano et al., 2014). Therefore, ethnic or race-related stigma reduction efforts are also needed. We strongly advocate for participatory approaches involving diverse PMB communities throughout the development and implementation of STI/HIV initiatives, which has been shown to be lacking in the EU (Nöstlinger et al., 2022). Crucially, informing PMB about their rights and assuring them of confidential care post-HIV diagnosis, without risking immigration status, is essential for fostering trust and ensuring timely access to healthcare services.

Navigating the healthcare system poses structural challenges for PMB, including coordination gaps, limited facility access, language constraints, and difficulty understanding the healthcare system in host countries. Language barriers, a significant obstacle to HIV health service accessibility, have also been noted in previous studies (Been & Verbon, 2017; Manirankunda et al., 2021; Nöstlinger et al., 2022; Shangase & Egbe, 2015). To address this, we propose increased availability of translated materials and on-site interpreters at key venues like sexual healthcare clinics, hospitals, and refugee centers, drawing on the success reported by Riggs et al. (2017) in Australia. Digital materials, including web pages, must incorporate translations, including the languages in the EMR (Dutch, German, and French). Furthermore, our findings emphasize the necessity for enhanced cooperation between healthcare and social work institutions (Pavli & Maltezou, 2017). Centralizing services and providing clear guidance on approaching diverse services minimizes information loss and enhances access and adherence to care (Brandenberger et al., 2019). PMB that are knowledgeable about the healthcare system can help disseminate essential information and address barriers. Community members' role as key figures in health promotion, a successful strategy in other HIV prevention contexts (Rhodes et al., 2016; Stutterheim et al., 2023), emphasizes the potential for community engagement to enhance healthcare accessibility for PMB in the EMR.

PMB also encounter barriers that are linked to socio-economic instability and legal uncertainty, aligning with findings by Nöstlinger et al. (2022). Our data underscores the impact of *precarity* on mental well-being, discouraging essential service utilization. Delays in healthcare access, including prevention and sexual health services, result from diverse legal and housing priorities overshadowing health concerns (Rechel et al., 2013). Additionally, many participants were unaware of available support services, emphasizing the need for enhanced communication upon migrants' arrival. Strengthening PMB's integration sessions, elucidating healthcare-seeking processes, legal entitlements, and assistance avenues, is crucial. Our observation that uncertainties persist regarding service eligibility and legal entitlements among PMB also shows that they require continued guidance. Regular repetition of these sessions is therefore recommended, as emerging care needs often only follow the resolution of primary legal and housing concerns.

Finally, regarding *knowledge and beliefs related to HIV and STIs*, we found that whilst introducing concepts such as U = U or testing as prevention intend to reduce HIV stigma and motivate prevention, they have not permeated as expected (Bedert et al., 2021; Manirankunda et al., 2021). Providing factual and stereotype-inconsistent information can be useful for eliminating misconceptions (Bartholomew Eldredge et al., 2016). Tailored communication strategies should account for cultural factors, including religion, gender roles, and social norms, which moderate the comprehension and acceptance of prevention and testing messages. Beyond integration sessions, leveraging existing safe spaces such as educational centers and support groups, fosters effective communication and discussion of key HIV and STI prevention messages, with peer outreach proving particularly effective among PMB populations as a strategy for disseminating critical health information (Deren et al., 2012).

Strengths and limitations

Our study has notable strengths, including a diverse sample of participants, both with and without HIV, a design facilitating data triangulation with KIs and researchers, ensuring data validity and accuracy of our findings. Our approach of balancing needs and assets can also be a valuable framework not often applied in other contexts, and our experience in Liège highlighted the effectiveness of direct outreach activities and community representatives in participant recruitment. The interviewers' characteristics,

mostly young White women, proved both as a strength and limitation. While discussing sex-related topics posed challenges, especially with male heterosexual participants, their experiences of migration fostered rapport and encouraged disclosure among female participants. However, limitations exist.

The sample size and focus on the EMR may limit the ability to statistically generalize our findings across broader populations. However, by being reflexive, triangulating with KIs and researchers, and providing comprehensive descriptions, we reinforce existing concepts and theories on topics such as HIV stigma and the interplay between migration and access to care, and are therefore supporting analytic generalizability (Carminati, 2018; Polit & Beck, 2010; Smith, 2018; Stutterheim & Ratcliffe, 2021a). Furthermore, recruitment imbalances across countries, with more participants in Liège (Belgium), potentially limit the generalizability of our results to broader other migrant communities in the region. Future research should encompass experiences of PMB from other origins in the EMR and a more extensive examination of the needs of undocumented migrants.

Conclusion

In conclusion, to achieve the UNAIDS 2030 goals in the EMR, we must tackle stigma towards HIV, deal with key structural challenges, and address misconceptions around sexuality in migrant populations. Making information accessible and tailored, increasing outreach activities, promoting accessible support services for PMB with HIV, and strengthening cooperation and coordination between healthcare and social work institutions are only some of the many possible suggestions to tackle these barriers. More importantly, we require a focus on key populations with culturally sensitive and participatory approaches, regardless of HIV status. This would allow tailoring interventions to the often-changing contexts and barriers surrounding migration.

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Author contributions

All authors contributed to the study conception and design, reviewed study materials, and interpreted findings. Material preparation, project administration, data collection and formal analysis were done by Andrea Nakakawa, Lizette C. Krist, and Hanne M. L. Zimmermann. The first draft of the manuscript was written by Andrea Nakakawa, with mentorship from Hanne M. L. Zimmermann. Lizette Krist was supervised by Kai J. Jonas and Sarah E. Stutterheim. Funding for this project was acquired by Kai J. Jonas and Sarah E. Stutterheim. All authors provided feedback on drafts of the manuscript and approved the final manuscript.

Data availability statement

Our paper is based on interview data and transcripts that are not publicly available due to privacy reasons.

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Appendix A. Interview guideline

(A) Interview guide for key populations in the EuRegio Meuse-Rhine about their anticipated risk and prevention behavior.

- Do you have any questions about the information you received before the interview?
 - Is it ok if I start recording now?
- (start the recording)
- I have to ask again, so that it's on the recording – do you consent to participating in this interview and to me making an audio recording of this interview?
 - Before we discuss sexual health in the region and HIV prevention, could you tell me a little more about yourself? (explore daily habits/activities, hobbies, etcetera)
 - How is it to live in the region? How long have you lived here?
 - Are you seeing anyone?
 - What's your gender? And your sexuality?
 - How is it to date in the region?
 - How do you usually approach meeting people or meeting up with people? Do you use dating apps? Why?
 - Do you usually discuss prevention, such as condom use, with partners? If yes, how do you do it? If no, why? (explore the variables that may affect whether if this

- discussion happens, such as the type of partner, how long they have been dating, etcetera)
- c. Do you think that there are differences within the region? For example, when you date someone from Germany or Belgium? (ask for examples)
 5. Could you tell me about your experiences with sexual health care? Are you used to getting regular tests or check-ups?
 - a. Where do you usually go for testing? Why?
 - b. How do you decide to get tested? (identify triggers to get medical attention)
 - c. How does your environment influence your decision to get or not tested? (explore social norms, influence of close family and friends VS society, stigma)
 - d. Could you describe the process you usually follow to get medical attention (sexual health)?
 - e. Have you ever faced any hustles or barriers for accessing medical services? (ask for examples)
 6. How/ In what circumstances do you feel you could have a risk to get an STI? How about HIV?
 - a. Have you ever felt in risk of getting either an STI or HIV? If yes, how did you deal with that situation?
 - b. Do your partners, or other people in your same sexual context, feel the same way about this?
 - c. What do you do to prevent STIs? How do you feel about this?
 - d. What do you think about STIs? And about HIV?
 - e. Have you ever heard about PrEP? Can you explain what it is?
 - f. Do you use it? Why or why not?
 7. What do you need regarding testing and/or prevention? What is missing?
 - a. Is that the same across the region?

(B) Interview guide for living with HIV in the EuRegion Meuse-Rhine about their experiences and context

This interview will be about your experiences with HIV. We will specifically discuss the time at which you tested for HIV, the period in which you think you became HIV positive, what HIV prevention looks like now, and some more specific questions about you.

1. Do you have any questions about the information you received before the interview?
 - a. Is it ok if I start recording now?

(start the recording)
2. I have to ask again, so that it's on the recording – do you consent to participating in this interview and to me making an audio recording of this interview?
3. Before we discuss HIV and HIV prevention, could you tell me a little more about yourself? (explore daily habits/activities, hobbies, etcetera)
 - a. How is it to live in the region? How long have you lived here?
 - b. Are you seeing anyone?
4. How is it to date in the region?

- a. How do you usually approach meeting people or meeting up with people? Do you use dating apps? Why?
- b. Do you usually discuss prevention, such as condom use, with partners? If yes, how do you do it? If no, why? (explore the variables that may affect whether if this discussion happens, such as the type of partner, how long they have been dating, etcetera)
- c. Do you think that there are differences within the region? For example, when you date someone from Germany or Belgium? (ask for examples)
5. First signs and symptoms / Testing: I would like to hear your experience from the moment that you started living with HIV. Can you tell me about it?
6. Diagnosis confirmation: Can you tell me about the moment you had a positive HIV test? How was that?
 - a. How did you find testing? When was that? How did it go?
 - b. How did you decide where to go to test yourself?
 - c. Who delivered the results of the test? Can you tell me about that moment? (explore if information was sufficient, if he/she was alone, how did they feel?)
7. Can you tell me about the time period or the moment you became HIV positive?
 - a. How did you think about HIV before? Was it something you thought about?
 - b. Was there anything you did in terms of prevention? Can you tell me about that?
 - c. I'd like to know a bit more about this time period. Were you dating at the time? How was that?
8. How do you feel HIV prevention is approached in the region? Is it the same throughout the region?
 - a. Has it changed since you became HIV positive?
 - b. What are your thoughts on ways HIV prevention could be improved?

Checklist topics:

- Participant background
- Living in the region
- HIV prevention in the region
- Differences in the region
- Dating / social life
- Behavior and Sexual Health
- Testing
- Prevention (PrEP, condoms)
- Sex work
- Drugs during sex
- Casual partners
- Traveling for sex
- Positive and negative experiences dating/discussing prevention/testing
- Covid-19
- Sexual health care experiences (Where? With whom?)
- Making choices (how to decide on where to seek medical care, how you decide who to tell?)
- Experiences (pos/neg) in health care services
- Attitudes and Beliefs around HIV
- Attitudes of others (partners, friends, family)
- Risk perception
- What's missing (initiatives, projects, etcetera)?