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ORIGINAL RESEARCH

A Socio-Ecological Perspective on Linkage to HIV Care in Bandung, Indonesia: A Qualitative Study to Explore Barriers and Facilitators

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Objective: This study aimed to explore the barriers and facilitators of the linkage to care in Bandung, Indonesia.

Methods: This study used a descriptive qualitative design with in-depth interviews with 17 purposively selected participants, including people living with HIV (PLHIV), healthcare providers, case managers, and community health volunteers. Data were collected from September 2024 to December 2024 in three key service settings in Bandung. A socio-ecological framework guided data collection and deductive content analysis, allowing thematic categorization at the individual, interpersonal, healthcare system/policy, and community levels.

Results: The analysis identified 10 main categories and 22 subcategories of facilitators and barriers linked to HIV care across socio-ecological levels. At the individual level, psychological readiness, HIV-related knowledge and perceptions, clinical conditions, and socioeconomic status shaped the linkage to care. Interpersonal support from family members, peers, and healthcare providers affected the decisions linked to care. At the healthcare system and community levels, service accessibility, stigma, and community engagement under the ongoing implementation of Universal Health Coverage (UHC) influenced the linkage to care in Bandung. A unique aspect of the present study lies in its emphasis on community engagement in the context of the ongoing implementation of UHC as a key facilitator, and service gaps at the primary care level and persistent stigma remains a key barriers in Bandung.

Conclusion: Multi-level factors shaped the linkage to HIV care in Bandung. Strengthening nurse- and peer-led navigation, expanding primary care services, promoting community participation, and scaling up structured professional guidance are key to reducing stigma and improving early engagement.

Keywords: barriers and facilitators, HIV care, linkage to care, primary healthcare, socio-ecological model, stigma, qualitative research, access to care, good health and wellbeing

Introduction

The global HIV epidemic remains a significant public health challenge, with approximately 40.8 million people living with HIV (PLHIV) by the end of 2024, and roughly 1.4 million new infections are recorded in that year.[1] Although there has been progress, as evidenced by a 39% decline in new infections since 2010, critical gaps persist.[1] Globally, 87% of people living with HIV (PLHIV) know their status, 77% receive antiretroviral therapy (ART), and only 72% achieve viral suppression.[1] These figures remain distanced from the Joint United Nations Programme on HIV/AIDS (UNAIDS) "95-95-95" cascade targets; 95% of all PLHIV will know their HIV status, 95% of those diagnosed will receive sustained ART, and 95% of those receiving ART will have viral suppression.[1–3]

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Indonesia is still struggling to meet the UNAIDS 95–95–95 targets. The country is facing one of the fastest-growing HIV epidemics in Asia, with an estimated 630,414 PLHIV by 2024.[4] Although AIDS-related deaths have gradually declined, treatment coverage remains inadequate, contributing to the persistently high mortality rates.[4] The national response has aligned with the 95-95-95 framework, yet significant barriers hinder the linkage to care.[5] Linkage to HIV care is commonly defined as PLHIV entry into HIV clinical care after diagnosis, often operationalized as a first clinic visit, confirmatory testing, or ART initiation within a specified time after diagnosis.[6] Timely linkage within 1 month plays a critical role in directly connecting diagnosis with treatment and subsequent viral suppression.[7] The delayed linkage reduces the proportion of diagnosed people who initiate treatment and achieve viral suppression, thereby undermining progress toward the UNAIDS 95–95–95 targets.[6] Evidence shows that delayed linkage to care not only delays treatment initiation, but also contributes to ongoing HIV transmission.[8]

Although global and national reporting remains limited, a prospective study conducted from September 2015 to September 2016 found that only 86.2% of PLHIV were associated with HIV care in Indonesia.[9] Finance disruptions, structural barriers, and stigma continue to impede timely linkage to care and other HIV care cascades.[10–12] In this context, it is essential to understand barriers and facilitators at the individual, interpersonal, community, and policy levels in Indonesia. As a major urban hub in Indonesia's most populous provinces, Bandung ranks among the highest HIV-incidence areas nationally.[9] The high seroprevalence is particularly noted among key populations, such as young men who have sex with men (MSM), according to a study on urban young MSM.[13]

Despite a growing body of qualitative research on HIV care across the continuum in Bandung,[14–16] the literature on the link to care remains limited. Although a qualitative study was conducted in Bandung, it focused solely on exploring the perspectives of people who inject drugs (PWID) regarding the role of peer support across HIV care.[14] Another qualitative study of transgender women across Indonesian cities, including Bandung, identified individual and structural barriers, such as concerns about confidentiality, stigma, and health insurance, that hindered access to HIV care.[16] However, these studies did not explicitly focus on the linkage to HIV care following diagnosis, did not consider multiple stakeholder perspectives, or lacked a fully integrated socio-ecological perspective.

Additionally, there remains a paucity of studies employing the socio-ecological framework to analyze determinants across all levels. The socio-ecological framework is a multi-level model that conceptualizes health behaviors as influenced by factors at the individual, interpersonal, community, institutional, and policy levels.[17] Such an approach has not been widely applied in Bandung, particularly with an explicit focus on the linkage to HIV care. Despite existing studies holistically demonstrating multi-level frameworks, those adapted to Indonesia's unique socio-cultural and decentralized health settings remain limited.[18] Therefore, this study aimed to explore the barriers and facilitators of linkage to HIV care in Bandung using a socio-ecological framework. This study addresses this gap through two key contributions: a holistic socio-ecological perspective on linkage to care, a focused exploration of the linkage to HIV care as the entry point to treatment, and at broader HIV care continuum—an area often underexplored in Indonesian research.

Methods

Study Design

This study employed a descriptive qualitative design,[19] utilizing in-depth interviews with a semi-structured interview guide to explore the barriers and facilitators of the linkage to HIV care in Bandung. This study was grounded in a constructivist paradigm,[20] which emphasizes the understanding of PLHIV experiences and the meanings they ascribe to their social realities. The socio-ecological framework guided the development of interview tools and data analysis, allowing exploration across five levels: individual, interpersonal, community, institutional, and policy.[17] The reporting of this study followed the Standards for Reporting Qualitative Research (SRQR) guidelines,[21] and the completed checklist is provided in Supplementary File 1.

Study Setting

Due to the complicated relationship between high population density, decentralized health systems, diverse risk groups, local culture and social value, local politics, and evolving community-based responses,[22] Bandung is an ideal setting to explore the multi-level barriers and facilitators impacting linkage to HIV care through a socio-ecological lens.[17] The research was conducted from September 2024 to December 2024 in three locations: Dr. Hasan Sadikin General Hospital; Pasundan Public Health Center as a primary healthcare facility providing HIV services; and Bandung City Health Office, which represents tertiary, primary, and program management levels of HIV care in Bandung. These sites were selected to obtain a comprehensive perspective from clinical-, community-, and policy-level service providers.

Participants and Sampling

Seventeen participants were recruited using purposive sampling to ensure diverse roles and experiences. Participant included PLHIV already linked to care, healthcare providers (eg, doctors, nurses, pharmacists, and laboratory analysts), peer supporters, outreach workers, and case managers at the health office and PHC level. PLHIV were identified through medical records at HIV care services and were approached by their assigned healthcare providers or peer supporters. Healthcare workers (eg, doctors, nurses, pharmacists, and laboratory analysts), outreach workers, and case managers were identified and invited based on their direct involvement in HIV service delivery. Peer supporters and outreacher were selected in collaboration with local community-based organizations engaged in HIV programmes. Invitations were extended via phone calls or direct communication during the clinic visits. Written informed consent was obtained from all participants prior to their participation.

Sampling was conducted until thematic saturation was achieved, ensuring the richness and variability of perspectives. Data saturation was considered to have been reached when, after the 15th interview, no new categories or subthemes emerged across ecological levels. Sampling continued with two additional interviews to confirm saturation and enhance the richness and variability of perspectives.

Inclusion Criteria

Participants were included if they were (1) adults living with HIV aged ≥18 years; (2) had at least six months of experience related to HIV testing, referral, or care services in Bandung; (3) were either healthcare providers with a minimum of one year of experience in HIV service delivery or PLHIV who had been diagnosed at least six months prior to data collection; and (4) provided informed consent to participate.

Data Collection

The interviews were conducted face-to-face in Bahasa Indonesia at locations agreed upon by the participants, ensuring privacy and comfort. Interviews were conducted by the first author (SM) and were assisted by trained assistants with prior experience in qualitative research. An interview guide based on the socio-ecological model and prior literature was used to explore the individual, social, and structural determinants that influence the linkage to HIV care. Interviews lasting 30–60 minutes, were audio-recorded with consent, and supplementary field notes were taken to capture the nonverbal context. The interview guides were adjusted slightly for each group (patients, providers, peer workers, and case managers). An interview guide is provided in Supplementary File 2.

All interviews were conducted in Bahasa Indonesia, the native language of both the participants and interviewer. Audio recordings were transcribed verbatim, translated into English by the first author (SM) and verified by a bilingual researcher (IP) to ensure accuracy and preserve contextual meaning. Transcripts and translations were stored securely in a restricted folder accessible only to the research team. Interviews were conducted by the first author (SM), a Ph.D student with prior experience in qualitative research. The first author was supervised by two supervisors (KI and YH) with prior experience in qualitative research and engagement in HIV-related health services in Indonesia. This professional background facilitated rapport with participants but also required critical self-awareness to minimize potential bias during data collection. Reflexive notes were maintained to monitor personal assumptions and ensure that the data collection process was participant-centered.

Data Analysis

This study employed a deductive content analysis approach to explore and interpret phenomena related to the linkage to HIV care, which has not been previously investigated in the context of Bandung.[23] A deductive strategy was selected, as the analysis was guided by a pre-existing theoretical framework, specifically the socio-ecological model. The coding process adhered to the structured deductive categorization method outlined by Mayring,[24] which involves (1) explicitly defining each category, (2) providing illustrative examples, and (3) establishing coding rules to ensure consistency.

Data analysis followed a deductive content analysis approach structured into six sequential stages. (1) The interviews were transcribed verbatim to ensure an accurate and complete representation of participants' narratives. (2) The researchers familiarized themselves with the data by repeatedly reading the transcripts and reviewing field notes and audio recordings. (3) Units of analysis were identified by extracting meaningful statements relevant to the socio-ecological framework. (4) These units were organized into initial codes and grouped into categories corresponding to five ecological levels: individual, interpersonal, community, institutional, and policy. (5) Categories are refined by eliminating redundancies, merging similar codes, and introducing new categories when necessary. (6) The research team reviewed and validated the final categorization matrix to ensure clarity, coherence, and interpretive trustworthiness. All coding and categorization were conducted manually without the use of qualitative data analysis software, allowing for close engagement with the data and nuanced interpretation. To ensure coding consistency, intercoder reliability was established through regular discussions and consensus among the research team until an agreement was reached regarding code definitions and categorization.

Trustworthiness

In this study, trustworthiness was ensured by applying Guba and Lincoln's criteria.[25] credibility, transferability, dependability, and confirmability. Credibility was established through data triangulation involving PLHIV, healthcare providers, peer supporters, and program managers as well as member checking to validate the accuracy of interpretations. Additionally, a summary of the preliminary findings was shared with selected participants post-interview to validate the interpretations. Transferability was supported by rich descriptions of the study setting, participants, and procedures, which allowed readers to assess the relevance of the findings to other contexts. Dependability was addressed by maintaining a clear audit trial documenting the methodological decisions throughout the research process. Confirmability was enhanced by preserving raw data, coding records, and field notes, and by engaging in collaborative analysis to minimize researcher bias.

Ethical Considerations

This study received ethical approval from the health research ethics committee. This study was conducted in accordance with the principles of the Declaration of Helsinki. Written informed consent was obtained from all participants. To maintain confidentiality, the participants' identities were anonymized, and pseudonyms were used in the transcripts and reports. All participants provided informed consent prior to participation, which included permission for the use of anonymized responses and direct quotations in publications.

Results

Characteristics of Participants

Seventeen participants were involved in this study, including PLHIV (n=8), healthcare providers (n=4), case managers (n=2), and community health volunteers (n=3). Among the eight PLHIV, the mean age was 39.5 years (SD = 9.59), with most participants aged 40 years or older. The average duration of living with HIV was 10.3 years (SD = 5.95), and the majority had been diagnosed for more than 10 years. The male participants comprised 62.5% of the participants in this group. Most PLHIV attained college-level education and represented key populations, including MSM (50%), serodiscordant individuals (37.5%), and people who inject drugs (12.5%). The majority were single or widowed (87.5%) or unemployed (75%). Notably, all PLHIV achieved viral suppression, with viral loads of <40 copies/mL.

The four healthcare providers had a mean age of 45.0 years (SD = 7.16), and all had been providing HIV-related services for more than 10 years (mean = 16.5; SD = 4.65). The group was predominantly female and all had a college degree. Their professional background included doctors, nurses, pharmacists, and laboratory analysts. All of them were employed in formal healthcare settings. The two case managers were male and female, with a mean age of 44.5 years

(SD = 3.54). One had worked in HIV services for less than five years, and the other for more than ten years (mean = 6.3; SD = 2.08). Both had a college-level education and were married. All worked at the district health office Moreover, the three community health volunteers had a mean age of 37.3 years (SD = 4.04), with two aged < 40 years. Their average duration of involvement in HIV-related services was 7.5 years (SD = 4.95), with most having to 5–10 years of experience. The group consisted mostly of males and individuals with a college-level education. Volunteer roles include peer support for MSM and outreach workers. All the participants achieved viral suppression in their clients. The participants' characteristics are presented in Table 1.

Socio-Ecological Perspective on Barriers and Facilitators of Linkage to HIV Care

At the individual level, the analysis revealed four main categories and eight subcategories. At the interpersonal level, one category with three supporting sub-categories was identified. Within the healthcare service and policy levels, four categories and ten subcategories emerged, reflecting both structural and systemic influences. At the community level, one category with a single subcategory was identified. A detailed categorization is presented in Table 2 and visualized in Figure 1.

Table 1 Characteristics of Participants Involved in the Study on Linkage to HIV Care in Bandung, Indonesia (September–December 2024)

Characteristic	PLHIV (n = 8) n (%)	Health Care Provider (n = 4) n (%)	Case Manager (n = 2) n (%)	Community Health-Volunteer (n=3) n (%)
Age (mean, SD)	39.5 (9.59)	45.0 (7.16)	44.5 (3.54)	37.3 (4.04)
<40	3 (37.5)	1 (25.0)	2 (100.0)	2 (75.0)
≥ 40	5 (62.5)	3 (75.0)	0 (0.0)	1 (25.0)
Receive/provide HIV care (year)	10.3 (5.95)	16.5 (4.65)	6.3 (2.08)	7.5 (4.95)
<5	2 (25.0)	0 (0.0)	1 (50.0)	1 (25.0)
5-10	1 (12.5)	0 (0.0)	0 (0.0)	2 (75.0)
>10	5 (62.5)	14 (100.0)	1 (50.0)	0 (0.0)
Gender				
Male	5 (62.5)	1 (25.0)	1 (50.0)	2 (75.0)
Female	3 (37.5)	3 (75.0)	1 (50.0)	1 (25.0)
Education				
High school	2 (25.0)	0 (0.0)	0 (0.0)	1 (25.0)
College	6 (75.0)	4 (100.0)	2 (100.0)	2 (75.0)
Population				
MSM	4 (50.0)	NA	NA	2 (75.0)
IDU	1 (12.5)	NA	NA	0 (0.0)
Serodiscordant	3 (37.5)	NA	NA	1 (25.0)
Marital status				
Married	1 (12.5)	4 (100.0)	2 (100.0)	0 (0.0)
Single/widow	7 (87.5)	0 (0.0)	0 (0.0)	3 (100.0)
Occupation				
Employed	2 (25.0)	4 (100.0)[a]	HD (2, 100.0%)	PS (2, 75.0%)
Unemployed	6 (75.0)	NA		Outreecher (1, 25.0%)
Viral load				
<40 copies/mL	8 (100.0)	NA	NA	2 (100.0)

Notes: [a]Doctor (1, 25%), clinical nurse (1, 25%), pharmacy (1, 25%), and laboratory analyst (1, 25%).

Abbreviations: HD, Health Department; PHC, NA, Not applicable; PS, peer support; MSM, men who have sex with men; IDU, injection drug user.

Table 2 Categorization Matrix of Barriers and Facilitators to Linkage to HIV Care in Bandung, Indonesia (September–December 2024)

Level	Sub-Category	Category	Query Support*
Individual	F: Motivation to live a healthy life	Psychological	Q1-5
	B: Low self-efficacy regarding treatment		
	B: Denial of HIV status		
	F: Perception of vulnerability to illness	Knowledge and perception	Q6-8
	B: Perceived healthy status		
	F: Good clinical status	Clinical	Q9-10
	B: Financial constraints	Socioeconomic	Q11-12
	B: Lack of health insurance		
Interpersonal	F: Support from family and partner	Interpersonal support	Q13-17
	F: Support from community health-volunteer		
	F: Support from healthcare workers		
Healthcare Services and Policy	F: Ease of access to health insurance services for HIV care	Service availability and accessibility	Q18-21
	B: Limited number of HIV care service facilities		
	B: Long turnaround time for diagnostic testing		
	F: Adequate counseling	Service quality	Q22-27
	F: Friendly services for key populations		
	B: Lack of education during HIV testing		
	B: Long waiting time for services		
	B: Inconsistent pre-ART examination procedures across facilities		
	F: National policy of "test and treat" (same-day ART initiation)	Supportive national policy	Q28-29
	B: Stigma in HIV care service settings	Stigma and discrimination in healthcare services	Q30
Community	F: Support from community health-volunteers for Universal Health Coverage	Role of community health volunteer	Q31-32

Notes: *Queries can be seen sequentially in the results section.

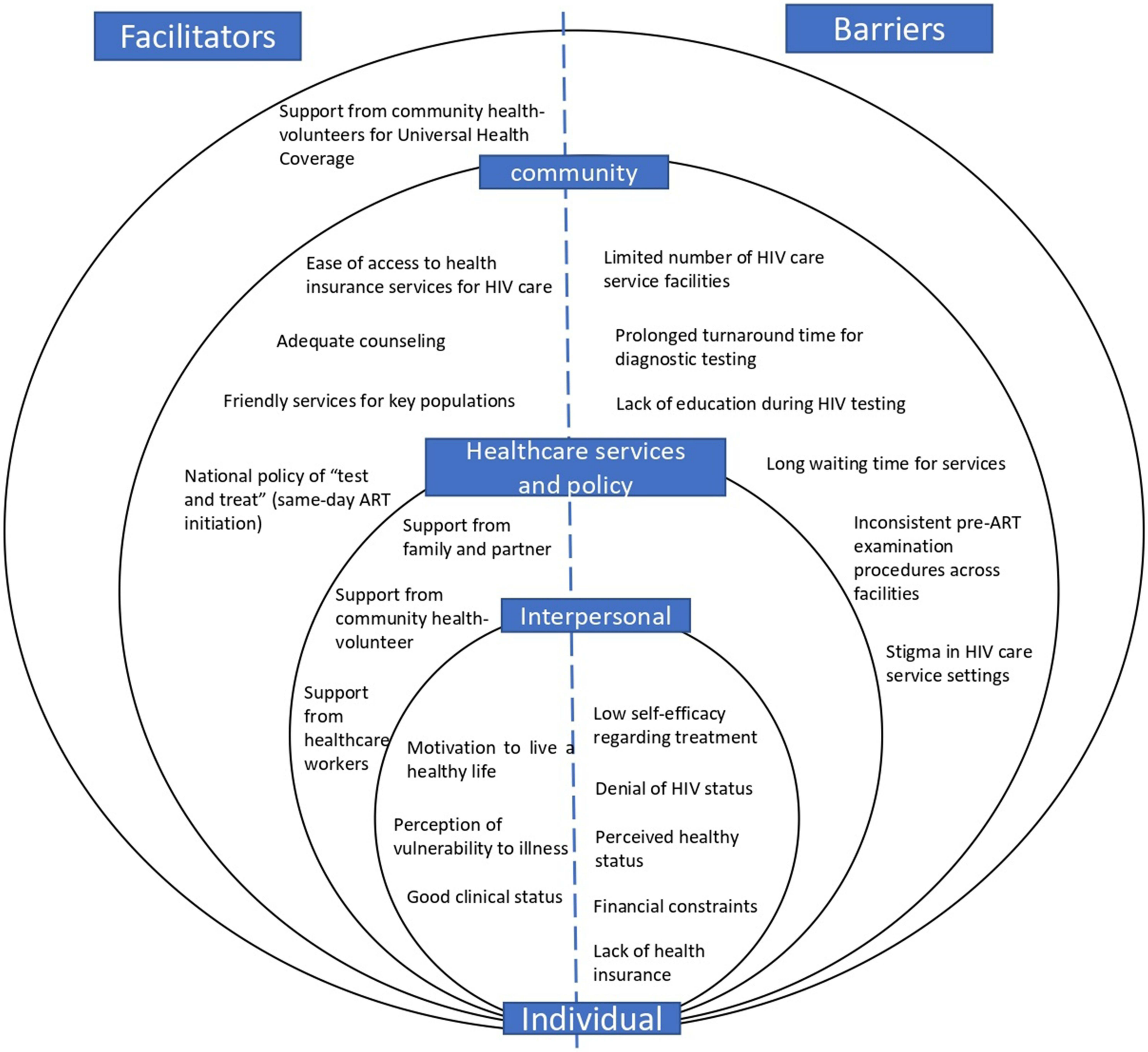

Figure 1 A Socio-ecological model on Linkage to HIV Care in Bandung.

Individual Level

At the individual level, participants' experiences demonstrated that a combination of psychological, perceptual, clinical, and socioeconomic factors influenced the linkage to HIV care (Query/Q1–Q12).

Psychological

A strong internal motivation to live healthily facilitated timely engagement in care, particularly among individuals who were aware of the importance of early treatment and found services easily accessible (Q1-Q2).

> Q1: Because I want to not die… Thank God it's free here, so it's easy to come, pay the admin fee, and that's it. (PLHIV 7)
>
> Q2: There was a desire to survive longer… It's human; you became aware of yourself. (PLHIV 8)

However, psychological barriers such as denial of HIV status (Q3) and low self-efficacy related to fear of side effects and the burden of lifelong medication were commonly expressed and appeared to delay care-seeking behaviors (Q4-Q5). These emotional responses often led to postponement or avoidance of follow-up care after diagnosis.

> Q3: I think that denial stems from fear, so they do not return. (Healthcare provider 1)
>
> Q4: The basic fear comes from seeing heavy side effects. (PLHIV 1)
>
> Q5: Most stop after just to 2–3 doses… they fear future side effects. (Community Health Volunteer 3)

Knowledge and Perceptions

Perception of vulnerability to illness and perceived health status among PLHIV play a key role in shaping PLHIV' decisions to link to HIV care. Some recognized the risk of opportunistic infections as a compelling reason to engage in care (Q6), while others who felt asymptomatic perceived no urgency to seek treatment (Q7-Q8).

> Q6: They are afraid of opportunistic infections like swollen lymph nodes or toxo… so they decided to go. (Community Health Volunteer 1)
>
> Q7: I felt healthy and had no symptoms… so I did not want to start treatment. (PLHIV 5)
>
> Q8: They still feel healthy, even though they know their status is positive. (Community Health Volunteer 1)

Clinical

According to a healthcare provider and community health volunteer, individuals with good clinical status were more likely to begin antiretroviral therapy promptly (Q9), without requiring additional diagnostic procedures (Q10). This finding aligns with the patient's perspective of perceived health status.

> Q9: If they are asymptomatic, they can start treatment immediately. (Healthcare provider 2)
>
> Q10: If there were no complaints, they received ARV the next day. (Community Health Volunteer 3)

Socioeconomic

In contrast, economic vulnerability, including unemployment and lack of health insurance, was often mentioned as a hindrance (Q11-Q12), especially when logistical costs such as transportation or registration fees became a burden (Q12).

> Q11: Not all patients work… If they do not have money, they desire to receive care but are unable to do so. (Healthcare provider 2)
>
> Q12: Their economic and social capacity declines… If they do not have BPJS, they must pay registration fees. (Case manager 1)

Interpersonal Level

At the interpersonal level, participants consistently emphasized the importance of supportive relationships in facilitating linkages to HIV care. Emotional and practical support from family members, partners, healthcare providers, and community health volunteers served as a strong motivating factor for PLHIV to timely link to HIV care following diagnosis (Q13-17).

The role of family support is particularly salient (Q13-Q14). PLHIV described how encouragement and emotional backing from their children or extended relatives gave them the strength to seek care (Q14). Community health volunteers also noted that close personal relationships, especially with family, were among the most significant contributors to care engagement (Q13).

> Q13: The most significant drivers [of linkage to care] are usually family and close ones. (Community Health Volunteer 1)

> Q14: My motivation came from my child…. and the support I received from my late brother's family. (PLHIV 1)

Healthcare workers contributed to this interpersonal support by providing continuous encouragement and reminding patients of the importance of staying on treatment (Q15). These reminders were framed as expressions of care rather than as obligations or reprimands (Q15).

> Q15: You can see how persistent we are in showing that we are caring. When we remind them, it is not out of annoyance or stigmas because we want them to be healthy. We remind them again and again. (Healthcare provider 3)

Support from community health volunteers also plays a critical role. For patients lacking strong family ties or experiencing denial, having an assigned treatment companion from a community health volunteer is considered essential (Q16). These companions provided not only practical assistance but also emotional solidarity, helping PLHIV feel less isolated during their treatment journey (Q17).

> Q16: If they do not have family support at home, there are companions from the NGO here. (Healthcare provider 3)

> Q17: Here, having a treatment companion is mandatory—like the extended hand of the doctor. Because of that, our friends on treatment feel like they have a company… Everyone feels empowered here. (PLHIV 4)

Healthcare Service and Policy Level

At the healthcare service and policy levels, several interrelated factors were identified that influenced the linkage to HIV care among PLHIV. These included the availability and accessibility of services, quality of care, implementation of national treatment guidelines, and the presence of stigma and discrimination within healthcare settings (Q18-30).

Services Availability and Accessibility

Access to HIV care was facilitated by the availability of national health insurance (*Badan Penyelenggaraan Jaminan Sosial/BPJS*), which made it easier for PLHIV to obtain referrals and treatments (Q18). Healthcare providers reported that, compared to other health services, accessing HIV services through the BPJS was relatively seamless (Q18). In addition, the expansion of HIV care services at the primary care level, including public health centers and community-based clinics, improved service reach and supported treatment initiation. However, access was not evenly distributed because of the limited number of primary-public health centers (in Indonesia known as *Pusat Kesehatan Masyarakat/Puskemas*) (Q19). Some PLHIV were diagnosed at facilities that did not provide ART and required referrals, which created additional barriers (Q20). These referral processes, particularly from testing-only centers to treatment facilities, were noted to cause delays and disengagement from care (Q20). Long turnaround times (TOT) for diagnostic results further compounded these issues, contributing to missed follow-up and delayed ART initiation (Q21).

> Q18: BPJS is now easier to access, especially for HIV services… it's even easier than for the general patients. (Healthcare provider 1)

> Q19: There are 11 puskesmas, 16 hospitals, and some community clinics providing HIV care in Bandung. (Case manager 1)

> Q20: If the testing site doesn't provide treatment, patients must be referred, which discourages them from returning. (Case manager 1)

> Q21: They are told to come back in three days, and they lose motivation… Some think, "Why not get the meds right away? (Community Health Volunteer 3)

Service Quality

Service quality, particularly the adequacy of counseling, has emerged as a key factor. Post-diagnosis counseling helped PLHIV understand the next steps in accessing treatment and increased their acceptance of HIV status (Q22). Participants who received clear guidance during counseling were more likely to engage in care (Q23). Moreover, facilities perceived as welcoming and sensitive to the needs of key populations were more successful in retaining patients (Q24). A sense of familial support from healthcare staff encouraged care-seeking behavior, whereas a lack of information and long wait times discouraged it (Q25). Some PLHIV also reported inconsistencies in pre-treatment procedures between facilities, such as unnecessary diagnostic tests, which created frustration and led to disengagement (Q26). Additionally, HIV care with long service hours due to the large number of clients causes PLHIV to discontinue initiation of care (Q27).

> Q22: Post-counseling should strengthen what the patient needs to do… that's how they move from refusal to engagement. (Healthcare provider 4)
>
> Q23: After I tested seropositive, counseling explained the risks and treatment clearly. (PLHIV 4)
>
> Q24: When treatment feels like family, patients come back and feel safe. (PLHIV 4)
>
> Q25: At testing sites, lack of information prevents patients from understanding that medication can lead to being undetectable. (Healthcare provider 4)
>
> Q26: Some centers insist on CD4 or chest X-rays even when the patient is healthy—people get discouraged and do not return. (Community Health Volunteer 2)
>
> Q27: Patients become frustrated when services take too long, especially when clinics are crowded. (Healthcare provider 2)

Supportive National Policies

The national "test and treatment" policy played a supportive role in encouraging early initiation of ART. This policy allowed PLHIV to start treatment immediately after diagnosis, regardless of CD4 count, streamlining access and reducing previous delays associated with older protocols (Q28-29).

> Q28: Now, once someone tests positive, they are immediately treated. Before, we waited for CD4 results; now, this is straightforward. (Healthcare provider 2)
>
> Q29: It is very easy now. After seeing the doctor, I obtained test results and started ART immediately. (PLHIV 4)

Stigma and Discrimination in Healthcare Services Settings

Despite these improvements, stigma from healthcare providers still exists in some facilities. This included judgmental attitudes toward patients, especially those from key populations, and discouraged PLHIV from returning to care (Q30). A religious or moralistic commentary on service provision further alienated some individuals (Q30).

> Q30: In some clinics, new patients are told to repent because of their lifestyle—it's very judgmental. (PLHIV 5)

Community Level

At the community level, the role of community organizations and community health volunteers was recognized as a key factor influencing the linkage to HIV care. These groups played a significant role in facilitating access to services by helping PLHIV navigate administrative and financial barriers (Q31-32).

In particular, community health volunteers were instrumental in helping PLHIV obtain health insurance and other social protection. By coordinating with healthcare facilities and leveraging partnerships with social services or charitable organizations, community health volunteers helped ensure that PLHIV, especially those facing economic hardship, could register for national health insurance (UHC/BPJS) or receive financial aid through alternative sources such as zakat institutions (Q31-Q32). Patients were able to access treatment services without incurring out-of-pocket costs, thereby enhancing continuity of care.

> Q31: Usually, for those with Bandung ID cards, we [the community health volunteers] ask the facility to help them register for UHC, like zakat institution or government-paid BPJS. (Community Health Volunteer 3)

> Q32: Social referral issues often involve getting health insurance cards and other documentation… In these cases, community health volunteers usually assist patients in navigating the administrative process, such as registering for BPJS or securing other required documents. (Program officer 2)

Discussion

Principal Finding

This study explored the barriers and facilitators influencing the linkage to HIV care among PLHIV in Bandung, using a socio-ecological framework. These findings include the following: (1) At the individual level, linkage to HIV care was influenced by psychological readiness, health knowledge and perceptions, clinical status, and socioeconomic challenges. (2) Interpersonal support from family members, healthcare providers, and community health volunteers plays an essential role in engaging PLHIV in seeking care. (3) Within the healthcare system, factors such as service availability and accessibility, service quality, stigma in healthcare settings, and supportive national policies either support or hinder PLHIV' link to care. (4) At the community level, community health volunteers were instrumental in facilitating access to healthcare and social protection schemes, particularly those lacking financial or social support. Moreover, our study extends the understanding of the linkage to care by incorporating multi-level perspectives, not only from PLHIV but also from healthcare providers, program managers, and community health volunteers, within a decentralized urban healthcare setting in Indonesia.

Previous qualitative studies have consistently highlighted several barriers that hinder the timely linkage to HIV care.[26–30] At the individual level, participants commonly reported denial of HIV status, low self-efficacy, fear of lifelong medication, concerns about disclosing their status, low perceived susceptibility, limited knowledge of treatment benefits, and financial constraints.[26–29] On the interpersonal level, poor communication with healthcare professionals and lack of support from family or partners contributed to delays.[27] Structural and healthcare-related barriers included long turnaround times for confirmatory tests, frequent clinical visits, inadequate guidance following diagnosis, negative attitudes among health workers, and limited service hours further delaying engagement in HIV services.[26,27,29,30] However, our study identified several additional barriers that have received little attention in the literature. A limited number of HIV care service facilities, particularly at the primary care level, and absence of health insurance are among these barriers.

In addition, the facilitators of timely linkage to HIV care identified in this study aligned with previous findings and were organized into four levels of the socio-ecological framework.[26–30] At the individual level, facilitators including psychological factors (eg, self-awareness, self-efficacy), knowledge and perception (eg, understanding the benefits of ART, belief in treatment effectiveness), clinical experiences (eg, presence of symptoms, illness, or death among loved ones), and socioeconomic status (eg, stable income, access to transportation) contributed to the motivation to seek care.[26,29] At the interpersonal level, social support from partners, family, healthcare providers, and peers was crucial in encouraging PLHIV to overcome their initial denial and begin treatment.[28–30] The healthcare service and policy levels encompassed several enabling factors, including service availability and accessibility (eg, free HIV care, financial assistance, and geographically accessible clinics), service quality (eg, sufficient counseling, provider follow-up, and institutional reputation), and supportive policies (eg, same-day ART initiation and clear national guidelines) that ensured that PLHIV received timely, equitable, and supportive care.[26–30] Finally, at the community level, peer and community health volunteer support provided emotional and informational assistance, reduced feelings of isolation and increased confidence in engaging in care.[26,30] Our study also identified less commonly reported facilitators, including good clinical condition, which gave individuals confidence in seeking care, and strong community support, particularly from community health volunteers who advocated for and facilitated access to UHC for those without insurance.

A unique aspect of the present study lies in its emphasis on community engagement and participatory approaches, particularly in the context of the ongoing implementation of Universal Health Coverage (UHC) in Bandung. One prominent example is *Jaringan Indonesia Positif* (JIP), a community-based organization that has played an active role in shaping HIV prevention policies at both the national and regional levels.[31] The 2021 United Nations Political Declaration on HIV/AIDS highlights the pivotal role of community-led organizations in achieving the 30–80-60 targets by 2025; specifically, these organizations should be responsible for delivering 30% of HIV testing and treatment services, 80% of prevention services for high-risk populations, and 60% of programs aimed at addressing societal enablers.[32] Strategic investments from key donors have strengthened these community-led networks, enabling them to influence local to global actors.[31] However, recent funding cuts from major donors have posed a significant threat to the sustainability of community-led efforts.[33,34] Reduced financial support jeopardizes essential functions such as outreach activities, peer education, and linkage to care support;[33] it is particularly harmful for marginalized groups who rely heavily on community-based services.

Although ART is officially provided free of charge in Indonesia, patients are often required to pay additional costs such as registration fees and, when necessary, hospitalization expenses.[35,36] However, HIV clinics are often located far from patients' homes, and medication stockouts remain a recurrent issue in some facilities.[35] The availability of public healthcare centers offering comprehensive HIV care services remains constrained, even in major urban centers, such as Bandung. This structural barrier aligns with the findings of the present study, in which participants from case managers highlighted the limited number of public healthcare centers providing HIV care across the city as a key challenge to timely linkage to HIV care. Moreover, if such service gaps are evident in a well-resourced city such as Bandung, the situation is likely to be even more concerning in smaller or more remote cities across Indonesia, where healthcare infrastructure and resources are more limited.

Implication to Practice and Local Policy

Linkage to HIV care serves as a crucial initial step in the HIV care cascade. This was the entry point for ART initiation and viral suppression. With timely entry into care and treatment, PLHIV can benefit from HIV treatment at the earliest feasible stage.[5,6] Community-driven movements and grassroots activism remain central to advancing the rights and well-being of people living with HIV.[31] Empowerment and participatory approaches are especially vital for scaling up the dissemination of the Undetectable = Untransmittable (U=U) messages among key populations. The U=U campaign is grounded in robust scientific evidence from a current systematic review that found no cases of sexual HIV transmission among serodifferent couples when the HIV-positive partner maintained viral suppression.[37,38] This global campaign has been instrumental in motivating access to treatment and adherence to ART. Positive U=U messaging can significantly reduce the emotional burden associated with the fear of transmission, thereby alleviating feelings of guilt, anxiety, and depression.[39]

To fully realize the potential of U=U, its implementation and scale-up must be supported by structured, evidence-informed training for healthcare providers. This includes education on the basic knowledge of HIV, human rights, stigma reduction, gender sensitivity, and professional ethics.[39,40] The development of comprehensive resource guides for healthcare professionals, such as those introduced in the United States, can serve as critical tools to standardize and strengthen U=U messaging in clinical practice.[39] Such resources not only enhance provider confidence and consistency but also reduce anticipated stigma at the community level, thereby improving HIV testing uptake and early linkage to care.

Given the central role of community nurses as key stakeholders in healthcare services in improving HIV care, including facilitating linkage to treatment,[41] nurse-led and peer-based patient navigation has gained recognition as a promising strategy to enhance both linkage to and retention in HIV care.[42,43] Patient navigators support people with HIV (PWH) by engaging in a range of non-clinical and coordination activities, such as accompanying clients to appointments, scheduling visits, providing logistical support (eg, transportation, food, clothing), offering HIV-related education, facilitating referrals, and fostering trust-based relationships with clients.

Moreover, shaping sustainable pathways for care linkage intervention and overall HIV care requires innovation beyond the traditional service delivery models.[44–47] Digital health technologies offer promising solutions for addressing the persistent limitations of healthcare services and hard-to-reach populations.[48] These tools may be particularly relevant in Indonesia, where disparities in access to HIV care remain a challenge even in urban areas, such as Bandung.[49] In addition, funding gaps and donor fatigue have major implications for sustaining the HIV response,[50] particularly for community-based interventions that depend heavily on external support. Integrating digital technologies into national HIV strategies can offer scalable, cost-effective, and resilient alternatives. Public health programs in the HIV response, including those to increase linkage to care,[51] must therefore prioritize the development of digital health infrastructure to ensure continuity of HIV care and equitable access in the face of evolving system constraints.

Limitation

This study had several limitations. First, the PLHIV sample may not fully represent all key populations at risk, such as female sex workers, transgender individuals, or adolescents, which may limit the transferability of findings to these groups. Second, as a qualitative study was conducted in Bandung, an urban setting with relatively better access to services, the findings may not reflect the experiences of individuals in rural or underserved areas in Indonesia or globally with more constrained healthcare infrastructure. Third, interviews were conducted at healthcare-related facilities or through service contacts, which may have introduced a selection bias by including only individuals who were already engaged or connected to HIV services. Moreover, while this study contributes valuable insights to the global discourse on HIV care engagement, the generalizability of its findings to other countries may be limited. Health system structures, HIV-related policies, and cultural norms vary significantly across different settings, and the barriers and facilitators identified in this study may manifest differently in countries with varying conditions.

Finally, the study was conducted prior to recent funding cuts affecting HIV programs in Indonesia and globally. Thus, emerging financial constraints may introduce new barriers that are not captured in the current data. These developments highlight the importance of future research to assess the impact of resource reductions on linkage to care, particularly in settings where community-based support structures are critical. Despite these limitations, the study provides contextually quite-rich data that can inform targeted interventions and policy efforts to improve linkage to care, particularly in decentralized health systems, such as Indonesia.

Conclusion

Linkage to HIV care is influenced by multi-level factors, suggesting that there are integrated strategies that address psychological readiness, social support, service availability and quality, stigma, and policy implementation. A unique aspect of the present study is the need to strengthen nurse-led and peer-supported patient navigation, expand primary healthcare-based HIV services, and scale up inclusive U=U messaging, all of which are crucial for improving early engagement in care. Finally, future research is needed to evaluate the evolving landscape of HIV service delivery in resource-constrained settings in Indonesia and to develop sustainable community-integrated interventions that support timely linkage to care.

Data Statement

The data that support the findings of this study are available on request from the first author, SM.

Ethical Considerations

This study was approved by the Health Research Ethics Committee of Universitas Padjadjaran (registration number: 769/UN6.KEP/EC/2024). All the participants provide written informed consent.

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Disclosure

The authors report no conflicts of interest in this work.

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