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Exploring HIV vulnerability among transgender people in Pakistan: a qualitative investigation

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ABSTRACT

Background. This study explored the lived experiences of transgender people in Pakistan, focusing on stigma, discrimination, family rejection, education, and unemployment and their contribution to HIV vulnerability. **Methods.** The qualitative investigation included 35 transgender individuals aged 19 to 49 years from diverse professions, recruited through purposive sampling via community-based contacts and referrals from transgender community leaders. Interviews were conducted in public venues (parks and restaurants) between 12 February and 5 March 2024, primarily in Urdu (33) and Punjabi (2). Thematic saturation was reached after the 30th interview, confirming adequacy of the sample. The study used a self-developed, open-ended, semi-structured questionnaire, informed by literature in similar cultural contexts and validated through expert review and pilot testing for clarity and cultural relevance. All participants identifying as transgender men and women were included after written consent. Participant demographics were described to contextualize the sample, and Braun and Clarke's thematic analysis approach was used to interpret qualitative results. **Results.** Primary risk factors for HIV transmission included unprotected receptive sex, inconsistent condom use, multiple sexual partners, and substance use. Economic hardships and limited employment opportunities were key drivers of engagement in sex work. Many participants reported experiencing discrimination in healthcare settings, which discouraged timely HIV testing and treatment-seeking behavior. **Conclusions.** Transgender people in Pakistan are involved in high-risk behaviors because of family rejection, homelessness, social marginalization, discrimination, and limited access to education and employment opportunities.

Keywords: discrimination, healthcare, high-risk behavior, HIV, Pakistan, thematic analysis, transgender, unsafe sex.

Introduction

Human immunodeficiency virus (HIV) presents a significant public health threat in Pakistan, necessitating an understanding of the transmission pathways in specific population groups.[1] HIV transmission in Pakistan is commonly observed in transgender people because of legal and policy challenges, societal stigma and discrimination, economic hardships, illiteracy, and unemployment.[2]

The 2016–2017 Integrated Biological and Behavioral Surveillance (IBBS) Round V in Pakistan reported an HIV prevalence of 7.5% among transgender women involved in sex work, which marks an increase from the 5.2% prevalence found in the 2011 IBBS data for the same population. This rise reflects an escalating trend in HIV transmission within transgender communities.[3,4] City-specific prevalence rates are even higher, with Larkana at 18.2%, Bannu at 15%, Karachi at 12.9%, and Lahore at 5.4%.[3] A study in Punjab reported a slightly lower HIV seroprevalence of 4.4% among transgender individuals, whereas a more recent study in Karachi (2019–2021) found that 58% of HIV-positive patients were transgender, indicating a high burden in localized health facilities.[5,6] Globally, a meta-analysis by Stutterheim in 2021 reported a high prevalence of 19.9% among transfeminine individuals, also reflecting increased transmission of HIV.[7]

According to the UNAIDS 2024 report, new HIV infections among transgender women increased by 3% from 2010 to 2022 because of stigma, discrimination, inadequate services, punitive laws, and violence.[8] Korenromp *et al.* conducted a Multisource Estimation and found that new HIV infections among transgender women rose from 0.72% in 2010 to 1.1% in 2022. The study attributed this increase to social stigma and discrimination in healthcare settings, which hindered access to prevention and treatment, leading to delayed diagnoses and increased HIV risk.[9]

HIV transmission among transgender individuals is primarily attributed to lack of awareness, unprotected sexual contact and needle sharing among intravenous drug users, inadequate training among healthcare providers, and stigma and discrimination in healthcare settings.[10–14] The literature supports the identification of these risk factors, starting with lack of knowledge being a significant contributor to HIV transmission. Studies have consistently shown that lower education levels and inadequate awareness about HIV prevention are directly linked to high-risk behaviors and elevated HIV prevalence among transgender people.[5,15,16] Second, unsafe sexual contact and needle sharing have been documented in multiple studies. These behaviors are associated with minimal condom usage, multiple sexual partners, involvement in commercial sex work, and needle sharing among drug users.[17–19] Stigma and discrimination in healthcare settings significantly exacerbate HIV transmission risks among transgender individuals in Pakistan. A 2025 report in Khyber Pakhtunkhwa reported that fear of harassment from healthcare providers led many transgender people living with HIV (PLHIV) to avoid testing and treatment, resulting in poor ART adherence and increased viral load, which heightens transmission risks.[20] Similarly, a 2022 study in Lahore found that 70% of transgender individuals received substandard care, with 81.8% facing neglect and 79% experiencing discrimination, leading many to avoid healthcare services, further increasing the risk of untreated STIs and HIV transmission.[21]

Although quantitative studies have provided valuable insights into HIV prevalence, incidence, and risk factors in transgender communities, they have primarily focused on numerical data, such as rates of unprotected sex, multiple partners, and substance use.[5,15,16,18,22–29] Although these studies help in understanding the scope of the problem, they often lack in-depth exploration of the lived experiences, social contexts, and personal challenges that contribute to HIV transmission. Factors such as family rejection, homelessness, marginalization, and discrimination in healthcare settings were highlighted, but their impacts on individual experiences and behaviors are often generalized rather than deeply understood.[16,21,22,27,28,30–33]

A qualitative approach was selected to complement existing quantitative data by providing a deeper understanding of the personal and social factors influencing HIV transmission among the transgender community. This study explores the perspectives of transgender individuals, specifically focusing on high-risk behaviors, economic vulnerability, stigma, discrimination, and family rejection. By capturing their lived experiences, fears, and challenges in accessing care, the study aims to uncover barriers to prevention and healthcare access, as well as the coping mechanisms employed by this marginalized group. These insights will inform targeted interventions and policy changes, addressing gaps in current approaches to HIV prevention and care for transgender individuals.

Methods

The qualitative study was conducted across nine towns in Lahore, Pakistan. Lahore was chosen because of its relatively more socially liberal environment and its large transgender population. The participants, aged 19–49 years, were selected to represent a broader spectrum of experiences and perspectives of young and middle-aged groups within the transgender community. A sample size of 35 participants was chosen, as it was deemed adequate to achieve thematic saturation. Thematic saturation was reached after the 30th interview; however, five additional interviews were conducted to confirm saturation and ensure representation across diverse professions and towns. This confirmed that the sample size was sufficient for capturing a comprehensive range of perspectives from self-identified transgender men and women.

The study included individuals who self-identified as transgender for more than a year, ensuring a stable and well-established understanding of their gender identity. This criterion was set to ensure that participants had sufficient time to explore and affirm their gender identity, leading to more reliable and consistent insights into their experiences.

The participants included individuals from diverse professional backgrounds, such as beggars, shop owners, business people, dancers, sex workers, makeup artists, and those engaged in the traditional practice of blessing births. Blessing births refer to a cultural practice in South Asia, particularly in Pakistan, India, and Bangladesh, where transgender people (hijras) are invited or sometimes arrive directly to bless newborns. This practice involves performing prayers, singing, and dancing, which are believed to bring good fortune, health, and prosperity to the child and family.[27,34,35]

The study adhered to the Sex and Gender Equity in Research (SAGER) guidelines to ensure ethical, inclusive, and accurate reporting of gender identity within the transgender population.[36] All participants were asked to self-identify their gender identity as either transgender men or transgender women, and this information was recorded and respected throughout the data collection and analysis process. Although both transgender men and transgender women were included, the number of transgender men was comparatively small. As a result, subgroup analysis by gender identity was not conducted. The study maintained clear distinctions between

sex assigned at birth and self-identified gender, and all findings were interpreted with sensitivity to the unique gendered experiences of transgender individuals in the Pakistani context. This approach ensured respectful representation and supported a deeper understanding of the structural and social factors contributing to HIV vulnerability in this marginalized community.

This study was approved by the institutional review board of the University of Lahore, Gujrat Campus, under reference number REG/GRT/24/AHS-03. Participants provided written informed consent after detailed explanation and were assured of privacy and anonymity. They were informed that their responses would be used in the study for academic and publication purposes, and they were assured of complete privacy and anonymity.

An open-ended semi-structured questionnaire was developed with reference to previously published articles, including studies from Pakistan and Bangladesh because their cultural and regional similarity, and from China where similar research objectives and questions were applied, ensuring strong relevance to the present study.[37–39]

The questions were piloted with 5 transgender participants and 10 healthcare experts to ensure cultural appropriateness and relevance. On the basis of their feedback, minor wording changes were made to improve clarity and sensitivity, such as simplifying stigma-related terms and making sexual health questions less judgmental and more conversational.

The interview guide consisted of two sections. Section I included six demographic questions (age, sex assigned at birth, gender identity, monthly income, education, and profession). Section II comprised eight open-ended questions addressing stigma, discrimination, rejection, victimization, healthcare access, mental health, and high-risk behaviors. The full set of 14 questions is provided in Table 1 (English; Urdu/Punjabi in Supplement). Questions on sexual behavior, substance use, and survival (Q7–Q9) mapped to HIV transmission; rejection, discrimination, and victimization (Q10–Q12) to stigma and discrimination; and healthcare access and policy change (Q13–Q14) to prevention strategies and community support.

Participants were recruited through purposive sampling via community-based contacts and referrals from transgender community leaders, who were asked to include both well-known and less visible members to ensure diverse representation. This unusually high participation rate was possible because recruitment occurred through trusted community leaders who endorsed the study and reassured participants of its safety. No participants withdrew or dropped out during the study. All interviews were conducted by the authors, who approached the participants with sensitivity and respect as allies of the transgender community (Fig. 1).

The interviews were conducted between 12 February and 5 March 2024 over a 3-week period. Each interview lasted approximately 40–50 min. Interviews were conducted in Urdu (33 participants) and Punjabi (2 participants) on the basis of participants' preferences. All participants chose public spaces, such as parks or restaurants, where they felt safer than in private locations. To maintain privacy, interviews were held in quiet, secluded corners within these settings, to ensure participants were comfortable. No personal identifiers were included in recordings, and participants were reminded that they could skip any question or stop the interview at any time. After each interview, participants were debriefed and provided with information on available support services. They were also given information on nearby transgender-friendly clinics and HIV testing centers run by the Punjab AIDS Control Program (PACP), along with local non-governmental organizations offering peer and mental health support. Although transport reimbursement was not provided, refreshments were offered. Participants also received contact details for the research team for follow-up or withdrawal requests.

All the interviews were transcribed verbatim and then translated into English by bilingual researchers fluent in both languages. To ensure meaning was preserved, translations were cross-checked by a second independent translator. The translated versions were further verified by the co-authors of this manuscript based in Australia and the United Kingdom to ensure linguistic and contextual accuracy. Cultural accuracy was confirmed through back-translation by an independent bilingual researcher. The written and audio records were transcribed following Parker's (2005) method, which emphasizes

Table 1. Questionnaire.

Section I: demographic details	
1.	What is your age?
2.	What was your sex assigned at birth?
3.	What is your current gender identity, and for how many years have you identified as this gender?
4.	What is your monthly income in rupees?
5.	What is the highest level of education you have completed?
6.	What is your current profession or occupation?
Section II: interview questions	
7.	Can you share your experiences regarding your sexual behaviors and decision-making in intimate relationships?
8.	How has substance use if any, such as alcohol or drugs, influenced your health and life decisions?
9.	What factors have influenced your employment decisions, and how have you managed your living conditions and survival?
10.	How has family rejection or lack of acceptance from family/society affected your life choices, mental health, and overall well-being?
11.	How have experiences of violence, exploitation, including forced sex, or victimization impacted your mental health and behaviors?
12.	Can you describe your experiences with discrimination or feeling judged, particularly in healthcare settings?
13.	Can you describe the barriers you face when trying to access healthcare, and share any specific challenges or issues you have experienced?
14.	What changes or initiatives do you think are needed to improve awareness and healthcare access for the transgender community?

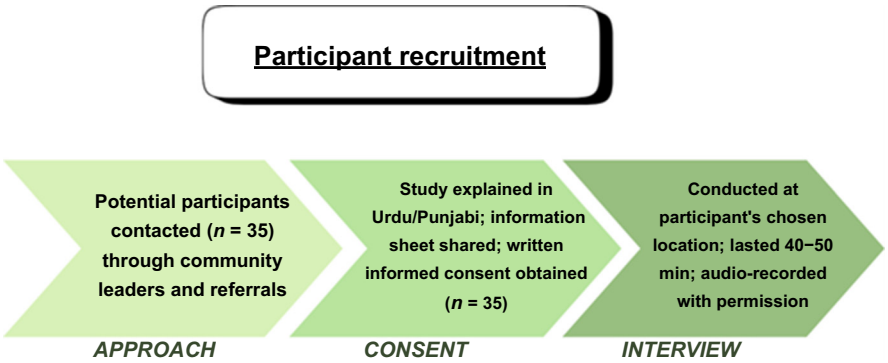

Fig. 1. Flow of participant recruitment, consent, and interviews.

narrative accuracy and reflexivity. Each transcript was reviewed multiple times and read aloud to ensure consistency.[40] In addition, transcripts were annotated to capture tone, pauses, and contextual nuances beyond the literal words, allowing both written texts and audio records to be faithfully represented while preserving participants' meanings and emotional expressions.

The interviewers were trained public health professionals (MPH) and allies of the transgender community, which facilitated rapport and empathetic engagement. Rapport was built through informal conversation and offering refreshments. Although their identities may have encouraged openness, they could also influence responses. To minimize bias, bracketing was practised during data collection and analysis, regular peer debriefings were held, and member-checks with a subset of participants confirmed that emerging themes accurately reflected their experiences. These steps enhanced the credibility and trustworthiness of the findings.

A thematic analysis approach was used, guided by Braun and Clarke's six-step framework: (1) familiarization with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report. All interview transcripts were read multiple times for familiarization. Initial codes were then developed inductively and grouped into potential themes. These themes were reviewed, defined, and refined through collaborative discussions among the research team to ensure they authentically captured the participants' narratives. NVivo (ver. 12) was employed to support systematic coding, thematic development, and data management throughout the analysis process.[41]

To guarantee participant confidentiality, all identifying information and pseudonyms were replaced with numerical codes (e.g. Participant 1, Participant 2), and transcripts were systematically numbered by page to maintain anonymity while ensuring organized data management for analysis.

To ensure coding reliability and analytical rigor, three researchers independently coded a subset of transcripts and resolved discrepancies through discussion. Although previous steps indicated saturation after the 30th interview, this was reaffirmed through continued review of the final transcripts, which revealed no emergence of additional codes. Codes, derived inductively, were grouped into subthemes and broader themes through iterative discussion. These themes were refined on the basis of their relevance to the research questions and were supported by illustrative participant quotes to strengthen the analytical narrative. An audit trail of coding decisions and memos was maintained in NVivo, whereas member-checking with five participants and triangulation with existing literature further enhanced trustworthiness.

Results

The narratives of 35 transgender participants were thematically analyzed, revealing rich and complex insights that were categorized into three overarching themes and accompanying subthemes. Demographic data were collected solely to contextualize the sample; no statistical analysis was performed as this was a purely qualitative study. The demographic details are available in Table 2. Table 2 shows the age, gender assigned at birth and gender identification, socioeconomic status, education and current profession of transgender individuals. The socioeconomic status was categorized on the basis of monthly income: Lower Class (15,000–25,000 PKR), Lower Middle Class (26,000–35,000 PKR), Middle Class (36,000–45,000 PKR), Upper Middle Class (46,000–55,000 PKR), and Upper Class (above 55,000 PKR).

The raw data were analyzed using inductive thematic analysis, with themes and subthemes gathered directly from the qualitative data mentioned in Table 3.

Main theme 1: HIV transmission

Subtheme 1.1: high-risk behaviors

The high-risk behaviors are actions or practices related to engaging in unprotected sexual practices, such as practising receptive anal intercourse without a condom and with multiple

Table 2. Demographic details of the participants ($n = 35$).

Participant No.	Age	Natal gender	Gender identity	Socioeconomic status	Education	Profession
1	36	Male	Transgender Woman	Lower Class	Illiterate	Beggar
2	45	Male	Transgender Woman	Lower Class	Secondary	Blessing birth
3	36	Male	Transgender Woman	Middle	Higher Secondary	Dancer
4	19	Male	Transgender Woman	Middle	Higher Secondary	Sex worker
5	28	Male	Transgender Woman	Middle	Higher Secondary	Sex worker
6	19	Male	Transgender Woman	Lower Middle	Secondary	Sex worker
7	32	Male	Transgender Woman	Middle	Higher Secondary	Sex worker
8	41	Male	Transgender Woman	Lower Class	Illiterate	Sex worker
9	19	Male	Transgender Woman	Middle	Higher Secondary	Sex worker
10	31	Female	Transgender man	Middle	Masters	Artist/Cosmetic business
11	20	Male	Transgender Woman	Lower Class	Illiterate	Beggar
12	28	Male	Transgender Woman	Lower Class	Illiterate	Blessing birth
13	23	Male	Transgender Woman	Lower Middle	Secondary	Blessing birth
14	25	Male	Transgender Woman	Lower Class	Illiterate	Blessing birth
15	21	Male	Transgender Woman	Lower Class	Illiterate	Blessing birth
16	24	Male	Transgender Woman	Lower Class	Illiterate	Beggar
17	25	Male	Transgender Woman	Middle	Bachelors	Make-up artist
18	23	Male	Transgender Woman	Middle	Bachelors	Make-up artist
19	38	Male	Transgender Woman	Middle	Higher Secondary	Make-up artist
20	24	Female	Transgender man	Upper Middle Class	Masters	Shop Owner/Business
21	27	Male	Transgender Woman	Lower Middle	Higher Secondary	Dancer
22	22	Male	Transgender Woman	Lower Middle	Secondary	Dancer
23	23	Male	Transgender Woman	Lower Middle	Secondary	Dancer
24	21	Male	Transgender Woman	Lower Middle	Secondary	Dancer
25	22	Male	Transgender Woman	Lower Middle	Secondary	Sex worker
26	35	Male	Transgender Woman	Lower Middle	Secondary	Sex worker
27	22	Male	Transgender Woman	Lower Class	Illiterate	Sex worker
28	26	Male	Transgender Woman	Lower Class	Higher Secondary	Make-up artist
29	25	Male	Transgender Woman	Lower Class	Illiterate	Make-up artist
30	27	Male	Transgender Woman	Lower Class	Secondary	Dancer
31	38	Male	Transgender Woman	Lower Class	Illiterate	Beggar
32	29	Male	Transgender Woman	Lower Class	Secondary	Sex worker
33	40	Male	Transgender Woman	Lower Class	Illiterate	Beggar
34	44	Male	Transgender Woman	Lower Class	Illiterate	Beggar
35	33	Male	Transgender Woman	Lower Class	Illiterate	Beggar

partners. Such high-risk behaviors were frequently reported by transgender participants.

> I have experienced forced sex by men many times, especially when they are drunk. (Participant No. 23, 23 years old, Dancer)

Similar findings were also observed in India and the US, where transgender people involved in sex work reported violence, drug use, and a lack of condom negotiation power, directly increasing their HIV vulnerability.[42]

The participant's response reflected mistreatment and exploitation, highlighting the reality of forced sex and violence. Such experiences not only cause emotional trauma but also lead to significant mental health issues. The literature also shows that transgender women who reported prior abuse, including forced sex, experienced significantly higher levels of depression, anxiety, and other psychological distress.[43]

Table 3. Themes and subthemes.

	Themes	Subthemes
I	HIV transmission	High-risk behaviors
		Economic vulnerability and sex survival
II	Stigma and discrimination	Perception and experiences
		Family rejection, homelessness, and marginalization
III	Prevention strategies and community upport	Barriers and limited healthcare access
		Policy changes and community initiatives

Similarly, experiences of sexual violence, including forced sex, were strongly correlated with severe psychological distress, such as depression, anxiety, self-harm, and suicide attempts.[44]

> I don't force my clients to use condoms; some offer more money for unprotected sex. No, I don't inquire about the health status of clients. (Participant No. 4, 19 years old, Sex worker)

Another study directly supported this response by showing how unfair treatment and discrimination can lead transgender people to practise unsafe sex that increases their chances of getting HIV.[45] The participant's response reveals an inability to negotiate condom use, combined with prioritizing financial incentives over safety and failing to inquire about clients' health status.

> I do drugs, and I like sex with multiple partners. (Participant No. 17, 25 years old, Makeup artist)

> To overcome mental health issues, I ran away from home, got involved with drug users, and started practicing IV injections. (Participant No. 12, 28 years old, Blessing birth)

The first response shows a preference for multiple sexual partners alongside drug use, and the second response also goes on to show how failure to address mental health issues may make people leave home, associate with drug users, and embrace such behaviors as IV drug use.

Subtheme 1.2: economic vulnerability and sex survival

Economic hardship, family rejection, and the lack of alternative employment options often force transgender individuals into sex work. The narratives reflect how a lack of education and job training drives people toward begging or sex work.

The respondents expressed the complex interplay between economic hardships and engagement in sex work. The respondents delve into the precarious circumstances that lead them to turn to sex work as a means of survival, not having any other opportunities.

> I found no other option but sex selling for survival. (Participant No. 31, 38 years old, Beggar)

A study on transgender people involved in sex work in Larkana, Pakistan, shows how poverty, family rejection, and lack of education force transgender individuals into sex work. With limited employment options, sex work becomes a means of survival, increasing their exposure to HIV through unsafe practices.[28] The participant's response reflects the dire socioeconomic conditions that force people to engage in sex work as a form of survival.

> The lack of educational training, bullying, societal harassment, and demand for sex ended me in begging on the streets. (Participant No. 34, 44 years old, Beggar)

Although another study conducted in a western context from Mexico also supports these findings, reporting that transgender women often engaged in survival sex due to homelessness, unemployment, and social exclusion.[46]

> If I had any professional training in fashion, I would have purpose in life rather than clapping and dancing on blessing births. (Participant No. 12, 28 years old, Blessing birth)

These two responses highlighted that lack of educational trainings not only limits opportunities but also increase vulnerability to health risks. Furthermore, the lack of education makes transgender people ignorant of their rights, and the availability of health services.

Main theme 2: stigma and discrimination

Subtheme 2.1: perception and experiences

Stigma and discrimination severely affect transgender individuals' access to healthcare. Fear of being judged and ridiculed often deters them from seeking medical help. In Pakistan, reports indicate that transgender individuals avoid hospitals because of past traumatic experiences and a lack of acceptance by healthcare providers.

Participants have reflected on how stigma and discrimination influence their healthcare-seeking experiences. The rejection and shame they felt from their families and society harmed their psyche and self-esteem. Participants discussed how uncomfortable and scared they are when they need to visit the doctor. This stigma has caused them to avoid seeking medical care because of fear of being judged, and mistreatment from healthcare professionals.

> I have a fear of discrimination and unacceptance in my mind. I visited a hospital once for typhoid fever, and one of the healthcare providers felt disgusted or hesitant to touch me. (Participant No. 33, 40 years old, Beggar)

Another study in Pakistan also found that transgender and gender non-conforming people often face discrimination in

hospitals. Participants in that study said they felt ignored, humiliated, or mistreated by doctors and nurses, which made them feel that healthcare settings were unsafe and unfriendly.[47]

> Going for healthcare is an extremely difficult task; I feel, they ridiculed me when they had to write my gender identity on the hospital form. (Participant No. 3, 36 years old, Dancer)

> We avoid going to the hospital to seek healthcare because we have a feeling of something being less. (Participant No. 2, 45 years old, Blessing birth)

A similar study conducted in Lahore, Pakistan, reported poor-quality care and feelings of shame or non-acceptance in the transgender community. There are some common barriers, such as lack of identity documents and societal stigma, that further discourage them from seeking help.[21]

> I don't feel comfortable visiting clinics for blood screenings because I think I am always judged. (Participant No. 5, 28 years old, Sex worker)

The responses represent a culture of fear, stigma, and discrimination that deters vulnerable individuals from accessing healthcare. The respondents always have a fear of being laughed at or being judged on the basis of gender identity. This highlights how negative perceptions and real-world experiences combine to influence healthcare-seeking behavior.

Subtheme 2.2: family rejection, homelessness, and marginalization

Many transgender individuals face early rejection from families, leading to homelessness and social isolation. This rejection not only affects their emotional well-being but also exposes them to increased risks of mental health disorders, substance use, and exploitation. The participants reported high rates of family rejection, with many being rejected or even abused because of their gender identity. This constant rejection and exclusion adds to their risk factors and limits their ability to seek help, increasing their risk of developing mental health issues and receiving inadequate healthcare.

> I have never seen and met my parents. I believe that they rejected me when I was born. (Participant No. 35, 33 years old, Beggar)

> I was rejected by my family when I was 11 years old and homelessness directed me to sex work. (Participant No. 9, 19 years old, Sex worker)

The responses we discussed earlier also highlight how transgender individuals engaged in sex work often face family rejection, which leads to early displacement from home and social isolation. Many participants reported being forced to leave their families at a young age because of their gender identity, pushing them into unstable housing and marginalized social roles.[42]

Family rejection experienced by respondents increased their vulnerability to exploitation and health risks because of lack of resources and support from family to protect themselves.

> I have terrible memories from my childhood, which has affected my mental health. I feel lonely and depressed. (Participant No. 15, 21 years old, Blessing birth)

This lack of support and acceptance contributes to their homelessness, exclusion from formal employment, and increased vulnerability to violence and exploitation – all core aspects of marginalization.

> My family does not accept me publicly and advises me not to wear feminine clothes while visiting them. I wish to commit suicide. (Participant No. 19, 38 years old, Makeup artist)

The responses of the participants reveal a severe mental health consequence of family rejection. One person describes how traumatic childhood memories cause loneliness and depression, whereas another considers suicide because of familial rejection and restrictions on gender identity. This lack of support exacerbates their emotional state, making them more vulnerable to bouts of mental illness.

Main theme 3: prevention strategies and community support

Subtheme 3.1: barriers and limited healthcare access

Participants reported limited awareness of existing HIV testing and sexual health services, highlighting the lack of specialized facilities and the perceived high cost of care as barriers. One participant stated:

> There are no healthcare set-ups available for our community specifically for HIV screening. (Participant No. 1, 36, Beggar)

> The healthcare cost is too much to afford for people like us. (Participant No. 1, 36 years old, Beggar)

Many participants reported a lack of accessible healthcare services for HIV screening and high healthcare costs as significant barriers. Despite the availability of national programs such as National AIDS Control Program (NACP) and Punjab AIDS Control Program (PACP), awareness and access remain limited, with stigma and negative experiences further hindering service utilization among transgender individuals.[47–49]

> The officials should provide free healthcare services for transgender people. (Participant No. 21, 27 years old, Dancer)

Highlighting the need expressed by Participant No. 21 (27 years old, Dancer) for free healthcare services for transgender people, programs such as the PACP offer free HIV testing, treatment, and counseling through dedicated centers, although stigma and lack of awareness continue to limit service utilization and access to care for transgender individuals.[48]

> The staff should be trained to understand our bodies and their needs. (Participant No. 7, 32 years old, Sex worker)

The above two responses from different participants indicate that specialized training for healthcare staff and the provision of free healthcare services should be prioritized among transgender people. Training staff to understand transgender people's unique needs will result in more inclusive and respectful care, whereas providing free services will remove financial barriers among these marginalized communities.

Subtheme 3.2: policy changes and community initiatives

Participants advocated for structural changes including health staff training, provision of free or subsidized care, targeted awareness campaigns, and community-based HIV education. The participants emphasized the importance of providing training to healthcare staff on how to deal with transgender patients. Furthermore, a strong demand for healthcare allowances or insurance was mentioned to help reduce the cost of HIV screening. Additionally, teaching transgender youth about HIV and STI prevention is viewed as long-term community awareness and empowerment.

> I came to know that transgender people have a high rate of diseases, including HIV/AIDS, so awareness is lacking and needed. (Participant No. 22, 22 years old, Dancer)

The respondent recognizes that transgender people are more likely to contract diseases such as HIV/AIDS and acknowledges that lack of awareness has caused high rates of HIV transmission among transgender people. This underscores their struggles and the need for a better understanding of the health challenges within their community. Community mobilization and peer-led interventions have shown promise in improving knowledge, reducing risk behaviors, and enhancing access to services.

> I personally think awareness among the public should be maintained at school levels especially transgender youth. (Participant No. 6, 18 years old, Sex worker)

The respondent in the current study emphasized the significance of implementing initiatives aimed at educating transgender youth, emphasizing the need to raise awareness and understanding within this marginalized community. Implementing such workshops and training programs in Pakistan can significantly improve the quality and inclusivity of healthcare services for transgender individuals.

> The surveillance should reach and target places where the transgender community lives. (Participant No. 18, 23 years old, Makeup artist)

The respondent suggested that governmental and non-governmental healthcare organizations should take more active steps to reach out to people directly at their doorsteps. There should targeted home-based healthcare services available for HIV and STI screening for transgender people.

Discussion

The qualitative interviews with transgender people revealed their experiences and difficulties, which highlighted the mechanics of HIV transmission. The lived experiences shared by the participants provided insightful information on high-risk behaviors, financial susceptibility, stigma and prejudice in healthcare and rejection in family, and obstacles to seeking healthcare. The current study explored these important issues and their solutions in these qualitative interviews, giving researchers a thorough grasp of the difficulties transgender people confront in the context of HIV transmission. The relative uniformity in responses may reflect the shared systemic barriers faced by participants rather than a lack of diversity in experiences.

Participants in theme I reported experiences with forced sex, unsafe sexual practices for financial incentives, substance use, and intravenous drug use. These behaviors not only increase the risk of contracting HIV but also demonstrate a lack of education and resources to promote safer practices. A previous study by Sinha *et al.* explained that transgender people in India are denied access to the necessities of a respectable and dignified life, implying discrimination, and are frequently excluded from the necessities of life.[50] Another study by Hoxmeier *et al.* highlighted the common victimization of nonconsensual sexual contact, emotional abuse, and sexual assault among transgender people.[51] Lenning *et al.* also supported the fact that economic hardship limits access to resources and perpetuates cycles of poverty, which further increases the risk of disease transmission and economic marginalization in this community.[52] The existing literature has also highlighted risky behaviors among marginalized populations, indicating that targeted interventions are urgently needed.

Participants in theme II reported experiencing stigma, discrimination, and family rejection or even abuse because of their gender identity. Stigma, discrimination, and a lack of family support increase the risk of HIV transmission and limit access to adequate healthcare. A previous study by Yadegarfard *et al.* found that transgender adolescents experience higher

levels of family rejection, social isolation, and loneliness when compared with cisgender people.[53] These factors are considered to be strong predictors of depression, suicidal thoughts, and increased sexual risk behaviors. Similarly, Robinson *et al.* demonstrated an understanding of the variables, such as sexuality and family rejection, influencing homelessness and lack of accessibility in healthcare resources.[54] The current study also emphasizes the unfavorable circumstances that can force transgender people into dangerous situations, increasing the risk of HIV transmission. Another study conducted by Ryan *et al.* named family rejection as a predictor of poor health in LGBT adults.[55] Javed *et al.* in Pakistan supported the current finding that transgender people, particularly sex workers, face significant stigma and discrimination, which contributes to their increased vulnerability to STIs including HIV.[5]

Participants in theme III identified a lack of specialized healthcare facilities and high medical costs as key barriers to accessing care. Many reported not seeking healthcare because they were unaware of free HIV testing and sexual health services. Although national programs such as the NACP and PACP provide free HIV testing, treatment, and counseling, our findings and prior research indicate that transgender individuals often remain unaware of these services or avoid them because of stigma and negative healthcare experiences.[48,49] Despite program availability, perceived accessibility remains limited in practice. This lack of awareness, combined with perceived high healthcare costs, creates significant barriers for marginalized communities in accessing essential HIV services. A similar study also reported that many transgender people in Pakistan remain unaware of free HIV testing programs and experience negative interactions with healthcare staff, further discouraging care-seeking.[47] The PACP offers free HIV testing, treatment, and counseling through 25 treatment centers, 36 satellite ART/Voluntary Counseling and Confidential Testing centers, and a dedicated transgender clinic at Fountain House. Despite over 52,000 transgender people and male sex workers being registered, stigma and limited awareness continue to hinder service utilization and highlight the need for targeted interventions.[48]

Similarly, a Pakistani study by Manzoor *et al.* highlighted that high medical costs, combined with limited knowledge of available services, significantly restrict transgender populations' access to quality healthcare.[21] Respondents also emphasized the importance of training healthcare providers to address the specific needs of the transgender community; thus, increasing access to care is also supported by the findings of Spicer's study emphasizing the importance of understanding the healthcare issues of the transgender community.[56] This is consistent with evidence from Western contexts, such as the TEACHH (Transgender Education for Affirmative and Competent HIV and Healthcare) program in Canada, which improved provider competence in HIV and transgender health.[57] Similarly, a study in New York City demonstrated that interactive transgender-competency workshops reduced transphobic attitudes, increased provider comfort, and encouraged gender-affirming practices.[58] Although these initiatives reflect Western cultural settings, similar training programs adapted to the Pakistani context could address many of the challenges identified in this study.

The findings underscore the urgent need for inclusive policies by both national and international policymakers to address issues of rejection, victimization, marginalization, and discrimination as a foundation first. Second, the provision of equal educational and employment opportunities should be developed to alleviate the economic hardships that are pushing individuals into sex work and begging for survival. Lastly, awareness and educational campaigns should be implemented for both transgender people and healthcare providers on a unified platform to improve knowledge of free testing and counseling facilities, challenge misconceptions, and reduce discrimination within Pakistan's healthcare system. These efforts could be modeled after Pakistan's tuberculosis/HIV community screening programs for transgender women and male sex workers (MSWs), which have successfully engaged marginalized communities. By adapting such programs for educational settings, a more inclusive and informed approach can be created, improving access to essential healthcare information and services for transgender individuals.[59]

This study has several limitations. As a qualitative study using purposive sampling, the findings are not generalizable to all transgender individuals in Pakistan. The reliance on self-reported data may introduce recall bias or social desirability bias. Additionally, although efforts were made to preserve meaning during translation from Urdu/Punjabi to English, some nuances may have been lost. The presence of a researcher or ally interviewer may have also influenced participant responses. Furthermore, recruitment through community networks and referrals may have biased the sample toward more socially connected transgender individuals, potentially underrepresenting those who are more isolated. Lastly, although interviews were conducted in public venues for safety reasons, the limited privacy may have influenced the depth of disclosure on sensitive topics.

Conclusion

In conclusion, this study revealed how a combination of stigma, discrimination, family rejection, lack of education, and unemployment increases the likelihood of HIV transmission. Participants were frequently engaged in high-risk sexual behaviors such as unprotected anal intercourse, sex with multiple partners, and intravenous drug use, often as a result of being forced, in emotional distress, or unable to ask their partners to use condoms. Family rejection emerged as a root cause of homelessness, emotional distress, and social isolation, leading to declining mental health and greater exposure to exploitation. It also disrupted access to education and skill development, resulting in economic

hardship that pushed many into sex work or begging. Similarly, stigma and discrimination within healthcare settings where participants reported being judged, ridiculed, and mistreated discouraged them from seeking medical attention. This avoidance was further compounded by unawareness of available free HIV testing and treatment services and the burden of high treatment costs, which collectively limited their access to essential healthcare. The findings call for practical interventions such as training healthcare professionals in gender-sensitive care, establishing transgender-inclusive clinics, and integrating HIV prevention education into community outreach. Government and non-governmental organizations should collaborate with transgender-led organizations to co-develop culturally appropriate services.

Supplementary material

Supplementary material is available online.

References

1 Masoudnia E. Public perceptions about HIV/AIDS and discriminatory attitudes toward people living with acquired immunodeficiency syndrome in Iran. *SAHARA J* 2015; 12(1): 116–122. doi:10.1080/17290376.2015.1123644

2 Fiorilli O, Ruocco A. Psychosocial issues in transgender health and barriers to healthcare. *Ital J Gender-Specific Med* 2019; 5(3): 123–130.

3 NACP. Integrated Biological and Behavioral Surveillance (IBBS) round V, 2016–17. NACP; 2017.

4 NACP. HIV Second Generation Surveillance in Pakistan: National report round IV. NACP; 2011.

5 Javed H, Bano A, Fatima W, Khan R, Akhtar A. Sexually transmitted infections and associated risk factors among the transgender population of Pakistan. *BMC Infect Dis* 2023; 23(1): 618. doi:10.1186/s12879-023-08591-4

6 Hussain A, Rahim A, Rajput F. The quality of life of HIV positive transgender and homosexual population in Karachi, Pakistan. *Pak J Med Sci* 2023; 39(4): 1202–1207. doi:10.12669/pjms.39.4.6445

7 Stutterheim SE, Van Dijk M, Wang H, Jonas KJ. The worldwide burden of HIV in transgender individuals: an updated systematic review and meta-analysis. *PLoS ONE* 2021; 16(12): e0260063. doi:10.1371/journal.pone.0260063

8 UNAIDS. New HIV infections data among key populations: proportions in 2010 and 2022. UNAIDS; 2024.

9 Korenromp EL, Sabin K, Stover J, Brown T, Johnson LF, Martin-Hughes R, *et al.* New HIV infections among key populations and their partners in 2010 and 2022, by world region: a multisources estimation. *J Acquir Immune Defic Syndr* 2024; 95(1S): e34–e45. doi:10.1097/QAI.0000000000003340

10 Shaw GM, Hunter E. HIV transmission. *Cold Spring Harb Perspect Med* 2012; 2(11): a006965. doi:10.1101/cshperspect.a006965

11 Garofalo R, Kuhns LM, Reisner SL, Mimiaga MJ. Behavioral interventions to prevent HIV transmission and acquisition for transgender women: a critical review. *J Acquir Immune Defic Syndr* 2016; 72(Suppl 3): S220–S225. doi:10.1097/QAI.0000000000001084

12 Jessani A, Berry-Moreau T, Parmar R, Athanasakos A, Prodger JL, Mujugira A. Healthcare access and barriers to utilization among transgender and gender diverse people in Africa: a systematic review. *BMC Glob Public Health* 2024; 2(1): 44. doi:10.1186/s44263-024-00073-2

13 Raza HA, Raja MHR, Khakwani MM, Jamil B. Pakistan's HIV high-risk populations: critical appraisal of failure to curtail spread beyond key populations. *IJID Reg* 2024; 11: 100364. doi:10.1016/j.ijregi.2024.100364

14 UNDP. Community voices – an HIV gender assessment in Pakistan. UNDP; 2023.

15 Khan AA, Rehan N, Qayyum K, Khan A. Correlates and prevalence of HIV and sexually transmitted infections among Hijras (male transgenders) in Pakistan. *Int J STD AIDS* 2008; 19(12): 817–820. doi:10.1258/ijsa.2008.008135

16 John A, Rana MS, Hanif A, Faridi TA, Noor S, Zahid S, *et al.* Knowledge, attitudes and practices of male transgenders in transmission of human immunodeficiency virus in Lahore, Pakistan. *Pak BioMed J* 2021; 4(1): 1–5. doi:10.54393/pbmj.v4i1.84

17 Ejaz M, Ekström AM, Ahmed A, Haroon A, Ali D, Ali TS, *et al.* Human papillomavirus associated prevention: knowledge, attitudes, and perceived risks among men who have sex with men and transgender women in Pakistan: a qualitative study. *BMC Public Health* 2022; 22(1): 378. doi:10.1186/s12889-022-12775-z

18 Sohail Z, Khan EA, Zaheer R, Fatima K. Frequency and risk factors associated with unprotected sex among transgenders having sex with men in Pakistan: problem behavior theory approach. *HIV & AIDS Review* 2022; 21(4): 296–300. doi:10.5114/hivar.2022.119531

19 Ali U, Samo RN, Riaz U, Ullah A, Shahswar Ali M, Ali SA, *et al.* Factors, practices and health needs of men who have sex with men, transgender and female sex workers engaged in sexualized drug use in Pakistan. *AIDS care* 2025; 37(10): 1–17. doi:10.1080/09540121.2025.2545302

20 Khan W, Gul S. Understanding the impact of HIV stigma on transgender persons living with HIV in Khyber Pakhtunkhwa. Blue Veins; 2025.

21 Manzoor I, Khan ZH, Tariq R, Shahzad R. Health problems & barriers to healthcare services for the transgender community in Lahore, Pakistan. *Pak J Med Sci* 2022; 38(1): 138–144. doi:10.12669/pjms.38.1.4375

22 Hawkes S, Collumbien M, Platt L, Lalji N, Rizvi N, Andreasen A, *et al.* HIV and other sexually transmitted infections among men, transgenders and women selling sex in two cities in Pakistan: a cross-sectional prevalence survey. *Sex Trans Infect* 2009; 85(Suppl 2): ii8–ii16. doi:10.1136/sti.2008.033910

23 Hussain S. An exploration of social exclusion and risky sexual behaviors amongst transgender women in Karachi, Pakistan. 2016. Available at https://etd.library.emory.edu/concern/etds/7d278t580?locale=en

24 Zeb MA, Shah AWA, Inayat F, Ullah A, Khan AA, Mir A. Sexually transmitted diseases and associated risk factors among transgenders in Peshawar. *J Islamabad Med Dental Coll* 2022; 11(4): 241–246. doi:10.35787/jimdc.v11i4.794

25 Shah HBU, Rashid F, Atif I, Hydrie MZ, Fawad MWB, Muzaffar HZ, *et al.* Challenges faced by marginalized communities such as transgenders in Pakistan. *Pan Afr Med J* 2018; 30(1): 96. doi:10.11604/pamj.2018.30.96.12818

26 Collumbien M, Chow J, Qureshi AA, Rabbani A, Hawkes S. Multiple risks among male and transgender sex workers in Pakistan. *J LGBT Health Res* 2008; 4(2–3): 71–79. doi:10.1080/15574090902913651

27 John A, Faridi TA. Evaluation of awareness and preventive measures among Transgender regarding sexually transmitted diseases. *LGULS* 2022; 6(01): 83–94. doi:10.54692/lgujls.2022.0601202

28 Altaf A, Zahidie A, Agha A. Comparing risk factors of HIV among hijra sex workers in Larkana and other cities of Pakistan: an an analytical cross sectional study. *BMC Public Health* 2012; 12(1): 279. doi:10.1186/1471-2458-12-279

29 Akhtar H, Badshah Y, Akhtar S, Kanwal N, Akhtar MN, Zaidi NUSS, *et al.* Prevalence of human immunodeficiency virus infection among transgender men in Rawalpindi (Pakistan). *Virol J* 2012; 9: 229. doi:10.1186/1743-422X-9-229

30 Altaf A, Pasha MSK, Majeed A, Ali W, Alaama AS, Jamil MS. Acceptability and feasibility of HIV self-testing among transgender people in Larkana, Pakistan: results from a pilot project. *Plos one* 2022; 17(7): e0270857. doi:10.1371/journal.pone.0270857

31 Awan S, Zia N, Sharif F, Shah SA, Jamil B. Types and risk factors of violence experienced by people living with HIV, Pakistan: a cross-sectional study. *East Mediterr Health J* 2020; 26(10): 1200–1209. doi:10.26719/emhj.20.046

32 Majid S, Rasool A, Rasool A, Zafar A. Social exclusion of transgender (hijra): a case study in Lahore (Pakistan). *Pak J Humanit Soc Sci* 2023; 11(2): 825–836. doi:10.52131/pjhss.2023.1102.0393

33 Ejaz M, Andersson S, Batool S, Ali T, Ekström AM. Anal human papillomavirus infection among men who have sex with men and transgender women living with and without HIV in Pakistan: findings from a cross-sectional study. *BMJ Open* 2021; 11(11): e052176. doi:10.1136/bmjopen-2021-052176
34 Mithani A, Burfat FM. Hijra-the sex in between. *JISR-MSSE* 2003; 1(1): 23–27.
35 Bockrath JT. Bhartia hijro ka dharma: the code of India's hijra. *Legal Stud F* 2003; 27: 83.
36 Heidari S, Babor TF, De Castro P, Tort S, Curno M. Sex and gender equity in research: rationale for the SAGER guidelines and recommended use. *Res Integr Peer Rev* 2016; 1(1): 2. doi:10.1186/s41073-016-0007-6
37 Hemel MMM, Reza MM, Pritom GSM, Sarwar G, Khan MNM, Khan S, *et al.* Full title-acceptability and feasibility of HIV self-testing (HIVST) among MSM and transgender women (*hijra*) in Bangladesh: a mixed-method study. *Heliyon* 2024; 10(10): e31477. doi:10.1016/j.heliyon.2024.e31477
38 Yan Z-H, Lin J, Xiao W-J, Lin K-M, McFarland W, Yan H-J, *et al.* Identity, stigma, and HIV risk among transgender women: a qualitative study in Jiangsu Province, China. *Infect Dis Poverty* 2019; 8(1): 94. doi:10.1186/s40249-019-0606-9
39 Bano S, Rahat R, Fischer F. Inconsistent condom use for prevention of HIV/STIs among street-based transgender sex workers in Lahore, Pakistan: socio-ecological analysis based on a qualitative study. *BMC Public Health* 2023; 23(1): 635. doi:10.1186/s12889-023-15550-w
40 Parker I. Narrative qualitative psychology, introducing radical research. Buckingham: Open University Press; 2005.
41 Clarke V, Braun V. Thematic analysis. In: Teo T. Encyclopedia of critical psychology. Springer; 2014. pp. 1947–1952.
42 Ganju D, Saggurti N. Stigma, violence and HIV vulnerability among transgender persons in sex work in Maharashtra, India. *Cult Health Sex* 2017; 19(8): 903–917. doi:10.1080/13691058.2016.1271141
43 Kussin-Shoptaw AL, Fletcher JB, Reback CJ. Physical and/or sexual abuse is associated with increased psychological and emotional distress among transgender women. *LGBT Health* 2017; 4(4): 268–274. doi:10.1089/lgbt.2016.0186
44 Fernández-Rouco N, Fernández-Fuertes AA, Carcedo RJ, Lázaro-Visa S, Gómez-Pérez E. Sexual violence history and welfare in transgender people. *J Interpers Violence* 2017; 32(19): 2885–2907. doi:10.1177/0886260516657911
45 Operario D, Nemoto T, Iwamoto M, Moore T. Unprotected sexual behavior and HIV risk in the context of primary partnerships for transgender women. *AIDS Behav* 2011; 15(3): 674–682. doi:10.1007/s10461-010-9795-8
46 Reed E, West BS, Frost E, Salazar M, Silverman JG, McIntosh CT, *et al.* Economic vulnerability, violence, and sexual risk factors for HIV among female sex workers in Tijuana, Mexico. *AIDS Behav* 2022; 26(10): 3210–3219. doi:10.1007/s10461-022-03670-0
47 Khan AR, Hussain K, Ghafoor A. Healthcare limitations for transgender and non-conforming (TGNC) persons in Pakistan. *HPHR* 2021; 43. doi:10.54111/0001/QQ2
48 Health and Population Department. Punjab AIDS Control Program. Available at https://pshealthpunjab.gov.pk/home/verticalprogramaids [cited 17 September 2025]
49 National Institutes of Health. National AIDS Control Programme. Available at https://www.nih.org.pk/public/national-aids-control-programme [cited 17 September 2025]
50 Sinha S. Social exclusion of transgender in the civil society: a case study of the status of the transgender in Kolkata. *IJHSS* 2016; 3(2): 178–190.
51 Hoxmeier JC. Sexual assault and relationship abuse victimization of transgender undergraduate students in a national sample. *Violence Gend* 2016; 3(4): 202–207. doi:10.1089/vio.2016.0008
52 Lenning E, Buist CL. Social, psychological and economic challenges faced by transgender individuals and their significant others: gaining insight through personal narratives. *Cult Health Sex* 2013; 15(1): 44–57. doi:10.1080/13691058.2012.738431
53 Yadegarfard M, Meinhold-Bergmann ME, Ho R. Family rejection, social isolation, and loneliness as predictors of negative health outcomes (depression, suicidal ideation, and sexual risk behavior) among Thai male-to-female transgender adolescents. *J LGBT Youth* 2014; 11(4): 347–363.
54 Robinson BA. Conditional families and lesbian, gay, bisexual, transgender, and queer youth homelessness: Gender, sexuality, family instability, and rejection. *J. Marriage Fam* 2018; 80(2): 383–396. doi:10.1111/jomf.12466
55 Ryan C, Huebner D, Diaz RM, Sanchez J. Family rejection as a predictor of negative health outcomes in white and Latino lesbian, gay, and bisexual young adults. *Pediatrics* 2009; 123(1): 346–352. doi:10.1542/peds.2007-3524
56 Spicer SS. Healthcare needs of the transgender homeless population. *J Gay Lesbian Ment Health* 2010; 14(4): 320–339. doi:10.1080/19359705.2010.505844
57 Lacombe-Duncan A, Logie CH, Persad Y, Leblanc G, Nation K, Kia H, *et al.* 'Transgender Education for Affirmative and Competent HIV and Healthcare (TEACHH)': protocol of community-based intervention development and a non-randomised multisite pilot study with pre–post test design in Canada. *BMJ Open* 2020; 10(7): e034144. doi:10.1136/bmjopen-2019-034144
58 Lelutiu-Weinberger C, Pollard-Thomas P, Pagano W, Levitt N, Lopez EI, Golub SA, *et al.* Implementation and evaluation of a pilot training to improve transgender competency among medical staff in an urban clinic. *Transgend Health* 2016; 1(1): 45–53. doi:10.1089/trgh.2015.0009
59 Ali Shah S, Qayyum S, Baig S, Iftikhar N, Bukhari RL, Ali W, *et al.* Results of community-based TB and HIV screening among transgender women and male sex workers in Pakistan. *PLOS Global Public Health* 2023; 3(1): e0000913. doi:10.1371/journal.pgph.0000913

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