Jaya *et al. BMC Women's Health* (2025) 25:245
https://doi.org/10.1186/s12905-025-03684-5

BMC Women's Health

RESEARCH Open Access

Young women's perspectives on a user-friendly self-sampling intervention to improve the diagnosis of sexually transmitted infections in underserved communities in KwaZulu-Natal, South Africa

Ziningi Nobuhle Jaya[1,2*], Witness Mapanga[1] and Tivani Phosa Mashamba-Thompson[1]

Abstract

Introduction Young women are disproportionately affected by sexually transmitted infections (STIs), especially in the KwaZulu-Natal province of South Africa thus the need for availability and accessibility to STI healthcare services. The main objective of this study was to collaborate with young women, using a nominal group technique (NGT), to identify barriers to existing STI healthcare services to ultimately identify strategies to inform attributes for a discrete choice experiment (DCE) towards developing a user-friendly self-sampling intervention for STI diagnosis in young women. The NGT was underpinned by the theoretical domains framework to identify and analyse factors that influence healthcare seeking behaviour.

Methods Eight young women, aged 18–24 years, were purposively selected from primary healthcare clinics in underserved communities. An NGT was conducted comprising the following steps: silent generation where individuals considered and recorded their responses to a question; round-robin sharing, recording and discussion of individual responses; followed by ranking of contributions. Thematic analysis was used to analyse data.

Results The following barriers to accessing STI healthcare services were identified: the clinics were too far from home; young women feared judgement by clinic staff; young women feared being told to inform their partners; clinic hours clashed with school hours and other personal commitments; and young women did not know enough about the signs and symptoms of STIs. The following strategies to improve access to STI healthcare services were suggested: campaigns to promote self-sampling; self-sampling kits should be available free of charge; an online system to assess symptoms and register to receive self-sampling kits via delivery or collection to accommodate people with disabilities.

Conclusion The strategies identified informed the attributes for the DCE which is aimed towards the development of a user-friendly self-sampling intervention for STI diagnosis in young women in KwaZulu-Natal.

Keywords Access, Diagnosis, Self-sampling, Sexually transmitted infections, Young women

*Correspondence:
Ziningi Nobuhle Jaya
u21848522@tuks.ac.za; buhledwayisa@yahoo.com
[1]School of Health Systems and Public Health, Faculty of Health Sciences, University of Pretoria, Pretoria, South Africa
[2]Department of Biomedical Science, Faculty of Natural Science, Mangosuthu University of Technology, Durban, Kwazulu-Natal, South Africa

Background

Sexually transmitted infections (STIs) remain a public health concern, globally [1, 2], with approximately 1 million infections acquired daily [3, 4]. Global statistics indicate that the highest burden of disease is concentrated in low-and-middle-income countries [3], and approximately 40% of the global STI burden is concentrated in sub-Saharan Africa [5, 6]. STIs are prevalent among young people [7], particularly among adolescent girls and young women residing in sub-Saharan Africa [8, 9]. In this region and globally, South Africa constitutes the highest number of STIs [10], and within South Africa, the KwaZulu-Natal province is more heavily burdened by STIs than the rest of the country [11]. Young women in this province are disproportionately affected by STIs [12, 13]. These findings are concerning when considering the long-term health complications of STIs which include infertility, increased risk of acquiring human immunodeficiency virus, and development of cervical cancer [14, 15]. This affects young women's rights to pleasurable and safe sexual experiences, and ultimately their sexual wellbeing.

The high prevalence of STIs among young women can be attributed to various factors, including urbanization and globalization. Globalization and urbanization have played a critical role in the spread of infectious diseases across the globe [16, 17], including a spread from rural to urban areas [16, 18]. These two phenomena are often related to the migration of persons in search for a better life, which may promote risky sexual behaviour [19–21]. Overpopulation, which is also a typical characteristic of globalization and urbanization, often leads to unequal and limited accessibility to basic healthcare services which negatively contributes to the spread of unknown and untreated infections [22, 23]. These phenomena are no different in South African metropolitan cities such as Durban, in eThekwini Metropolitan Municipality, the study location.

While globalization and urbanization may contribute to the spread of infectious diseases, STI healthcare management and treatment approaches play a crucial role in the fight against such infections. Syndromic management is the method commonly employed to diagnose, manage, and treat STIs across the globe [24, 25] as well as in South Africa [26, 27]. Using this approach, STIs are diagnosed based on verbal reports and physical examinations, and the most common causative agent is then treated [28, 29]. Although the syndromic approach is useful when infected individuals seek medical care, it is limited when screening for asymptomatic infections [25, 29, 30]. However, self-sampling can facilitate a paradigm shift from a syndromic clinic-based approach towards a more patient-centred approach which enables the diagnosis and treatment of specific STIs.

Self-sampling have not only proven it's potential for a more patient-centred approach, but is also proven acceptability and comfortability [31–34]. As such, to promote accurate STI diagnosis, self-sampling interventions should be tailored to user needs and preferences. There is limited research on the service provision of such interventions from a user perspective. Considering prevailing STIs among young people on the backdrop of existing clinic-based interventions, a different approach, involving the end-users, to investigate and implement innovative interventions such as self-sampling is warranted. Participatory research involves end-users in a collaborative process towards the development of new approaches [35, 36]. Young people have a crucial role in the fight for health equity on various health challenges [37], including STI healthcare. In line with participatory research, a nominal group technique (NGT) was conducted, to identify key self-sampling strategies in collaboration with young women from underserved communities in eThekwini Metropolitan district. The NGT outcomes would inform the design of a preference weighed discrete choice experiment (DCE), which is a quantitative research method used to solicit the preferences of individuals for a service provided [38], particularly the use of self-sampling interventions in this study. The study investigated comprehensive health services for diagnostics and treatment, defining underserved communities as those facing barriers to necessary healthcare due to factors including socioeconomic status and geographic location.

Methods

Young women aged 18–24 years were invited from underserved urban communities to participate in NGT which aimed to develop user-friendly, self-sampling intervention for STI diagnosis for women. The young women were from eThekwini District Municipality, in KwaZulu-Natal province, South Africa. Ultimately, one in-person NGT was conducted with eight young women.

Participant recruitment

Since the study aimed to investigate young women's perspectives on self-sampling, young women were purposively sampled from family planning and youth clinics in primary healthcare clinics. The study was explained to prospective research participants, and interested young women were screened for eligibility before participation. The following eligibility criteria were used to select participants:

Inclusion criteria

- Young women aged 18–24 years old.
- Young women residing in underserved urban communities.
- Sexually active young women.

Exclusion criteria

- Women who were deemed unsuitable due to their mental capacity to comprehend the study.

All eligible young women were then invited to the NGT which was held at a venue outside of the public health clinic on a day different from that of recruitment. Written informed consent was obtained before study participation. All identifiers were removed from the collected data before analysis.

Study design

The NGT is a qualitative exploratory research method that combines the concept of idea generation with problem solving in a group setting [38, 39]. This technique uses structured small group discussions comprising 8–12 participants [40]. It has been used to identify priorities in healthcare and research [41, 42], and to identify key attributes for a DCEs [43]. The NGT approach generates a wide range of ideas and obtains consensus by promoting participation from all individuals, including those who often withhold their ideas out of fear [38, 41]. As such, compared to traditional focus groups, there is a smaller risk of confident participants dominating the knowledge creation process. Ultimately, multiple responses to the research question are generated. Finally, all participants then rank all contributions according to their perceived priority. A NGT consists of three main stages, including silent generation during which participants consider a question and pen their responses; round-robin sharing, recording and discussing individual responses; followed by ranking of contributions. In this study a NGT was used to identify barriers to accessing current STI healthcare services, and to identify key attributes for a successful STI self-sampling intervention. The NGT was grounded in the Theoretical Domains Framework to identify and analyse the factors influencing healthcare-seeking behaviour [44]. This was done to inform the design of a preference weighed DCE, which is a quantitative research method used to solicit the preferences of individuals for a service provided [45]. The strategies developed in the current study will be utilised to collaboratively identify key attributes of a preferred user-friendly self-sampling intervention. This would be done by conducting a DCE at a later stage to understand young women's preferences for a self-sampling intervention to diagnose STIs among young women in underserved communities in KwaZulu-Natal, South Africa.

Procedure

A NGT was conducted on February 17, 2023, and data was collected on this day only. It was performed in four consecutive phases. Phase 1 focused on identifying barriers to accessing current STI management and treatment services. Phase 2 focused on determining the key features of an efficient delivery method for self-sampling STI diagnostics. Phase 3 focused on presenting ideas to all participants. Phase 4 comprised of ranking the contributions of all study participants.

The research questions for the NGT were as follows:

Question 1 What are the barriers that prevent or limit young women from accessing current STI healthcare management services?

Question 2 What would be the key strategies to deliver self-sampling for STI diagnosis among young women to mitigate the barriers to access?

The participants were divided into two groups with four participants each. A question was posed to the participants and time was allotted for silent generation for individual group members to formulate responses, thereafter each group wrote their responses on a flip chart. A representative from each group presented their contributions to the rest of the participants through round-robin sharing. The NGT was facilitated by the principal investigator and a researcher who was responsible for taking notes. The facilitators recorded group responses and a discussion of the responses was done where clarification was required. All transcribed responses were checked against what was written on the flip charts for accuracy during the NGT. After this, the participants ranked all contributions according to individual importance.

Data processing and analysis

Results were analysed separately for each question. After the participant groups submitted their response to the 2 NGT questions, a short break was taken. Two coders (ZNJ and an outsourced coder LM) independently coded the participant responses for each question, according to themes that emerged. This helped to limit researcher bias dues to preconceived ideas or other perspectives. Following this, participants ranked the identified themes based on their individual perspectives regarding importance. Each young woman assigned a ranking on a scale of 1–7, with "1" representing the lowest priority and "7" the highest priority, for both questions. For question one, the total importance score for each barrier was calculated by summing the individual rankings provided by participants. Similarly, for question two, the total importance

score for each key strategy was determined by adding the rankings from all participants. The barriers and strategies were then prioritized numerically based on these total scores. The highest total ranking indicated the highest priority, while the lowest total ranking represented the least priority. This approach was chosen for its simplicity and effectiveness in capturing collective prioritization while aligning with methods used in similar studies published in this field.

Confidentiality and anonymity in the NGT process

Given the structured group discussion nature of the NGT, participants contributed and ranked themes openly, which inherently precluded complete anonymity during the process. Participants were informed about this limitation before data collection began and given the option to decline participation if they had concerns about this aspect of the method. To mitigate potential discomfort, discussions were facilitated in a setting designed to promote mutual respect, trust, and inclusivity. Confidentiality was ensured by securely storing participant information, anonymizing data during analysis, and removing all identifiers from the final results.

Results

Sample description

Twelve young women were initially recruited and confirmed for attendance. However, on the day of the scheduled NGT, none of the young women came. Some reported unavailability on the morning of the scheduled NGT and some were unreachable on their cell phones that day. As such, the scheduled NGT workshop was cancelled. Consequently, this meant participant recruitment had to be redone and the NGT workshop rescheduled. On the second attempt, a total of fifteen young women confirmed their attendance and only eight women presented on the day of the workshop. However, since the minimum number of participants required for an effective NGT is eight, the session continued, and data collection was carried out as planned. Of the eight young women, four were from Umlazi township and the other four were from Cato Manor. The average participant age was 21 years. Seven participants were undergraduate students at local universities, and one participant was a postgraduate student.

Barriers to accessing STI healthcare services

Participants identified ten barriers to accessing current STI healthcare services. The barriers in order from least to most important as ranked by the participants were: clinics are far away from home which received an overall ranking score of 31; afraid of clinic staff judging and shouting at the partner received overall ranking score of 41; afraid of being asked to inform a partner received overall ranking score of 42; clinic hours clashed with school hours and other personal commitments received a overall ranking score of 42; participants did not know the symptoms of STIs received overall ranking score of 48; participants were unwilling to seek medical care because of denial received overall ranking score of 50; participants were afraid of being judged by nurses or clinic staff for being sexually active received overall ranking score of 52; participants mentioned that STI healthcare services were an invasion of their privacy received overall ranking score of 54; fear of exposure of condition to parents, family and friends received overall ranking score of 54; and the most important barrier was the stigma associated with STIs which was ranked 55 overall (Fig. 1).

Overview of barriers as presented by the participants was as follows:

Proximity to healthcare facility

Participants reported that their primary healthcare clinics (PHCs) were far from their place of residence and so it prevented them from seeking medical attention for STI related issues. One young woman commented: *"The clinic is too far and I need money for a taxi to get there so going is a challenge for me."* Another stated, *"I have to walk a long distance because the clinic is too far from my house."*

Sexual partner-related issues

In order to prevent the spread of infection, individuals who test positive for STIs are asked to inform their sexual partners and bring them to the clinic so they can also get treated. The young women expressed fear of informing their partners to get treatment. They also reported being afraid that if they test positive and inform their partners to get treatment, the clinic staff would shout at their partners. One young woman stated, *"I fear the nurses will shout at my partner when he comes for treatment at the clinic."* And another said, *"I have fear of my partner's judgement."*

Health facility working hours

A notable number of young women aged 18–24 years are still in school where they have to attend classes from Monday to Friday which is when their local PHCs are open. As such, they are often unable to get the medical attention they require because of this conflict. A young woman commented, *"Going to the clinic is a big challenge because it is during school hours and I cannot afford to miss classes."* Another also said, *"I don't have time, I have to be at school and work."*

Lack of knowledge on STIs and neglect

The young women indicated that they were unfamiliar with the signs and symptoms of an STI making it difficult for them to determine whether they need medical

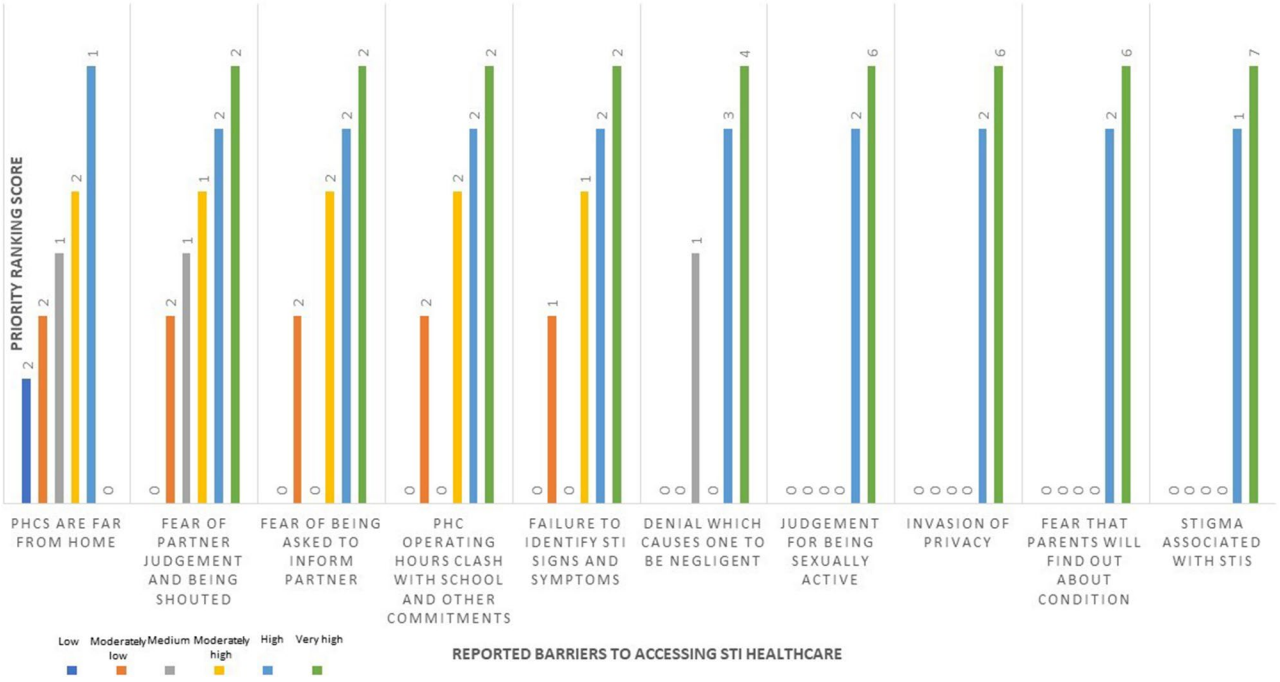

Fig. 1 Ranking of barriers to accessing healthcare for STIs as identified by young women in underserved urban settings

attention. A young woman remarked, *"The truth is that I am ignorant about the symptoms of infection."* Another stated, *"I fail to identify my symptoms."* Another also said, *"Not enough awareness of the symptoms because I don't have enough exposure."*

The young women also reported that even if they were able to identify their symptoms and associate them with an STI, they are not willing to accept being infected. By not accepting their infection status, they neglect seeking the medical care they require. One young woman said, *"Sometimes it's just denial. I never think it's something serious unless it's severe." Another commented, "It's hard to accept that I am infected."*

Health care providers attitude towards unmarried persons sexual behaviour

The young women expressed anxiety about disclosing their sexual activity due to concerns about potential judgment from healthcare workers. Specifically, they feared being judged for engaging in sexual activity at a young age. One commented, *"As young adults we are expected to be celibate or abstain from any sexual activity so going there to be treated for an STI you would get judged."*

Discomfort with STI assessment and diagnosis procedures

For some of the participants, seeking medical care for STIs is viewed as an invasion of privacy and so it deters them from doing so. A young women said, *"I am relatively a person who does not like being touched. It makes me uncomfortable knowing that I have to be naked during the genital examination. I fear being tested and checked by someone I do not know."* Another remarked, *"I see the genital examination as an invasion of my private parts."* Another young woman added, *"It's a very sensitive topic to speak about and introverts like myself have trouble talking about it."*

Fear of breach of confidentiality by health care providers

There was a fear of parents and other families discovering the engagement in sexual activity because the clinic staff knew their parents and relatives. As such, this prevents them from seeking medical attention for STI related illnesses. Among the young women, one remarked, *"Most nurses at my local clinic know my parents so they may disclose my condition."* And another one added, *"Most healthcare workers at my local clinic are either family members or know my mom, so it's very hard to seek that kind of help fearing they will disclose my status to her."*

Stigma associated with STIs

Stigma was ranked as a major barrier to accessing STI healthcare from local PHCs. A young woman stated, *"There is a stigma that accompanies STIs and even nurses judge you."* Another one added, *"Since they expect us to be celibate, they judge us when we have STIs because of the stigma."*

Table 1 Suggested strategies for self-sampling in young women

Suggested strategies	Ranking (1 = low priority; 7 = high priority)							Score	Percentage of votes	Ranking
	1	2	3	4	5	6	7	56	100%	
Run campaigns to promote self-sampling and normalise testing	-	-	-	-	-	-	8	56	100%	1
Self-sampling kits are to be made available free of charge at local pharmacies, mobile clinics, schools, and universities	-	-	-	-	-	1	7	55	98%	2
Online system for assessing symptoms and registering to receive or collect self-sampling kits to accommodate people with disabilities	-	-	-	-	-	2	6	54	96%	3
Designated kit collection and drop off location at local clinics and collection of results once available - avoid contact with clinic staff	-	-	-	-	2	2	4	50	89%	4
Results are to be communicated via email and or SMS	-	-	1	-	2	-	5	48	86%	5

Strategies for self-sampling interventions for STI diagnosis in young women

Young women identified six strategies that might promote the delivery of self-sampling interventions to diagnose STIs in similar populations. The suggested strategies are presented in descending order in Table 1 from high to low priority. The following strategies were suggested: run campaigns to promote self-sampling and handing out self-sampling kits at schools and universities; self-sampling kits should be available free of charge at local pharmacies, mobile clinics, schools, and universities; there should be an online system for assessing symptoms and registering for the delivery or collection of self-sampling kits; people with disabilities should be accommodated; there should be designated kit collection and drop off locations at local clinics so that young women do not have to interact with clinic staff; STI results should be communicated via email or SMS; and lastly regular campaigns should encourage and normalize testing of asymptomatic individuals. However, upon further analysis, the two strategies on campaigns to promote self-sampling and campaigns to promote and normalize STI testing were combined into one.

Since participants were separated into two groups for the NGT, feedback and responses to all the questions are presented as feedback from the entire group and not as individuals.

Sensitization on self-sampling and self-sampling kits and normalising STI testing

This strategy was ranked as the most important. The young women emphasized the usefulness of campaigns in different places to promote awareness about STIs. This strategy would also facilitate the distribution of self-sampling kits across the community.

> *Campaigns of STIs at schools and communities can hand out self-sampling kits with condoms. Have self-sampling kits distributed like how they would distribute condoms at clinics and schools? Universities should set out public roll-out days to distribute self-collection kits to all students.*

Due to the stigma associated with STIs, many young people are uncomfortable seeking medical attention for sexual reproductive health related challenges. The participants attributed this stigma to ignorance in the community about STIs. Participants suggested that regular campaigns should be run in communities to bring awareness and educate communities about STIs.

> *STI awareness and self-sampling for STI diagnosis to be normalized in the community. For it to be something that is done every month and not just because you experience symptoms.*

Availability and accessibility of self-sampling kits

Participant suggested that self-sampling kits should be given to individuals for free and in places easily accessible to young women. This is to inhibit discrimination and enable people from different backgrounds to have easy access to STI healthcare services.

> *"Use mobile clinics to hand out kits. Mobile clinics help maintain anonymity because they have no signage so there is no judgement so it would be more comfortable this way. Nobody can see and judge me. Free access to kits is provided from the nearest pharmacy. Make self-sample kits readily accessible like the first aid kits and condoms."*

Online system for symptom assessment and registration for self-sampling kit

One of the main barriers identified in this study was that young women were afraid of being judged by the clinic staff for being sexually active. They were also afraid that family members will find out if they have an STI because neighbours and relatives might work at the local clinics and might spread the news to parents. To mitigate this challenge, the participants suggested an online system for registering and requesting a self-sampling kit to be

delivered to a location of their choosing. Additionally, the online system should screen patients for signs and symptoms of infection. An online system would help to maintain confidentiality and would allow young women with disabilities to access the service privately.

> *Comment 1: "Using electronic methods to communicate would maintain confidentiality. It would also allow sample collection to be done at home and then sent to the clinic for testing."*
> *Comment 2: "Online system to assess symptoms and register to receive or collect self-sampling kits to preserve confidentiality and anonymity and also to accommodate special groups such as people with disabilities."*

Designated kit collection and drop off and result collection

Young women were afraid of being judged by the clinic staff for being sexually active and afraid of being spotted by their peers while accessing STI healthcare services. As such, they suggested having a designated collection and drop-off location for self-sampling kits.

> *Being able to access the self-sampling kit without having to speak to anyone or disclose how you contracted the STI.*

Results communicated via email or SMS

There was a concern about interacting with healthcare providers due to fear confidentiality being breached. Participants suggested that electronic communication of results would help to maintain confidentiality.

> *Receive results via SMS or email. Electronic communication of results would maintain confidentiality.*

Discussion

A NGT was conducted with young women to identify barriers that hinder access to existing STI healthcare services in underserved communities and identify key strategies for self-sampling interventions for STI diagnosis. The study findings provide valuable insights into the priorities and preferences of young women in the selected communities to access STI healthcare services. Furthermore, the identified strategies serve as the attributes of STI self-sampling interventions to inform the design of a DCE towards developing a user-friendly self-sampling intervention for the selected participant demographic.

All eight young women collectively identified and ranked ten distinct barriers to accessing STI healthcare services. The overall ranking score assigned to each barrier revealed a nuanced understanding of the challenges faced by young women when accessing these services. The most important barrier was the stigma associated with STIs, indicating its profound influence on healthcare seeking behaviours. This finding is in line with existing literature which highlights the significant impact of stigma on individuals' decisions to access STI healthcare services [46]. The stigma associated with STIs hinders their willingness to seek medical care and thus compromises their overall reproductive health [47, 48].

In terms of the other barriers, participants also reported being afraid of being asked to inform their partners, were afraid of judgmental clinic staff, and were not willing to seek medical attention because of denial of infection. Participants also had limited knowledge of the signs and symptoms of STIs, and clinic hours conflicted with school hours. The limited knowledge to identify the signs and symptoms of infection reflects the importance of education and awareness campaigns tailored to this population. These barriers are consistent with the barriers reported in previous studies. Avuvika et al. [49] reported that women did not seek medical care for STIs because they were asymptomatic, they were afraid of being judged, and they were afraid of testing positive. Similarly, another reported that young women could not identify symptoms of STIs and were afraid of being judged [50]. In the same study not having integrated STI healthcare services and lack of confidentiality were also highlighted as inhibitors to young women from accessing STI healthcare services [50].

The NGT results about the strategies highlighted various strategies that would promote the uptake of self-sampling interventions to diagnose STIs among young women and thus eliminate the outlined barriers. Strategy prioritization was determined through the ranking scores of individual participants based on their preferences. The idea of running campaigns to promote self-sampling and distribute self-sampling kits was ranked as the most important. This highlights the potential of integrating STI healthcare into routine healthcare education efforts which is in keeping with recommendations in previous research. Jayapalan [51] recommended STI health education as a strategy to improve healthcare seeking behaviour. In another study, health education was associated with improved healthcare seeking behaviour [52]. Overall, as a strategy, STI health education has the potential to improve healthcare seeking behaviour whilst simultaneously addressing cultural issues and practices that prevent adults from talking to young people about sexual intercourse and providing suitable guidance. The provision of self-sampling kits free of charge at local pharmacies, mobile clinics, schools, and universities was ranked as equally significant. This is an important strategy considering that the cost of accessing healthcare is a significant barrier to healthcare access [53, 54]. Although cost has been identified as a barrier to access, research

indicates that reducing or eliminating costs does not necessarily lead to increased utilization of healthcare services [53]. In contrast, a study by Lim et al. [55, 56] reported an improvement in healthcare seeking behaviour when access to healthcare was available for free.

Other strategies included participants emphasizing the importance of maintaining confidentiality by incorporating online systems that eliminate interaction with healthcare workers. Such a strategy is not surprising considering the previously highlighted barrier to accessing healthcare due to judgement by healthcare workers. In addition to maintaining confidentiality, participants highlighted that the use of such systems would also accommodate individuals with disabilities. The use of various electronic (eHealth) platforms including SMS, email, and online systems to access healthcare services is well documented and has proven useful in places where access to basic services is limited [57]. Several studies have further demonstrated the usefulness of eHealth solutions in improving access even for people living with disabilities [58]. Additionally, Nourimand et al. [59] reported eHealth services as having the potential to improve STI healthcare and prevent infection, especially in young people. As such, suggesting an e-Health approach to effectively deliver a user-friendly self-sampling intervention has the potential to improve access to and provision of STI healthcare services for young women.

While the study yielded valuable evidence in terms of barriers and attribute identification, participant recruitment was initially challenging with several participant no shows and cancellations. The challenge in recruiting more than one group of more than eight participants suggests substantial barriers in engaging young women for various reasons. Research on participatory research highlights scepticism towards researchers as a key deterrent for young people's lack of research participation [60]. This scepticism has been attributed to fear of judgement and concerns about confidentiality [60, 61]. Young people may not realise the significance of their participation and so do not see the need to participate [60]. Unequal power relationships between adult researchers and young people has also been highlighted as a hinderance to participation [61]. The drive towards participatory research is part of a broader shift towards collaborative research that includes the affected individuals to bridge the gap between knowledge creation and real-world actionable research. The participation challenges encountered in this study undermine such efforts and ultimately limits the voice of young people in research. As such, flexible recruitment strategies to build trust and safe spaces for young women to feel valued and be comfortable to participate are essential. Furthermore, this call for advocacy work to go beyond calls for participation and address the specific challenges which prevent young women from participating.

The study addressed a significant public health concern of STIs among young women in underserved urban communities. By exploring barriers to accessing STI healthcare services and identifying strategies for self-sampling interventions, the study aimed to contribute towards developing attributes towards the development of a user-friendly self-sampling intervention to diagnose STI in young women using a DCE.

Utilizing the NGT approach promotes active participation from all participants and ensures that multiple perspectives and ideas are considered. This enabled a comprehensive exploration of barriers and strategies, providing rich and in-depth findings. The strategies suggested by the participants, such as making self-sampling kits readily available, using online systems for registration and symptom screening, and running campaigns have the potential to inform the development and implementation of effective interventions tailored to the needs and preferences of young women in underserved urban communities.

Limitations

Due to participant recruitment and NGT scheduling challenges, the study ended up with a group of young women at a similar stage in their lives in that they were all undertaking higher education studies. One young woman was employed, particularly the postgraduate student, and possibly more mature than her peers who are still doing undergraduate studies. In some cases, young women of the same age may still be in high school and so the findings may not be representative of that population. Therefore, the results may not truly reflect the sentiments of young women of school going age. The participants were purposively sampled from family planning and youth clinics and did not consider women who may not be able to visit the clinics for various reasons. This may have introduced selection bias because women who do not visit these clinics or who face additional barriers to accessing healthcare services may have different perspectives and experiences concerning the questions posed during the NGT. In addition, study findings are based on self-reported responses from young women who participated in the NGT session. As such, it is possible that participants provided responses they perceived as expected rather than their true opinions.

Replicating the study in different settings and populations to validate the findings and assess the generalizability of the results is recommended. Investigating the feasibility, acceptability, and effectiveness of using technology-based interventions in increasing testing rates and reaching young women in underserved populations may prove useful. Evaluating the costs and benefits of the

suggested strategies to inform resource allocation decisions and guide policymaking is also recommended.

Conclusion

In this study, there was a collaboration with young women to identify barriers that prevent them from accessing STI healthcare services. The collaboration also identified strategies to deliver self-sampling interventions for STI diagnosis that may lead to the development of user-friendly STI healthcare services for young women in underserved communities. Designing a self-sampling intervention tailored to user preferences, and aimed at improving access to STI healthcare services, based on the identified strategies would be useful. A similar NGT was conducted among healthcare workers to answer the same questions in this NGT and develop attributes of a user-friendly self-sampling intervention for STI diagnosis in young women (submitted to a reputable journal). Therefore, as a next step, synthesising the findings from both NGTs to conduct a DCE to determine a user-friendly self-sampling intervention for STI diagnosis in young women in underserved urban communities in eThekwini District Municipality is suggested. Understanding user preferences for an intervention, through a DCE, holds a great promise for a more tailored approach to STI healthcare which would likely improve engagement and ultimately healthcare outcomes. While the NGT contributes towards the DCE, local healthcare providers and policymakers can use the current study findings as evidence to design accessible, non-stigmatising, and responsive interventions to improve young people's engagement with STI healthcare services.

Abbreviations

DCE	Discrete choice experiment
NGT	Nominal group technique
PI	Principal Investigator
STI	Sexually transmitted infection

Acknowledgements

I would like to acknowledge Miss Andisa Cele, Miss Lerato Moshoeshoe, Miss Fezeka Ludidi, and Mr Tafadzwa Jaya who assisted with the various participant recruitment and data collection processes. Dr. Cheryl Tosh (University of Pretoria) for editing support.

Author contributions

ZNJ wrote, revised, and edited the main text; WM and TPMT supervised, revised, and edited the manuscript.

Funding

Funding from the Department of Higher Education's new Generation of Academics Programme was received for data collection only.

Data availability

All data generated or analysed during this study are available in the manuscript. However, additional datasets used (including NGT conducted among healthcare workers) are available from the corresponding author upon reasonable request if required.

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Faculty of Health Sciences Research Ethics Committee of the University of Pretoria, reference number 136/2022. The study adhered to ethical standards and principles outlined in the Belmont Report.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Received: 11 September 2023 / Accepted: 21 March 2025
Published online: 22 May 2025

References

1. Organization WH. Sexually transmitted infections: implementing the global STI strategy. World Health Organization; 2017.
2. Zheng Y, Yu Q, Lin Y, Zhou Y, Lan L, Yang S, et al. Global burden and trends of sexually transmitted infections from 1990 to 2019: an observational trend study. Lancet Infect Dis. 2022;22(4):541–51.
3. Organization WH. WHO recommendations on self-care interventions: self-collection of samples for sexually transmitted infections (STIs). World Health Organization; 2020.
4. Organization WH, Data. and statistics. 2017. Ref Type: Data File. 2016.
5. WHO. Global health sector strategy on sexually transmitted infections 2016–2021: towards ending stis. World Health Organization Geneva, Switzerland; 2016.
6. Nodjikouambaye ZA, Compain F, Sadjoli D, Mboumba Bouassa R-S, Péré H, Veyer D et al. Accuracy of curable sexually transmitted infections and genital mycoplasmas screening by multiplex real-time PCR using a self-collected veil among adult women in Sub-Saharan Africa. Infectious diseases in obstetrics and gynecology. 2019;2019.
7. Francis SC, Mthiyane TN, Baisley K, Mchunu SL, Ferguson JB, Smit T, et al. Prevalence of sexually transmitted infections among young people in South Africa: A nested survey in a health and demographic surveillance site. PLoS Med. 2018;15(2):e1002512.
8. Francis SC, Mthiyane TN, Baisley K, Mchunu SL, Ferguson JB, Smit T et al. Prevalence of sexually transmitted infections among young people in South Africa: A nested survey in a health and demographic surveillance site. PLoS Med. 2018;15(2).
9. Yuh T, Micheni M, Selke S, Oluoch L, Kiptinness C, Magaret A, et al. Sexually transmitted infections among Kenyan adolescent girls and young women with limited sexual experience. Front Public Health. 2020;8:303.
10. Wand H, Reddy T, Dassaye R, Moodley J, Naidoo S, Ramjee G. Estimating prevalence and incidence of sexually transmitted infections among South African women: implications of combined impacts of risk factors. Int J STD AIDS. 2020;31(11):1093–101.
11. Naidoo S, Wand H, Abbai NS, Ramjee G. High prevalence and incidence of sexually transmitted infections among women living in Kwazulu-Natal, South Africa. AIDS Res Therapy. 2014;11:1–7.
12. Galappaththi-Arachchige HN, Zulu SG, Kleppa E, Lillebo K, Qvigstad E, Ndhlovu P, et al. Reproductive Health problems in rural South African young women: risk behaviour and risk factors. Reproductive Health. 2018;15:1–10.
13. Rosenberg M, Pettifor A, Miller WC, Thirumurthy H, Emch M, Afolabi SA, et al. Relationship between school dropout and teen pregnancy among rural South African young women. Int J Epidemiol. 2015;44(3):928–36.
14. Marcus U, Ort J, Grenz M, Eckstein K, Wirtz K, Wille A. Risk factors for HIV and STI diagnosis in a community-based HIV/STI testing and counselling site for men having sex with men (MSM) in a large German City in 2011–2012. BMC Infect Dis. 2015;15:1–8.
15. Abebe M, Eshetie S, Tessema B. Prevalence of sexually transmitted infections among cervical cancer suspected women at university of Gondar comprehensive specialized hospital, North-west Ethiopia. BMC Infect Dis. 2021;21(1):378.
16. Connolly C, Keil R, Ali SH. Extended urbanisation and the spatialities of infectious disease: demographic change, infrastructure and governance. Urban Stud. 2021;58(2):245–63.

17. Ahmed S, Dávila JD, Allen A, Haklay M, Tacoli C, Fèvre EM. Does urbanization make emergence of zoonosis more likely? Evidence, Myths and gaps. Environ Urbanization. 2019;31(2):443–60.
18. Yu D, Li X, Yu J, Shi X, Liu P, Tian P. Whether urbanization has intensified the spread of infectious diseases—Renewed question by the COVID-19 pandemic. Front Public Health. 2021:1642.
19. El-Bassel N, Gilbert L, Terlikbayeva A, West B, Bearman P, Wu E, et al. Implications of mobility patterns and HIV risks for HIV prevention among migrant market vendors in Kazakhstan. Am J Public Health. 2011;101(6):1075–81.
20. El-Bassel N, Gilbert L, Shaw SA, Mergenova G, Terlikbayeva A, Primbetova S, et al. The silk road health project: how mobility and migration status influence HIV risks among male migrant workers in central Asia. PLoS ONE. 2016;11(3):e0151278.
21. Wang Y, Lu R, Wu G, Lan R, Ou R, Zhang Y, et al. Changing trends of HIV, syphilis, and hepatitis C among male migrant workers in Chongqing, China: nine consecutive cross-sectional surveys, 2010–2018. Int J Environ Res Public Health. 2020;17(3):875.
22. Biswas PP. Skewed urbanisation and the contagion. Econ Polit Wkly. 2020;55(16):13–5.
23. Park J-E, Kibe P, Yeboah G, Oyebode O, Harris B, Ajisola MM, et al. Factors associated with accessing and utilisation of healthcare and provision of health services for residents of slums in low and middle-income countries: a scoping review of recent literature. BMJ Open. 2022;12(5):e055415.
24. Organization WH. Guidelines for the management of symptomatic sexually transmitted infections. World Health Organization; 2021.
25. Gupta V, Sharma VK. Syndromic management of sexually transmitted infections: A critical appraisal and the road ahead. Natl Med J India. 2019;32(3).
26. Peters RP, Klausner JD, De Vos L, Feucht UD, Medina-Marino A. Aetiological testing compared with syndromic management for sexually transmitted infections in HIV-infected pregnant women in South Africa: a non-randomised prospective cohort study. BJOG: Int J Obstet Gynecol. 2021;128(8):1335–42.
27. Africa DoHRoS. In: Health, Do, editors. Sexually transmitted infections management guidelines 2018. South Africa: Department of Health Republic South Africa; 2018.
28. Bosu WK. Syndromic management of sexually transmitted diseases: is it rational or scientific? Tropical Med Int Health. 1999;4(2):114–9.
29. Kopkin R, Grenvik JM, Chiweza C, Iwuh I, Wilkinson J. Syndromic treatment of stis in low-income countries is inadequate: current threats and future directions. Clin Obstet Gynecol. 2022;65(4):717–32.
30. Karim S, Bouchikhi C, Banani A, El Fatemi H, Souho T, Erraghay S, et al. Bacterial sexually transmitted infections and syndromic approach: a study conducted on women at Moroccan university hospital. Germs. 2021;11(4):544.
31. Leenen J, Hoebe C, Ackens R, Posthouwer D, van Loo I, Wolffs P. Pilot implementation of a home-care programme with chlamydia, gonorrhoea, hepatitis B, and syphilis self-sampling in HIV-positive men who have sex with men. BMC Infect Dis. 2020;20(1):1–9.
32. Camus C, Penaranda G, Khiri H, Camiade S, Molet L, Lebsir M, et al. Acceptability and efficacy of vaginal self-sampling for genital infection and bacterial vaginosis: A cross-sectional study. PLoS ONE. 2021;16(11):e0260021.
33. Sechi I, Cocuzza CE, Martinelli M, Muresu N, Castriciano S, Sotgiu G, et al. editors. Comparison of different self-sampling devices for molecular detection of human papillomavirus (HPV) and other sexually transmitted infections (STIs): a pilot study. Healthcare; 2022.
34. Flowers P, Vojt G, Pothoulaki M, Mapp F, Woode Owusu M, Estcourt C, et al. Understanding the barriers and facilitators to using self-sampling packs for sexually transmitted infections and blood-borne viruses: thematic analyses for intervention optimization. Br J Health Psychol. 2023;28(1):156–73.
35. Slocum N. Participatory methods toolkit: A practitioner's manual. King Baudouin Foundation Brussels, Belgium; 2003.
36. Hall J, Gaved M, Sargent J. Participatory research approaches in times of Covid-19: a narrative literature review. Int J Qualitative Methods. 2021;20:16094069211010087.
37. Ozer EJ, Abraczinskas M, Duarte C, Mathur R, Ballard PJ, Gibbs L, et al. Youth participatory approaches and health equity: conceptualization and integrative review. Am J Community Psychol. 2020;66(3–4):267–78.
38. Gallagher M, Hares T, Spencer J, Bradshaw C, Webb I. The nominal group technique: a research tool for general practice? Fam Pract. 1993;10(1):76–81.
39. Harvey N, Holmes CA. Nominal group technique: an effective method for obtaining group consensus. Int J Nurs Pract. 2012;18(2):188–94.
40. Murphy M, Black N, Lamping D, McKee C, Sanderson C, Askham J, et al. Consensus development methods, and their use in clinical guideline development. Health Technol Assess (Winchester Eng). 1998;2(3):i–88.
41. Manera K, Hanson CS, Gutman T, Tong A. Consensus methods: nominal group technique. 2019.
42. Hutchings A, Raine R. A systematic review of factors affecting the judgments produced by formal consensus development methods in health care. J Health Serv Res Policy. 2006;11(3):172–H9.
43. Hiligsmann M, van Durme C, Geusens P, Dellaert BG, Dirksen CD, van der Weijden T et al. Nominal group technique to select attributes for discrete choice experiments: an example for drug treatment choice in osteoporosis. Patient Prefer Adherence. 2013:133–9.
44. Atkins L, Francis J, Islam R, O'Connor D, Patey A, Ivers N, et al. A guide to using the theoretical domains framework of behaviour change to investigate implementation problems. Implement Sci. 2017;12(1):1–18.
45. Mangham LJ, Hanson K, McPake B. How to do (or not to do)… designing a discrete choice experiment for application in a low-income country. Health Policy Plann. 2009;24(2):151–8.
46. Scheinfeld E. Shame and stis: an exploration of emerging adult students' felt shame and stigma towards getting tested for and disclosing sexually transmitted infections. Int J Environ Res Public Health. 2021;18(13):7179.
47. Lee AS, Cody SL. The stigma of sexually transmitted infections. Nurs Clin. 2020;55(3):295–305.
48. Valentine JA, Delgado LF, Haderxhanaj LT, Hogben M. Improving sexual health in US rural communities: reducing the impact of stigma. AIDS Behav. 2022;26(Suppl 1):90–9.
49. Avuvika E, Masese LN, Wanje G, Wanyonyi J, Nyaribo B, Omoni G, et al. Barriers and facilitators of screening for sexually transmitted infections in adolescent girls and young women in Mombasa, Kenya: A qualitative study. PLoS ONE. 2017;12(1):e0169388.
50. Newton-Levinson A, Leichliter JS, Chandra-Mouli V. Sexually transmitted infection services for adolescents and youth in low-and middle-income countries: perceived and experienced barriers to accessing care. J Adolesc Health. 2016;59(1):7–16.
51. Jayapalan S. Determinants of delay in the health care seeking behaviour of STD patients. Clin Epidemiol Global Health. 2015;3:S69–74.
52. Puthuchira Ravi R, Athimulam Kulasekaran R. Care seeking behaviour and barriers to accessing services for sexual health problems among women in rural areas of Tamilnadu state in India. Journal of sexually transmitted diseases. 2014;2014.
53. George MS, Davey R, Mohanty I, Upton P. Everything is provided free, but they are still hesitant to access healthcare services: why does the Indigenous community in Attapadi, Kerala continue to experience poor access to healthcare? Int J Equity Health. 2020;19:1–15.
54. Domapielle MK, Akurugu CA, Mdee A. Horizontal inequity in healthcare delivery: A qualitative analysis of perceptions of locality and costs of access in the Jirapa municipality, North-western Ghana. J Int Dev. 2020;32(8):1308–23.
55. Lim MT, Lim YMF, Tong SF, Sivasampu S. Age, sex and primary care setting differences in patients' perception of community healthcare seeking behaviour towards health services. PLoS ONE. 2019;14(10):e0224260.
56. Andersen RM, Yu H, Wyn R, Davidson PL, Brown ER, Teleki S. Access to medical care for low-income persons: how do communities make a difference? Med Care Res Rev. 2002;59(4):384–411.
57. Organization WH. Global diffusion of eHealth: making universal health coverage achievable: report of the third global survey on eHealth. World Health Organization; 2017.
58. Jumreornvong O, Tabacof L, Cortes M, Tosto J, Kellner CP, Herrera JE, et al. Ensuring equity for people living with disabilities in the age of COVID-19. Disabil Soc. 2020;35(10):1682–7.
59. Nourimand F, Keramat A, Sayahi M, Bozorgian L, Hashempour Z. A systematic review of eHealth modes in preventing sexually transmitted infections. Indian J Sexually Transmitted Dis AIDS. 2022;43(2):117.
60. Jacquez F, Vaughn LM, Wagner E. Youth as partners, participants or passive recipients: A review of children and adolescents in community-based participatory research (CBPR). Am J Community Psychol. 2013;51:176–89.
61. Kim J. Youth involvement in participatory action research (PAR): challenges and barriers. Crit Social Work. 2016;17(1).

Publisher's note