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Determinants and acceptability of HIV self-testing among vulnerable groups in sub-Saharan Africa: A scoping review protocol

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ABSTRACT

Introduction HIV self-testing (HIVST) is where individuals collect their specimens and perform the HIV test privately. HIVST has improved testing uptake and coverage, especially among vulnerable groups of sub-Saharan Africa (SSA). Vulnerable groups include key populations such as men who have sex with men, sex workers, people who inject drugs, lesbian, gay, bisexual and transgender persons and young women. However, little is known about the determinants and acceptability of HIVST among these groups in SSA. Therefore, this scoping review aims to explore the determinants and acceptability of HIVST among vulnerable groups in SSA.

Methods A scoping review will be conducted using the Arksey and O'Malley framework and further refined by Levac framework. The review will follow a six-step approach: (1) identifying the research question, (2) identifying relevant studies, (3) study selection eligibility, (4) charting the data, (5) collating, summarising and reporting the results and (6) consultation. A comprehensive search strategy will be developed, and the following electronic databases will be searched: MEDLINE, Embase, Global Health and the Cochrane Library. Grey literature will also be searched, including conference abstracts and reports. Eligibility criteria will include studies conducted in SSA, published between 2010 and 2023, focusing on vulnerable groups and exploring the determinants and acceptability of HIVST. Two independent reviewers will screen identified studies' titles, abstracts and full texts. Any disagreements will be resolved through discussion or consultation with a third reviewer. Data extraction will be conducted using a standardised form.

Ethics and dissemination This review, not requiring ethical approval, aims to inform policy and intervention design to boost HIV testing adoption within vulnerable communities. We plan to disseminate our findings via a peer-reviewed journal, policy briefs, conference presentations and stakeholder engagement.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The study considers various vulnerable groups, such as people who inject drugs, sex workers, incarcerated individuals, women, children, adolescents and members of the lesbian, gay, bisexual and transgender community, allowing for a broader understanding of the factors influencing HIV self-testing (HIVST) acceptability across different communities.
⇒ By analysing the current body of evidence, the study will highlight areas where further research is needed, guiding future investigations to address these gaps.
⇒ By enhancing the understanding of the determinants and acceptability of HIVST among at-risk populations in sub-Saharan Africa (SSA), this study will contribute to the global effort to end the HIV epidemic.
⇒ The findings may not be generalisable to all vulnerable populations in SSA or other regions, as the review focuses on specific at-risk groups and contexts.
⇒ Language bias as the study will only include studies published in English.

INTRODUCTION

The spread of HIV infection remains a significant concern for public health, particularly in Africa, as evidenced by recent studies.[1–4] Sub-Saharan Africa (SSA) continues to be the region most heavily affected by HIV, with a majority (67%) of HIV-positive individuals residing there, according to a report by The Joint United Nations Programme on HIV/AIDS (UNAIDS),[5] and an estimated 25.7 million people living with HIV in the region in 2020.[6] Although there has been notable advancement in decreasing HIV infections in SSA, continuous illnesses and fatalities in the past 20 years have made attaining 'epidemic containment' difficult.[7]

Communities that experience disproportionately high rates of HIV/AIDS include people of colour, particularly those of African descent, men who have sex with men (MSM), injection drug users (IDUs), female sex workers (FSW), lesbian, gay, bisexual and transgender persons (LGBT), people with mental illness and those living in poverty.[8 9] The term 'vulnerable' is applied to groups whose living conditions make them susceptible to factors increasing their risk of

acquiring HIV.[10] Disturbingly, vulnerable populations continue to experience alarmingly high rates of new infections.[11]

Annually, roughly 1.8 million new HIV infections are recorded, with vulnerable populations representing close to 51% of all new adult HIV infections, according to UNAIDS.[12] Their sexual partners constitute 65% of HIV infections globally and 39% within SSA.[11] Within these groups, specific rates of HIV risk have been identified. For example, the risk of HIV is estimated to be 35 times higher among people who inject drugs, 34 times higher for LGBT, 26 times higher for SWs and 25 times higher among MSM.[11] To clarify, female SWs, who offer sexual services in exchange for payment,[13] are considered a critical population due to their elevated risk of contracting HIV.[14]

Gender inequality is also contributing to the rise in infections among women and girls.[15] Despite significant efforts to encourage HIV testing and knowledge of one's status, global testing uptake remains suboptimal.[16 17]

Access to HIV testing is vital to the overall HIV response, as it serves as a gateway to prevention, treatment and care services.[18 19] Unfortunately, in SSA, vulnerable groups encounter numerous obstacles when attempting to access conventional HIV testing services.[19–21] These obstacles include stigma, discrimination and restricted access to healthcare services, thereby hindering their ability to seek appropriate testing and care.[22]

HIV self-testing (HIVST) is an emerging strategy for increasing HIV testing uptake and has been shown to be highly acceptable and accurate.[23–25] HIVST is a process whereby an individual collects their own specimen, performs a rapid diagnostic test and interprets the results in private.[26]

In recent years, HIVST has garnered attention in the HIV testing industry as a final resort to achieve UNAIDS' 95-95-95 targets by 2030.[27] As a result of emerging recommendations that endorse its use in over 40 countries, discussions have progressed in support of integrating HIVST as a tactic for entry into the HIV care continuum,[28] especially for individuals who test positive in order to gain timely and effective treatment.[29]

HIVST plays a crucial role in the larger HIV testing and treatment continuum of care.[30] It primarily serves as a mechanism that allows individuals to become aware of their potential HIV status at their convenience.[31] On acquiring this knowledge, individuals with a positive HIVST result may be prompted to seek early medical intervention and psychological support.[32] These efforts can subsequently aid in delaying the onset of the disease, lowering the risk of HIV transmission (particularly in the early stages of infection), enabling the treatment of AIDS-related conditions, offering psychological distress management and promoting safer sexual behaviours.[33 34]

However, it is essential to note that the effectiveness of HIVST in facilitating these outcomes is contingent on individuals' agency and awareness to seek further testing and treatment following a positive HIVST result.[35] This underlines the importance of a robust health promotion strategy designed to empower people to seek additional care after self-testing. Thus, while HIVST does not directly facilitate early medical or psychological interventions, it forms a critical first step in the path towards these important interventions and ultimately, a comprehensive continuum of HIV care.[36]

Being aware of one's own HIV status as well as that of their sexual partner(s) can motivate individuals to engage in preventive measures at an individual level consistently.[37] Additionally, while it is true that individuals in private perform HIVST and there is no inherent requirement for individuals to report their test results to an authority, strategies can be implemented to encourage voluntary reporting of these results.[36] For instance, digital HIVST kits or interfaces offering online result reporting options could facilitate this process.[38] Alternatively, follow-up services linked to HIVST, such as counselling or confirmatory testing, also present opportunities for data collection.[30] These mechanisms, although reliant on individual willingness and therefore potentially subject to underreporting, could contribute to establishing a statistical benchmark for HIV incidence and prevalence in the target population.[39] However, it is crucial to acknowledge the potential limitations in data completeness and representativeness due to the private and voluntary nature of HIVST.[30 40] Notwithstanding these limitations, the data collected can be valuable for implementing regular surveillance and developing effective policies for controlling HIV/AIDS.[41]

While HIVST holds substantial promise for improving HIV testing rates among at-risk groups in SSA, it is worth noting that the access to HIVST remains limited for these populations. The potential of HIVST can only be fully realised when these barriers to access are adequately addressed and the benefits of such testing are made readily available to these vulnerable groups.[16 39 42 43] Furthermore, there is a scarcity of knowledge regarding the factors that affect its utilisation and acceptability within these groups in SSA. This scoping review protocol seeks to identify and examine the evidence related to the determinants and acceptability of HIVST among vulnerable populations in the region.

METHODS AND ANALYSIS

Protocol design

The methodology of this scoping review is derived from the approach developed by Arksey and O'Malley[42] and further refined by Levac *et al*.[43] The review will be conducted in six stages: (1) identifying the research question, (2) identifying relevant studies, (3) election of appropriate studies, (4) charting the data, (5) collating, summarising and reporting the results and (6) consultation. Our approach will also incorporates principles from the methodology developed by the Joanna Briggs Institute.[44] The protocol for this review is not registered with PROSPERO due to its current non-acceptance of scoping

Table 1 PICOT framework for determinants and acceptability of HIV self-testing among vulnerable groups in sub-Saharan Africa

Criteria	Determinants
P—Population	Vulnerable groups in sub-Saharan Africa
I—Intervention/Exposure	HIV self-testing
C—Comparison	No comparison group
O—Outcomes	Determinants of HIV self-testing Acceptability of HIV self-testing
T—Timeline	2010–2023

reviews. We adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P) in crafting the protocol[45] and the PRISMA Extension for Scoping Reviews (ScR) extension for scoping reviews will guide the presentation of our results.[46] In addition, we compared the protocol to previously published protocols while adhering to the same guidelines and incorporating *BMJ*'s additional expectations.

Stage 1: identifying the research question

We developed the research question through the technique suggested by Arksey and O'Malley. The main research question is 'What are the determinants and acceptability of HIVST among vulnerable groups in SSA?'.

The research subquestions are:

1. What are the determinants of HIVST among vulnerable groups in SSA?
2. What is the acceptability rate of HIVST among vulnerable groups in SSA?

This study will use the Population, Intervention/Exposure, Comparison, Outcomes and Timeline (PICOT) format (table 1) to align the study selection with the research question. In this study's applied PICOT framework, the population under consideration includes vulnerable groups in SSA. The intervention or exposure of interest is HIVST. There is no comparison group in this framework. The outcomes being assessed are the determinants of HIVST and the acceptability of HIVST among the population of interest. The timeline for this study spans from 2010 to 2023.

Stage 2: identifying relevant studies

We will comprehensively search electronic databases (PubMed, Embase, CINAHL and Web of Science) and grey literature sources (Google Scholar, OpenGrey and WHO Global Health Library) for studies published between 2010 and 2023. To locate potentially relevant grey literature, targeted searches will be conducted on dissertations/theses (using ProQuest dissertations and theses global) and conference abstracts (using EMBASE Conference Abstracts, Conference Proceedings Citation Index—Science and Social Science & Humanities).

The search terms will include a combination of keywords related to HIV, self-testing, vulnerable populations and SSA. We will also hand search the reference lists of included studies and review articles for additional studies, including websites such as the WHO.

Stage 3: study selection of eligible studies

To ensure a rigorous selection process, we will employ the PIOT framework (table 1) as a guide for the title and abstract screening. Additional eligibility criteria will be implemented to guarantee the selection of studies that are pertinent to our research question.

Inclusion criteria

Titles and abstracts will be screened for eligibility by two independent reviewers based on the following inclusion criteria:

1. The study was conducted in SSA.
2. The study focuses on vulnerable groups, such as MSM, FSW, IDU, members of the LGBT community, women, adolescents and young people.
3. The study reports on determinants and acceptability of HIVST.
4. The study was published in English between 2010 and 2023. Full-text articles will be assessed for eligibility by the same two reviewers. Any discrepancies will be resolved through discussion and consultation with a third reviewer.

Should any ambiguity arise during the first pass of screening, the full text will be obtained for additional clarification. Full-text articles will be further assessed for eligibility by the same two independent reviewers.

Exclusion criteria

Studies will be excluded if they have any of the following characteristics:

1. Studies that do not include participants or studies from SSA.
2. Studies focusing on non-vulnerable participants.
3. Studies where full-text articles could not be obtained.

The entire selection process will be executed using a reviewing platform, specifically, Rayyan, to facilitate collaboration between reviewers, maintain transparency and streamline the reviewing process. Any discrepancies between the two reviewers during the screening and selection stages will be resolved through discussion and, if needed, consultation with a third reviewer to reach an agreement.

Endnote X9 software will be used to manage all eligible articles, identify and eliminate any duplicates. It is anticipated that the selection of studies for the review will be completed within 8 weeks, and this process will adhere to the guidelines provided by the PRISMA-ScR checklist.[46] Additionally, the selection process will be mapped out using the PRISMA-P chart.[45]

Types of studies

We will consider experimental (randomised or non-randomised), observational studies (longitudinal, cross-sectional) and mixed-methods studies.

Table 2 Data charting form

1	Lead author
2	Year of publication
3	Title of study
4	Aim of study
5	Study design
6	Study setting/country
7	Study population
8	Age group
9	Sample size (number of participants)
10	Eligibility criteria
11	Intervention
12	Study outcome
13	Determinants of HIV self-testing
14	Acceptability rate of HIV self-testing
15	Factors associated with the acceptability of HIV self-testing
16	Recommendations from the study

Stage 4: charting the data

Building on our research objectives outlined in the PICOT framework (table 1), we will proceed to chart and analyse the data from the selected studies. Data will be extracted using a predefined charting form (table 2), which is designed to capture critical details about each study. It is important to note that while our PICOT framework guided the scope and focus of our study, this charting form now enables us to systematically organise and analyse the data, pinpointing key areas such as the study design, setting, population and key findings.

Stage 5: collating, summarising and reporting the results

The data will be analysed using appropriate methods for each type of study included in the scoping review. For qualitative studies, we will employ thematic content analysis to identify themes related to the determinants and acceptability of HIVST among vulnerable groups in SSA. This will be any notable quotes or narratives from participants that shed light on their experiences, perceptions or attitudes towards HIVST.

This process will involve the following steps:

Two trained members of our research team will independently code the data.

To enhance the reliability and validity of our analysis, the data will be independently dual coded. Any discrepancies in the coding process will be resolved through discussion and consensus, involving a third researcher if necessary.

Themes will be developed using an inductive approach, where themes will emerge organically from the data. This will allow for a rich, grounded understanding of the research topic.

While our approach is primarily inductive, the overarching PICOT framework (table 1) will provide a broad conceptual guide for our theme development.

To facilitate efficient and rigorous analysis, we will use NVivo, a software tool designed for managing, coding and analysing qualitative data. This tool will allow us to organise our data systematically and visualise relationships between themes, enhancing the depth and thoroughness of our analysis.

For quantitative studies, we will extract information as stated in the data charting form. Our goal is to answer the research question and achieve the study's overarching objective. We will present our findings in a comprehensive report, including a narrative summary alongside tables, graphs and diagrams to visually represent key results.

Stage 6: consultation

We will consult with stakeholders, including policymakers, researchers and representatives from vulnerable populations, to validate and interpret the findings of this scoping review.

While stakeholders have not directly contributed to the design of this review, we are in the process of establishing channels for their involvement in interpreting our findings. For instance, we plan to organise stakeholder meetings or workshops where we will present our findings and invite feedback and discussion. We also plan to conduct one-on-one consultations, either in-person or virtually, depending on the stakeholder's location and preference.

To access these stakeholders, we will leverage our existing networks and partnerships within the public health sphere. We will also seek assistance from local health departments and non-governmental organisations that work with the vulnerable populations under study.

We are committed to ensuring that the consultation process is inclusive and respectful, recognising the expertise that each stakeholder brings. We believe that their input will be invaluable in helping us identify research gaps, interpret our findings within the proper context and make relevant recommendations for future research.

Ethics and dissemination

As this is a scoping review of the existing literature, ethical approval is not required.

We acknowledge that ensuring our research reaches those it affects most is a critical step in conducting ethically sound and impactful research.

In addition to publication in a peer-reviewed scientific journal and presentations at academic conferences and webinars, we intend to take multiple approaches to ensure our research findings reach the target communities and stakeholders.

Our dissemination strategies will be customised based on the needs and characteristics of the target communities. For instance, we plan to organise community meetings or workshops in collaboration with local health departments and community-based organisations, where

we can present our findings in an understandable and accessible manner.

We also aim to visit clinics serving the vulnerable populations included in our study, to present our findings to healthcare workers who can, in turn, share this knowledge with those who use their services.

Furthermore, if we are able to access funding, we may be able to develop audience-friendly materials, such as infographics or briefs, that summarise our key findings and recommendations. These materials can be distributed both physically and virtually, via community networks or social media platforms, to reach a broad audience within the target communities.

We believe these strategies will help ensure our findings are disseminated widely and effectively among the people who could benefit most from them, promoting a better understanding of HIVST among vulnerable populations in SSA.

Patient and public involvement

It was not appropriate or possible to involve patients or the public in the design, or conduct, or reporting, or dissemination plans of our research. This is a scoping review protocol. No participants were interviewed.

DISCUSSION

HIVST represents an innovative HIV testing approach with the potential to markedly enhance HIV testing coverage and uptake in SSA,[31 47] which bears the greatest HIV burden worldwide.[6] Nonetheless, several challenges, such as inadequate awareness, accessibility and acceptability, have restricted its implementation among vulnerable populations in SSA.[39 48] Studies have revealed that HIV stigma, fear of HIV disclosure, scepticism about the accuracy of HIVST kits and worries about privacy and confidentiality are significant obstacles to the adoption of HIVST among vulnerable groups in SSA.[21 49 50] In contrast, studies have also shown that convenience, confidentiality and the ability to self-test at home are crucial factors that promote the uptake of HIVST among vulnerable populations.[51–53]

This scoping review aims to offer a comprehensive survey of the current status of HIVST among vulnerable groups in SSA. The review's objective is to provide insight into the acceptability and usage of HIVST among vulnerable populations, which will aid in developing evidence-based interventions that can enhance the control and management of the HIV epidemic among these groups. This review will be a crucial tool in guiding future research on HIVST, and its findings will serve as a foundation for effective interventions.

Given that SSA bears the highest global burden of HIV, understanding these determinants is paramount to designing and implementing effective, context-specific interventions. Furthermore, the focus on vulnerable groups will highlight disparities within HIV incidence and care, prioritising the most affected individuals who are often sidelined in mainstream healthcare systems. The protocol revolves around some central themes: accessibility, affordability, acceptability and the unique sociocultural and economic factors acting as determinants for HIVST. By exploring the acceptability of HIVST, it will present insights into how stigma, knowledge, perceived utility and trust in self-testing methods influence individuals' willingness to self-test. Additionally, it will serve as a crucial tool to identify research gaps and future directions for strengthening the HIV response.

In conclusion, this scoping review protocol aims to systematically examine the determinants and acceptability of HIVST among vulnerable groups in SSA. By identifying and synthesising the available evidence, this review will provide valuable insights into the factors that influence the use and acceptability of HIVST in these at-risk populations. The findings will be instrumental in informing policy-makers and public health practitioners in the development and implementation of targeted interventions to improve HIV testing uptake and coverage in the region. Furthermore, this review will identify research gaps and help guide future studies to address the barriers and facilitators of HIVST adoption among vulnerable communities in SSA, ultimately contributing to the global effort to end the HIV epidemic.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

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