Needle and syringe programs for reducing blood-borne diseases among people who inject drugs in sub-Saharan Africa: a scoping review protocol

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ABSTRACT

Objective: This review will identify, explore, and map the literature on the characteristics and implementation modalities of needle and syringe programs for reducing blood-borne diseases among people who inject drugs in sub-Saharan Africa compared with the recommended standards by the World Health Organization and AIDS Projects Management Group.

Introduction: Sub-Saharan Africa bears a disproportionate burden of infectious diseases and HIV/AIDS. Needle and syringe programs have been shown to be effective in preventing transmission of infections among those who inject drugs by providing them with sterile injection equipment. The programs may also serve as avenues for addressing other issues that affect this population.

Inclusion criteria: This review will consider published and unpublished studies on needle and syringe programs as a method of preventing blood-borne infections among people who inject drugs in sub-Saharan Africa. The review will consider quantitative, qualitative, and mixed methods study designs, as well as systematic reviews and text and opinion papers.

Methods: The electronic databases to be searched include MEDLINE, African Journals Online, CINAHL, the Cochrane Library, Embase, and TRoPHI. We will also search sources of unpublished studies and gray literature (conference abstracts, theses, etc). The search will be restricted to studies in English, with no date limit. Data extraction will be done by two independent reviewers, guided by an extraction tool developed by the reviewers. Key information, such as author, reference, and findings relevant to the review questions, will be obtained. The results will be presented as graphs, figures, and tables accompanied by a narrative summary.

Keywords: blood-borne; human immunodeficiency virus (HIV); needle and syringe programs; people who inject drugs; sub-Saharan Africa

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Introduction

People who inject drugs are at increased risk of contracting blood-borne infections, which include hepatitis B virus, hepatitis C virus, human immunodeficiency virus (HIV), soft tissue infection, sepsis, and endocarditis.[1] To administer substances by injection, a syringe drives the drug solution intravenously, subdermally (known to users as "skin-popping"), or intramuscularly.[2] Some of the drugs injected this way include heroin, cocaine, methamphetamine, ecstasy, ketamine, phencyclidine (PCP), and prescription drugs, such as Vicodin or Adderall.[3]

According to the 2019 United Nations' World Drug Report, 11 million people injected drugs in 2017. Of these, 1.4 million had HIV and a further 5.6 million had hepatitis C.[4] This trend is on the rise, with the World Health Organization (WHO) now reporting that approximately 13 million people inject drugs globally and 1.7 million of them have HIV.[5] Drug injection for recreational purposes is linked to approximately 10% of global HIV infections. The sub-Saharan region of Africa bears a disproportionate burden of the problem, with an

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estimated prevalence of HIV among people who inject drugs reaching 15.5% in East and Southern Africa.[5,6,7]

A key reason for the high rate of infectious diseases among people who inject drugs is the sharing of needles and syringes. In one study, those who injected drugs attributed this behavior to difficulty in obtaining sterile injection equipment.[8] Access is also curtailed by treatment modalities involving office visits, which instill fear of incarceration or discrimination.[7,9,10] Other reasons for sharing include the urge to inject a drug during a withdrawal and the belief that sharing can be done without risk among friends and lovers.[8] Infections acquired through injection may be transmitted to others by further sharing of injection paraphernalia or through sex.[7,8] Therefore, there is a need for clean and safe drug paraphernalia, as well as health education, to ensure safe injection and proper response to withdrawal episodes.[8,9] This can be achieved through needle and syringe programs (NSPs).

In response to the problem of transmission of blood-borne infections among people who inject drugs, the WHO and the AIDS Projects Management Group (APMG) prepared a guide titled "Guide to starting and managing needle and syringe programmes."[11] This guide is adopted in this scoping review because it outlines the principles that should guide NSPs. It includes pertinent aspects in the implementation of NSPs, which include coverage, location of NSPs, availability of treatment and social services, assessments for need, community mobilization, effective engagement of people who inject drugs in decision-making, prompt initiation, comprehensive range of services, range of products offered, target group, presence of community-based outreach services, education for the people who inject drugs about the risks they face, sustainable approaches, and the modes of service delivery.

Although abstinence from drug use is the most effective way of preventing drug-related harm, this approach is very difficult to achieve and maintain.[8] Harm-reduction strategies such as NSPs are effective in reducing infection transmission, both in low- and middle-income as well as transitional-economy countries.[12] Despite the proven benefits, NSPs may still be misinterpreted as a cause of increased infections. This has been observed in Vancouver, Canada, where an outbreak of HIV among people who inject drugs occurred in the mid-1990s.[13] The programs face resistance due to community-level concerns, legal constraints, and political opposition, which have resulted in their cessation in countries such as Bulgaria, the Philippines, and Laos.[14]

Early NSPs in the United States were terminated due to supposed contravention of drug laws, although they were later allowed in a number of states.[15] NSPs have been successfully implemented in Australia, New Zealand, the Czech Republic, Poland, Slovakia, and Hungary.[14,16] In sub-Saharan Africa, NSPs have been rolled out in Kenya, Mali, Mauritius, Mozambique, Senegal, South Africa, and Uganda.[14,17,18] An earlier study found that NSPs can be successful by redirecting their focus away from public order objectives. This can be done by setting apart the distribution and collection functions, offering the injection items without limits, decentralization, services diversity, and progress evaluation.[13]

The largest burden of infectious diseases and the HIV/AIDS epidemic is in low- and middle-income countries, which experience a paucity of information around the topic and a dearth of resources to address the related health threats.[10,12] Despite the proven benefits of programs offering harm-reduction services, such programs have been neglected, particularly by the public sector in sub-Saharan Africa where only a few countries have adopted harm-reduction programs.[10,18] Changes in the laws to allow legal acquisition and use of injection paraphernalia increases their use,[19] as was observed in Connecticut, in the United States. This highlights the importance of handling the structural factors that are external to people who inject drugs in order to achieve long-term and sustainable reduction in blood-borne infections.[20] Furthermore, successful mitigation requires the inclusion of people of all genders in the disease-prevention strategies.[19,21,22]

The proposed scoping review will identify, explore, and map literature on the characteristics and implementation modalities of NSPs rolled out in sub-Saharan Africa. We will compare the programs with the guide prepared by the WHO and APMG.[11] The guide outlines, in particular, how to implement successful NSPs; therefore, a comparison between the existing programs and the guide will illustrate the successes and shortcomings of the modalities applied so far in sub-Saharan Africa. It is anticipated that the results of the scoping review will inform governments and policymakers of injection drug use in sub-Saharan Africa and identify gaps for further

research. The results will also ensure that organizers of harm-reduction initiatives are aware of appropriate methods that should be used in NSPs.

A preliminary search of PROSPERO, MEDLINE, the Cochrane Database of Systematic Reviews, and *JBI Evidence Synthesis* was conducted and no current or in-progress scoping reviews or systematic reviews on the topic were identified.

Review questions

i) What are the characteristics and implementation modalities of NSPs for reducing blood-borne diseases among people who inject drugs in sub-Saharan Africa?
ii) How do NSPs in sub-Saharan Africa compare with the guidelines recommended by WHO and APMG?

Inclusion criteria

Participants

This review will consider studies that include people who inject drugs of all types in sub-Saharan Africa.

Concept

This review will consider studies that explore NSPs as a method of preventing blood-borne infections. Studies combining NSPs with other modalities will also be included, but those with other modalities not including NSPs will be excluded.

Context

This review will consider studies from countries in sub-Saharan Africa as determined by the World Bank categorization of countries.[23]

Types of sources

This review will consider quantitative, qualitative, and mixed methods study designs for inclusion. In addition, systematic reviews and text and opinion papers will be considered for inclusion.

Methods

The proposed scoping review will be conducted in accordance with the JBI methodology for scoping reviews.[24]

Search strategy

The search strategy will aim to locate both published and unpublished studies. An initial limited search of MEDLINE (PubMed) was done to identify articles on the topic. The text words contained in the titles and abstracts of relevant articles, and the index terms used to describe the articles, were used to develop a full search strategy for MEDLINE via PubMed (see Appendix I). The search strategy, including all identified keywords and index terms, will be adapted for each included information source. The reference lists of articles selected for full-text review will be screened for additional studies.

Articles will be restricted to the English language as that is the language the authors are fluent in. Articles published from database inception to the present will be included.

The databases to be searched include MEDLINE (PubMed), Embase (Ovid), African Journals Online, CINAHL (EBSCO), the Cochrane Library, and the Trials Register of Promoting Health Interventions (TRoPHI). Sources of unpublished studies (including reports, theses, conference proceedings, presentations, and government documents) and gray literature to be searched include Web of Science, WHO, United Nations High Commissioner for Refugees reports, Centers for Disease Control and Prevention reports, Grey Literature Report, National Library of Medicine, ProQuest Dissertations and Theses, Australasian Digital Theses Program, and the British Library.

Source of evidence selection

Following the search, all identified records will be collated and uploaded into EndNote v.20 (Clarivate Analytics, PA, USA) and duplicates removed. Following a pilot test, titles and abstracts will then be screened by two independent reviewers for assessment against the inclusion criteria for the review. Potentially relevant papers will be retrieved in full and their citation details imported into the JBI System for the Unified Management, Assessment and Review of Information (JBI SUMARI; JBI, Adelaide, Australia). The full text of selected citations will be assessed in detail against the inclusion criteria by two independent reviewers. Reasons for exclusion of full-text papers that do not meet the inclusion criteria will be recorded and reported in the scoping review. Any disagreements that arise between the reviewers at each stage of the selection process will be resolved through discussion or with a third reviewer. The results of the search will be reported in full in the final scoping review and presented in a Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram.[25]

Data extraction

Data will be extracted from papers included in the scoping review by two independent reviewers using a data extraction tool developed by the reviewers. The data extracted will include specific details about the participants, concept, context, study methods, and key findings relevant to the review questions. A draft extraction tool is provided in Appendix II. This tool captures the characteristics and the implementation modalities recommended in the WHO guide.[11] Any modifications to the tool will be reported in the scoping review. Any disagreements that arise between the reviewers will be resolved with a third reviewer. Authors of papers will be contacted to request missing or additional data, where required.

Data analysis and presentation

Relevant information on the characteristics and implementation modalities of NSPs in sub-Saharan Africa will be compared with the guide by WHO and APMG.[11] The guide outlines recommended implementation principles (eg, setting up and running) of NSPs. A comparison between existing programs and the guide will inform relevant stakeholders about the successes and shortcomings of the modalities for reducing blood-borne infections implemented in sub-Saharan Africa. Based on this guide, the following aspects will be adopted for this review.

Characteristics:

- coverage (the geographic area the NSPs serve);
- location of existing NSPs (proximity to the targeted communities of people who inject drugs);
- availability of treatment and social services;
- careful assessments for need (indicated need of NSPs);
- community mobilization and effective engagement of people who inject drugs in decision-making;
- quick start (started promptly in order to address the program before wider spread of infections);
- provision of comprehensive range of services, coordination, and flexibility;
- range of products offered by NSPs;
- target group (it is recommended that people who inject drugs and their sexual partners be included);
- presence of community-based outreach services for people who inject drugs;
- education for people who inject drugs on the risks they face and how to reduce these risks;
- sustainable approach to get support from other entities and nurturing staff for long-term gains.

Implementation modalities:

- fixed sites (one drop-in site and ability to offer additional services, such as health care and testing and counseling for HIV and hepatitis);
- mobile programs (mobile services are often easier for local residents to cope with and can overcome any opposition to a fixed site);
- outreach programs (easiest to start, but can be difficult to maintain);
- syringe vending machines (should be located in an area where injecting is known to occur and where drug injectors can access the machine without fear of police surveillance or other harassment);
- pharmacies (most are private, hence incentives are needed to persuade the pharmacists to support and participate);
- varied modes of service delivery.

Maps will be used to illustrate the location of programs while frequency tables will demonstrate the available services. A narrative report will be produced to summarize the extracted data. These results will be described in relation to the research question and in the context of the overall study purpose.

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Appendix I: Search strategy

MEDLINE (PubMed)

Search conducted on October 12, 2021, updated on February 4, 2022.

Search	Query	Records retrieved
#1	(("Africa South of the Sahara"[MeSH Terms]) OR "South Africa") OR ("South Sudan" OR "Namibia" OR "Kenya" OR "Eritrea" OR "Equatorial Guinea" OR "Guinea" OR "Zambia" OR "Uganda" OR "Tanzania" OR "Rwanda" OR "Nigeria" OR "Mozambique" OR "Mali" OR "Liberia" OR "Lesotho" OR "Cote d'Ivoire" OR "Guinea-Bissau" OR "Ghana" OR "Gabon" OR "Ethiopia" OR "Congo" OR "Chad" OR "Central African Republic" OR "Burundi" OR "Burkina Faso" OR "Africa, Southern" OR "Africa, Eastern" OR "Africa" OR "Benin")	626,053
#2	("Democratic Republic of the Congo" OR Djibouti OR "French Somaliland" OR Eritrea OR Ethiopia OR Gabon OR "Gabonese Republic" OR Gambia OR Ghana OR "Gold Coast" OR Guinea OR Lesotho OR Basutoland OR Liberia)	242,280
#3	(Madagascar OR "Malagasy Republic" OR Malawi OR Nyasaland OR Mali OR Mauritania OR Mauritius OR Mozambique OR Namibia OR Niger OR Nigeria)	114,237
#4	(Rwanda OR "Sao Tome" OR Seychelles OR Senegal OR "Sierra Leone" OR Somalia OR "South Africa" OR Sudan OR Swaziland OR Tanzania OR Togo OR "Togolese Republic" OR Uganda OR Zambia OR Zimbabwe OR Rhodesia)	245,588
#5	(("Needles"[Mesh] OR "Needle-Exchange Programs"[Mesh] OR "Needle Sharing"[Mesh] OR "needle" OR "exchange" OR NSP OR "harm reduction"[Title/Abstract] OR "needle exchange"[Title/Abstract] OR "syringe exchange"[Title/Abstract])	502,465
#6	("Drug Users"[Mesh] OR "Injectors" OR IDU OR "Drug injectors" OR "injecting drugs" OR "subcutaneous injection" OR "Intramuscular injection" OR "Intradermal" OR "injecting" OR "drug injection" OR "Intravenous injection"[Title/Abstract])	111,728
#7	(#1 OR #2 OR #3 OR #4)	673,611
#8	(#5 OR #6)	607,855
#9	(#7 AND #8)	13,264

Appendix II: Data extraction instrument

Author	
Year of publication	
Aims/purpose	
Sample size	
Study methods	
Data collection methods	
Outcome	Study findings relevant to study objectives
Characteristics	
Geographical location of data collection/country	
Coverage	
Availability of treatment and social services	
Careful assessments for need	
Community mobilization	
Time of start of program	
Provision of comprehensive range of services, coordination, and flexibility	
Range of products offered by needle and syringe programs	
Target group	
Presence of community-based outreach services for people who inject drugs	
Education for the people who inject drugs on the risks they face and how to reduce these risks	
Sustainability	
Modes of service delivery	
Comment	