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Access to HIV Healthcare Services by Farmworkers in sub-Saharan Africa (SSA): A Systematic Review Protocol

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Complete List of Authors:	Mlangeni, Nosimilo; Stellenbosch University Faculty of Medicine and Health Sciences, Global Health; National Institute for Occupational Health, Division of National Health Laboratory Services Adetokunboh, Olatunji; Stellenbosch University Faculty of Medicine and Health Sciences, Global Health; Stellenbosch University, DSI-NRF Centre of Excellence for Epidemiological Modelling and Analysis Lembani, Martina; University of the Western Cape Faculty of Community and Health Sciences, School of Public Health Malotle, Molebogeng; National Institute for Occupational Health, A Division of National Health Laboratory Services Nyasulu, P; Stellenbosch University Faculty of Medicine and Health Sciences, Global Health; University of the Witwatersrand Faculty of Health Sciences, School of Public Health
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Manuscripts

Access to HIV Healthcare Services by Farmworkers in sub-Saharan Africa (SSA): A Systematic Review Protocol

Author: N Mlangeni, Stellenbosch University, Division of Epidemiology and Biostatistics, Department of Global Health, Faculty of Medicine and Health Sciences, Cape Town, South Africa. milo.mlangeni@yahoo.com | 24966886@sun.ac.za

National Institute for Occupational Health, Division of National Health Laboratory Services, Johannesburg, South Africa

Co-Author: Olatunji Adetokunboh, Stellenbosch University, Division of Epidemiology and Biostatistics, Department of Global Health, Faculty of Medicine and Health Sciences, Cape Town, South Africa. Olatunji@sun.ac.za
DSI-NRF Centre of Excellence for Epidemiological Modelling and Analysis, Stellenbosch University, Cape Town, South Africa.

Co-Author: Martina Lembani, University of Western Cape, School of Public Health, Cape Town, South Africa. mlembani@uwc.ac.za

Co-Author: Molebogeng Malotle, National Institute for Occupational Health, Division of National Health Laboratory Services, Johannesburg, South Africa. molebogengm@nioh.ac.za

Co-Author: Peter Nyasulu, Stellenbosch University, Division of Epidemiology and Biostatistics, Department of Global Health, Faculty of Medicine and Health Sciences, Cape Town, South Africa. pnyasulu@sun.ac.za

University of the Witwatersrand, Division of Epidemiology and Biostatistics, School of Public Health, Faculty of Health Sciences, Johannesburg, South Africa

Correspondence: Department of Global Health, Stellenbosch University, Francie Van Zijl Dr, Parow, Cape Town, 7505, milo.mlangeni@yahoo.com

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ABSTRACT

Introduction

Sub-Saharan Africa (SSA) region harbours the highest burden of Human Immunodeficiency Virus (HIV) infections in the world. Agricultural work has been reported as one of the occupations with a high prevalence of HIV. Farmworkers generally have poor access to health services which prevents them from receiving proper HIV prevention and care. Furthermore, poor policies and policy implementation, and lack of workplace programs increases farm workers' vulnerability to HIV infection. Thus, the aim of this study is to conduct a systematic review to assess HIV prevention and treatment services and national policies governing access to healthcare services by farmworkers in SSA.

Methods and analysis

Our systematic review will include studies published from January 1990 to December 2021 within SSA countries. We will use a sensitive search strategy for electronic bibliographic databases and grey literature sources. The main outcomes to be reported will be HIV policy for farmworkers, availability of HIV prevention service(s), availability of treatment and support to farmworkers who are living with HIV, presence of referral structures for farmworkers through the health system and follow up services for farmworkers who are on antiretroviral therapy. We will synthesize the main characteristics of included studies and use summary measures to describe study characteristics. We will analyse the data using random-effects meta-analysis method for quantitative data. We will explore themes and relationships between included studies for qualitative data.

Ethics and dissemination

The study will use publicly available data and ethics exemption has been obtained from Human Research Ethics Committees, Faculty of Medicine & Health Sciences, Stellenbosch University. The results of this study will be disseminated through peer-reviewed journals, conference presentations, and seminars.

Keywords: Farmworkers, HIV prevention, Access to health services, HIV policy, HIV workplace services, migration and health.

Prospective Register of Systematic Reviews: CRD42021277528

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Strengths and limitations

- The study reduces the risk of duplication, gives transparency to the intended methods and processes that will be followed.
- The study reduces possible biases and allows for peer review.
- The review will be the first to explore and provide a comprehensive overview of existing HIV policies, services, and programs provided to the farmworker’s population in the SSA region.
- The limitation of this protocol is the scarcity of HIV prevention studies for farmworkers in SSA.
- Inadequate methodological quality on HIV prevention, treatment, and care studies for farmworkers is a possible limitation of this review.

INTRODUCTION

Human Immunodeficiency Virus (HIV) continues to be a global concern, with more than 37 million people infected by the end of 2020 (1). Though there has been a decline of new infections over the past two decades (2), HIV ranks among the top ten causes of death globally (3). Sub-Saharan Africa (SSA) region harbours the highest burden of HIV in the world with an estimated 70% of people living with HIV (4). South Africa has the highest HIV burden within Southern Africa region and globally. In 2015, the International Labour Organization (ILO) estimated that 26 million workers worldwide aged between 15 to 49 years were living with HIV, while 22.7% of the workforce in South Africa were people living with HIV (5). Despite the fact that there are no ongoing studies on measuring HIV burden per specific occupation in South Africa, previous studies conducted at different time points have highlighted that occupations with a high prevalence of HIV are healthcare workers 15.7% (6), truck drivers 26% (7), mine workers 24.6% (8), and farmworkers with 39% in 2010 (9). This highlights an important underlying fact that farmworkers carry the highest burden of HIV amongst the working population.

Farmworkers face various barriers in accessing HIV prevention and control services, including voluntary counselling and testing (VCT), condoms, and antiretroviral therapy (ART). They are a highly mobile population which increases their vulnerability to HIV (10), as migration is cited to be the strongest single predictor of HIV risk in SSA (11). Farmworkers generally have poor

access to health services (11) which prevents them from receiving proper HIV prevention, treatment, care, and support services. Agricultural and farming areas are normally situated in remote, hard-to-reach areas. These geographical and structural factors, combined with high mobility affects the farmworkers' ability to access health services. These factors highlighted above promulgate the overall health outcome of the farming population.

It is worth noting that other hindering factors that compound farmworkers' ability to access healthcare facilities include distance to nearest health facility, long working hours, and travel means to access health facilities (12). In addition, taking time off from farm work to attend to healthcare issues compromises their earning as such remains a non-priority need to avoid losing income (13). Furthermore poor and/or fragmented policies and policy implementation, as well as lack of workplace programs increases farmworkers' vulnerability to HIV infection (11). There are reportedly high unprotected sexual engagements including low usage of condoms within the farm working environment, that involve casual sex partners (9,11) as well as lack of HIV knowledge and low risk perception of HIV infection among farming communities (11). These factors increase the vulnerability of the farmworkers to HIV infection (14). Over and above, it has been reported that HIV prevention interventions that have been provided in occupational settings have shown to be effective (15), and such workplace services may not be a reality for farmworkers

Even though there are studies that report on farmworkers' HIV screening, treatment, care, and support (16,17), the findings from such studies have not highlighted national strategies and approaches in the provision of healthcare services to the farming populations. Furthermore, studies done previously have tended to broadly encompass farmworkers within the migrant labourers' paradigm. Farmworkers are likely to be internal or external migrants, and they tend to differ from other migrant labourers due to social factors that disadvantage them. Most of the time it is the non-skilled migrant workers who tend to be farmworkers, and due to restrictions in immigration policies, they almost always lack legal resident status. This puts them at an increased risk of health and other social challenges within the farming environment (18) more so due to dependence on employer/workplace provisions rather than on national occupational health programs (19,20).

METHODS AND ANALYSIS

This systematic review protocol follows the Cochrane Handbook's guidelines for Systematic Reviews of Interventions and Reports using the Preferred Reporting Items for Systematic Reviews and Meta-analyses Protocols (PRISMA-P) (21,22)

Objectives

The specific objective of this systematic review is to summarise data on HIV services available for farmworkers in SSA, including services provided at the workplace, by private or NGOs, or provided by the ministries of health. The second objective is to assess the presence of policies that guides provision of HIV services to farmworkers at government or workplace level.

Study participants

The study participants are farmworkers, regardless of age or gender. These will include all categories of farmworker status, be it migrant and non-migrant, as well as seasonal and permanently employed farmworkers. For this systematic review ‘farmworker’ are defined as persons employed to work on a farm regardless of the migration status, and working in full-time employment, seasonal or temporary basis.

Timeframe

Studies published from January 1990 to December 2021 within SSA countries will be included. This will ensure that included studies provide up to recent developments in the provision of services. The dates also factor in the emergence of the HIV pandemic and the introduction of ART programmes and services in SSA.

Outcomes

Studies to be included must have reported on HIV programmes/packages of care provided to farmworkers, and who provides the services (employer/public sector/private/non-governmental organization [NGO]). The HIV services in our context include the presence of any of the following: HIV policy for farmworkers, availability of HIV prevention service(s), availability of treatment, care and support to farmworkers who are living with HIV, presence of referral structures for farmworkers through the health system, and follow up services for farmworkers who are on ART.

Inclusion criteria

Studies conducted on HIV prevention, treatment, care, and support for farmworkers in SSA. We will include quantitative studies such as case-control studies, cohort studies, and cross-sectional surveys. We will also include qualitative studies such as case studies, phenomenological studies, and mixed methods studies. Furthermore, we will review unpublished quantitative and qualitative data obtained from reports and policy documents. We will include articles published in English, French, and Portuguese. We will use language translation software for studies published in other languages other than English.

Exclusion criteria

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We will exclude studies that are done outside of SSA. Letters, editorials, reviews, and commentaries, will also be excluded. Studies that do not measure, discuss, or report any of the prevention levels of HIV services will be excluded. All studies published before 1990 will be excluded.

Search strategy

We will use a sensitive search strategy for electronic bibliographic databases and grey literature sources (Supplementary file 1). Search terms will be designed for MEDLINE (PubMed) to identify controlled vocabulary of Medical Subject Headings (MeSH) related to HIV and Farmworkers. We will identify keywords based on our knowledge of the field of HIV infection. MEDLINE search terms will be adapted for other electronic databases to conform to their search functions. Databases will include PubMed via MEDLINE, CINAHL (EBSCO Host) Cumulative Index of Nursing and Allied Health Literature, Cochrane Library, including the Cochrane Central Register of Controlled Trials, African Index Medicus and Scopus.

We will also search the following websites for additional information on HIV services for farmworkers: the SSA Ministries of health for policies and guidelines, the research institutes, the ILO, the World Health Organization (WHO), and other key NGOs websites.

Furthermore, we will search grey literature through Google Scholar and Open Grey (SIGLE) for any relevant unpublished work. We will also search for possible additional citations from the reference list, conference abstracts from International Conference on AIDS and STIs in Africa (ICASA) and South African Aids (SAAIDS) conferences, and presentations using Web of Science Proceedings Citation Index (CPCI). The search terms will be used in different combinations as per the objective of the review and will include keywords such as HIV/AIDS, HIV workplace service, HIV workplace program, HIV prevention, HIV policy, mobility and migration, farmworkers' health, migrant farmworkers, migration and health, agriculture, health care access, seasonal farmworkers, occupational health, and SSA. Search results will be managed and remove duplicates using specialised bibliographic software, Endnote reference management tool (<http://endnote.com/>). We will prepare a search diary with details of the databases searched, keywords used and number of search results.

Data extraction, management, and selection of eligible studies

Initial screening of titles and abstracts will be undertaken by two reviewers (NM, MM) against the inclusion and exclusion criteria through Rayyan QCRI, the Systematic Reviews web app (23). Full-text articles will be appraised for relevance and methodological quality by two independent reviewers (NM, MM). Any disagreements on selected articles will be resolved through mutual consensus or involvement of a third reviewer (OA, PN, or ML). Data will be

systematically extracted using a standardized data collection tool that will be developed according to the format laid down in the Cochrane Handbook for Systematic Reviews of Interventions. We will extract data about the first author, publication year, journal, language, setting (workplace, private, government services), research methods and outcomes (type of HIV services accessed). The data extraction tool will be piloted by two reviewers (NM, MM) on at least five randomly selected articles prior, thereafter the tool will be revised accordingly based on observations during the piloting process.

We will make attempts to contact study authors for studies that will have missing data on key variables, or where further clarity is necessary. For missing data that cannot be obtained a description of such missing data with possible implications thereof will be provided in the review.

Data analysis

We will synthesize the main characteristics of included studies and use summary measures to describe study characteristics as described by the primary authors such as the mean, median, proportions and frequencies. We will assess homogeneity of the study findings and use the chi-square (χ^2) and I-square (I^2) test to come up with percentage variation across the studies.

Sub-group analysis will be done to explore sources of heterogeneity in studies, as heterogeneity is mostly in some individual studies due to variations in study designs and methodology. We expect adequate data to perform meta-analysis since we will include both quantitative and qualitative studies, However, should there be insufficient or should data not satisfy homogeneity status, we will not perform meta-data analysis.

In analysing qualitative studies, a thematic framework analysis will be conducted. We will follow five steps of framework synthesis which include familiarisation with the data, identifying a thematic framework, indexing, charting, mapping and interpretation (24). We will use the Research evidence (SURE) thematic framework (25) to guide our thematic analysis. We will present our findings on a summary of qualitative findings table that will summarise our key findings.

All findings will be presented following the format recommended by Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA-P) (26).

Risk of bias in included studies

To assess the risk of bias within included studies, the methodological quality of studies will be assessed by using the Newcastle-Ottawa scale (NOS) which is used for assessing the quality

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of non-randomized studies in meta-analysis (27). The NOS for cohort and cross-sectional studies will be modified to meet the systematic review requirements, whilst the cohort scale will be modified for case studies.

The strength of the body of evidence will be assessed by using the Grading of Recommendations Assessment Development and Evaluation (GRADE) approach (28). The grade certainty of evidence presented as high, moderate, low, and very low will be determined based on an assessment of evidence for risk of bias, publication bias, and indirectness. The assessment will be conducted by two reviewers (NM, MM) and where there are disagreements a third reviewer (OA, PN or ML) will be involved to resolve the differences.

To assess our confidence on qualitative findings we will apply the CERQual approach (29). This approach draws on the GRADE approach and assesses confidence based on four components: the methodological limitations of included studies, the relevance of the included studies to the review question, the coherence of the review findings and the adequacy of data contributing to the review findings. The confidence findings will be reported as either high, moderate, low, or very low. The CERQual assessment will appear in a summary of qualitative findings table.

Patient and public involvement

Patients and/or the public will not be involved in this review.

ETHICS AND DISSEMINATION

The study will use publicly available data hence ethical approval was not warranted. The findings will be disseminated in scientific forums and conferences targeting public health audiences and policymakers using virtual platforms such as webinars.

Conclusion

The findings from this systematic review will provide best available evidence on effective approaches to mitigate HIV infection among farmworkers through identification of relevant strategic approaches to improving health care access to HIV prevention, care, and support. Data from this review will be key to provide guidance and inform relevant policy that will facilitate targeted health care access of HIV services for farmworkers.

Acknowledgment We thank Ms Pamela Nyokwana for her support in the development of the search strategy.

Author contributions

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NM conceptualized the study, designed the search strategy, drafted the proposal and takes full responsibility of the article. MM provided critical feedback on the study protocol, and will contribute to study selection process, and data extraction. PSN, OA, and ML contributed to critically reviewing the conceptualization and design of the study protocol. All authors read and approved the final version of the protocol.

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Competing interests There are no competing interests.

Patient consent for publication Patient consent is not required.

Provenance and peer review The protocol will be peer-reviewed externally.

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SEARCH STRATEGY

KEY WORDS. The following key words will be used:

HIV/AIDS, HIV workplace services, HIV prevention, Farmworkers' health, Migration and HIV, Health care access, Seasonal farmworkers, Agricultural workers, Agricultural workers' health, Occupational health, HIV policies for farmworkers, HIV programs for farmworkers, Sub-Saharan Africa (SSA).

LIST OF DATABASES. These databases will be searched:

Medical Literature Analysis and Retrieval System Online (MEDLINE) (PubMed), Cumulative Index to Nursing and Allied Health Literature (CINAHL) (EBSCO Host), Cochrane library, African Index Medicus, Scopus

Further websites: SSA ministries of health; World Health Organization, other research institutes, grey literature (Google Scholar and Open Grey), Web of Science Proceedings Citation Index (for conference abstracts).

SEARCH STRATEGY

This search strategy will be used:

#1

access OR knowledge OR availability AND

"HIV workplace services" OR "HIV prevention" OR "HIV policy" OR "occupational health" OR "HIV education" OR "sexual health" AND

farmworkers OR "farm workers" OR "agricultural workers" OR immigrant farmworkers OR "migrant workers" OR "migrant farmworker"

AND

"Sub-Saharan Africa" OR "Southern Africa" OR "East Africa" OR "West Africa" OR Africa

#2

Access OR knowledge AND

"HIV workplace services" OR "HIV prevention" OR "HIV policy" OR "occupational health" OR "sexual health" OR "HIV education" AND

Farmworkers OR farm workers OR "Agricultural workers" OR "immigrant farmworkers" AND

Supplementary file 1

Access to HIV Healthcare Services by Farmworkers in sub-Saharan Africa

Sub-Saharan Africa OR Southern Africa OR East Africa OR West Africa OR Africa

#3

Access* OR "access to care" knowledge OR availability OR provision OR guidelines OR "National policy" OR "strategic plan" AND

HIV OR "workplace health services" OR "HIV prevention" OR "HIV policy*" OR "HIV testing" OR "occupational health" OR "sexual health" OR "HIV education" OR "HIV program*" OR "condoms*" OR ART OR "antiretroviral therapy" OR "HIV care and treatment" OR "health services" AND

Farmworkers OR "farm workers" OR "Agricultural workers*" OR "immigrant farmworkers" OR "migrant farmworkers" OR "migrant workers" OR "migrant labourers" OR "migrants' health" OR migrants OR "vulnerable populations" OR "mobile populations" AND

sub-Saharan Africa OR Angola OR Benin OR Botswana OR "Burkina Faso" OR Burundi OR Cameroon OR "Cape Verde" OR "Central African Republic" OR Chad OR Comoros OR Congo Brazzaville OR Congo Democratic Republic OR "Côte d'Ivoire" OR Djibouti OR "Equatorial Guinea" OR Eritrea OR Ethiopia OR Gabon OR "The Gambia" OR Ghana OR Guinea OR Guinea-Bissau OR Kenya OR Lesotho OR Liberia OR Madagascar OR Malawi OR Mali OR Mauritania OR Mauritius OR Mozambique OR Namibia OR Niger OR Nigeria OR Réunion OR Rwanda OR "Sao Tome and Principe" OR Senegal OR Seychelles OR "Sierra Leone" OR Somalia OR "South Africa" OR Sudan OR Swaziland OR Tanzania OR Togo OR Uganda OR "Western Sahara" OR Zambia OR Zimbabwe

PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) 2015 checklist: recommended items to address in a systematic review protocol*

Section and topic	Item No	Checklist item
ADMINISTRATIVE INFORMATION		
Title:		
Identification	Page 1	1a Identify the report as a protocol of a systematic review
Update		1b If the protocol is for an update of a previous systematic review, identify as such
Registration	Page 2	2 If registered, provide the name of the registry (such as PROSPERO) and registration number
Authors:		
Contact	Page 1	3a Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author
Contributions	Page 8-9	3b Describe contributions of protocol authors and identify the guarantor of the review
Amendments		4 If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments
Support:	Page 9	
Sources		5a Indicate sources of financial or other support for the review
Sponsor		5b Provide name for the review funder and/or sponsor
Role of sponsor or funder		5c Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol
INTRODUCTION		
Rationale	Page 3-4	6 Describe the rationale for the review in the context of what is already known
Objectives	Page 4-5	7 Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)
METHODS		
Eligibility criteria	Page 5-6	8 Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review
Information sources	Page 6	9 Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage
Search strategy		10 Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated
Supplement 1		
Study records:	Page 6-7	
Data management		11a Describe the mechanism(s) that will be used to manage records and data throughout the review

Selection process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)
Data collection process	11c	Describe planned method of extracting data from reports (such as piloting forms done independently, in duplicate), any processes for obtaining and confirming data from investigators
Data items	12	List and define all variables for which data will be sought (such as PICO items and other identifying sources), any pre-planned data assumptions and simplifications
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritisation of main and additional outcomes, with rationale
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies (including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis)
Data synthesis	15a	Describe criteria under which study data will be quantitatively synthesised
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I^2 , Kendall's τ)
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (such as GRADE)

*** It is strongly recommended that this checklist be read in conjunction with the PRISMA-P Explanation and Elaboration (cite when available) for important clarification on the items. Amendments to a review protocol should be tracked and dated. The copyright for PRISMA-P (including checklist) is held by the PRISMA-P Group and is distributed under a Creative Commons Attribution Licence 4.0.**

From: Shamseer L, Moher D, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart L, PRISMA-P Group. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. BMJ. 2015 Jan 2;349(jan02 1):g7647.

BMJ Open

Access to HIV Healthcare Services by Farmworkers in sub-Saharan Africa (SSA): A Systematic Review Protocol

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Access to HIV Healthcare Services by Farmworkers in sub-Saharan Africa (SSA): A Systematic Review Protocol

Author: N Mlangeni, Stellenbosch University, Division of Epidemiology and Biostatistics, Department of Global Health, Faculty of Medicine and Health Sciences, Cape Town, South Africa. milo.mlangeni@yahoo.com | 24966886@sun.ac.za

National Institute for Occupational Health, Division of National Health Laboratory Services, Johannesburg, South Africa

Co-Author: Olatunji Adetokunboh, Stellenbosch University, Division of Epidemiology and Biostatistics, Department of Global Health, Faculty of Medicine and Health Sciences, Cape Town, South Africa. olatunji@sun.ac.za

DSI-NRF Centre of Excellence for Epidemiological Modelling and Analysis, Stellenbosch University, Cape Town, South Africa.

The University of the People, Pasadena, California, USA.

Co-Author: Martina Lembani, University of Western Cape, School of Public Health, Cape Town, South Africa. mlembani@uwc.ac.za

Co-Author: Molebogeng Malotle, National Institute for Occupational Health, Division of National Health Laboratory Services, Johannesburg, South Africa. molebogengm@nioh.ac.za

Co-Author: Peter Nyasulu, Stellenbosch University, Division of Epidemiology and Biostatistics, Department of Global Health, Faculty of Medicine and Health Sciences, Cape Town, South Africa. pnyasulu@sun.ac.za

University of the Witwatersrand, Division of Epidemiology and Biostatistics, School of Public Health, Faculty of Health Sciences, Johannesburg, South Africa

Correspondence: Department of Global Health, Stellenbosch University, Francie Van Zijl Dr, Parow, Cape Town, 7505, milo.mlangeni@yahoo.com

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ABSTRACT

Introduction

Sub-Saharan Africa (SSA) region harbours the highest burden of Human Immunodeficiency Virus (HIV) infections in the world. Agricultural work has been reported as one of the occupations with a high prevalence of HIV. Farmworkers generally have poor access to health services which prevents them from receiving proper HIV prevention and care. Furthermore, poor policies and policy implementation, and lack of workplace programs increases farm workers' vulnerability to HIV infection. Thus, the aim of this study is to conduct a systematic review to assess HIV prevention and treatment services and national policies governing access to healthcare services by farmworkers in SSA.

Methods and analysis

Our systematic review will include studies published from January 1990 to December 2021 within SSA countries. We will use a sensitive search strategy for electronic bibliographic databases and grey literature sources. Databases will include PubMed, CINAHL, Cochrane library, African Index Medicus and Scopus. The main outcomes to be reported will be HIV policy for farmworkers, availability of HIV prevention service(s), availability of treatment and support to farmworkers who are living with HIV, presence of referral structures for farmworkers through the health system and follow up services for farmworkers who are on antiretroviral therapy. We will synthesize the main characteristics of included studies and use summary measures to describe study characteristics. We will analyse the data using random-effects meta-analysis method for quantitative data. We will explore themes and relationships between included studies for qualitative data.

Ethics and dissemination

The study will use publicly available data and ethics exemption has been obtained from Human Research Ethics Committees, Faculty of Medicine & Health Sciences, Stellenbosch University. The results of this study will be disseminated through peer-reviewed journals, conference presentations, and seminars.

Keywords: Farmworkers, HIV prevention, Access to health services, HIV policy, HIV workplace services, migration and health.

Prospective Register of Systematic Reviews: CRD42021277528

Strengths and limitations

- The study reduces the risk of duplication, gives transparency to the intended methods and processes that will be followed.
- The study reduces possible biases and allows for peer review.
- The review will be the first to explore and provide a comprehensive overview of existing HIV policies, services, and programs provided to the farmworker’s population in the SSA region.
- The limitation of this protocol is the scarcity of HIV prevention studies for farmworkers in SSA.
- Inadequate methodological quality on HIV prevention, treatment, and care studies for farmworkers is a possible limitation of this review.

INTRODUCTION

Human Immunodeficiency Virus (HIV) continues to be a global concern, with more than 37 million people infected by the end of 2020 (1). Though there has been a decline of new infections over the past two decades (2), HIV ranks among the top ten causes of death globally (3). Sub-Saharan Africa (SSA) region harbours the highest burden of HIV in the world with an estimated 70% of people living with HIV (4). South Africa has the highest HIV burden within Southern Africa region and globally. In 2015, the International Labour Organization (ILO) estimated that 26 million workers worldwide aged between 15 to 49 years were living with HIV, while 22.7% of the workforce in South Africa were people living with HIV (5). Despite the fact that there are no ongoing studies on measuring HIV burden per specific occupation in South Africa, previous studies conducted at different time points have highlighted that occupations with a high prevalence of HIV are healthcare workers 15.7% (6), truck drivers 26% (7), mine workers 24.6% (8), and farmworkers with 39% in 2010 (9). This highlights an important underlying fact that farmworkers carry the highest burden of HIV amongst the working population.

Farmworkers face various barriers in accessing HIV prevention and control services, including voluntary counselling and testing (VCT), condoms, and antiretroviral therapy (ART). They are a highly mobile population which increases their vulnerability to HIV (10), as migration is cited to be the strongest single predictor of HIV risk in SSA (11). Farmworkers generally have poor access to health services (11) which prevents them from receiving proper HIV prevention, treatment, care, and support services. Agricultural and farming areas are normally situated in remote, hard-to-reach areas. These geographical and structural factors, combined with high

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mobility affects the farmworkers' ability to access health services. These factors highlighted above promulgate the overall health outcome of the farming population.

It is worth noting that other hindering factors that compound farmworkers' ability to access healthcare facilities include distance to nearest health facility, long working hours, and travel means to access health facilities (12). In addition, taking time off from farm work to attend to healthcare issues compromises their earning as such remains a non-priority need to avoid losing income (13). Furthermore poor and/or fragmented policies and policy implementation, as well as lack of workplace programs increases farmworkers' vulnerability to HIV infection (11). There are reportedly high unprotected sexual engagements including low usage of condoms within the farm working environment, that involve casual sex partners (9,11) as well as lack of HIV knowledge and low risk perception of HIV infection among farming communities (11). These factors increase the vulnerability of the farmworkers to HIV infection (14). Over and above, it has been reported that HIV prevention interventions that have been provided in occupational settings have shown to be effective (15), and such workplace services may not be a reality for farmworkers

Even though there are studies that report on farmworkers' HIV screening, treatment, care, and support (16,17), the findings from such studies have not highlighted national strategies and approaches in the provision of healthcare services to the farming populations. Furthermore, studies done previously have tended to broadly encompass farmworkers within the migrant labourers' paradigm. Farmworkers are likely to be internal or external migrants, and they tend to differ from other migrant labourers due to social factors that disadvantage them. Most of the time it is the non-skilled migrant workers who tend to be farmworkers, and due to restrictions in immigration policies, they almost always lack legal resident status. This puts them at an increased risk of health and other social challenges within the farming environment (18) more so due to dependence on employer/workplace provisions rather than on national occupational health programs (19,20).

METHODS AND ANALYSIS

This systematic review protocol follows the Cochrane Handbook's guidelines for Systematic Reviews of Interventions and Reports using the Preferred Reporting Items for Systematic Reviews and Meta-analyses Protocols (PRISMA-P) (21,22)

Objectives

The specific objective of this systematic review is to summarise data on HIV services available for farmworkers in SSA, including services provided at the workplace, by private or NGOs, or

provided by the ministries of health. The second objective is to assess the presence of policies that guides provision of HIV services to farmworkers at government or workplace level.

Study participants

Studies that report on farmworkers’ HIV prevention, treatment, care and support, regardless of age or gender, will be included. These will include all categories of farmworker status, be it migrant and non-migrant, as well as seasonal and permanently employed farmworkers. For this systematic review ‘farmworker’ are defined as persons employed to work on a farm regardless of the migration status, and working in full-time employment, seasonal or temporary basis.

Timeframe

Studies published from January 1990 to December 2021 within SSA countries will be included. This will ensure that included studies provide up to recent developments in the provision of services. The dates also factor in the emergence of the HIV pandemic and the introduction of ART programmes and services in SSA.

Outcomes

The study will examine outcomes on availability and access to HIV services for farmworkers. The main outcomes of interest are the presence of HIV policy frameworks, guidelines or programs for HIV prevention, treatment and care services, and other treatment modalities specifically targeting farmworkers.

Inclusion criteria

Studies conducted on HIV prevention, treatment, care, and support for farmworkers in SSA. We will include quantitative studies such as case-control studies, cohort studies, and cross-sectional surveys. We will also include qualitative studies such as case studies, phenomenological studies, and mixed methods studies. Furthermore, we will review unpublished quantitative and qualitative data obtained from reports and policy documents. We will include articles published in all languages, including but not limited to English, French, and Portuguese. We will use language translation software for studies published in other languages other than English.

Exclusion criteria

We will exclude studies that are done outside of SSA. Letters, editorials, reviews, and commentaries, will also be excluded. Studies that do not measure, discuss, or report any of

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the prevention levels of HIV services will be excluded. All studies published before 1990 will be excluded.

Search strategy

We will use a sensitive search strategy for electronic bibliographic databases and grey literature sources (Supplementary file 1). Search terms will be designed for MEDLINE (PubMed) to identify controlled vocabulary of Medical Subject Headings (MeSH) related to HIV and Farmworkers. We will identify keywords based on our knowledge of the field of HIV infection. MEDLINE search terms will be adapted for other electronic databases to conform to their search functions. Databases will include PubMed via MEDLINE, CINAHL (EBSCO Host) Cumulative Index of Nursing and Allied Health Literature, Cochrane Library, including the Cochrane Central Register of Controlled Trials, African Index Medicus and Scopus.

We will also search the following websites for additional information on HIV services for farmworkers: the SSA Ministries of health for policies and guidelines, the research institutes, the ILO, the World Health Organization (WHO), and other key NGOs websites.

Furthermore, we will search grey literature through Google Scholar and Open Grey (SIGLE) for any relevant unpublished work. We will also search for possible additional citations from the reference list, conference abstracts from International Conference on AIDS and STIs in Africa (ICASA) and South African Aids (SAAIDS) conferences, and presentations using Web of Science Proceedings Citation Index (CPCI). The search terms will be used in different combinations as per the objective of the review and will include keywords such as HIV/AIDS, HIV workplace service, HIV workplace program, HIV prevention, HIV policy, mobility and migration, farmworkers' health, migrant farmworkers, migration and health, agriculture, health care access, seasonal farmworkers, occupational health, and SSA. Search results will be managed and remove duplicates using specialised bibliographic software, Endnote reference management tool (<http://endnote.com/>). We will prepare a search diary with details of the databases searched, keywords used and number of search results.

Data extraction, management, and selection of eligible studies

Initial screening of titles and abstracts will be undertaken by two reviewers (NM, MM) against the inclusion and exclusion criteria through Rayyan QCRI, the Systematic Reviews web app (23). Full-text articles will be appraised for relevance and methodological quality by two independent reviewers (NM, MM). Any disagreements on selected articles will be resolved through mutual consensus or involvement of a third reviewer (OA, PN, or ML). Data will be systematically extracted using a standardized data collection tool that will be developed according to the format laid down in the Cochrane Handbook for Systematic Reviews of

Interventions. We will extract data about the first author, publication year, journal, language, setting (workplace, private, government services), research methods and outcomes (type of HIV services accessed). The data extraction tool will be piloted by two reviewers (NM, MM) on at least five randomly selected articles prior, thereafter the tool will be revised accordingly based on observations during the piloting process.

We will make attempts to contact study authors for studies that will have missing data on key variables, or where further clarity is necessary. For missing data that cannot be obtained a description of such missing data with possible implications thereof will be provided in the review.

Data analysis

We will synthesize the main characteristics of included studies and use summary measures to describe study characteristics as described by the primary authors such as the mean, median, proportions and frequencies. We will use descriptive statistics to determine the proportion of included studies that reported the key outcomes. We will assess homogeneity of the study findings and use the chi-square (χ^2) and I-square (I^2) test to come up with percentage variation across the studies. We will consider I-squared value greater than 75% as considerable heterogeneity. Data will be analysed using Stata statistical software, version 16.1. Sub-group analysis will be done to explore sources of heterogeneity in studies, as heterogeneity is mostly in some individual studies due to variations in study designs and methodology. A narrative synthesis will be performed to synthesize findings from the studies.

In analysing qualitative studies, a thematic framework analysis will be conducted following an inductive approach, where themes will be determined through engagement with extracted data. Coding of data will be done based on the themes identified in the data. We will follow five steps of framework synthesis which include familiarisation with the data, identifying a thematic framework, indexing, charting, mapping and interpretation (24). We will use the Research evidence (SURE) thematic framework (25) to guide our thematic analysis. We will present our findings on a summary of qualitative findings table that will summarise our key findings.

All findings will be presented following the format recommended by Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA-P) (26).

Risk of bias in included studies

To assess the risk of bias within included studies, the methodological quality of studies will be assessed by using the Newcastle-Ottawa scale (NOS) which is used for assessing the quality of non-randomized studies in meta-analysis (27). The NOS for cohort and cross-sectional

studies will be modified to meet the systematic review requirements, whilst the cohort scale will be modified for case studies.

The strength of the body of evidence will be assessed by using the Grading of Recommendations Assessment Development and Evaluation (GRADE) approach (28). The grade certainty of evidence presented as high, moderate, low, and very low will be determined based on an assessment of evidence for risk of bias, publication bias, and indirectness. The assessment will be conducted by two reviewers (NM, MM) and where there are disagreements a third reviewer (OA, PN or ML) will be involved to resolve the differences.

To assess our confidence on qualitative findings we will apply the CERQual approach (29). This approach draws on the GRADE approach and assesses confidence based on four components: the methodological limitations of included studies, the relevance of the included studies to the review question, the coherence of the review findings and the adequacy of data contributing to the review findings. The confidence findings will be reported as either high, moderate, low, or very low. The CERQual assessment will appear in a summary of qualitative findings table.

Patient and public involvement

Patients and/or the public will not be involved in this review.

ETHICS AND DISSEMINATION

The study will use publicly available data hence ethical approval was not warranted. The findings will be disseminated in scientific forums and conferences targeting public health audiences and policymakers using virtual platforms such as webinars.

Acknowledgment We thank Ms Pamela Nyokwana for her support in the development of the search strategy.

Author contributions

NM conceptualized the study, designed the search strategy, drafted the proposal and takes full responsibility of the article. MM provided critical feedback on the study protocol, and will contribute to study selection process, and data extraction. PSN, OA, and ML contributed to critically reviewing the conceptualization and design of the study protocol. All authors read and approved the final version of the protocol.

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Competing interests There are no competing interests.

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Patient consent for publication Patient consent is not required.

Provenance and peer review The protocol will be peer-reviewed externally.

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Supplementary file 1

Access to HIV Healthcare Services by Farmworkers in sub-Saharan Africa: Search Strategy

Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions(R) <1946 to February 23, 2022>

- 1 hiv/ or hiv-1/ or hiv-2/
- 2 HIV*.mp.
- 3 AIDS.mp. or Acquired Immunodeficiency Syndrome/
- 4 (human immun* and deficiency virus).mp. or acquired immunodeficiency syndrome*.tw.
- 5 1 or 2 or 3 or 4
- 6 Anti-Retroviral Agents/ or Antiretroviral Therapy, Highly Active/
- 7 (antiretroviral* or HAART* or (anti and retroviral*) or ARV*).mp.
- 8 5 or 6 or 7
- 9 (sub-Saharan Africa or Angola or Benin or Botswana or "Burkina Faso" or Burundi or Cameroon or "Cape Verde" or "Central African Republic" or Chad).mp.
- 10 (Comoros or Congo Brazzaville or Congo Democratic Republic or "Côte d'Ivoire" or Djibouti or "Equatorial Guinea" or Eritrea or Ethiopia or Gabon or Gambia or Ghana or Guinea or "Guinea-Bissau" or Kenya or Lesotho).mp.
- 11 (Liberia or Madagascar or Malawi or Mali or Mauritania or Mauritius or Mozambique or Namibia or Niger or Nigeria or Reunion or Rwanda).mp.
- 12 ("Sao Tome and Principe" or Senegal or Seychelles or "Sierra Leone" or Somalia or "South Africa" or Sudan or Swaziland or Tanzania or Togo or Uganda or "Western Sahara" or Zambia or Zimbabwe).mp.
- 13 exp "Africa South of the Sahara"/
- 14 9 or 10 or 11 or 12 or 13
- 15 8 and 14
- 16 limit 15 to yr="1990 -Current"
- 17 (Farmworkers or "farm worker*" or "Agricultural worker*" or "migrant farmworkers" or "migrant workers" or "migrant labourer*").mp.
- 18 Farmers/
- 19 ("migrant* adj2 health" or migrants or "mobile population*").mp.
- 20 Rural Population/

Supplementary file 1

- 21 ((rural adj2 population*) or (rural adj2 communit*)).tw.
22 plantation worker*.mp.
23 agrarian.tw.
24 17 or 18 or 19 or 20 or 21 or 22 or 23
25 16 and 24
26 (Access* or "access to care" or knowledge or availability or provision or guidelines or
"National policy" or "strategic plan").tw.
27 "Delivery of Health Care"/ or care package*.mp.
28 26 or 27
29 25 and 28
30 limit 30 to humans

Embase 1947-Present, updated daily

- 1 exp Human immunodeficiency virus/ or exp acquired immune deficiency syndrome/ or exp
human immunodeficiency virus infection/ or exp human immunodeficiency virus 1/ or exp human
immunodeficiency virus 2/
2 HIV*.tw.
3 AIDS.tw.
4 antiretroviral agents.mp. or antiretrovirus agent/
5 (HAART* or ARV*).tw.
6 1 or 2 or 3 or 4 or 5
7 (sub-Saharan Africa or Angola or Benin or Botswana or "Burkina Faso" or Burundi or
Cameroon or "Cape Verde" or "Central African Republic" or Chad).mp.
8 (Comoros or Congo Brazzaville or Congo Democratic Republic or "Côte d'Ivoire" or Djibouti
or "Equatorial Guinea" or Eritrea or Ethiopia or Gabon or Gambia or Ghana or Guinea or "Guinea-
Bissau" or Kenya or Lesotho).mp.
9 (Liberia or Madagascar or Malawi or Mali or Mauritania or Mauritius or Mozambique or
Namibia or Niger or Nigeria or Reunion or Rwanda).mp.
10 ("Sao Tome and Principe" or Senegal or Seychelles or "Sierra Leone" or Somalia or "South
Africa" or Sudan or Swaziland or Tanzania or Togo or Uganda or "Western Sahara" or Zambia or
Zimbabwe).mp.
11 exp "Africa south of the Sahara"/ep [Epidemiology]
12 7 or 8 or 9 or 10 or 11

Supplementary file 1

13 6 and 12

14 limit 13 to yr="1990 -Current"

15 (Farmworkers or "farm worker*" or "Agricultural worker*" or "migrant farmworkers" or
 16 "migrant workers" or "migrant labourer*").mp.

17 exp agricultural worker/
 18 ("migrant* adj2 health" or migrants or "mobile population*").mp.

19 exp rural population/
 20 ((rural adj2 population*) or (rural adj2 communit*)).tw.

21 plantation worker*.tw.

22 agrarian.tw.

23 15 or 16 or 17 or 18 or 19 or 20 or 21

24 14 and 22

25 (Access* or "access to care" or knowledge or availability or provision or guidelines or
 26 "National policy" or "strategic plan").tw.

27 health care provision.mp. or health care delivery/
 28 care package.mp.

29 24 or 25 or 26

30 23 and 27

Cochrane Central Register of Controlled Trials**Issue 2 of 12, February 2022**

#1 (HIV* or AIDS or Human Acquired Immunodeficiency Syndrome):ti,ab,kw

#2 MeSH descriptor: [HIV] explode all trees

#3 MeSH descriptor: [Acquired Immunodeficiency Syndrome] explode all trees

#4 (human immun*) and (deficiency virus)

#5 MeSH descriptor: [Anti-Retroviral Agents] explode all trees

#6 MeSH descriptor: [Antiretroviral Therapy, Highly Active] explode all trees

#7 (antiretroviral* or HAART*)

#8 #1 or #2 or #3 or #4 or #5 or #6 or #7

#9 ((sub-Saharan Africa or Angola or Benin or Botswana or "Burkina Faso" or Burundi or
 Cameroon or "Cape Verde" or "Central African Republic" or Chad) or (Comoros or Congo

Supplementary file 1

Brazzaville or Congo Democratic Republic or "Côte d'Ivoire" or Djibouti or "Equatorial Guinea" or Eritrea or Ethiopia or Gabon or Gambia or Ghana or Guinea or "Guinea-Bissau" or Kenya or Lesotho)):ti,ab,kw

#10 ((Liberia or Madagascar or Malawi or Mali or Mauritania or Mauritius or Mozambique or Namibia or Niger or Nigeria or Reunion or Rwanda) or ("Sao Tome and Principe" or Senegal or Seychelles or "Sierra Leone" or Somalia or "South Africa" or Sudan or Swaziland or Tanzania or Togo or Uganda or "Western Sahara" or Zambia or Zimbabwe)):ti,ab,kw

#11 MeSH descriptor: [Africa South of the Sahara] explode all trees

#12 #9 or #10 or #11

#13 #12 and #8

#14 ((Farmworkers or "farm worker*" or "Agricultural worker*" or "migrant farmworkers" or "migrant workers" or "migrant labourer*")):ti,ab,kw

#15 MeSH descriptor: [Farmers] explode all trees

#16 ("migrant* AND health") or migrants or "mobile population"

#17 MeSH descriptor: [Rural Population] explode all trees

#18 (rural and population*) or (rural and communit*)

#19 plantation worker*

#20 agrarian

#21 #14 or #15 or #16 or #17 or #18 or #19 or #20

#22 #21 and #13

#23 ((Access* or "access to care" or knowledge or availability or provision or guidelines or "National policy" or "strategic plan")):ti,ab,kw

#24 care package*

#25 MeSH descriptor: [Delivery of Health Care] explode all trees

#26 #23 or #24 or #25

#27 #26 and #22

Interface - EBSCOhost Research Databases

Database - CINAHL

#	Query
S9	S6 AND S7

Supplementary file 1

S8	S6 AND S7
S7	TX (((Access* or "access to care" or knowledge or availability or provision or guidelines or "National policy" or "strategic plan"))) OR MH delivery of health care OR TX care package
S6	S4 AND S5
S5	TX (((Farmworkers or "farm worker*" or "Agricultural worker*" or "migrant farmworkers" or "migrant workers" or "migrant labourer*"))) OR MH farmers OR TX ("mobile population*" or (rural and population*) or (rural and communit*)) OR TX ((plantation worker*) or agrarian)
S4	S1 AND S2
S3	S1 AND S2
S2	TX ((sub-Saharan Africa or Angola or Benin or Botswana or "Burkina Faso" or Burundi or Cameroon or "Cape Verde" or "Central African Republic" or Chad) OR TX ((Comoros or Congo Brazzaville or Congo Democratic Republic or "Côte d'Ivoire" or Djibouti or "Equatorial Guinea" or Eritrea or Ethiopia or Gabon or Gambia or Ghana or Guinea or "Guinea-Bissau" or Kenya or Lesotho)) OR TX ((Liberia or Madagascar or Malawi or Mali or Mauritania or Mauritius or Mozambique or Namibia or Niger or Nigeria or Reunion or Rwanda)) OR TX (("Sao Tome and Principe" or Senegal or Seychelles or "Sierra Leone" or Somalia or "South Africa" or Sudan or Swaziland or Tanzania or Togo or Uganda or "Western Sahara" or Zambia or Zimbabwe)) OR MH africa south of the sahara
S1	TX (HIV* or AIDS or Human Acquired Immunodeficiency Syndrome) OR MH hiv OR MH acquired immunodeficiency syndrome OR MH Anti-Retroviral Agents OR TX antiretroviral therapy

African Index Medicus

tw:((tw:(hiv* OR aids OR antiretroviral*)) AND (tw:(farmers OR farmworkers OR agricultur* OR rural OR agrarian))) AND (collection_gim:("AIM"))

Web of Science

Editions = CPCI-SSH , CPCI-S

Search #5

#4 AND #3

Search #4

Supplementary file 1

(Farmworkers or "farm worker*" or "Agricultural worker*" or "migrant farmworkers" or "migrant workers" or "migrant labourer*") (Topic) or farmers (Topic) or "rural population*" or "rural communit*" (Topic) or "plantation worker*" or agrarian (Topic)

Search #3

#2 AND #1

Search #2

(sub-Saharan Africa or Angola or Benin or Botswana or "Burkina Faso" or Burundi or Cameroon or "Cape Verde" or "Central African Republic" or Chad) (Topic) or (Comoros or Congo Brazzaville or Congo Democratic Republic or "Côte d'Ivoire" or Djibouti or "Equatorial Guinea" or Eritrea or Ethiopia or Gabon or Gambia or Ghana or Guinea or "Guinea-Bissau" or Kenya or Lesotho) (Topic) or (Liberia or Madagascar or Malawi or Mali or Mauritania or Mauritius or Mozambique or Namibia or Niger or Nigeria or Reunion or Rwanda) (Topic) or ("Sao Tome and Principe" or Senegal or Seychelles or "Sierra Leone" or Somalia or "South Africa" or Sudan or Swaziland or Tanzania or Togo or Uganda or "Western Sahara" or Zambia or Zimbabwe) (Topic)

Search #1

(HIV* or "HIV infection*") OR TOPIC: (AIDS or "acquired immunodeficiency syndrome" or "acquired immunodeficiency syndrome") (Topic)

Google Scholar

(HIV OR AIDS) and sub saharan africa and (rural or farmers) and (access or healthcare or availability)

Screened first 100 results

PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) 2015 checklist: recommended items to address in a systematic review protocol*

Section and topic	Item No	Checklist item
ADMINISTRATIVE INFORMATION		
Title:		
Identification	Page 1	1a Identify the report as a protocol of a systematic review
Update		1b If the protocol is for an update of a previous systematic review, identify as such
Registration	Page 2	2 If registered, provide the name of the registry (such as PROSPERO) and registration number
Authors:		
Contact	Page 1	3a Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author
Contributions	Page 8-9	3b Describe contributions of protocol authors and identify the guarantor of the review
Amendments		4 If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments
Support:	Page 9	
Sources		5a Indicate sources of financial or other support for the review
Sponsor		5b Provide name for the review funder and/or sponsor
Role of sponsor or funder		5c Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol
INTRODUCTION		
Rationale	Page 3-4	6 Describe the rationale for the review in the context of what is already known
Objectives	Page 4-5	7 Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)
METHODS		
Eligibility criteria	Page 5-6	8 Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review
Information sources	Page 6	9 Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage
Search strategy		10 Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated
Supplement 1		
Study records:	Page 6-7	
Data management		11a Describe the mechanism(s) that will be used to manage records and data throughout the review

Selection process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)
Data collection process	11c	Describe planned method of extracting data from reports (such as piloting forms done independently, in duplicate), any processes for obtaining and confirming data from investigators
Data items	12	List and define all variables for which data will be sought (such as PICO items and other identifying sources), any pre-planned data assumptions and simplifications
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritisation of main and additional outcomes, with rationale
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies (including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis)
Data synthesis	15a	Describe criteria under which study data will be quantitatively synthesised
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I^2 , Kendall's τ)
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (such as GRADE)

*** It is strongly recommended that this checklist be read in conjunction with the PRISMA-P Explanation and Elaboration (cite when available) for important clarification on the items. Amendments to a review protocol should be tracked and dated. The copyright for PRISMA-P (including checklist) is held by the PRISMA-P Group and is distributed under a Creative Commons Attribution Licence 4.0.**

From: Shamseer L, Moher D, Clarke M, Ghersi D, Liberati A, Petticrew M, Shekelle P, Stewart L, PRISMA-P Group. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. BMJ. 2015 Jan 2;349(jan02 1):g7647.

BMJ Open

Access to HIV Healthcare Services by Farmworkers in sub-Saharan Africa (SSA): A Systematic Review Protocol

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Date Submitted by the Author:	06-Sep-2022
Complete List of Authors:	Mlangeni, Nosimilo; Stellenbosch University Faculty of Medicine and Health Sciences, Global Health; National Institute for Occupational Health, Division of National Health Laboratory Services Adetokunboh, Olatunji; Stellenbosch University Faculty of Medicine and Health Sciences, Global Health; Stellenbosch University, DSI-NRF Centre of Excellence for Epidemiological Modelling and Analysis Lembani, Martina; University of the Western Cape Faculty of Community and Health Sciences, School of Public Health Malotle, Molebogeng; National Institute for Occupational Health, A Division of National Health Laboratory Services Nyasulu, P; Stellenbosch University Faculty of Medicine and Health Sciences, Global Health; University of the Witwatersrand Faculty of Health Sciences, School of Public Health
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Keywords:	HIV & AIDS < INFECTIOUS DISEASES, PREVENTIVE MEDICINE, Organisation of health services < HEALTH SERVICES ADMINISTRATION & MANAGEMENT, Health policy < HEALTH SERVICES ADMINISTRATION & MANAGEMENT

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Access to HIV Healthcare Services by Farmworkers in sub-Saharan Africa (SSA): A Systematic Review Protocol

Author: N Mlangeni, Stellenbosch University, Division of Epidemiology and Biostatistics, Department of Global Health, Faculty of Medicine and Health Sciences, Cape Town, South Africa. milo.mlangeni@yahoo.com | 24966886@sun.ac.za

National Institute for Occupational Health, Division of National Health Laboratory Services, Johannesburg, South Africa

Co-Author: Olatunji Adetokunboh, Stellenbosch University, Division of Epidemiology and Biostatistics, Department of Global Health, Faculty of Medicine and Health Sciences, Cape Town, South Africa. olatunji@sun.ac.za

DSI-NRF Centre of Excellence for Epidemiological Modelling and Analysis, Stellenbosch University, Cape Town, South Africa.

The University of the People, Pasadena, California, USA.

Co-Author: Martina Lembani, University of Western Cape, School of Public Health, Cape Town, South Africa. mlembani@uwc.ac.za

Co-Author: Molebogeng Malotle, National Institute for Occupational Health, Division of National Health Laboratory Services, Johannesburg, South Africa. molebogengm@nioh.ac.za

Co-Author: Peter Nyasulu, Stellenbosch University, Division of Epidemiology and Biostatistics, Department of Global Health, Faculty of Medicine and Health Sciences, Cape Town, South Africa. pnyasulu@sun.ac.za

University of the Witwatersrand, Division of Epidemiology and Biostatistics, School of Public Health, Faculty of Health Sciences, Johannesburg, South Africa

Correspondence: Department of Global Health, Stellenbosch University, Francie Van Zijl Dr, Parow, Cape Town, 7505, milo.mlangeni@yahoo.com

ABSTRACT

Introduction

Sub-Saharan Africa (SSA) region harbours the highest burden of Human Immunodeficiency Virus (HIV) infections in the world. Agricultural work has been reported as one of the occupations with a high prevalence of HIV. Farmworkers generally have poor access to health services which prevents them from receiving proper HIV prevention and care. Furthermore, poor policies and policy implementation, and lack of workplace programs increases farm workers' vulnerability to HIV infection. Thus, the aim of this study is to conduct a systematic review to assess HIV prevention and treatment services and national policies governing access to healthcare services by farmworkers in SSA.

Methods and analysis

Our systematic review will include studies published from January 1990 to December 2021 within SSA countries. We will use a sensitive search strategy for electronic bibliographic databases and grey literature sources. Databases will include PubMed, CINAHL, Cochrane library, African Index Medicus and Scopus. The main outcomes to be reported will be HIV policy for farmworkers, availability of HIV prevention service(s), availability of treatment and support to farmworkers who are living with HIV, presence of referral structures for farmworkers through the health system and follow up services for farmworkers who are on antiretroviral therapy. We will synthesize the main characteristics of included studies and use summary measures to describe study characteristics. In a situation where data are not sufficiently homogeneous to perform a quantitative synthesis, we will conduct a narrative synthesis. We will explore themes and relationships between included studies for qualitative data.

Ethics and dissemination

The study will use publicly available data and ethics exemption has been obtained from Human Research Ethics Committees, Faculty of Medicine & Health Sciences, Stellenbosch University. The results of this study will be disseminated through peer-reviewed journals, conference presentations, and seminars.

Keywords: Farmworkers, HIV prevention, Access to health services, HIV policy, HIV workplace services, migration and health.

Prospective Register of Systematic Reviews: CRD42021277528

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Strengths and limitations

- The study reduces the risk of duplication, gives transparency to the intended methods and processes that will be followed.
- The study reduces possible biases and allows for peer review.
- The review will be the first to explore and provide a comprehensive overview of existing HIV policies, services, and programs provided to the farmworker’s population in the SSA region.
- The limitation of this protocol is the scarcity of HIV prevention studies for farmworkers in SSA.
- Inadequate methodological quality on HIV prevention, treatment, and care studies for farmworkers is a possible limitation of this review.

INTRODUCTION

Human Immunodeficiency Virus (HIV) continues to be a global concern, with more than 37 million people infected by the end of 2020 (1). Though there has been a decline of new infections over the past two decades (2), HIV ranks among the top ten causes of death globally (3). Sub-Saharan Africa (SSA) region harbours the highest burden of HIV in the world with an estimated 70% of people living with HIV (4). South Africa has the highest HIV burden within Southern Africa region and globally. In 2015, the International Labour Organization (ILO) estimated that 26 million workers worldwide aged between 15 to 49 years were living with HIV, while 22.7% of the workforce in South Africa were people living with HIV (5). Despite the fact that there are no ongoing studies on measuring HIV burden per specific occupation in South Africa, previous studies conducted at different time points have highlighted that occupations with a high prevalence of HIV are healthcare workers 15.7% (6), truck drivers 26% (7), mine workers 24.6% (8), and farmworkers with 39% in 2010 (9). This highlights an important underlying fact that farmworkers carry the highest burden of HIV amongst the working population.

Farmworkers face various barriers in accessing HIV prevention and control services, including voluntary counselling and testing (VCT), condoms, and antiretroviral therapy (ART). They are a highly mobile population which increases their vulnerability to HIV (10), as migration is cited to be the strongest single predictor of HIV risk in SSA (11). Farmworkers generally have poor access to health services (11) which prevents them from receiving proper HIV prevention, treatment, care, and support services. Agricultural and farming areas are normally situated in remote, hard-to-reach areas. These geographical and structural factors, combined with high

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mobility affects the farmworkers' ability to access health services. These factors highlighted above promulgate the overall health outcome of the farming population.

It is worth noting that other hindering factors that compound farmworkers' ability to access healthcare facilities include distance to nearest health facility, long working hours, and travel means to access health facilities (12). In addition, taking time off from farm work to attend to healthcare issues compromises their earning as such remains a non-priority need to avoid losing income (13). Furthermore poor and/or fragmented policies and policy implementation, as well as lack of workplace programs increases farmworkers' vulnerability to HIV infection (11). There are reportedly high unprotected sexual engagements including low usage of condoms within the farm working environment, that involve casual sex partners (9,11) as well as lack of HIV knowledge and low risk perception of HIV infection among farming communities (11). These factors increase the vulnerability of the farmworkers to HIV infection (14). Over and above, it has been reported that HIV prevention interventions that have been provided in occupational settings have shown to be effective (15), and such workplace services may not be a reality for farmworkers

Even though there are studies that report on farmworkers' HIV screening, treatment, care, and support (16,17), the findings from such studies have not highlighted national strategies and approaches in the provision of healthcare services to the farming populations. Furthermore, studies done previously have tended to broadly encompass farmworkers within the migrant labourers' paradigm. Farmworkers are likely to be internal or external migrants, and they tend to differ from other migrant labourers due to social factors that disadvantage them. Most of the time it is the non-skilled migrant workers who tend to be farmworkers, and due to restrictions in immigration policies, they almost always lack legal resident status. This puts them at an increased risk of health and other social challenges within the farming environment (18) more so due to dependence on employer/workplace provisions rather than on national occupational health programs (19,20).

METHODS AND ANALYSIS

This systematic review protocol follows the Cochrane Handbook's guidelines for Systematic Reviews of Interventions and Reports using the Preferred Reporting Items for Systematic Reviews and Meta-analyses Protocols (PRISMA-P) (21,22)

Objectives

The specific objective of this systematic review is to summarise data on HIV services available for farmworkers in SSA, including services provided at the workplace, by private or NGOs, or

provided by the ministries of health. The second objective is to assess the presence of policies that guides provision of HIV services to farmworkers at government or workplace level.

Study participants

Studies that report on farmworkers’ HIV prevention, treatment, care and support, regardless of age or gender, will be included. These will include all categories of farmworker status, be it migrant and non-migrant, as well as seasonal and permanently employed farmworkers. For this systematic review ‘farmworker’ are defined as persons employed to work on a farm regardless of the migration status, and working in full-time employment, seasonal or temporary basis.

Timeframe

Studies published from January 1990 to December 2021 within SSA countries will be included. This will ensure that included studies provide up to recent developments in the provision of services. The dates also factor in the emergence of the HIV pandemic and the introduction of ART programmes and services in SSA.

Outcomes

The study will examine outcomes on availability and access to HIV services for farmworkers. The main outcomes of interest are the presence of HIV policy frameworks, guidelines or programs for HIV prevention, treatment and care services, and other treatment modalities specifically targeting farmworkers.

Inclusion criteria

Studies conducted on HIV prevention, treatment, care, and support for farmworkers in SSA. We will include quantitative studies such as case-control studies, cohort studies, and cross-sectional surveys. We will also include qualitative studies such as case studies, phenomenological studies, and mixed methods studies. Furthermore, we will review unpublished quantitative and qualitative data obtained from reports and policy documents. We will include articles published in all languages, including but not limited to English, French, and Portuguese. We will use language translation software for studies published in other languages other than English.

Exclusion criteria

We will exclude studies that are done outside of SSA. Letters, editorials, reviews, and commentaries, will also be excluded. Studies that do not measure, discuss, or report any of

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the prevention levels of HIV services will be excluded. All studies published before 1990 will be excluded.

Search strategy

We will use a sensitive search strategy for electronic bibliographic databases and grey literature sources (Supplementary file 1). Search terms will be designed for MEDLINE (PubMed) to identify controlled vocabulary of Medical Subject Headings (MeSH) related to HIV and Farmworkers. We will identify keywords based on our knowledge of the field of HIV infection. MEDLINE search terms will be adapted for other electronic databases to conform to their search functions. Databases will include PubMed via MEDLINE, CINAHL (EBSCO Host) Cumulative Index of Nursing and Allied Health Literature, Cochrane Library, including the Cochrane Central Register of Controlled Trials, African Index Medicus and Scopus.

We will also search the following websites for additional information on HIV services for farmworkers: the SSA Ministries of health for policies and guidelines, the research institutes, the ILO, the World Health Organization (WHO), and other key NGOs websites.

Furthermore, we will search grey literature through Google Scholar and Open Grey (SIGLE) for any relevant unpublished work. We will also search for possible additional citations from the reference list, conference abstracts from International Conference on AIDS and STIs in Africa (ICASA) and South African Aids (SAAIDS) conferences, and presentations using Web of Science Proceedings Citation Index (CPCI). The search terms will be used in different combinations as per the objective of the review and will include keywords such as HIV/AIDS, HIV workplace service, HIV workplace program, HIV prevention, HIV policy, mobility and migration, farmworkers' health, migrant farmworkers, migration and health, agriculture, health care access, seasonal farmworkers, occupational health, and SSA. Search results will be managed and remove duplicates using specialised bibliographic software, Endnote reference management tool (<http://endnote.com/>). We will prepare a search diary with details of the databases searched, keywords used and number of search results.

Data extraction, management, and selection of eligible studies

Initial screening of titles and abstracts will be undertaken by two reviewers (NM, MM) against the inclusion and exclusion criteria through Rayyan QCRI, the Systematic Reviews web app (23). Full-text articles will be appraised for relevance and methodological quality by two independent reviewers (NM, MM). Any disagreements on selected articles will be resolved through mutual consensus or involvement of a third reviewer (OA, PN, or ML). Data will be systematically extracted using a standardized data collection tool that will be developed according to the format laid down in the Cochrane Handbook for Systematic Reviews of

Interventions. We will extract data about the first author, publication year, journal, language, setting (workplace, private, government services), research methods and outcomes (type of HIV services accessed). The data extraction tool will be piloted by two reviewers (NM, MM) on at least five randomly selected articles prior, thereafter the tool will be revised accordingly based on observations during the piloting process.

We will make attempts to contact study authors for studies that will have missing data on key variables, or where further clarity is necessary. For missing data that cannot be obtained a description of such missing data with possible implications thereof will be provided in the review.

Data analysis

We will synthesize the main characteristics of included studies and use summary measures to describe study characteristics as described by the primary authors such as the mean, median, proportions and frequencies. We will use descriptive statistics to determine the proportion of included studies that reported the key outcomes. We will assess homogeneity of the study findings and use the chi-square (χ^2) and I-square (I^2) test to come up with percentage variation across the studies. We will consider I-squared value greater than 75% as considerable heterogeneity. Data will be analysed using Stata statistical software, version 16.1. Sub-group analysis will be done to explore sources of heterogeneity in studies, as heterogeneity is mostly in some individual studies due to variations in study designs and methodology. In a situation where data are not sufficiently homogeneous to perform a quantitative synthesis, we will conduct a narrative synthesis.

In analysing qualitative studies, a thematic framework analysis will be conducted following an inductive approach, where themes will be determined through engagement with extracted data. Coding of data will be done based on the themes identified in the data. We will follow five steps of framework synthesis which include familiarisation with the data, identifying a thematic framework, indexing, charting, mapping and interpretation (24). We will use the Research evidence (SURE) thematic framework (25) to guide our thematic analysis. We will present our findings on a summary of qualitative findings table that will summarise our key findings.

All findings will be presented following the format recommended by Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA-P) (26).

Risk of bias in included studies

To assess the risk of bias within included studies, the methodological quality of studies will be assessed by using the Newcastle-Ottawa scale (NOS) which is used for assessing the quality

of non-randomized studies in meta-analysis (27). The NOS for cohort and cross-sectional studies will be modified to meet the systematic review requirements, whilst the cohort scale will be modified for case studies.

The strength of the body of evidence will be assessed by using the Grading of Recommendations Assessment Development and Evaluation (GRADE) approach (28). The grade certainty of evidence presented as high, moderate, low, and very low will be determined based on an assessment of evidence for risk of bias, publication bias, and indirectness. The assessment will be conducted by two reviewers (NM, MM) and where there are disagreements a third reviewer (OA, PN or ML) will be involved to resolve the differences.

To assess our confidence on qualitative findings we will apply the CERQual approach (29). This approach draws on the GRADE approach and assesses confidence based on four components: the methodological limitations of included studies, the relevance of the included studies to the review question, the coherence of the review findings and the adequacy of data contributing to the review findings. The confidence findings will be reported as either high, moderate, low, or very low. The CERQual assessment will appear in a summary of qualitative findings table.

Patient and public involvement

Patients and/or the public will not be involved in this review.

ETHICS AND DISSEMINATION

The study will use publicly available data hence ethical approval was not warranted. The findings will be disseminated in scientific forums and conferences targeting public health audiences and policymakers using virtual platforms such as webinars.

Acknowledgment We thank Ms Pamela Nyokwana for her support in the development of the search strategy.

Author contributions

NM conceptualized the study, designed the search strategy, drafted the proposal and takes full responsibility of the article. MM provided critical feedback on the study protocol, and will contribute to study selection process, and data extraction. PSN, OA, and ML contributed to critically reviewing the conceptualization and design of the study protocol. All authors read and approved the final version of the protocol.

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Competing interests There are no competing interests.

Patient consent for publication Patient consent is not required.

Provenance and peer review The protocol will be peer-reviewed externally.

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Supplementary file 1

Access to HIV Healthcare Services by Farmworkers in sub-Saharan Africa: Search Strategy

Ovid MEDLINE(R) and Epub Ahead of Print, In-Process, In-Data-Review & Other Non-Indexed Citations, Daily and Versions(R) <1946 to February 23, 2022>

- 1 hiv/ or hiv-1/ or hiv-2/
- 2 HIV*.mp.
- 3 AIDS.mp. or Acquired Immunodeficiency Syndrome/
- 4 (human immun* and deficiency virus).mp. or acquired immunodeficiency syndrome*.tw.
- 5 1 or 2 or 3 or 4
- 6 Anti-Retroviral Agents/ or Antiretroviral Therapy, Highly Active/
- 7 (antiretroviral* or HAART* or (anti and retroviral*) or ARV*).mp.
- 8 5 or 6 or 7
- 9 (sub-Saharan Africa or Angola or Benin or Botswana or "Burkina Faso" or Burundi or Cameroon or "Cape Verde" or "Central African Republic" or Chad).mp.
- 10 (Comoros or Congo Brazzaville or Congo Democratic Republic or "Côte d'Ivoire" or Djibouti or "Equatorial Guinea" or Eritrea or Ethiopia or Gabon or Gambia or Ghana or Guinea or "Guinea-Bissau" or Kenya or Lesotho).mp.
- 11 (Liberia or Madagascar or Malawi or Mali or Mauritania or Mauritius or Mozambique or Namibia or Niger or Nigeria or Reunion or Rwanda).mp.
- 12 ("Sao Tome and Principe" or Senegal or Seychelles or "Sierra Leone" or Somalia or "South Africa" or Sudan or Swaziland or Tanzania or Togo or Uganda or "Western Sahara" or Zambia or Zimbabwe).mp.
- 13 exp "Africa South of the Sahara"/
- 14 9 or 10 or 11 or 12 or 13
- 15 8 and 14
- 16 limit 15 to yr="1990 -Current"
- 17 (Farmworkers or "farm worker*" or "Agricultural worker*" or "migrant farmworkers" or "migrant workers" or "migrant labourer*").mp.
- 18 Farmers/
- 19 ("migrant* adj2 health" or migrants or "mobile population*").mp.
- 20 Rural Population/

Supplementary file 1

- 21 ((rural adj2 population*) or (rural adj2 communit*)).tw.
22 plantation worker*.mp.
23 agrarian.tw.
24 17 or 18 or 19 or 20 or 21 or 22 or 23
25 16 and 24
26 (Access* or "access to care" or knowledge or availability or provision or guidelines or
"National policy" or "strategic plan").tw.
27 "Delivery of Health Care"/ or care package*.mp.
28 26 or 27
29 25 and 28
30 limit 30 to humans

Embase 1947-Present, updated daily

- 1 exp Human immunodeficiency virus/ or exp acquired immune deficiency syndrome/ or exp
human immunodeficiency virus infection/ or exp human immunodeficiency virus 1/ or exp human
immunodeficiency virus 2/
2 HIV*.tw.
3 AIDS.tw.
4 antiretroviral agents.mp. or antiretrovirus agent/
5 (HAART* or ARV*).tw.
6 1 or 2 or 3 or 4 or 5
7 (sub-Saharan Africa or Angola or Benin or Botswana or "Burkina Faso" or Burundi or
Cameroon or "Cape Verde" or "Central African Republic" or Chad).mp.
8 (Comoros or Congo Brazzaville or Congo Democratic Republic or "Côte d'Ivoire" or Djibouti
or "Equatorial Guinea" or Eritrea or Ethiopia or Gabon or Gambia or Ghana or Guinea or "Guinea-
Bissau" or Kenya or Lesotho).mp.
9 (Liberia or Madagascar or Malawi or Mali or Mauritania or Mauritius or Mozambique or
Namibia or Niger or Nigeria or Reunion or Rwanda).mp.
10 ("Sao Tome and Principe" or Senegal or Seychelles or "Sierra Leone" or Somalia or "South
Africa" or Sudan or Swaziland or Tanzania or Togo or Uganda or "Western Sahara" or Zambia or
Zimbabwe).mp.
11 exp "Africa south of the Sahara"/ep [Epidemiology]
12 7 or 8 or 9 or 10 or 11

Supplementary file 1

13 6 and 12

14 limit 13 to yr="1990 -Current"

15 (Farmworkers or "farm worker*" or "Agricultural worker*" or "migrant farmworkers" or
 16 "migrant workers" or "migrant labourer*").mp.

17 exp agricultural worker/
 18 ("migrant* adj2 health" or migrants or "mobile population*").mp.

19 exp rural population/
 20 ((rural adj2 population*) or (rural adj2 communit*)).tw.

21 plantation worker*.tw.

22 agrarian.tw.

23 15 or 16 or 17 or 18 or 19 or 20 or 21

24 14 and 22

25 (Access* or "access to care" or knowledge or availability or provision or guidelines or
 26 "National policy" or "strategic plan").tw.

27 health care provision.mp. or health care delivery/
 28 care package.mp.

29 24 or 25 or 26

30 23 and 27

Cochrane Central Register of Controlled Trials**Issue 2 of 12, February 2022**

#1 (HIV* or AIDS or Human Acquired Immunodeficiency Syndrome):ti,ab,kw

#2 MeSH descriptor: [HIV] explode all trees

#3 MeSH descriptor: [Acquired Immunodeficiency Syndrome] explode all trees

#4 (human immun*) and (deficiency virus)

#5 MeSH descriptor: [Anti-Retroviral Agents] explode all trees

#6 MeSH descriptor: [Antiretroviral Therapy, Highly Active] explode all trees

#7 (antiretroviral* or HAART*)

#8 #1 or #2 or #3 or #4 or #5 or #6 or #7

#9 ((sub-Saharan Africa or Angola or Benin or Botswana or "Burkina Faso" or Burundi or
 Cameroon or "Cape Verde" or "Central African Republic" or Chad) or (Comoros or Congo

Supplementary file 1

Brazzaville or Congo Democratic Republic or "Côte d'Ivoire" or Djibouti or "Equatorial Guinea" or Eritrea or Ethiopia or Gabon or Gambia or Ghana or Guinea or "Guinea-Bissau" or Kenya or Lesotho)):ti,ab,kw

#10 ((Liberia or Madagascar or Malawi or Mali or Mauritania or Mauritius or Mozambique or Namibia or Niger or Nigeria or Reunion or Rwanda) or ("Sao Tome and Principe" or Senegal or Seychelles or "Sierra Leone" or Somalia or "South Africa" or Sudan or Swaziland or Tanzania or Togo or Uganda or "Western Sahara" or Zambia or Zimbabwe)):ti,ab,kw

#11 MeSH descriptor: [Africa South of the Sahara] explode all trees

#12 #9 or #10 or #11

#13 #12 and #8

#14 ((Farmworkers or "farm worker*" or "Agricultural worker*" or "migrant farmworkers" or "migrant workers" or "migrant labourer*")):ti,ab,kw

#15 MeSH descriptor: [Farmers] explode all trees

#16 ("migrant* AND health") or migrants or "mobile population"

#17 MeSH descriptor: [Rural Population] explode all trees

#18 (rural and population*) or (rural and communit*)

#19 plantation worker*

#20 agrarian

#21 #14 or #15 or #16 or #17 or #18 or #19 or #20

#22 #21 and #13

#23 ((Access* or "access to care" or knowledge or availability or provision or guidelines or "National policy" or "strategic plan")):ti,ab,kw

#24 care package*

#25 MeSH descriptor: [Delivery of Health Care] explode all trees

#26 #23 or #24 or #25

#27 #26 and #22

Interface - EBSCOhost Research Databases

Database - CINAHL

#	Query
S9	S6 AND S7

Supplementary file 1

S8	S6 AND S7
S7	TX (((Access* or "access to care" or knowledge or availability or provision or guidelines or "National policy" or "strategic plan"))) OR MH delivery of health care OR TX care package
S6	S4 AND S5
S5	TX (((Farmworkers or "farm worker*" or "Agricultural worker*" or "migrant farmworkers" or "migrant workers" or "migrant labourer*"))) OR MH farmers OR TX ("mobile population*" or (rural and population*) or (rural and communit*)) OR TX ((plantation worker*) or agrarian)
S4	S1 AND S2
S3	S1 AND S2
S2	TX ((sub-Saharan Africa or Angola or Benin or Botswana or "Burkina Faso" or Burundi or Cameroon or "Cape Verde" or "Central African Republic" or Chad) OR TX ((Comoros or Congo Brazzaville or Congo Democratic Republic or "Côte d'Ivoire" or Djibouti or "Equatorial Guinea" or Eritrea or Ethiopia or Gabon or Gambia or Ghana or Guinea or "Guinea-Bissau" or Kenya or Lesotho)) OR TX ((Liberia or Madagascar or Malawi or Mali or Mauritania or Mauritius or Mozambique or Namibia or Niger or Nigeria or Reunion or Rwanda)) OR TX (("Sao Tome and Principe" or Senegal or Seychelles or "Sierra Leone" or Somalia or "South Africa" or Sudan or Swaziland or Tanzania or Togo or Uganda or "Western Sahara" or Zambia or Zimbabwe)) OR MH africa south of the sahara
S1	TX (HIV* or AIDS or Human Acquired Immunodeficiency Syndrome) OR MH hiv OR MH acquired immunodeficiency syndrome OR MH Anti-Retroviral Agents OR TX antiretroviral therapy

African Index Medicus

tw:((tw:(hiv* OR aids OR antiretroviral*)) AND (tw:(farmers OR farmworkers OR agricultur* OR rural OR agrarian))) AND (collection_gim:("AIM"))

Web of Science

Editions = CPCI-SSH , CPCI-S

Search #5

#4 AND #3

Search #4

Supplementary file 1

(Farmworkers or "farm worker*" or "Agricultural worker*" or "migrant farmworkers" or "migrant workers" or "migrant labourer*") (Topic) or farmers (Topic) or "rural population*" or "rural communit*" (Topic) or "plantation worker*" or agrarian (Topic)

Search #3

#2 AND #1

Search #2

(sub-Saharan Africa or Angola or Benin or Botswana or "Burkina Faso" or Burundi or Cameroon or "Cape Verde" or "Central African Republic" or Chad) (Topic) or (Comoros or Congo Brazzaville or Congo Democratic Republic or "Côte d'Ivoire" or Djibouti or "Equatorial Guinea" or Eritrea or Ethiopia or Gabon or Gambia or Ghana or Guinea or "Guinea-Bissau" or Kenya or Lesotho) (Topic) or (Liberia or Madagascar or Malawi or Mali or Mauritania or Mauritius or Mozambique or Namibia or Niger or Nigeria or Reunion or Rwanda) (Topic) or ("Sao Tome and Principe" or Senegal or Seychelles or "Sierra Leone" or Somalia or "South Africa" or Sudan or Swaziland or Tanzania or Togo or Uganda or "Western Sahara" or Zambia or Zimbabwe) (Topic)

Search #1

(HIV* or "HIV infection*") OR TOPIC: (AIDS or "acquired immunodeficiency syndrome" or "acquired immunodeficiency syndrome") (Topic)

Google Scholar

(HIV OR AIDS) and sub saharan africa and (rural or farmers) and (access or healthcare or availability)

Screened first 100 results

PRISMA-P (Preferred Reporting Items for Systematic review and Meta-Analysis Protocols) 2015 checklist: recommended items to address in a systematic review protocol*

Section and topic	Item No	Checklist item
ADMINISTRATIVE INFORMATION		
Title:		
Identification	Page 1	1a Identify the report as a protocol of a systematic review
Update		1b If the protocol is for an update of a previous systematic review, identify as such
Registration	Page 2	2 If registered, provide the name of the registry (such as PROSPERO) and registration number
Authors:		
Contact	Page 1	3a Provide name, institutional affiliation, e-mail address of all protocol authors; provide physical mailing address of corresponding author
Contributions	Page 8-9	3b Describe contributions of protocol authors and identify the guarantor of the review
Amendments		4 If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments
Support:	Page 9	
Sources		5a Indicate sources of financial or other support for the review
Sponsor		5b Provide name for the review funder and/or sponsor
Role of sponsor or funder		5c Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol
INTRODUCTION		
Rationale	Page 3-4	6 Describe the rationale for the review in the context of what is already known
Objectives	Page 4-5	7 Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)
METHODS		
Eligibility criteria	Page 5-6	8 Specify the study characteristics (such as PICO, study design, setting, time frame) and report characteristics (such as years considered, language, publication status) to be used as criteria for eligibility for the review
Information sources	Page 6	9 Describe all intended information sources (such as electronic databases, contact with study authors, trial registers or other grey literature sources) with planned dates of coverage
Search strategy		10 Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated
Supplement 1		
Study records:	Page 6-7	
Data management		11a Describe the mechanism(s) that will be used to manage records and data throughout the review

Selection process	11b	State the process that will be used for selecting studies (such as two independent reviewers) through each phase of the review (that is, screening, eligibility and inclusion in meta-analysis)
Data collection process	11c	Describe planned method of extracting data from reports (such as piloting forms done independently, in duplicate), any processes for obtaining and confirming data from investigators
Data items	12	List and define all variables for which data will be sought (such as PICO items and other identifying sources), any pre-planned data assumptions and simplifications
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritisation of main and additional outcomes, with rationale
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies (including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis)
Data synthesis	15a	Describe criteria under which study data will be quantitatively synthesised
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data and methods of combining data from studies, including any planned exploration of consistency (such as I^2 , Kendall's τ)
	15c	Describe any proposed additional analyses (such as sensitivity or subgroup analyses, meta-regression)
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (such as publication bias across studies, selective reporting within studies)
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (such as GRADE)

*** It is strongly recommended that this checklist be read in conjunction with the PRISMA-P Explanation and Elaboration (cite when available) for important clarification on the items. Amendments to a review protocol should be tracked and dated. The copyright for PRISMA-P (including checklist) is held by the PRISMA-P Group and is distributed under a Creative Commons Attribution Licence 4.0.**

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