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Study Protocol

Socio-Cultural Determinants of Access to HIV Treatment and Care Among Pregnant and Postpartum People: A Systematic Review Protocol

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ABSTRACT

Introduction: HIV-related maternal mortality remains high in many low-resource settings despite global declines. Lifelong antiretroviral therapy (ART) improves maternal and child outcomes, yet ART initiation, retention, and adherence remain suboptimal during pregnancy and postpartum. Socioeconomic, behavioral, and structural determinants influence linkage to care and viral suppression, but evidence describing their impact across the perinatal continuum remains fragmented. This review will synthesize these determinants through an equity lens using the PROGRESS-Plus framework, and reporting will follow PRISMA-E 2012 guidelines.

Methods and Analysis: This protocol follows PRISMA-E 2012 guidelines and is registered with PROSPERO (CRD420250650979). A comprehensive search will be conducted across multiple databases for studies published from January 2012 to May 2025. Eligible designs will include quantitative, qualitative, and mixed-methods studies evaluating HIV testing, ART initiation, retention in care, and viral suppression in relation to socio-cultural, economic, behavioral, or health system factors. The PECO framework will be used (Population: pregnant/postpartum individuals with HIV ; Exposure: social/structural determinants; Comparator: not exposed; Outcomes: HIV care cascade indicators). Postpartum will be defined as up to 12 months after delivery, and adolescents aged 15–17 years will be included. Two independent reviewers will screen studies using Rayyan. Quality will be assessed using Joanna Briggs Institute tools. Random-effects meta-analysis will be conducted when feasible. Qualitative findings will undergo thematic synthesis; mixed-methods results will be integrated narratively.

Ethics and dissemination: Approval is not required as this review uses publicly available data. Findings will be submitted for publication, presented at guideline meetings, and shared at scientific conferences.

1. Introduction

The global battle against Human Immunodeficiency Virus (HIV) and Advanced HIV Disease (AHD) has achieved extraordinary progress, largely due to the development and scale-up of antiretroviral therapy (ART). ART has transformed HIV from a fatal illness into a manageable chronic condition, with HIV-related mortality declining by nearly 40% between 2010 and 2021 [1, 2]. Despite these accomplishments, significant inequalities persist in access to and adherence to HIV treatment and care, particularly among vulnerable and key populations. As of 2023, an estimated 9.3 million people living with HIV still lacked access to ART [3].

While biological and clinical determinants of treatment outcomes are well-documented, there is growing recognition of the critical role of socio-cultural and structural factors in shaping the continuum of HIV care. These influences—such as beliefs, norms, values, practices, and interactions with the health system—affect health-seeking behaviors, engagement with care, and treatment adherence [4].

Pregnant and postpartum people represent a priority population in the global HIV response. In 2023, the World Health Organization (WHO) estimated that 1.3 million pregnant individuals worldwide were living with HIV [5]. Although vertical transmission can be prevented through timely diagnosis, access to prevention of mother-to-child transmission (PMTCT) services, and sustained adherence to ART during pregnancy and the postpartum period, it continues to pose a significant concern [6]. Socio-cultural barriers—including gender inequities in healthcare, stigma and discrimination, lack

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of partner or family support, poverty, geographic isolation, and limited health literacy—frequently hinder engagement with HIV care and retention in treatment among this group [7].

Previous systematic reviews have examined determinants of HIV care, often focusing on either supply-side (health system) or demand-side (individual and community) factors influencing initiation and retention in ART [8, 9, 10]. However, as understanding of both biomedical and socio-structural determinants evolves, there remains a pressing need for an updated and consolidated synthesis of socio-cultural influences on HIV care, specifically in the context of pregnant and postpartum populations. Moreover, while earlier reviews have largely focused on outcomes such as ART initiation, adherence, and retention in care, our review will also include viral suppression as a key outcome [11].

Recognizing and understanding the influence of socio-cultural determinants on access to HIV treatment and care is crucial for developing targeted and effective interventions. This protocol describes the methodology for a systematic review and meta-analysis designed to: [2] identify socio-cultural determinants influencing HIV treatment and care access among pregnant and postpartum people; [1] compare barriers across regions and healthcare systems; and [3] generate evidence to inform contextually and culturally appropriate policy and intervention strategies. By doing so, the review aims to contribute to improved maternal and child health outcomes in the context of HIV.

1.1. Objectives

1.1.1. Primary objective

- To determine and examine socio-cultural determinants influencing HIV/AIDS treatment and care access in pregnant and postpartum people.

1.1.2. Secondary objectives

- To compare barriers across different regions and healthcare systems.
- To offer recommendations for policy and intervention strategies to enhance HIV treatment and care adherence during the pregnancy and postpartum period.

2. Methods

A systematic review of studies exploring factors that influence access to HIV care and treatment, including HIV testing, uptake of ART, adherence to antiretroviral (ART) regimens, and HIV counseling of pregnant and postpartum people with HIV, will be performed.

This literature review will be conducted in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The review protocol has been submitted for registration with PROSPERO (Registration ID: CRD420250650979).

2.1. Information sources

We will perform an extensive literature search across the following major databases: PubMed, CINAHL, Web of Science, EMBASE, PsycINFO, Scopus, LILACS, and African Index Medicus, for studies published between January 2012 and May 2025. The decision to apply this publication year filter is based on the WHO Consolidated Guidelines on the Use of Antiretroviral Drugs for Treating and Preventing HIV Infection (2013). The revision process for these guidelines was initiated in early 2012 under the oversight of the WHO Guidelines Review Committee. This 2013 update consolidated ART-related recommendations into a single set of guidelines, encompassing HIV treatment and prevention across all age groups and populations within the broader HIV care continuum. As the guideline revision process began in 2012, we restricted our search to studies published from that year onward.

A robust search strategy will be developed in collaboration with a university librarian to ensure the systematic and comprehensive identification of relevant literature. The strategy will incorporate Medical Subject Headings (MeSH) terms and keywords related to HIV, pregnancy, postpartum, treatment access, and determinants. Searches will be conducted across PubMed, CINAHL, Web of Science, EMBASE, PsycINFO, Scopus, LILACS, and African Index Medicus, with no language restrictions. To supplement these databases, we will also review Google Scholar, the reference lists of included studies, and those of similar systematic reviews to identify additional eligible studies.

The search strategy will be developed and reported in full accordance with PRISMA-S guidelines. For each database, we will document the complete line-by-line search strategy, database interface, search dates, applied filters, and the number of hits, all of which will be included in the Appendix for transparency and reproducibility.

Existing evidence indicates that MEDLINE (PubMed), Embase, Web of Science, and Google Scholar together cover the vast majority of biomedical literature, with recall rates estimated at approximately 95–98%. While the incremental yield from additional databases is expected to be modest, their inclusion will enhance methodological rigor and comprehensiveness. We will also acknowledge in the discussion that, despite broad database coverage, some non-indexed or unpublished data may remain inaccessible.

2.2. Inclusion and exclusion criteria

We will include quantitative observational studies (case-control, cohort, and cross-sectional studies) as well as qualitative and mixed-method studies. The eligible studies must report at least one of these four outcomes: HIV testing, initiation of ART, retention in HIV care, or viral suppression. Studies must analyze associations between these outcomes and various determinants, including but not limited to socio-cultural, socio-demographic, economic, psychosocial, behavioral, or health system-related factors.

Studies focused on pregnant or postpartum people with HIV aged 18 years or older will be considered. Included studies must estimate risk effects or associations and account for potential confounding in their analysis. Non-English studies will be included without language restrictions to minimize language bias. They will be translated using a combination of machine translation tools (e.g., Google Translate, Microsoft Translator) and AI-assisted platforms such as DeepL. Two reviewers will independently verify all translations, and any discrepancies will be resolved by consensus. This workflow follows Cochrane guidance for the inclusion of non-English studies and emphasizes transparency, reproducibility, and accuracy in data extraction. Only studies with full-text articles available will be included. Editorials, commentaries, reviews, and studies without primary data or relevant outcomes will be excluded.

Study PECO Population(s), Exposure(s), Comparator(s), Outcome(s) The PECO framework will guide this systematic review. The Population (P) of interest is pregnant and postpartum individuals diagnosed with HIV/AIDS. Exposure (E) comprises social and structural determinants, including socio-cultural, economic, and health system factors that may influence engagement with HIV care. The Comparator (C) will be individuals not exposed

Table 1: Search grid with identifiable PECO concepts

PECO Concept	Description
Participants	Pregnant or postpartum individuals diagnosed with HIV/AIDS
Exposure	Examining socio-cultural determinants and barriers that influence key stages of HIV care, including screening, initiation of ART, retention in treatment, and achievement of viral suppression.
Comparators	None
Outcomes	Access to HIV/AIDS treatment and care across the continuum.

PECO, Population, Exposure, Comparator, and Outcome; ART, Antiretroviral Therapy.

to the determinant under study, although studies without explicit comparators will also be considered. The Outcome (O) is defined as HIV care cascade measures, specifically HIV screening, initiation of ART, retention in treatment, and achievement of viral suppression **(Table 1)**.

2.3. Study Selection

The study selection will employ a two-step approach: title screening and abstract screening, followed by a full-text review. We will use Rayyan, an online tool to facilitate review management for the screening process [12].

First, two reviewers will independently screen all records at each stage using predefined inclusion criteria. Any duplicates and titles that fail to meet the inclusion criteria will be excluded. After this initial screening, the full-text articles of the remaining potentially eligible studies will be uploaded manually to Rayyan for further review.

During the full-text screening phase, two reviewers will independently assess each article to determine its final eligibility. Any discrepancies will be resolved through discussion or, if necessary, consultation with a third reviewer. Additionally, the reviewers will manually search the reference lists of included articles to identify any further key studies for potential inclusion. The selection process will be documented using a PRISMA flow diagram.

3. Case Presentation

3.1. Search Strategy

The full Boolean search string for MEDLINE (via PubMed) is provided below as the primary example, combining MeSH terms and free-text terms related to HIV, antiretroviral therapy, pregnancy/postpartum, and socio-cultural determinants of access to care. This strategy will be adapted for use in other databases (e.g., mapping MeSH to CINAHL subject headings, using topic search [TS] fields in Web of Science, and keyword-based searches in Google Scholar). Filters will be applied for publication year (2012 onwards) to align with the initiation of the 2013 WHO guideline revision. Detailed search strings for all databases will be included in an appendix, in line with PRISMA-S reporting standards.

3.2. PubMed (3,511 results)

("HIV"[MeSH Terms] OR "HIV Infection*"[MeSH Terms] OR "human immunodeficiency virus*") AND ("Anti-Retroviral Agent*"[MeSH Terms] OR "Antiretroviral Therapy, Highly Active"[MeSH Terms] OR "Prevention of Mother-to-Child Transmission"[MeSH Terms] OR ARV OR ART OR HAART OR PMTCT OR "antiretroviral therap*" OR "highly active antiretroviral therap*" OR "prevention of mother-to-child HIV transmission" OR "treatment*" OR "care*" OR "antiretrovir*") AND ("Pregnancy"[MeSH Terms] OR "Pregnant Wom*n"[MeSH Terms] OR "Maternal Health"[MeSH Terms] OR "Breast Feeding"[MeSH Terms] OR "Mothers"[MeSH Terms] OR pregnant* OR antepartum OR postpartum OR perinatal OR natal OR breastfeed* OR mother* OR maternal*) AND (“access” OR cultur* OR “health barrier*" OR "cultural barrier*" OR "determinant*" OR "social barrier*")

3.3. CINAHL (1,701 results)

(MH "HIV" OR MH "HIV Infections" OR "human immunodeficiency virus*") AND (MH "Anti-Retroviral Agents" OR MH "Antiretroviral Therapy, Highly Active" OR MH "Prevention of Mother-to-Child Transmission" OR ARV OR "Anti-retroviral Therapy" OR ART OR "Highly Active Anti-Retroviral Therapy" OR HAART OR "prevention of mother-to-child HIV transmission" OR PMTCT OR antiretrovir* OR treatment* OR care*) AND (MH "Pregnancy" OR MH "Pregnant Wom*n" OR MH "Maternal Health" OR MH "Breast Feeding" OR MH "Mothers" OR pregnant* OR antepartum OR postpartum OR perinatal OR natal OR breastfeed* OR mother* OR maternal*) AND (“access” OR “soci*” OR “cultur*” OR "socio-cultural determinant*")

3.4. Web of Science (5,377 results)

TS=("HIV" OR "HIV Infection*" OR "human immunodeficiency virus*") AND TS=("Anti-Retroviral Agent*" OR "Antiretroviral Therapy, Highly Active" OR "Prevention of Mother-to-Child Transmission" OR ARV OR ART OR HAART OR PMTCT OR "antiretroviral therap*" OR "highly active antiretroviral therap*" OR "prevention of mother-to-child HIV transmission" OR treatment* OR care* OR "antiretrovir*") AND TS=("Pregnancy" OR "Pregnant Wom*n" OR "Maternal Health" OR "Breast Feeding" OR "Mothers" OR pregnant* OR antepartum OR postpartum OR perinatal OR natal OR breastfeed* OR mother* OR maternal*) AND TS=("access" OR cultur* OR "health barrier*" OR "cultural barrier*" OR determinant* OR "social barrier*")

3.5. Google Scholar (710,000)

"HIV" OR "HIV infection" OR "human immunodeficiency virus" AND ("antiretroviral therapy" OR "ART" OR "ARV" OR "HAART" OR "PMTCT" OR "highly active antiretroviral therapy" OR "prevention of mother-to-child HIV transmission") AND ("pregnancy" OR "pregnant women" OR "maternal health" OR "breastfeeding" OR "mothers" OR "maternal" OR "postpartum" OR "perinatal") AND ("access" OR "cultural barriers" OR "health barriers" OR "social determinants" OR "healthcare access" OR "cultural factors")

3.6. Data extraction and classification

Two reviewers will independently screen titles/abstracts and full texts against the eligibility criteria. Prior to formal screening, we will conduct a pilot calibration exercise on a sample of 20–50 records to refine decision rules and ensure consistency. Inter-rater agreement will be assessed using Cohen’s κ statistic at both the title/abstract and full-text stages, with discrepancies resolved through discussion or by a third reviewer if necessary **(Table 2)**.

For data extraction, we will use a standardized form pretested on a small sample of studies to ensure clarity and consistency. From each included study, we will extract study characteristics (e.g., year of publication, country), HIV testing, ART initiation, adherence, and factors influencing access to HIV care. These

Table 2: Data to be extracted from the included studies

Domain	Data Items	Notes/Definitions
Bibliometric Data	Authors, year of publication, country of origin	The country will also be coded by the WHO region and the World Bank income group.
Study Characteristics	Study design, study setting (facility, community, urban/rural), sample size, participant eligibility criteria, sampling method	Setting classification harmonized across studies.
Population Characteristics	Age, pregnancy/postpartum stage, HIV status confirmation, comorbidities	Extracted as reported; disaggregate by pregnancy vs. postpartum where possible.
Exposure Operationalization	Definition and measurement of social/structural determinants (e.g., SES, stigma, health system barriers)	Record both categorical/continuous coding and data source (survey, registry, etc.).
Comparator	Unexposed group (where applicable)	Document if the study is descriptive and has no comparator.
Outcome Variables	HIV testing uptake, ART initiation, retention in care (6, 12, 24 months), adherence (measure specified), discontinuation, viral suppression (<200 copies/mL or study definition)	Map to the harmonized HIV care cascade framework.
Effect Measures	Risk ratio, odds ratio, hazard ratio, prevalence ratio, etc.	Note whether crude or adjusted.
Adjustment Sets	Covariates included in multivariable analyses	Specify variables adjusted for (e.g., age, SES, parity).
Equity Variables (PROGRESS-Plus)	Place of residence, race/ethnicity, occupation, gender/sex, religion, education, socioeconomic status, social capital, plus age, disability, sexual orientation, etc.	Capture where reported.
Timepoints	Follow-up points for outcomes (e.g., 6, 12, 24 months, postpartum intervals)	Standardize across studies for synthesis.
Funding Source	Funder name/type, presence of industry sponsorship	Note any reported conflicts of interest.

ART, Antiretroviral Therapy; HIV, Human Immunodeficiency Virus; SES, Socioeconomic Status; PROGRESS-Plus, Place of residence, Race/ethnicity, Occupation, Gender/sex, Religion, Education, Socioeconomic status, and Social capital, plus additional personal characteristics.

factors may include socio-demographic, socioeconomic, medical, health system-related, knowledge and belief-related, risky health behaviors, psychosocial aspects, stigma and discrimination, family and interpersonal violence, and community HIV/AIDS prevalence. Extracted data will be organized in structured summary tables.

3.7. Quality Appraisal

The methodological quality of included studies will be appraised using the Joanna Briggs Institute (JBI) critical appraisal checklists [13], with the specific checklist selected according to study design (e.g., cohort, case-control, cross-sectional, qualitative). For studies employing mixed-methods designs, the Mixed Methods Appraisal Tool (MMAT, 2018) will be applied to ensure comprehensive evaluation across both qualitative and quantitative components.

Each item within the checklists will be classified as "Yes," "No," "Unclear," or "Not Applicable." Two reviewers will independently perform all assessments, with disagreements resolved by consensus or adjudication by a third reviewer. The results of the critical appraisal will be tabulated and used to inform the interpretation of findings. While no studies will be excluded solely on quality grounds, risk of bias assessments will be explicitly considered in the narrative synthesis and any sensitivity analyses, ensuring that study quality informs the overall strength and credibility of the evidence.

3.8. Statistical Analysis

3.8.1. Synthesis & Statistical Analysis

The primary effect measures of interest will be adjusted odds ratios (aORs), adjusted risk ratios (aRRs), or adjusted hazard ratios (aHRs), as reported by individual studies. When studies report only unadjusted estimates, these will be extracted but analyzed separately or included in sensitivity analyses. Where necessary, effect measures will be converted to a common metric (e.g., log odds ratio) for meta-analysis. For prevalence or proportion data (e.g., HIV testing uptake, ART initiation), pooled estimates will be calculated using a random-effects model with appropriate transformations (e.g., Freeman–Tukey double arcsine or generalized linear mixed models [GLMM]) to stabilize variances.

Random-effects models will be used to account for between-study heterogeneity. Effect sizes will be reported with 95% confidence intervals (CIs), and prediction intervals will also be provided to convey expected between-study variation. Results will be interpreted primarily in terms of effect sizes and intervals rather than statistical significance thresholds.

Statistical heterogeneity will be quantified using the I^2 statistic, with $I^2 > 50\%$ considered substantial. Where ≥ 10 studies are available, we will conduct subgroup analyses and meta-regression to explore sources of heterogeneity. Potential moderators will include geographic region, World Bank income level, antenatal vs. postpartum period, study design, and risk of bias classification. Influence analyses will be conducted to assess the impact of outliers.

For meta-analyses including ≥ 10 studies, we will assess small-study effects using contour-enhanced funnel plots and statistical tests for asymmetry (e.g., Egger's test for continuous outcomes, Harbord's test for binary outcomes), with interpretation informed by the limitations of these methods.

For qualitative studies, we will use a thematic synthesis approach to identify recurring patterns and themes related to barriers and facilitators of HIV care. Where applicable, findings will be integrated through a mixed-methods synthesis, with qualitative evidence contextualizing and explaining quantitative results.

The overall certainty of evidence for each outcome will be assessed using the GRADE approach, adapted for observational designs. Domains will include risk of bias, consistency, directness, precision, and publication bias. The summary of the Findings tables will present pooled effect estimates alongside certainty ratings.

Results will be summarized in structured tables, including variables such as study design, setting, exposure operationalization, outcome definitions and timepoints, effect measures, adjustment sets, equity variables (aligned with PROGRESS-Plus), and funding/conflicts of interest. This ensures systematic alignment between extracted variables and the analytic framework.

4. Discussion

We anticipate several potential limitations in this review. Variations in study design, population characteristics (e.g., antenatal versus postpartum), and health system contexts may complicate comparability and reduce the strength of pooled estimates. In addition, despite an extensive search strategy, the possibility of database coverage bias persists, particularly for studies conducted in underrepresented regions. These limitations will be explicitly acknowledged and considered in the interpretation of findings.

5. Conclusions

This protocol outlines the planned methods for a systematic review examining the influence of social and structural determinants on HIV care among pregnant and postpartum individuals. By mapping barriers and facilitators across multiple levels, this review aims to pinpoint key intervention targets. The findings will guide culturally relevant, context-specific mental health and stigma-reduction strategies, inform tailored interventions such as group therapy, and support their integration into antenatal, postnatal, family, and community care. Ultimately, the goal is to strengthen HIV care delivery, reduce mental health burdens, enhance support networks, and improve ART adherence and maternal–child outcomes. As a protocol, this document specifies the planned methodology; the conclusions of the review itself will depend on the evidence identified and synthesized.

Conflicts of Interest

The authors declare no competing interests that could have influenced the objectivity or outcome of this research

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Institutional Review Board (IRB)

This review is based on the analysis of publicly available published studies and does not involve any new data collection from human participants. As such, a formal ethical approval is not required. The review will strictly adhere to established ethical standards for secondary research.

Large Language Model

None

Authors Contribution

OI, AM, NN, SFM, and AR conceptualized the study design and objectives. EN, HF, SR, MAQ, ZHJ, and OI conducted the literature search and drafted the manuscript. EN, HF, SR, MAQ, and ZHJ critically reviewed and revised the final manuscript. AR is the guarantor and critically reviewed the manuscript. All authors approve the final manuscript as submitted for publication.

Data Availability

This systematic review is based on an analysis of previously published studies. All data analyzed during this study are derived from articles publicly available on electronic databases, including PubMed, Web of Science, and CINAHL. Full details of the search strategy, inclusion criteria, and data extraction process are described in the Methods section of the manuscript.

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