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Reproductive and Sexual Health Rights (Srhr) In Developing Countries: A Systematic Review

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Abstract

Sexual and reproductive health and rights (SRHR) remain a critical global public health challenge, particularly in low- and middle-income countries where disparities in access, utilization, and outcomes continue to persist. Despite growing research output, the evidence base remains fragmented across populations, settings, and outcome domains, limiting its utility for policy and programmatic decision-making. This systematic review therefore aimed to synthesize available evidence on SRHR outcomes, appraise study characteristics and methodological quality, and examine heterogeneity and certainty of evidence across included studies. A systematic review and meta-analytic approach were employed to identify and synthesize empirical studies on SRHR across diverse populations and contexts in developing countries. Eligible studies included cross-sectional, cohort, qualitative, observational, survey, and intervention designs. Data were extracted on study characteristics, target populations, outcome domains, and methodological quality. Risk of bias was assessed across selection, measurement, confounding, and outcome assessment domains. Heterogeneity was quantified using the I^2 statistic, while meta-regression analyses were conducted to identify potential sources of variability. Findings indicate that cross-sectional studies dominated the evidence base (47.4%), followed by qualitative studies (26.3%) and cohort designs (15.8%). Adolescents

(44.7%) and women (36.8%) were the most frequently studied populations. Sexual behaviour (18.4%), SRHR service access (15.8%), and contraceptive use (13.2%) were the most reported outcomes, whereas health equity remained the least examined domain (5.3%). Overall heterogeneity was moderate (I^2 = 65%), with substantial variability observed in contraceptive use (72.6%), sexual behaviour (69.7%), and SRHR access (65.1%). Rural settings exhibited higher heterogeneity (I^2 = 69%) compared with urban settings (I^2 = 57%). Risk of bias was predominantly moderate, with confounding control identified as the principal limitation. Certainty of evidence was generally moderate, high for HIV/STI outcomes, and low for gender-based violence domains. Meta-regression revealed significant associations with publication year, sample size, geographic region, study quality, and setting ($p < 0.05$). Finally, the SRHR evidence base is methodologically moderate but highly heterogeneous, with notable gaps in equity-focused, intervention, and structural determinant research, which are suggested areas for further studies.

Keywords: Reproductive, Sexual health rights, Developing Countries, Sexual behaviors.

Introduction

The reproductive and sexual health rights (SRHR) constitute a core component of universal human rights, encompassing the right of individuals to attain the highest standard of sexual and reproductive health, to access accurate information and quality services, and to make autonomous decisions regarding their bodies and relationships free from coercion, discrimination, and violence (World Bank, 2018). The conceptualization of sexual and reproductive health has evolved significantly since the International Conference on Population and Development, which reframed reproductive health as not merely the absence of disease but a state of complete physical, mental, and social well-being in all matters relating to the reproductive system (World Bank, 2018). This paradigm shifts also emphasized the centrality of human rights, gender equality, and individual autonomy in shaping health outcomes (Psaki *et al.*, 2017). Over the past several decades, developing countries particularly low- and middle-income countries (LMICs) have experienced substantial demographic, social, and health transitions (De Neve *et al.*, 2015). Increased investments in education, healthcare systems, and global health initiatives have contributed to improvements in key indicators such as fertility reduction, increased contraceptive uptake, and declines in maternal and child mortality (Cleland, 2010; Gakidou *et al.*, 2010; Psaki *et al.*, 2017). For instance, global primary school enrollment rose dramatically between 1970 and 2010, reaching near-universal levels in many regions (World Bank, 2018), with evidence suggesting strong correlations between educational attainment and improved SRHR outcomes (Basu, 2002; LeVine *et al.*, 2012).

Education, particularly female education, has been consistently identified as a critical social determinant of SRHR (Psaki *et al.*, 2017). Empirical studies demonstrate that increased years of schooling are associated with delayed sexual debut, later age at marriage, reduced fertility, and improved maternal and child health outcomes (Behrman, 2015). Education enhances cognitive skills, health literacy, and access to information, thereby enabling individuals to make informed reproductive choices and utilize healthcare services effectively (Nguyen & Wodon, 2017). Furthermore, it contributes to women's empowerment by improving economic opportunities, increasing autonomy in household decision-making, and strengthening negotiation capacity in sexual relationships (Psaki *et al.*, 2017). The relationship between education and SRHR has also been conceptualized through multiple theoretical pathways. These according to (De Neve *et al.* (2015). include: (i) preference-shaping mechanisms, whereby education influences fertility desires and norms regarding family size; and (ii) capacity-enhancing mechanisms, through which education improves access to resources, knowledge, and services necessary to achieve reproductive intentions. Additionally, education may exert an incarceration effect, particularly among adolescents, by delaying exposure to early marriage and childbearing while individuals remain in school (K Deepika et al., 2025). Some scholars have further described education as a social vaccine, particularly in the context of HIV prevention, by equipping individuals with knowledge and skills to reduce risky sexual behaviors (K Deepika et al., 2025)

Despite these well-documented associations, progress in SRHR across developing countries remains uneven and, in many cases, insufficient. High levels of unmet need for contraception persist, alongside substantial burdens of unintended pregnancy, unsafe abortion, and sexually transmitted infections (STIs), including HIV/AIDS (Bongaarts & Casterline, 2023; Mensch *et al.*, 2015). According to the World Health Organization, more than 374 million new cases of curable STIs occur annually, disproportionately affecting young people aged 15–24 years, the majority of whom reside in LMICs. Additionally, approximately 21 million pregnancies occur annually among adolescent girls aged 15–19 years in these settings, with nearly half being unintended (WHO, 2021). Adolescents and young people represent a particularly vulnerable population within the SRHR framework. LMICs are home to nearly 90% of the global adolescent population, many of whom face intersecting risks including early sexual initiation, child marriage, unintended pregnancy, and exposure to sexual violence (UNFPA, 2019). Gender inequality further exacerbates

these vulnerabilities, limiting girls' access to education, restricting autonomy, and increasing susceptibility to coercion and harmful practices such as early and forced marriage (Akpan, 2003; Nguyen & Wodon, 2017). In sub-Saharan Africa, for example, nearly half of women aged 20–24 years are married before the age of 18, contributing to adverse health and socioeconomic outcomes (UNICEF, 2020).

Structural and systemic barriers continue to impede access to SRHR services in many developing contexts. These barriers include inadequate healthcare infrastructure, shortages of skilled healthcare providers, financial constraints, and sociocultural norms that stigmatize sexual health discussions particularly for unmarried individuals and adolescents (K Deepika et al., 2025). Legal and policy environments also play a critical role; restrictive laws governing access to contraception and safe abortion services, as well as the criminalization of certain sexual behaviors, can significantly limit service utilization and exacerbate health inequities. Human rights frameworks are central to addressing these challenges. International treaties and national legal systems establish obligations for states to respect, protect, and fulfill SRHR. However, the implementation of these frameworks remains inconsistent across LMICs. Laws and policies can either facilitate access to SRHR services by ensuring availability, accessibility, acceptability, and quality or create barriers through restrictive provisions and discriminatory practices. For instance, requirements for third-party authorization, age restrictions, and lack of confidentiality can deter adolescents from seeking care. Conversely, rights-based approaches that promote gender equality, non-discrimination, and community participation have been shown to improve SRHR outcomes (Gruskin *et al.*, 2013).

Sexual health, as an integral component of SRHR, extends beyond reproductive functions to include emotional well-being, interpersonal relationships, and the ability to experience safe and satisfying sexual lives. However, comprehensive sexuality education (CSE) remains limited in many LMICs, both in coverage and content. Existing programs often focus narrowly on biological aspects of reproduction, neglecting critical components such as consent, gender norms, communication skills, and prevention of sexual and gender-based violence. Evidence from both high-income and developing settings indicates that well-designed CSE programs can delay sexual initiation, reduce risky behaviors, and increase contraceptive use (Kirby, 2007; UNESCO, 2018). In addition to traditional determinants, emerging global challenges such as climate change are increasingly recognized as influencing SRHR outcomes. Environmental shocks including droughts, floods, and extreme temperatures can disrupt healthcare systems, exacerbate food insecurity, and increase vulnerability to gender-based violence and displacement. These impacts disproportionately affect women and girls, particularly in resource-constrained settings, thereby compounding existing inequities in access to SRHR services (UNFPA, 2021).

Importantly, while a substantial body of literature documents associations between various determinants and SRHR outcomes, significant gaps remain in establishing causal relationships. Many studies are observational in nature and subject to biases such as reverse causality and unmeasured confounding factors, including socioeconomic status, cultural norms, and individual preferences. As a result, improvements in SRHR indicators may reflect broader related changes such as economic development or policy reforms rather than direct effects of specific interventions. Given these complexities, there is a critical need for rigorous synthesis of evidence to better understand the determinants, interventions, and outcomes related to SRHR in developing countries.

The main aim of this systematic review is to evaluate reproductive and sexual health rights in developing countries, with particular emphasis on the availability, accessibility, utilization, and quality of reproductive and sexual health services, as well as the factors that influence individuals' ability to exercise these rights. Specifically, the review will assess the availability and utilization of reproductive and sexual health services in developing countries and identify the major barriers that limit access to and uptake of such services. It will also examine the key socio-demographic, economic, cultural, and gender-related determinants that influence the realization of reproductive and sexual health rights. Furthermore, the review will evaluate the effectiveness of interventions and policies designed to promote reproductive and sexual health rights and improve related health outcomes in developing countries.

Methodology

Study Design

A systematic review design was employed to comprehensively identify, appraise, and synthesize existing empirical evidence on reproductive and sexual health rights (SRHR) in developing countries. The systematic review methodology is widely regarded as a rigorous approach for minimizing bias and enhancing the reliability of findings through structured and transparent procedures. It enables the integration of diverse study designs, including quantitative, qualitative, and mixed-methods research, thereby providing a comprehensive understanding of complex public health issues.

The conduct and reporting of this review were guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (Moher *et al.*, 2009). This framework provides standardized procedures for systematic reviews, ensuring methodological rigor, transparency, and reproducibility throughout the review process. Adherence to PRISMA enhances the credibility of the review by clearly documenting each stage of study identification, screening, eligibility assessment, and inclusion.

Study Setting

This review focused exclusively on developing countries, defined as low- and middle-income countries (LMICs) according to the classification of the World Bank (World Bank, 2018). These settings were selected due to their disproportionate burden of adverse reproductive and sexual health outcomes, including high maternal mortality, unmet need for contraception, and high prevalence of sexually transmitted infections (STIs) (World Health Organization, 2021). Hence, LMICs are further characterized by structural challenges such as limited healthcare infrastructure, financial constraints, sociocultural barriers, and gender inequality, all of which significantly influence access to and utilization of SRHR services (UNFPA, 2019).

Eligibility Criteria

The eligibility criteria for study inclusion were developed using the Population, Exposure, Outcome, and Study Design (PEOS) framework (Bettany-Saltikov, 2012). This framework was appropriate for synthesizing both qualitative and quantitative evidence related to SRHR.

Inclusion Criteria

Studies were included in the systematic review if they examined reproductive and sexual health rights (SRHR) and related outcomes, including access to and utilization of reproductive and sexual health services, sexually transmitted infections (STIs), maternal health, sexual violence, and contraceptive use. Eligible studies were required to focus on populations living in developing countries, particularly low- and middle-income countries (LMICs), to ensure that the evidence was relevant to the study context. The review included original research employing quantitative, qualitative, or mixed-methods designs, provided that the studies were published in English between 2000 and 2025. This publication period was selected to capture contemporary evidence on reproductive and sexual health rights and the evolving policies, interventions, and determinants influencing their realization in developing countries.

Exclusion Criteria

Studies were excluded if they were review articles, commentaries, editorials, opinion pieces, or other forms of non-original research. Studies were also excluded where the full text was not accessible, as sufficient methodological and outcome information was required to assess their eligibility and relevance to the review

Search Strategy

A comprehensive literature search was conducted across multiple electronic databases, including Google Scholar, Scopus, Web of Science, and PubMed/MEDLINE. These databases were selected due to their extensive coverage of biomedical and public health literature.

The search strategy combined Medical Subject Headings (MeSH) and free-text terms to ensure comprehensive retrieval of relevant studies (Higgins & Green, 2011). Key search terms included: sexual and reproductive health rights, SRHR, family planning, contraceptive use, adolescent reproductive health, sexual health services, developing countries (low- and middle-income countries). Additionally, manual searches of reference lists from included studies were conducted to identify further relevant articles (Higgins & Green, 2011).

Study Selection Process

The study selection process was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009). The process involved four sequential stages: identification, screening, eligibility assessment, and inclusion. During the identification stage, all records retrieved from the selected electronic databases were imported into a reference management system, where duplicate records were identified and removed. The screening stage involved reviewing the titles and abstracts of the remaining records against the predefined eligibility criteria to determine their relevance to the review. Studies considered potentially eligible were then subjected to full-text assessment during the eligibility stage, where each article was examined in detail to determine whether it satisfied all the inclusion criteria. Finally, studies that met the eligibility requirements were included in the systematic review and formed the basis for the synthesis of evidence. This structured and systematic approach helped to minimize selection bias, promote consistency in the application of eligibility criteria, and enhance the transparency and reproducibility of the study selection process. The overall selection process was presented using a PRISMA flow diagram.

Data Extraction

A standardized data extraction form was developed and used to systematically collect relevant information from

each of the studies included in the review, in accordance with established systematic review methods (Higgins & Green, 2011). The information extracted from each study included the author(s) and year of publication, country or region where the study was conducted, study design, sample size and characteristics of the study population, reproductive and sexual health and rights (SRHR) outcomes assessed, and the key findings reported by the authors. Where applicable, information on the interventions implemented, including their nature, scope, and intended outcomes, was also extracted. The use of a standardized data extraction tool facilitated a consistent approach to the collection and organization of evidence across the included studies, minimized the potential for data extraction bias, and enhanced the completeness, reliability, and comparability of the information used for the subsequent synthesis of findings.

Quality Assessment

The methodological quality of included studies was assessed using validated critical appraisal tools. Quantitative studies were evaluated, while qualitative and mixed-methods studies were assessed using appropriate tools (Hong *et al.*, 2018). Studies were appraised based on criteria including study design, sampling techniques, measurement validity, and risk of bias. Only studies rated as moderate to high quality were included in the final synthesis to ensure robustness of findings.

Data Synthesis

Due to the considerable heterogeneity among the included studies in terms of study designs, populations, settings, and outcome measures, a narrative synthesis approach was adopted to integrate and interpret the available evidence (Popay et al., 2006). This approach enabled the findings from diverse quantitative, qualitative, and mixed-methods studies to be systematically compared and synthesized while accommodating differences in study characteristics and reported outcomes. The synthesis was organized around four key thematic areas: access to reproductive and sexual health and rights (SRHR) services, determinants influencing the realization and utilization of SRHR, the effectiveness of interventions aimed at improving SRHR outcomes, and the influence of legal and policy frameworks on SRHR. Findings were examined across these themes to identify common patterns, variations, gaps, and contextual factors that could explain differences in outcomes between settings. Where appropriate, descriptive statistics were used to summarize key characteristics and findings of the included studies, while tables were employed to present and organize the evidence in a clear and systematic manner. This approach facilitated an integrated interpretation of the available evidence and provided a comprehensive understanding of SRHR in developing countries.

Ethical Considerations

Ethical approval was not required for this study as it involved the analysis of secondary data from published studies (Higgins & Green, 2011). However, ethical research practices were strictly adhered to, including accurate reporting of findings, proper citation of sources, and avoidance of plagiarism.

Results

Characteristics of Included Studies

The distribution of study designs indicates a predominant reliance on cross-sectional studies, which accounted for nearly half of the included studies (47.4%). Qualitative studies constituted a substantial proportion (26.3%), reflecting the importance of exploring contextual, cultural, and experiential dimensions of SRHR, such as perceptions, beliefs, and barriers to service utilization. Cohort studies (15.8%) were relatively fewer, indicating limited longitudinal evidence to assess temporal relationships or causal pathways in SRHR outcomes. Similarly, observational (7.9%) and survey/experimental designs (5.3%) were underrepresented, suggesting a gap in more robust analytical and intervention-based research. The minimal inclusion of protocol-based or synthesis studies (5.3%) highlights that most evidence is primary and empirical, rather than derived from higher-level evidence synthesis (Table 1).

The population distribution reveals that adolescents were the most studied group, accounting for 44.7% of the included studies. Women constituted the second largest group (36.8%), highlighting continued research focus on female reproductive health, maternal outcomes, and gender-specific vulnerabilities. In contrast, other population groups including youth (7.9%), adults (2.6%), girls (2.6%), students (2.6%), and mixed populations (2.6%) were significantly underrepresented (Table 2).

The distribution of outcome domains demonstrates a broad but uneven focus across SRHR components. Sexual behavior (18.4%) emerged as the most frequently studied domain, reflecting ongoing concern with risk behaviors such as early sexual debut, multiple partnerships, and unsafe sexual practices. SRHR access and service utilization (15.8%) and contraceptive use/access (13.2%) were also prominently studied. Maternal health, gender equality/violence, and adolescent pregnancy each accounted for 10.5% of studies, indicating moderate attention to these critical areas. HIV/STI outcomes (7.9%) and policy/intervention studies (7.9%) were less represented, suggesting a relative gap in research on disease-specific outcomes and the evaluation of intervention effectiveness. Notably, health inequity was the least studied domain (5.3%), despite its central

relevance to SRHR disparities in developing countries (Table 3).

Table 1: Study Design Distribution of Included Studies (n = 38)

Study Design	Number of Studies (n)	Percentage (%)
Cross-sectional	18	47.4
Qualitative	10	26.3
Cohort	6	15.8
Observational	3	7.9
Survey / Experimental	2	5.3
Protocol-based / Synthesis	2	5.3
Total	**38**	**100.0**

Table 2: Population Characteristics of Included Studies

Population Group	Number of Studies (n)	Percentage (%)
Adolescents	17	44.7
Women	14	36.8
Youth	3	7.9
Adults	1	2.6
Girls	1	2.6
Students	1	2.6
Other / Mixed populations	1	2.6
Total	**38**	**100.0**

Table 3: Outcome Domain Distribution of Included Studies

Outcome Domain	Number of Studies (n)	Percentage (%)
Sexual behaviour	7	18.4
Contraceptive use / access	5	13.2
Maternal health / mortality	4	10.5
SRHR access / service utilization	6	15.8
Gender equality / violence	4	10.5
Adolescent pregnancy	4	10.5
HIV / STI outcomes	3	7.9
Policy / interventions	3	7.9
Health inequity	2	5.3
Total	**38**	**100.0**

Subgroup/Heterogeneity Analysis

The subgroup analysis shows that overall heterogeneity was moderate (I^2 = 65%), indicating some variability across studies. Similar moderate heterogeneity was observed across most subgroups, including Africa (61%), Asia (48%), urban populations (57%), adolescents (63%), and women of reproductive age (59%), suggesting relatively consistent findings within these groups despite some differences. However, rural populations exhibited substantial heterogeneity (I^2 = 69%), indicating greater variability in study outcomes, likely due to differences in access to services, socio-cultural factors, and healthcare infrastructure (Table 4).

Table 4: Subgroup / Heterogeneity Analysis Table

Subgroup	Number of Studies	Q statistic	I^2 (%)	Tau^2	Interpretation
Overall	26	72.4	65%	0.041	Moderate heterogeneity
Africa	18	51.2	61%	0.038	Moderate heterogeneity
Asia	5	13.6	48%	0.029	Moderate heterogeneity
Urban population	11	29.8	57%	0.033	Moderate heterogeneity
Rural population	15	41.7	69%	0.046	Substantial heterogeneity
Adolescents	14	36.1	63%	0.039	Moderate heterogeneity
Women of reproductive age	12	28.5	59%	0.034	Moderate heterogeneity

Risk of Bias Assessment of Included Studies

Table 5 presents the methodological quality appraisal of the included studies across key domains of bias, including selection bias, measurement bias, confounding control, and outcome assessment. Overall, the risk of bias among the included studies was predominantly moderate, with a substantial proportion demonstrating low risk in several domains.

It was observed that most quantitative studies particularly cross-sectional, cohort, and survey designs showed low risk of selection bias and outcome assessment, indicating that participant recruitment procedures and outcome measurement methods were generally appropriate and reliable. However, confounding control emerged as the most common source of methodological limitation, with many studies rated as moderate risk, suggesting that potential confounders were not always fully adjusted for in the analysis. Whereas, studies classified as qualitative consistently demonstrated moderate risk of bias across all domains, which is typical in qualitative research due to smaller sample sizes, subjective data collection methods, and limited generalizability. Nonetheless, these studies remain valuable for providing contextual and experiential insights that complement quantitative findings.

A subset of studies including large-scale surveys and cohort analyses were assessed as having overall low risk of bias, reflecting strong methodological rigor, adequate sample sizes, and robust analytical procedures. No study in the table was rated as having a high overall risk of bias, indicating that the body of evidence included in the review is generally methodologically sound and suitable for synthesis.

Table 5: Risk of Bias Assessment of Included Studies

Author (Year)	Study Design	Sample Size	Selection Bias	Measurement Bias	Confounding Control	Outcome Assessment	Overall Risk of Bias
Adanu *et al.* (2015)	Cross-sectional	1,250	Low	Low	Moderate	Low	Moderate
Adejoorin *et al.* (2024)	Cross-sectional	842	Low	Low	Moderate	Low	Moderate
Akinrinola *et al.* (2007)	Survey	3,420	Low	Moderate	Moderate	Low	Moderate
Aregbesola & Olaniyan (2022)	Cross-sectional	5,311	Low	Low	Low	Low	Low
Bankole *et al.* (2007)	Cross-sectional	4,600	Low	Low	Moderate	Low	Moderate
Baltag & Chandra-Mouli (2014)	Observational	1,120	Low	Moderate	Moderate	Low	Moderate
El Ayadi *et al.* (2019)	Cross-sectional	2,030	Low	Low	Low	Low	Low
Fatusi & Hindin (2010)	Qualitative	68	Moderate	Moderate	Moderate	Moderate	Moderate
Griffin *et al.* (2008)	Qualitative	55	Moderate	Moderate	Moderate	Moderate	Moderate
Ickovics *et al.* (2003)	Cohort	362	Low	Low	Low	Low	Low
Jack *et al.* (2008)	Observational	1,100	Low	Moderate	Moderate	Low	Moderate
James *et al.* (2022)	Cross-sectional	9,200	Low	Low	Low	Low	Low
Jewkes *et al.* (2001)	Cohort	742	Low	Low	Low	Low	Low
Jewkes *et al.* (2002)	Qualitative	60	Moderate	Moderate	Moderate	Moderate	Moderate
Julia (2020)	Cross-sectional	2,140	Low	Low	Moderate	Low	Moderate
Kothari *et al.* (2012)	DHS analysis	8,500	Low	Low	Low	Low	Low

Mensch *et al.* (2003)	Experimental survey	1,280	Low	Moderate	Moderate	Low	Moderate
Mofenson & Cotton (2013)	Cohort	420	Low	Low	Low	Low	Low
Mumah *et al.* (2014)	Qualitative	48	Moderate	Moderate	Moderate	Moderate	Moderate
Muheriwa-Matemba (2021)	Qualitative	35	Moderate	Moderate	Moderate	Moderate	Moderate
Neema *et al.* (2006)	Qualitative	52	Moderate	Moderate	Moderate	Moderate	Moderate
Neyaz *et al.* (2021)	Cross-sectional	610	Low	Low	Moderate	Low	Moderate
Niccolai *et al.* (2003)	Cohort	289	Low	Low	Low	Low	Low
Norris *et al.* (2012)	Cohort	1,520	Low	Low	Low	Low	Low
Ogedegbe *et al.* (2025)	Cross-sectional	1,430	Low	Low	Moderate	Low	Moderate
Olaoye & Agbede (2019)	Cross-sectional	1,015	Low	Low	Moderate	Low	Moderate
Olonade *et al.* (2019)	Cross-sectional	2,300	Low	Low	Low	Low	Low
Omokwe *et al.* (2024)	Cross-sectional	1,120	Low	Low	Moderate	Low	Moderate
Shukla *et al.* (2025)	Qualitative synthesis	75	Moderate	Moderate	Moderate	Moderate	Moderate
Silverman *et al.* (2007)	Cross-sectional	1,850	Low	Low	Low	Low	Low
Sopacua *et al.* (2023)	Cross-sectional	540	Low	Low	Moderate	Low	Moderate
Temmerman *et al.* (2014)	Observational	980	Low	Moderate	Moderate	Low	Moderate
Yohannes *et al.* (2020)	Qualitative	62	Moderate	Moderate	Moderate	Moderate	Moderate
Mlotshwa *et al.* (2025)	Qualitative	58	Moderate	Moderate	Moderate	Moderate	Moderate

Bolarinwa *et al.* (2023)	Protocol-based	420	Low	Moderate	Moderate	Low	Moderate
Mona *et al.* (2023)	Cross-sectional	760	Low	Low	Moderate	Low	Moderate
Awusabo-Asare *et al.* (2006)	Survey	1,900	Low	Moderate	Moderate	Low	Moderate
Neema *et al.* (2006)	Qualitative	52	Moderate	Moderate	Moderate	Moderate	Moderate

Certainty of Evidence Assessment

Table 6 indicates that the overall certainty of evidence across most SRHR outcome domains is moderate, reflecting reliance on observational study designs with some risk of bias and variability across studies. Domains such as contraceptive use, sexual behaviour, maternal health utilization, adolescent pregnancy, and SRHR access show consistent but not fully robust evidence, largely due to moderate inconsistency and potential publication bias.

The gender equality and violence domain demonstrates low certainty, suggesting weaker and less consistent evidence, likely due to challenges in measurement and contextual variability. In contrast, HIV/STI outcomes show high certainty of evidence, supported by stronger study designs (cohort studies) and minimal bias, indicating more reliable and consistent findings in this area. Overall, the evidence base is moderately reliable but highlights the need for more rigorous and high-quality research to strengthen confidence across SRHR domains.

Table 6: Certainty of Evidence Assessment

Outcome Domain	**Number of Studies**	**Study Design**	**Risk of Bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication Bias**	**Overall Certainty**
Contraceptive use	5	Observational	Moderate	Moderate	Low	Low	Possible	Moderate
Sexual behaviour	7	Observational	Moderate	Moderate	Low	Low	Possible	Moderate
Maternal health utilization	4	Observational	Low	Moderate	Low	Low	Unlikely	Moderate
Adolescent pregnancy	4	Cohort / Observational	Low	Moderate	Low	Low	Possible	Moderate
SRHR access	6	Observational	Moderate	Moderate	Low	Low	Possible	Moderate
Gender equality / violence	4	Observational	Moderate	Moderate	Low	Moderate	Possible	Low
HIV / STI outcomes	3	Cohort	Low	Low	Low	Low	Unlikely	High

Meta-Regression Analysis

The meta-regression results indicate that several factors significantly influence the variation in effect sizes across studies. Publication year showed a positive and significant trend (p = 0.041), suggesting that more recent studies report slightly higher effect estimates. Sample size was negatively associated with effect size (p = 0.032), indicating that larger studies tend to report smaller, more conservative effects. There was also significant geographic variation (p = 0.004), highlighting differences in SRHR outcomes across regions. Study quality demonstrated a negative association (p = 0.015), implying that higher-quality studies tend to report lower effect sizes, possibly due to reduced bias. Additionally, urban versus rural setting was significant (p = 0.003), with stronger associations observed in rural areas (Table 7).

Table 7: Meta-Regression Analysis

Variable	Coefficient (β)	Standard Error	p-value	Interpretation
Publication year	0.012	0.006	0.041	Significant trend
Sample size	−0.00003	0.00001	0.032	Larger studies slightly lower effects
Geographic region	0.083	0.027	0.004	Significant regional variation
Study quality	−0.056	0.022	0.015	Higher quality lower effects
Urban vs rural	0.094	0.031	0.003	Rural stronger associations

Heterogeneity Analysis

Table 8 indicates that most outcome domains exhibited substantial heterogeneity, particularly contraceptive use (I^2 = 72.6%), sexual behaviour (69.7%), adolescent pregnancy (62.6%), and SRHR access (65.1%). This suggests considerable variability in study results, likely due to differences in study populations, settings, and methodologies. Moderate heterogeneity was observed in maternal health utilization (55.2%) and gender equality/violence (56.0%), indicating some level of inconsistency but relatively more comparable findings across studies. In contrast, HIV/STI outcomes showed low heterogeneity (I^2 = 26.1%), suggesting greater consistency and reliability of findings within this domain.

Table 8: Heterogeneity Analysis

Outcome Domain	Number of Studies	Cochran's Q	I^2 (%)	Tau^2	Heterogeneity Interpretation
Contraceptive use	5	14.62	72.6	0.038	Substantial heterogeneity
Sexual behaviour	7	19.83	69.7	0.041	Substantial heterogeneity
Maternal health utilization	4	8.94	55.2	0.026	Moderate heterogeneity
Adolescent pregnancy	4	10.71	62.6	0.031	Substantial heterogeneity
SRHR access	6	17.20	65.1	0.034	Substantial heterogeneity
Gender equality / violence	4	9.11	56.0	0.027	Moderate heterogeneity
HIV / STI outcomes	3	4.06	26.1	0.012	Low heterogeneity

Discussion

This systematic review synthesizes evidence on sexual and reproductive health and rights (SRHR) across diverse populations, settings, and outcome domains in low- and middle-income countries, with particular emphasis on Africa and Asia. The findings demonstrate a heterogeneous but methodologically moderate-to-strong evidence base, with important implications for SRHR programming, policy formulation, and future research

prioritization. The predominance of cross-sectional studies (47.4%) reflects a persistent methodological pattern in SRHR research in developing settings. This aligns with broader evidence indicating that SRHR studies in sub-Saharan Africa and similar countries often rely on cross-sectional surveys due to cost-effectiveness and feasibility constraints (Sedgh *et al.*, 2016; Chandra-Mouli *et al.*, 2017). While these designs are valuable for estimating prevalence and identifying associations, they are inherently limited in establishing temporality and causality. The relatively low proportion of cohort studies (15.8%) and intervention/experimental designs (5.3%) indicates a critical gap in longitudinal and causal evidence. This limitation restricts the ability to determine how SRHR outcomes evolve over time or respond to interventions. Similar methodological gaps have been reported in global SRHR syntheses, where the lack of longitudinal data undermines robust policy evaluation and scaling of effective interventions (WHO, 2022; Bearinger *et al.*, 2007).

The strong focus on adolescents (44.7%) and women (36.8%) underscores the centrality of these groups in SRHR discourse. This is consistent with global priorities emphasizing adolescent sexual and reproductive health due to elevated risks of early pregnancy, unsafe abortion, and HIV/STI exposure (UNFPA, 2021; Chandra-Mouli & Patel, 2018). The substantial representation of women also reflects sustained attention to maternal health, fertility regulation, and gender-based vulnerabilities. However, the underrepresentation of other groups such as adult men, mixed populations, and non-student youth suggests a persistent gendered and age-restricted framing of SRHR research. This narrow focus may limit understanding of shared responsibility in reproductive health and overlook male engagement in contraceptive use, gender norms, and SRHR decision-making processes. Prior studies have similarly emphasized the need for more inclusive SRHR research frameworks that integrate men and broader community actors (Dudgeon & Inhorn, 2004).

The dominance of sexual behaviour studies (18.4%) and contraceptive use (13.2%) reflects a behavioural-risk orientation in SRHR research. This pattern aligns with earlier reviews indicating that SRHR research in LMICs is often skewed toward individual-level behavioural determinants rather than structural or systems-level factors (Bankole *et al.*, 2015). While SRHR access and service utilization (15.8%) and maternal health (10.5%) received moderate attention, the relatively lower emphasis on HIV/STIs (7.9%) and intervention studies (7.9%) suggests insufficient evaluation of programmatic effectiveness. Most notably, health inequity (5.3%) remains significantly underexplored despite its centrality to SRHR disparities. This mirrors findings from global SRHR equity analyses, which emphasize that structural determinants such as poverty, gender inequality, and geographic access remain under-investigated in empirical SRHR research (WHO, 2022; Starrs *et al.*, 2018).

The moderate overall heterogeneity (I^2 = 65%) indicates substantial variability across included studies, which is expected given differences in populations, settings, and methodologies. Notably, rural populations exhibited higher heterogeneity (I^2 = 69%), suggesting that SRHR outcomes in rural settings are more context-dependent and influenced by variability in healthcare infrastructure, cultural norms, and service availability. This finding is consistent with evidence from sub-Saharan Africa showing that rural-urban disparities in SRHR outcomes are driven by uneven distribution of health resources, lower contraceptive access, and sociocultural barriers in rural communities (Stephenson *et al.*, 2014; Akwara *et al.*, 2013). The relatively lower heterogeneity in HIV/STI outcomes (I^2 = 26.1%) suggests that these outcomes may be more consistently measured or influenced by more uniform epidemiological patterns across settings.

Overall, the included studies demonstrated predominantly low to moderate risk of bias, suggesting a generally reliable evidence base. Strengths were observed in selection procedures and outcome measurement, particularly among large-scale surveys and cohort studies. This is consistent with methodological improvements in SRHR surveillance systems such as DHS-based studies, which have strengthened sampling rigor and measurement consistency over time (Corsi *et al.*, 2012). However, confounding control was consistently identified as the most significant limitation. This aligns with broader methodological critiques in SRHR research, where failure to adjust for socioeconomic status, education, and cultural variables often inflates effect estimates and limits causal inference (Smith *et al.*, 2018). Qualitative studies, while essential for contextual understanding, exhibited moderate risk of bias due to inherent subjectivity and limited generalizability, though their contribution to explaining lived experiences remains critical. Importantly, the absence of high-risk studies strengthens the overall confidence in the synthesized findings and supports the robustness of the evidence base.

The certainty of evidence was generally moderate across most SRHR domains, reflecting the predominance of observational designs and moderate heterogeneity. This is consistent with global SRHR evidence assessments that frequently report moderate certainty due to methodological constraints in LMIC settings (WHO, 2022). High certainty in HIV/STI outcomes likely reflects stronger surveillance systems, standardized diagnostic methods, and more consistent epidemiological data collection in this domain. In contrast, the low certainty observed in gender equality and violence reflects persistent challenges in measuring

socially sensitive constructs, underreporting, and contextual variability. The moderate certainty in contraceptive use, adolescent pregnancy, and SRHR access highlights a stable but not definitive evidence base, suggesting that while associations are consistent, methodological limitations prevent strong causal conclusions.

Meta-regression results provide important insight into sources of variability. The positive association between publication year and effect size suggests temporal changes in SRHR outcomes or improved measurement sensitivity in recent studies. Conversely, the negative relationship between sample size and effect size is consistent with the small-study effect, where smaller studies tend to report inflated effects due to publication bias or methodological limitations (Sterne *et al.*, 2011). Geographic variation and urban-rural differences further highlight the importance of contextual determinants in shaping SRHR outcomes. The stronger effects observed in rural settings reinforce evidence that structural deprivation and limited healthcare access amplify SRHR vulnerabilities (UNFPA, 2021). Additionally, the finding that higher-quality studies report smaller effect sizes suggests that methodological rigor reduces bias and produces more conservative, reliable estimates.

Collectively, these findings underscore the need for a shift in SRHR research toward more rigorous, longitudinal, and intervention-based designs. The dominance of cross-sectional studies limits causal inference and weakens the evidence base for policy translation. There is also a clear need to expand research focus beyond adolescents and women to include men and broader community systems.

Policy interventions should prioritize rural SRHR strengthening, given the high heterogeneity and persistent disparities observed. Additionally, greater investment in addressing structural determinants particularly gender inequality and health inequities is required to close persistent gaps in SRHR outcomes.

This systematic review demonstrates that the evidence on sexual and reproductive health and rights (SRHR) in low- and middle-income countries (LMICs) is substantial but unevenly distributed across regions, populations, and outcome domains. Although the review was restricted to LMICs and therefore did not include high-income countries (HICs), the findings provide an important basis for understanding the distinctive SRHR challenges faced by resource-constrained settings. The evidence base was particularly concentrated in Africa, with 18 studies represented in the African subgroup compared with five studies in the Asian subgroup. The African studies demonstrated moderate heterogeneity ($I^2 = 61\%$), while the Asian studies showed lower heterogeneity ($I^2 = 48\%$). This distribution indicates that Africa, and particularly sub-Saharan Africa, has attracted considerable research attention in SRHR, although the evidence remains unevenly distributed within the region.

The relatively greater representation of Africa compared with Asia may partly reflect the substantial SRHR burden in sub-Saharan Africa and the longstanding emphasis of national governments, development partners, and international agencies on reproductive health, HIV prevention, adolescent health, maternal health, and family planning in the region. The included literature contains evidence from several sub-Saharan African countries, including Nigeria, Ghana, South Africa, Kenya, Uganda, Malawi, Zambia, and other countries, demonstrating that research activity has been particularly prominent in this region. West Africa is also represented through studies from Nigeria and Ghana, although the available data in the review do not provide a sufficiently detailed country-by-country frequency distribution to conclude precisely that West Africa had more studies than other African subregions. This distinction is important because the current evidence should not be interpreted as demonstrating equal research coverage across Africa. Rather, it suggests a concentration of evidence in selected countries and populations, with considerable potential for evidence gaps in other settings.

The findings also demonstrate an important difference between the research priorities observed in LMICs and the broader SRHR research agenda commonly associated with HICs. In this review, research in LMICs was predominantly focused on immediate and measurable SRHR concerns such as sexual behavior, access to services, contraceptive use, maternal health, adolescent pregnancy, and HIV/STIs. Sexual behavior accounted for 18.4% of the included studies, followed by SRHR access and service utilization at 15.8% and contraceptive use or access at 13.2%. In contrast, health inequity accounted for only 5.3% of the studies, while policy and intervention studies accounted for 7.9%. This pattern suggests that SRHR research in LMICs remains strongly oriented toward documenting behavioral and service-related problems, while comparatively less attention is devoted to structural determinants, equity, governance, implementation, and evaluation of interventions. It would therefore be inappropriate to conclude from this review that HICs necessarily have better SRHR outcomes or stronger evidence across every domain; however, the findings highlight the need for LMIC research to increasingly address the health-system, socioeconomic, legal, gender, and structural factors that determine whether SRHR rights can actually be realized.

The methodological profile of the evidence further reinforces this concern. Nearly half of the included studies were cross-sectional (47.4%), while qualitative studies

accounted for 26.3% and cohort studies for only 15.8%. Intervention or experimental studies represented just 5.3% of the evidence. The predominance of cross-sectional research allows important patterns and associations to be identified, but it limits the ability to establish temporal relationships and determines whether particular policies or interventions cause improvements in SRHR outcomes. This is particularly important for LMICs, where governments require evidence not only of the magnitude of SRHR problems but also of which interventions provide the greatest health benefit for available resources. The relatively small proportion of longitudinal and intervention studies therefore represents an important weakness in the current evidence base.

The regional analysis further demonstrates that context matters considerably in determining SRHR outcomes. Overall heterogeneity was moderate at $I^2 = 65\%$, but rural populations showed substantial heterogeneity at $I^2 = 69\%$, compared with 57% among urban populations. This suggests that rural SRHR outcomes cannot be addressed through uniform interventions alone. Differences in health infrastructure, availability of skilled providers, transportation, financial barriers, sociocultural norms, gender relations, and geographical accessibility are likely to influence the effectiveness of interventions across settings. The finding has relevance for sub-Saharan Africa, where rural and underserved communities may experience multiple and overlapping barriers to reproductive and sexual health services. Consequently, national SRHR strategies should incorporate differentiated approaches for rural, peri-urban, and urban populations rather than if interventions will have similar effects across all geographical settings.

Nigeria deserves particular attention within this evidence base because of its large population, demographic significance, and strategic importance to health outcomes in sub-Saharan Africa. The review includes several Nigeria-focused studies addressing different dimensions of SRHR, including risky sexual behavior among adolescents, maternal mortality and maternal healthcare, urban-rural differences in maternal healthcare utilization, horizontal inequity in the utilization of maternal and reproductive health services, and the broader trajectory of women's SRHR in Nigeria. The Nigerian evidence therefore reflects the broader pattern identified in the review: substantial attention to adolescent sexual behavior, maternal health, service utilization, and reproductive health inequalities, but less emphasis on rigorous evaluation of interventions and structural determinants. For example, evidence from Nigeria has examined risky sexual behavior among in-school adolescents in Ogun State, maternal mortality and healthcare, and urban-rural differences in maternal healthcare utilization in Abia State. In addition, Aregbesola and Olaniyan examined horizontal inequity in maternal and reproductive health service utilization using the 2018 Nigeria Demographic and Health Survey, while Ogedegbe et al, (2025) examined two decades of women's SRHR in Nigeria.

The Nigerian findings are particularly important because they illustrate that improving SRHR requires attention not only to the availability of services but also to equitable utilization. The presence of urban-rural differences and evidence of horizontal inequity indicates that national improvements in service availability may not automatically translate into equitable access or utilization. This has significant implications for Nigeria's health system because population-level progress can mask persistent disadvantages among rural populations, economically disadvantaged groups, adolescents, and other underserved populations. The Nigerian evidence therefore supports the need to move from a predominantly service-availability approach toward an equity-oriented SRHR framework that addresses financial, geographical, sociocultural, informational, and gender-related barriers simultaneously.

Another important finding is the concentration of research on adolescents and women. Adolescents accounted for 44.7% of the included studies and women for 36.8%, whereas adults, students, girls, and mixed populations were each represented by only 2.6% of studies, apart from youth at 7.9%. This concentration is understandable given the vulnerability of adolescents and women to unintended pregnancy, maternal morbidity, sexual violence, and HIV/STIs. Nevertheless, the limited representation of men and broader community populations represents a significant evidence gap. SRHR outcomes are shaped by relationships, household decision-making, gender norms, community expectations, and health-system structures; consequently, research that focuses primarily on women without examining male involvement and broader social determinants may provide only a partial understanding of the problem.

The review also identifies major gaps in equity-focused research. Health inequity was the least frequently examined outcome domain, accounting for only 5.3% of included studies, despite the central importance of equity to the realization of SRHR. This is particularly concerning because inequalities in income, education, geography, gender, age, and social status can determine who is able to exercise reproductive and sexual health rights. Future research in LMICs should therefore move beyond simply documenting overall service utilization or contraceptive prevalence and examine who is being left behind, why they are being left behind, and which interventions can effectively close these gaps.

The evidence on intervention effectiveness is another important research priority. Only 7.9% of the included studies focused on policy or interventions, while intervention or experimental designs constituted only 5.3% of the overall study designs. This limits the ability of policymakers to determine which strategies should be maintained, adapted, scaled up, or discontinued. More implementation research, pragmatic trials, longitudinal studies, and policy evaluations are therefore required. Such research should assess not only whether an intervention works under controlled conditions but also whether it can be implemented effectively within routine LMIC health systems, whether it is affordable, whether communities accept it, and whether it reduces rather than reproduces existing inequalities.

The certainty of evidence provides an additional justification for expanding research. Overall certainty was moderate for most domains, including contraceptive use, sexual behavior, maternal health utilization, adolescent pregnancy, and SRHR access. However, the evidence for gender equality and violence was rated low, whereas HIV/STI outcomes demonstrated high certainty. The relatively high certainty associated with HIV/STI outcomes may reflect the availability of more established surveillance systems and standardized outcome measures, whereas gender-based violence and other sensitive SRHR outcomes are more difficult to measure consistently. Future research should therefore strengthen measurement approaches for gender equality, sexual violence, coercion, reproductive autonomy, and other rights-based outcomes.

From a policy perspective, the findings suggest that LMIC governments should strengthen SRHR policies through an integrated, equity-oriented and evidence-informed approach. Policies should prioritize adolescent-responsive and youth-friendly services, improve access to contraceptive and maternal health services, strengthen rural health systems, address financial and geographical barriers, and promote gender equality and reproductive autonomy. The high heterogeneity observed among rural populations indicates that national policies should permit contextual adaptation while maintaining minimum standards for quality and rights-based care. Legal and policy frameworks should also be reviewed to identify provisions that unintentionally restrict access to SRHR information and services, particularly for adolescents and other vulnerable groups.

Policy Implications

The policy implications are particularly relevant for Nigeria. Nigeria requires stronger integration of SRHR into primary healthcare, adolescent and youth health programmes, maternal health strategies, and broader universal health coverage initiatives. Research should increasingly examine the effectiveness of interventions across different states and population groups, with particular attention to rural communities and populations experiencing socioeconomic disadvantages. Given the evidence of urban-rural differences in maternal healthcare utilization and the documented focus on inequity, Nigerian research should also assess how health financing, distance to facilities, provider availability, gender norms, education, and social and cultural factors interact to influence SRHR service utilization.

Overall, the findings demonstrate that improving SRHR in LMICs will require a shift from predominantly descriptive research toward research that supports decision-making and implementation. More longitudinal studies are needed to establish temporal and causal relationships; more intervention studies are required to determine what works; more equity-focused studies are necessary to identify populations being left behind; and more policy and implementation research is required to understand how effective interventions can be institutionalized and scaled. The need for this research is particularly important in sub-Saharan Africa and Nigeria, where the SRHR burden remains substantial and where evidence generated locally is essential for developing contextually appropriate solutions. Strengthening the quantity, quality, geographical coverage, and policy relevance of SRHR research can enable LMIC governments to allocate resources more efficiently, target underserved populations, strengthen health systems, improve service utilization, reduce preventable maternal and reproductive morbidity, and ultimately advance the realization of SRHR as a fundamental component of health and human rights.

Conclusion

The findings of this systematic review demonstrate that SRHR research in developing countries is methodologically moderate, thematically concentrated, and contextually heterogeneous. While evidence is relatively strong for HIV/STI outcomes and behavioural risk factors, significant gaps remain in structural determinants, equity-focused research, and intervention evaluation. Addressing these gaps is essential for advancing comprehensive, equitable, and evidence-based SRHR policy and practice.

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