Adolescents' Sources of Sexual Health Information in Sub-Saharan Africa: A Scoping Review

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Abstract

Aim and Objectives: To determine the scope of research on Sub-Saharan adolescents' preferences for accessing sexual health knowledge and information.

Background: Despite recent increases in positive sexual health outcomes for adolescents worldwide, young people in Sub-Saharan Africa continue to face some of the highest global rates of teenage pregnancy and HIV infection. Existing research into the sexual health of this population is focused on interventions and outcomes, often through the lens of adult practitioners. The current review examined the scope of research that have explored the source preferences for sexual health education from adolescents themselves.

Methods: This scoping review followed PRISMA's Guide for Scoping Reviews to systematically search and analyze literature published between January 2013 and April 2023. Research was sourced from five public health and social sciences databases: AIM, CINAHL, MedLine, PubMed, and Scopus. Articles were assessed for methodological quality using the Mixed Methods Appraisal Tool (MMAT). Data from the literature was critically appraised using narrative analysis.

Findings and Discussion: 11 studies were included for review, encompassing qualitative, quantitative, and mixed data collection methods. Explicit discussion of adolescents' stated preferences was a minor note in most research reviewed, behind outcome-focused analysis. Parents were identified as the most preferred source of sexual health information (in six articles); by contrast, very few adolescents reported a preference for learning about sex from mass media sources. Preferred sources of information varied minutely for different types of information (contraception versus puberty, for example), gender, and cultural background.

Conclusions: Research on adolescent preferences for sexual health education is limited. Additional, in-depth research is needed into adolescent preferences in order to best impact policies and social work practice. Social worker practitioners, especially, must prioritize adolescents' preferences to best empower them to lead sexually healthy lives.

Key words: comprehensive sexual education, adolescents, Sub-Saharan Africa

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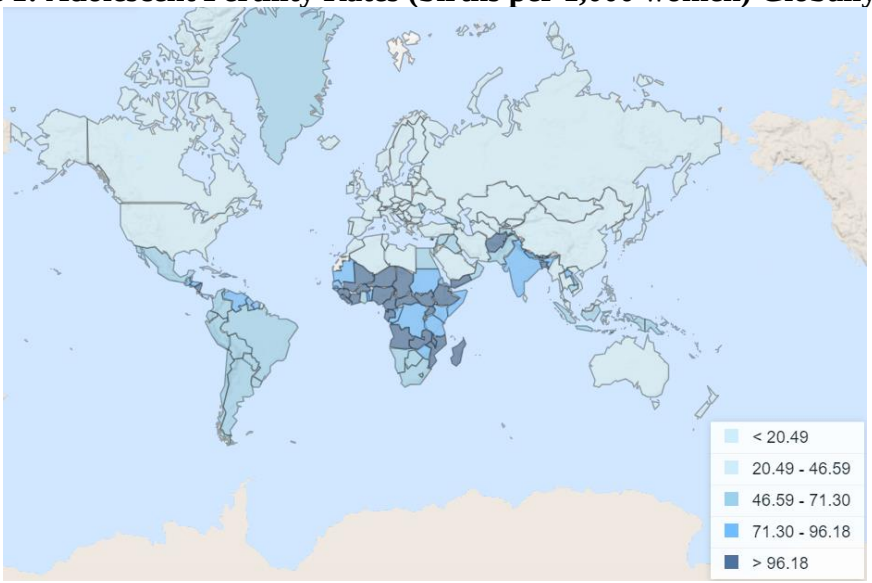
1. Introduction

In 1994, the member states of the United Nations (UN) met at the International Conference on Population and Development (ICPD) to outline a Programme of Action on population growth and its implications for social and economic development (UN, 1995). This Programme of Action emphasized a key objective of accessibility to reproductive health information for populations (ibid). Experts also included a highlighted consideration of adolescent needs in accessing reproductive health in order to reduce unwanted pregnancy, unsafe abortion, sexually transmitted infections (including HIV/AIDS) and the promotion of healthy sexual behavior for this age group (ibid, pp. 36-38).

In the nearly 30 years since the release of the UN ICPD Programme of Action, global indicators suggest that overall, sexual health outcomes of adolescents have improved, especially among girls (Liang et al., 2019). Globally, girls are more likely to marry later, delay their first sexual experience, and use contraceptives than they were 30 years ago (ibid). However, this progress is not uniform throughout the world. For example, even though contraceptive use grew the most quickly in Sub-Saharan Africa (from 4% to 15% in 20 years), the region continues to have one of the highest rates of adolescent pregnancy (ibid, pp. S9-10). Figures 1 and 2 demonstrate the overall global decrease in adolescent pregnancy rates from 1994 to 2020, while also highlighting regional differences – notably, the continued high incidence of adolescent pregnancy in Sub-Saharan Africa.

Figure 1: Adolescent Fertility Rates (births per 1,000 women) Globally, 1994



Source: (World Bank, 2020)

Figure 2: Adolescent Fertility Rates (births per 1,000 women) Globally, 2020

Source: (World Bank, 2020)

The gap between Sub-Saharan Africa and other regions of the world (for example, Europe and Asia Pacific) is apparent when examining the countries with the highest and lowest rates of adolescent pregnancy. Niger, Mozambique, Central African Republic, and Mali had the highest rates globally in 2020, with adolescent (15 – 19 years old) birth rates of over 150 women per 1,000; in contrast, the countries with the lowest rates, Norway, Denmark, Sweden, and Japan, had rates of 2 or 3 women per 1,000 (Bank, 2020). Similarly, prevalence of HIV and other sexually transmitted infections (STIs) has increased globally and especially in Sub-Saharan Africa, despite increased condom usage (Liang et al., 2019, p. S13). This is especially impactful on global sexual health, as Sub-Saharan Africa has the highest proportion of adolescents in the world, with 20% of all adolescents globally living in the region (Melesse et al., 2020).

Sexual health experts tie these advancements – or stagnation and regression in some areas – to levels of investment globally and nationally in sexual and reproductive health policies and education efforts (Liang et al., 2019). Investment is key to improving quality of life for adolescents and general life outcomes, especially for women and girls (Hensel et al., 2016). According to the WHO's policy of a "well-being economy," investments in public health are essential for societal well-being, and placing quality of life and well-being at the heart of state economies is best for long-term investment in populations (WHO, 2022).

Improving sexual health is essential for societal well-being, as there is a direct tie between sexual health and individual and societal outcomes. Studies such as Hensel et al. (2016) link sexual well-being to physical, mental, emotional, and social well-being outcomes for young women, including substance use, depression, self-esteem, social integration, and crime levels. Sexual health is explicitly linked to physical health and life expectancy as well: in developing countries, unsafe sex is the second leading cause of disease, disability or death and is within the top ten causes of death in wealthy nations (Ezzati et al., 2002). More broadly, sexual health factors can be linked to holistic health outcomes for individuals, including mental health; relationships with

family, friends, and peers; productivity and participation in the labor market; educational and professional attainment; gender-based, sexual, and domestic violence; housing insecurity; and drug use and addiction (Schnitzler et al., 2023). Many of these factors can lead to better (or worse) outcomes in overall health, poverty reduction, and gender equality in communities (Wickramanayake, 2019). This is why gender and economic experts cite women's health initiatives – including sexual health promotion – as essential to achieving sustainable development goals; not only in gender equality, but also in eradicating poverty and reducing structural inequalities (Langer et al., 2015).

Conversely, a systematic review of research in Sub-Saharan Africa found that sociocultural, environmental, and economic factors including unequal gender power relations, poverty, and absence of affordable education are positively correlated with higher rates of adolescent pregnancy (Yakubu & Salisu, 2018). These findings follow the WHO's identified "social determinants" of broader health outcomes for global communities, including income and social protection, education, unemployment, job insecurity, working life conditions, social inclusion, and early childhood development (WHO, 2008). This is reflected in the WHO's guidelines for addressing adolescent pregnancy and associated negative outcomes in developing countries: one area of focus is increasing education opportunities and economic and social support programs (Chandra-Mouli et al., 2013).

Given the impact of good sexual health on life outcomes, UN Women and the UN Educational, Scientific, and Cultural Organization (UNESCO) advocate and assist in the implementation of what they term "comprehensive sexuality education" for all adolescents. They define this as:

> *Comprehensive sexuality education (CSE) is a curriculum-based process of teaching and learning about the cognitive, emotional, physical and social aspects of sexuality. It aims to equip children and young people with knowledge, skills, attitudes and values that will empower them to: realize their health, well-being and dignity; develop respectful social and sexual relationships; consider how their choices affect their own well-being and that of others; and, understand and ensure the protection of their rights throughout their lives* (UNW & UNICEF, 2018, p. 16).

Critically, this definition notes that CSE can reach youth through both formal and informal means (ibid). There is no one specific example of what CSE looks like, as it is dependent upon a child's age, development stage, cultural background, and context (ibid, p. 17). As such, it is necessary to examine specific populations' experiences with sexual health and CSE in order to draw conclusions about effective practices. This review examines the experiences of adolescents in Sub-Saharan Africa in order to address this.

2. Background

Existing Literature on Sub-Saharan Adolescents' Sexual Health

Studying adolescent sexual health is essential to understand a key aspect of adolescent life, as adolescent sexual health is lacking on a global level, especially for girls. One in four girls aged 15 to 19 years old have an unmet need for contraception; girls this age account for 11% of all births and 14% of maternal deaths, with complications during pregnancy and childbirth the lead cause of death for girls aged 15 to 19 globally (OHCHR, 2020). Additionally, adolescents are the

only age group in which death due to AIDS is currently increasing (ibid). Data collected during lockdowns due to the COVID-19 pandemic indicate that these negative outcomes were severely exacerbated due to the pandemic. Teenage pregnancy and child marriage rates spiked in many Sub-Saharan countries that dealt with long-term school closures and lockdowns, causing additional financial stress (Okeke et al., 2022). The impact was felt even more keenly by adolescent girls, who faced increased rates of domestic violence, lack of access to contraception, and limited sexual, maternal, and reproductive health interventions (Murewanhema, 2020). For example, girls experiencing COVID-19 containment measures in Kenya were twice as likely as their peers in other regions of Kenya to get pregnant, and three times more likely to drop out of school (Zulaika et al., 2022). These sexual health outcomes are linked to long-term life outcomes including lower earning potential, lower schooling levels, unstable living arrangements, food instability, and socioeconomic inequality (ibid, p. 7). Years of data in both high- and low-income countries, however, suggest that CSE, especially with a focus on contraceptive use and practicing protected sex, can be effective at lowering pregnancy and HIV rates among youth, which may negate some of these negative life outcomes (Grunseit, 1997; Kirby, 2002; Kohler et al., 2008).

Research by sexual and public health researchers on both adolescent sexual health outcomes and their impact on quality of life is especially abundant in Sub-Saharan Africa. This can be explained in part by the notably poor outcomes in Africa and the Sub-Saharan region specifically:

- The adolescent fertility rate is highest in the WHO African region, and especially in the Sub-Saharan region, with 103 births per 1000 adolescent girls aged 15-19 years, compared with the global average of 44 per 1000 (Melesse et al., 2020, p. 1; WHO, 2020, p. 1).
- Approximately 31% of women in Sub-Saharan Africa were married before the age of 18 (WHO, 2020, p. 1).
- The WHO African region has the highest number of people living with HIV globally, as well as the highest number of new infections per year; HIV is also one of the leading causes of death in the region (WHO, 2020, p. 3).

Understanding the sexual health needs of these Sub-Saharan youth through research is essential. However, historically, much of this research has been conducted by Western researchers, with a critical eye on sexual health behaviors and cultural norms, and a hyper-focus on poor health outcomes.

There has been a recent shift in focus towards not just examining interventions and outcomes, but also exploring the sexual lives of young people. This is reflected in the World Health Organization's (WHO) recently expanded definition of sexual health from its original reproduction-centric focus to a broader definition that includes sexuality:

> *Sexual health is a state of physical, emotional, mental and social well-being in relation to sexuality; it is not merely the absence of disease, dysfunction or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination and violence. For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected and fulfilled* (WHO, 2017, p. 3).

The World Health Organization (WHO) defines reproductive health as a separate entity from sexual health, focusing on access to health care associated with female reproductive organs; however, for the purpose of this review, "sexual health" will be used as a blanket term that refers to both sexual and reproductive health (2017).

Existing literature on the topic of adolescent sexual health in Sub-Saharan Africa generally delves into three main focus areas:

1. Studying the historical efficacy of formal programs and curricula on changing adolescent sexual behaviors, for example: researching the impact of school health education on adolescent abstinence levels (Shuey et al., 1999); discussing the obstacles to sexual health policy implementation in schools (Ninsiima et al., 2020); examining peer-led models' success in reducing HIV risk (Vu et al., 2017); and identifying a need for formal "adolescent friendly services" and clinics (Atuyambe et al., 2015).
2. Quantifying sexual risk-taking behaviors and sexual and reproductive health knowledge among adolescents, with regards to: HIV prevention services (Palomino González et al., 2019); the prevalence of teenage pregnancy (Nabugoomu et al., 2020); and access to contraceptive methods (Guttmacher Institute, 2019).
3. Identifying key social norms, cultural attitudes, and other personal factors that may impact adolescents' sexual behaviors, including adolescent-parent communication (Muhwezi et al., 2015); and the impact of the cross-section between individual beliefs and localized demographic factors on sexual health knowledge (Bukuluki et al., 2021).

But these focus areas ignore how, exactly, the sexual health information needs of Sub-Saharan youth are currently being met. It is possible that these needs are not being met at all. While the East and South African (ESA) Commitment on youth sexual and reproductive health outcomes was drafted and ratified by 2013, with an emphasis on the need for CSE policies and improved formal education efforts, few countries have implemented concrete policies to meet these guidelines (UNESCO, 2013; Wangamati, 2020). If there is no comprehensive, formal approach to sexual health education, but adolescents are still sexually active and engaging in potentially risky behavior, how are they educating themselves, if they are at all. Adolescents in Sub-Saharan Africa today, with broader-spread access to the internet, social media, and more vast communities than even ten years ago, may not be pursuing or receiving the bulk of their sexual health knowledge from school or traditional community health NGOs. Among so many choices, who do they want to receive this information from? There is minimal research exploring this question.

This review aims to explore the research examining Sub-Saharan adolescents' preferred sexual health information sources. Understanding adolescent preferences for CSE (including the source of this education) is important for community health workers, NGOs, school counselors, social workers, and policy makers, as they attempt to address sexual health needs and make progress towards sustainable development goals.

Review Question

This review will be guided by the following question:

- How do adolescents in Sub-Saharan Africa prefer to access sexual health information?

The overall objective of the review is to understand Sub-Saharan adolescents' preferences for sexual health information, including who and what they rely on as trustworthy sources of information. Attention will also be paid to potential demographic differences in studies on this topic.

Connections to Social Work

Considering there are 1.2 billion adolescents globally (16% of the world's population), this needs to be an area of focus for research, policy, and social work practices (OHCHR, 2020). Sexual health is not only an important piece of adolescents' overall health and well-being, but it also affects their social welfare. For example, poor sexual health outcomes can serve as a significant barrier against school attendance and economic mobility, especially for teenage girls (ibid). This is directly influential in the field of social work, especially with children and families, as poor health outcomes for children and adolescents may lead to poorer life outcomes and higher reliance on social welfare (Wickramanayake, 2019). As discussed in Chapter 1, sexual health is directly linked to social demographics and outcomes; sexual health can impact individual and societal well-being, and societal factors can lead to poor sexual health outcomes (Hensel et al., 2016; Schnitzler et al., 2023).

The International Federation of Social Workers (IFSW) recognized the role that reproductive rights have on women's life opportunities, declaring in 1999 that women's rights to control their own reproductive health is the foundation for the "enjoyment of other rights" (IFSW, 1999). This is especially important for social workers to be aware of, as interdisciplinary practitioners that aim to treat clients as whole humans (Alzate, 2009). Prioritizing sexual and reproductive health and rights in social work is essential given women's health care – including maternal and childcare – constitute a majority of social workers' cases (IFSW, 1999). This can be attributed to a number of causes, including the "feminization of poverty" (women are disproportionally in poverty), gender as an intersectional minority identity, and the high number of female-led single parent households (Alston, 2018, p. 4). Furthermore, social workers are increasingly involved in health care work as behavioral and physical health sciences become more integrated (and viewed as connected) (Fraser et al., 2018). Studies have shown that social workers are essential for positive health care outcomes, helping to marry the physical with the psychosocial (ibid).

The IFSW and the UN have long recognized the importance of access to reproductive rights as key to achieving gender equality, framing the right to control one's own fertility as a main source of empowerment for women across the world (IFSW, 1999; Shalev, 2000). However, there is a rising movement towards recognizing that the sexual life – whether intertwined with the reproductive or not – "is essential for individual, interpersonal, and societal well-being" (World Association for Sexual Health, 2013). This idea is not new: social worker and sexuality educator Diane Brashear suggested in 1976 that "to ignore our sexuality is to deny our humanity" (p. 18). Beyond promoting gender equality or reducing the spread of STIs that may damage physical health, sexual health is, for many people, part of fostering intimate connections and maintaining good mental health. Strong sexual health is not simply the absence of negative sexual or reproductive outcomes, but rather the embracing of the sexual as part of life. Said another way, "The expression of sexuality is a window into who each person is and how they relate to each

other" (Timm, 2009, p. 15). The goal of the social worker is to support a healthy, holistic self (IFSW, 2014). Promoting a healthy sexual life, then, in whatever form that means for each individual, is also the responsibility of the social worker.

Theoretical Framework

This review aims to understand adolescent sexual health through the lens of the adolescents themselves. As such, the review is grounded in an empowerment theoretical framework. Empowerment, at its core, emphasizes individual strengths and competencies, positioning individuals as capable of creating change in their own lives and in society (Perkins & Zimmerman, 1995, p. 569). Essential to this review, and social work more broadly, is the view that individuals ought to be given opportunities to develop knowledge and skills, with professionals acting as "collaborators instead of authoritative experts" (ibid, p. 570). This review explicitly asks for adolescents' own preferences in order to shift research focus towards empowering youth to dictate their own sexual health education, and their sexuality even further.

Discussing research and social work interventions through an empowerment lens is especially important for children and youth, who can many times be viewed by the world as recipients of care and actions, rather than actors themselves (Boyden & Levison, 2000, p. 32). One way of framing empowerment as a theory or practice is through the idea of power imbalances, with a shift to uplift the voices of the powerless (Anderson et al., 1994). A powerless individual is "acted upon" rather than being the actor in their environment; overcoming this "recipient" role requires increasing one's personal, interpersonal, or political power (ibid, p. 78). This role of the "acted upon" is often ascribed to adolescents, who are to be "seen, but not heard," as the adage goes. As such, research and interventions that prioritize youth's perspectives, that literally make their voices heard and promote their personal and collective power, can be viewed as empowering practices.

Commencing from an empowerment framework is also important when discussing social work and health interventions in Sub-Saharan Africa. Much of social work on the continent is based in Western ideals, practices, scholarship, rooted in the colonial history of each country (Anderson et al., 1994). One way to combat this is through environmental "appropriateness" that roots practice in local knowledge and cultural concepts and a "cultural safety" focus that criticizes unequal power structures and practitioner-patient relationships (Anderson et al., 1994, p. 76; Curtis et al., 2019, p. 14). Modern public health and social work scholars argue for this approach of "cultural safety" in marginalized communities over previous discussions of "cultural competence" in order to actually affect change and disrupt corrupt power structures (Curtis et al., 2019). Rather than prioritizing "becoming 'competent' in the culture of others," working towards cultural safety involves reflecting on personal inherent biases and organizational or systemic power imbalances (ibid). This approach is a key tenant of empowerment practices, as it shifts focus from what the practitioner can offer (for example, learning "enough" about a community to be deemed "culturally competent") to how to reallocate power away from health organizations and structures to the hands of the people. This focus of shifting power underscores the empowerment approach of supporting "people's capacity to work for their own welfare" (Anderson et al., 1994, p. 77)

This review is built on the perspective that it is important to empower adolescents in Sub-Saharan Africa in discussions about their own sexual health. As the next Chapter discusses, studies were selected for review with this focus in mind.

3. Methodology

Introduction to Systematic Reviews

The nature of a globalized world with a plethora of international research has resulted in a dearth of literature on any given topic. Systematic reviews may be viewed as one way to effectively sort through research to reach a general conclusion on an issue, intervention, or population (Page et al., 2021). Importantly for this review, systematic reviews are increasingly viewed as essential in global public health discourse, interventions, and policy, especially for policymakers who may have to sort through an "overwhelming volume" of research in order to make informed decisions (ibid, p. 1). This is doubly true for issues focused on reproductive health, in which reviews may include studies that use different designs and methods to study the same question or population (Collins & Fauser, 2005).

Systematic reviews are particularly reliable and valid forms of research due to their high methodological standard – for example, this review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Nussbaumer-Streit et al., 2016). While reviews that are conducted more rapidly than the standard systematic review (which can take up to 24 months) may have lower levels of reliability, the transparency and rigor of the methodological process remains strong, and the review remains generally valid (ibid). The transparency specific to systematic reviews, and the PRISMA model in particular, ensure reproducibility of this review for future research.

Different Types of Reviews

The rise in popularity of reviews to synthesize research has led to a stratification and specialization of the concept of a systematic review of literature (Grant & Booth, 2009). While there are many categorizations of different types of systematic reviews, a number of review styles are most commonly utilized in health research, including traditional systematic reviews, meta-analyses, literature (also referred to as narrative) reviews, and scoping reviews (ibid).

Traditional systematic reviews are the best known in the research community, as they gained popularity in the 1980s and now have decades of legitimacy due to extensive established methodological standards such as Cochrane and PRISMA (Grant & Booth, 2009, p. 102). Key to a systematic review is the systematic methodology used in search approaches and the synthesis of research evidence (ibid). These reviews can be extremely helpful in answering narrow or simple research questions that lend towards one method of primary data collection – especially around health interventions. However, systematic reviews can be limited when examining more complex research questions that may lend to multiple study designs (ibid). Also popular among public health scholars are meta-analyses, which statistically combine the results of similar quantitative studies to draw a larger picture about a topic (ibid, p. 97). These are specifically

helpful for understanding the efficacy of an intervention, or more precisely determining a statistical outcome from multiple studies (ibid, p. 97).

Literature reviews, often referred to as narrative reviews, are among the most well-known reviews in common literature, but are not as systematic in their analyses as traditional systematic reviews or meta-analyses (Grant & Booth, 2009, p. 97). Literature reviews examine published material and consolidate an overall narrative of the existing literature, which can be beneficial for examining a question over time; however, they lack the "explicit intent" to either discover all potential information on a topic or draw any specific analysis from the data (ibid).

Finally, scoping reviews aim to understand the scope of research on a given topic; this includes identifying both the "nature" and "extent" of existing research (Grant & Booth, 2009, p. 101). They are generally utilized as indicators of the need for a more in-depth systematic review on a topic to inform policy; if little research exists on a topic, a more in-depth review synthesizing evidence may not be possible (ibid). Scoping reviews are generally regarded as reputable as they follow similar methodologies to traditional systematic reviews, aiming to be systematic, transparent, and replicable (ibid).

Approach used in this Review

This review initially planned to follow a more traditionally systematic approach to reviewing literature on the research question ("How do adolescents in Sub-Saharan Africa prefer to access sexual health information?"). However, as searches were conducted, it became clear that existing research on the topic is limited in scope. As such, this review was shifted to become more scoping in approach, with the aim of understanding the extent and nature of research on the topic.

One strength of adopting a scoping review is the flexibility in scale of the research question itself (Grant & Booth, 2009, p. 101). Scoping reviews permit as broad or narrow of a guiding review question as the researcher would like – for example, the question guiding this review is generally broad in terms of population and context, but the issue, as well as the inclusion and exclusion criteria (see Table 5) narrow the extent of research included drastically. This ensures that while a wide net is cast, the scope of research examined is limited to studies specifically focused on adolescents' stated preferences of sexual health information sources. Casting a wide net at the onset of the review allows for a more global conclusion or solution to the question posed, as potentially heterogenous studies in population, geography, methodology, and more are pulled into the review and systematically analyzed (Bartolucci & Hillegass, 2010).

This research deviates from a standard scoping review in a number of ways. First, while scoping reviews may include ongoing research, policy, and media articles, among other types of literature, this review only includes published, peer-reviewed research (Peters et al., 2020). This is due to the nature of the research question guiding this review, which is focused specifically on how adolescents themselves have dictated their preferences. This information is most likely to be accurately and thoroughly reported in research, rather than media or social media, for example. Additionally, to ascertain the strength and reliability of the research included, this review conducts a quality assessment more typical to a traditional systematic review. Many scoping reviews do not include a quality assessment as they are more focused on the extent and nature of existing research (Grant & Booth, 2009). This review, however, includes the quality of articles as

a necessary aspect to understand the actual scope and value of current research, much as a traditional systematic review would.

One identified weakness of all systematic reviews is their perceived inability to provide comprehensive or historical coverage; this review mitigates this issue by focusing on a ten-year snapshot in time (Collins & Fauser, 2005). This review aims not to provide a narrative over time of the adolescent experience with CSE, but rather an understanding of the population's needs during a critical time in developing CSE policies.

Objectives

As this is a scoping review, the objectives of the review are examined through the Population, Concept, Context (PCC) framework recommended by PRISMA for Scoping Reviews (Tricco et al., 2018, p. 474).

- Population: Adolescents, defined by the WHO as people between the ages of 10 and 19 years old (WHO, 2023); articles that specifically name other age groups as "adolescents" or "young people," based on cultural status, are included.
    - For example, an article on 18–20-year-old "adolescents" is included.
- Concept: Sources of sexual health education, knowledge, information, and/or discussion.
- Context:
    - Geographic area: Sub-Saharan Africa; the region is known globally for poor adolescent sexual and reproductive health outcomes, including pregnancy and HIV infection rates (see "Knowledge Basis"). Existing research on the specific preferences of different youth across the region is limited (see "Knowledge Basis"). This review uses the WHO's definition of Sub-Saharan Africa as all countries located below the Sahara Desert; see full list in Table 1 (WHO, 2021).
    - Timeframe: 2013-2023; the ESA Commitment in 2013 to develop and implement policies to bolster CSE for adolescents (see "Knowledge Basis") is an appropriate starting point for a scoping review of sexual health education and knowledge (UNESCO, 2013).

Table 1: List of Countries in Sub-Saharan Africa

Angola	Cote d'Ivoire	Liberia	Senegal
Benin	Equatorial Guinea	Madagascar	Seychelles
Botswana	Eritrea	Malawi	Sierra Leone
Burkina Faso	Eswatini (Formerly Known as Swaziland)	Mali	Somalia
Burundi	Ethiopia	Mauritania	South Africa
Cabo Verde	Gabon	Mauritius	South Sudan

Cameroon	Gambia	Mozambique	Sudan
Central African Republic	Ghana	Namibia	Tanzania
Chad	Guinea	Niger	Togo
Comoros	Guinea-Bissau	Nigeria	Uganda
Democratic Republic of Congo	Kenya	Rwanda	Zambia
Republic of Congo	Lesotho	Sao Tome and Principe	Zimbabwe

Source: (World Bank, 2021)

This review is not restricted in scope to one specific research design, type, or outcome, in order to best explore the variety of data existing on the issue.

Search Strategy

Search Strings

Table 2 presents the initial search string, drafted to be adapted for each database. The search string broke down the PCC identified above ("Objectives") to encounter the broadest swath of relevant articles. For example, multiple variations of terms for adolescents were used to ensure the search captured the population, including mention of "school" or "secondary," two terms for the schooling in that age range. For example, two articles included in this review define the surveyed population as "school-going" or "secondary students" (Eneji et al., 2022; Nneka & Okagua, 2019). All countries in Sub-Saharan Africa (see Table 1) were listed to catch research in any specific country that made no mention of the broader region. A proximity operator ("NEAR/3") was initially used in the concept search substring to capture any potential combination of words around sexual or reproductive education, knowledge, or information gathering. Wildcard operators ("*") were utilized to capture versions of words ("commodity" versus "commodities") to broaden the search further to include any variation of keywords – plural or conjugated verbs. The three subsections of the PCC were connected to each other through the Boolean "AND" operator to ensure that articles meet all three criteria (Aromataris & Riitano, 2014). The timeframe was not included in search string, as it was applied through the database filters.

Table 2: Search String Version 1

Population	**Concept**	**Context**
("adolescent*" OR "teen*" OR "youth*" OR "high school*" OR "high-school*" OR "secondary" OR "secondaries")	(("sex*" OR "reproductive")NEAR/3("education" OR "commodit*" OR "knowledge" OR "decision*" OR "inform*" OR "learn*"))	("Sub-Saharan Africa*" OR "subsarahan africa*" OR "sub saharan africa*" OR "west africa*" OR "east africa*" OR "Angola*" OR "Benin*" OR "Botswana*" OR "Burkina Faso*" OR "Burundi*" OR "Cabo Verde*" OR "Cameroon*" OR "Central African Republic*" OR "Chad*" OR "Comoros*"

		OR "Congo*" OR "DRC*" OR "Cote d'Ivoire*" OR "Ivory Coast*" OR "Equatorial Guinea*" OR "Eritrea*" OR "Eswatini*" OR "Swaziland*" OR "Ethiopia*" OR "Gabon*" OR "Gambia*" OR "Ghana*" OR "Guinea*" OR "Guinea-Bissau*" 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 "Rwanda*" OR "Sao Tome*" OR "Principe*" OR "Senegal*" OR "Seychelles*" OR "Sierra Leone*" OR "Somalia*" OR "South Africa*" OR "South Sudan*" OR "Sudan*" OR "Tanzania*" OR "Togo*" OR "Uganda*" OR "Zambia*" OR "Zimbabwe*")

Many databases, however, did not have the capability for a proximity search. Additionally, those that did have proximity searches pulled articles into the search that mentioned "sex" in the abstract in reference to gender identity, which is not relevant for this review. For example, Scopus, an expansive social sciences database, returned 23,579 results in the past ten years when using the proximity search in full text. The search was restricted to within the title, abstract, and keywords, which returned 1,643 results. However, including sex* near education* triggered abstracts that mentioned demographics ("sex, education attainment"), which were not necessarily relevant to the search. As such, a specific string of terms to potentially capture the concept was created. This began with the first part of the concept: sexual health. Based on readings for the "Knowledge Basis," seven terms were selected: "sexual," "sex," "sexuality," "sexual health," "sex health," "reproductive," and "reproductive health." For the second half of the concept: education and information sources, synonyms such as "education," "knowledge," "source/s," and "information" were used. To create the search string, the two halves of the concept were combined into different phrases, such as "sexual health education."

To test these terms, a search of "sex*" AND "education" was conducted in Scopus and the Cumulative Index of Nursing and Allied Health (CINAHL), an expansive public health database, to see if any additional terms appeared to be added to the search string. CINAHL's "Smart Text" search function was also used to trigger similar and relevant terms. This confirmed that the terms included in the concept search were the most relevant and encompassing. In conducting this very basic, high-level search, additional terms to refer to adolescents appeared as relevant, including "school," "young people," and "young persons." These were added to the population section of the search string as well.

The articles returned for each database were numerous and included multiple articles that appeared relevant at first glance; as such, Version 2 of the search string was adopted for all databases (see Table 3).

Table 3: Search String Version 2

Population	Concept	Context
(“adolescent*” OR “teen*” OR “youth*” OR "school*" OR "high-school*" OR "secondary" OR "secondaries" OR "young people" OR "young person" OR "young persons")	("sexual education" OR "sex education" OR "sexuality education" OR "sexual health education" OR "sex health education" OR "reproductive health education" OR "reproductive education" OR "sexual knowledge" OR "sex knowledge" OR "sexuality knowledge" OR "sexual health knowledge" OR "sex health knowledge" OR "reproductive health knowledge" OR "reproductive knowledge" OR "sexual source" OR "sex source" OR "sexuality source" OR "sexual health source" OR "sex health source" OR "reproductive health source" OR "reproductive source" OR "sexual sources" OR "sex sources" OR "sexuality sources" OR "sexual health sources" OR "sex health sources" OR "reproductive health sources" OR "reproductive sources" OR "sexual information" OR "sex information" OR "sexuality information" OR "sexual health information" OR "sex health information" OR "reproductive health information" OR "reproductive information" OR "source of sexual" OR "source of sex" OR "source of sexuality" OR "source of reproductive")	("Sub-Saharan Africa*" OR "subsarahan africa*" OR "sub saharan africa*" OR "west africa*" OR "east africa*" OR "Angola*" OR "Benin*" OR "Botswana*" OR "Burkina Faso*" OR "Burundi*" OR "Cabo Verde*" OR "Cameroon*" OR "Central African Republic*" OR "Chad*" OR "Comoros*" OR "Congo*" OR "DRC*" OR "Cote d'Ivoire*" OR "Ivory Coast*" OR "Equatorial Guinea*" OR "Eritrea*" OR "Eswatini*" OR "Swaziland*" OR "Ethiopia*" OR "Gabon*" OR "Gambia*" OR "Ghana*" OR "Guinea*" OR "Guinea-Bissau*" 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 "Rwanda*" OR "Sao Tome*" OR "Principe*" OR "Senegal*" OR "Seychelles*" OR "Sierra Leone*" OR "Somalia*" OR "South Africa*" OR "South Sudan*" OR "Sudan*" OR "Tanzania*" OR "Togo*" OR "Uganda*" OR "Zambia*" OR "Zimbabwe*")

Databases

The databases used for sourcing literature for review were elected due to their subject matter expertise. Below is the initial list of databases considered:

- **Public health databases** were prioritized, as CSE is often lumped in with public health research. Initial databases considered included CINAHL, PubMed, MedLine, and Cochrane Public Access.
- **Social science databases** were also included, as education sources and sexual behavior and attitudes have been the subject of sociological, psychological, social work, and other social science research. Initial databases considered included Scopus and Social Sciences Premium Collection (formerly ProQuest Social Sciences Premium Collection).
- **African-specific databases** were examined, especially the African Index Medicus (AIM) by the WHO, which focuses specifically on health and life sciences literature published in Africa.

Table 4 indicates the number of results for each of the initial databases using the updated search string from Table 3.

Table 4: Database Results

Database Name	Search Specifics	Results Returned
CINAHL	Peer-reviewed; title, abstract, subject	29
PubMed	Title, abstract	35
MedLine	Peer-reviewed; title, abstract, subject	25
Cochrane Public Access	Title, abstract, keywords	4
Scopus	Title, abstract, keywords	892
Social Sciences Premium Collection	Peer-reviewed; anywhere except full text	531
AIM	Title, abstract, subject	12

Within each database, search results were limited to peer-reviewed articles, which are generally viewed as more trustworthy by the research community due to the inherent check on bias, faulty deductions, and ethical quandaries (Kelly et al., 2014). Databases where "peer-reviewed" is not specifically mentioned as a filter in Table 4 (PubMed, Cochrane, Scopus and AIM) notably only include peer-reviewed articles in the database, so the search filter was not necessary.

Additionally, the search string was limited within each database to have keywords appear in the article title, abstract, keywords, or subject. This both broadened and specialized the search. Searching for key terms beyond the title alone captured more potential articles than a simple title-only search; choosing not to search for key terms in the full text of articles ensured that minor mentions of any of the terms throughout an article's full text did not merit pulling an article as relevant. The latter was essential for databases such as PubMed, which returned 6,228 articles without the filter of where the search string appeared, many of which were irrelevant due to not discussing adolescents or surveying a population in Sub-Saharan Africa. In contrast, once the search string was limited to appear within the title and abstract only, 35 articles were returned.

No additional filters, such as language or region were selected for each database. All articles surveyed had an English title; furthermore, restricting searches by region within each database eliminated relevant articles in some of the databases, as the filter likely removed articles from journals not based in the African region.

Of the seven databases included in the initial search, five are included in this review: CINAHL, PubMed, MedLine, Scopus, and AIM. Cochrane Public Access is excluded as it solely contains systematic reviews, although two reviews returned from the search string were independently examined for potential hand-added articles. The other three public health databases are all included due to the low volume of articles. Due to high volume of articles in the social sciences databases compared with the public health, one is prioritized for inclusion. This review sources Scopus as the social sciences database over Social Sciences Premium Collection, as it is recommended as a database for social work research by McGinn et al. in their research on the most comprehensive social sciences databases (2016). AIM is included as the source of African journals.

Selection Process

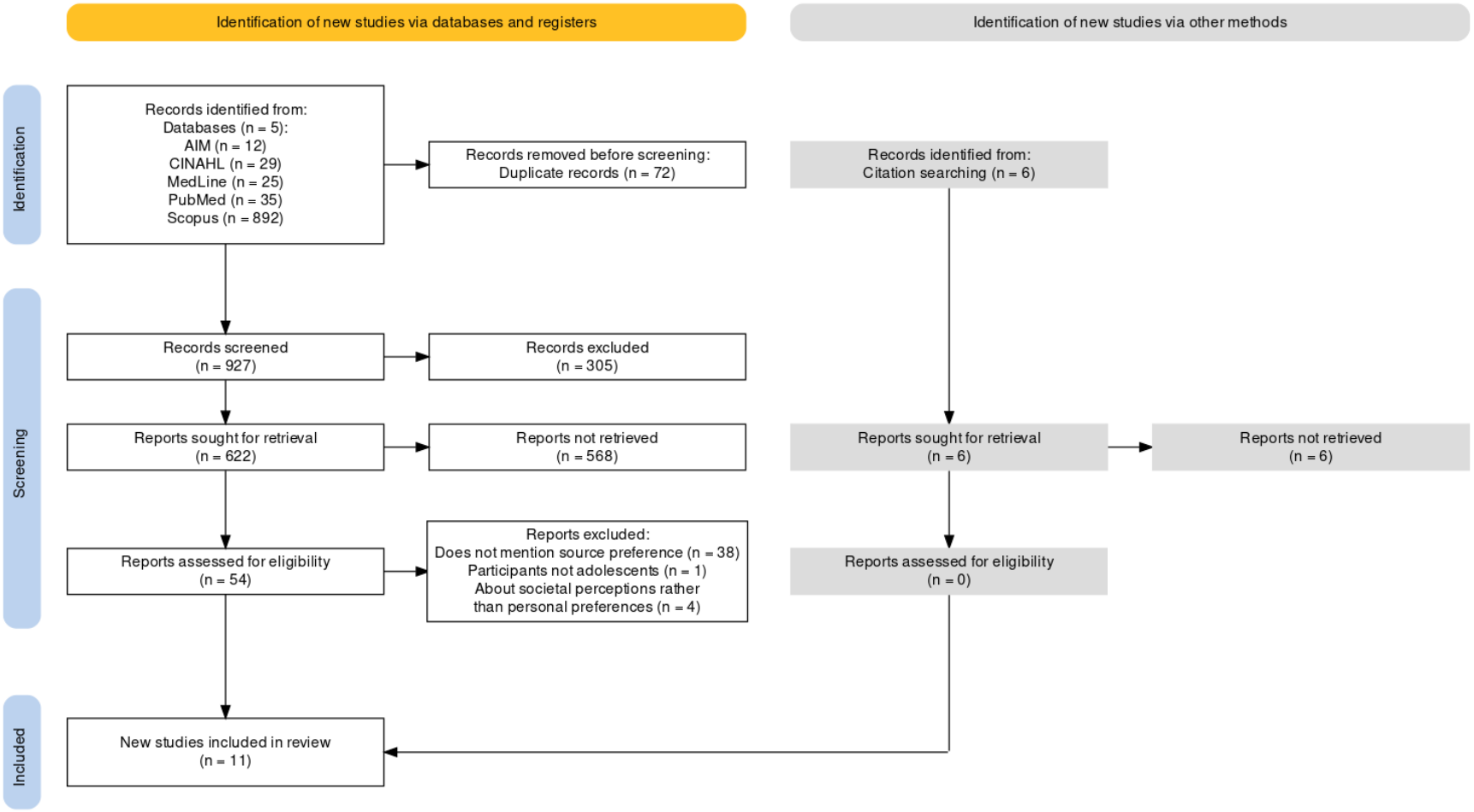
Once the five databases were selected and the search string finalized, articles were exported into EndNote for screening titles, then abstracts sought for retrieval, then full text assessed for eligibility. Exclusion and inclusion criteria, seen in Table 5, were used to guide the screening process.

Table 5: Exclusion and Inclusion Criteria

Include	**Exclude**
Peer-reviewed empirical studies	Non-peer-reviewed papers
	Research reviews, including systematic reviews
	Policy analyses
Research on adolescents in Sub-Saharan Africa (see definitions in Table 1) Adolescents as active research participants	Research not focused on adolescents, or on adolescents not based in Sub-Saharan Africa Research without adolescents in the research sample (e.g., interviews with adults discussing adolescents)
Research on specific populations within adolescents (gender, sexuality, culture)	
Research on sources of sexual health information and education	Research on sexual health outcomes with no mention of sources of information (e.g., teenage pregnancy rates as a function of CSE in schools versus no CSE) Research on CSE teachers' attitudes, demographics
Studies on the success of different sexual health education models (e.g., peer-to-peer)	Comparative analysis of sexual health curricula
Studies on how adolescents receive sexual health information from the internet	
Utilization of social media in sexual health interventions for adolescents	
Sexuality education, interventions, or sources of information on one specific area of sexual health (e.g., HIV, sexuality, contraceptives, abstinence-only)	Research on circumcision Research on sexual abuse, crime prevalence
Specific source of sexual health knowledge or education as a predictor of sexual and reproductive health outcomes	Health outcomes and risk factors (maternal, child mortality; abortion success, STIs; etc.)

Details on the screening process steps and outcomes can be found in Figure 3 below.

Figure 3: PRISMA Flowchart of the Selection Process



Source: (Haddaway et al., 2022)

In the initial title screening process, titles that focused on sexual health education in schools were over-included to ensure inclusion of any mention of source preference, especially around teachers and other school-related resources. Titles, however, that discussed educators' perspectives were excluded. These articles frequently failed to discuss students' preferences in their own words in favor of prioritizing educator or parental perceptions of adolescent preferences.

Additionally, any titles that focused on sexual abuse, domestic violence, (female or male) circumcision, or violence were excluded in the initial screening process. The articles surveyed in this category generally did not discuss source preferences, but rather outcomes of interventions. Also excluded in the initial title screening process were narrative, systematic, and other reviews, as they did not contain primary data. They were, however, hand screened for any relevant articles to add as hand-added citations.

In the title screening, articles discussing predicted variables of sexual risk behavior, pregnancy, and CSE program success were broadly over-included. This was due to the potential lack of articles explicitly focusing on or mentioning adolescent preference, so additional titles were included to potentially broaden the scope of final research. Articles that mentioned a higher risk of sexual outcomes or behaviors associated with receiving information from one source over the other were included in the initial stage in the case that adolescent preference was included or named as a variable. Most were removed in the abstract phase, as they did not mention any source preference at all.

Titles mentioning "contraceptive attitudes" or "CSE attitudes" were also included in the initial title screening in the case that attitudes referred to source preferences; however, in the abstract stage, many did not actually discuss preferences, instead focusing on behavioral or intervention outcomes. These were then excluded.

In the next stage, abstracts were sought for retrieval with increased sensitivity to inclusion and exclusion criteria. For example, abstracts focused on sexual health curriculum designs or the impact of different school-based interventions on sexual and reproductive health behaviors were excluded. Abstracts that listed non-adolescents as the primary research participants were also excluded, including "women of reproductive age," which often referred to women aged 15 through 34 years old (or older). Many abstracts of initial articles with titles focused on schools also revealed that the research participants were educators, teachers, policymakers, and other adults of the community. Other abstracts revealed more outcome-oriented results; these were all excluded as well.

The final stage, assessing the full text of articles for eligibility, narrowed down the included research even further. Many articles revealed findings that were more strongly emphasized interviews with educators or subject matter experts, with little adolescent input. Instead, they used snippets of adolescent interviews to reinforce ideas and perspectives on the efficacy or interest in types of school-based education (for example, from civil society organizations). These articles were excluded, as they did not explicitly discuss which sources were most important or preferred for young people.

Additionally, articles that investigated why adolescents used one particular source (e.g., the internet), or the benefits they saw from learning from a source (e.g., youth clubs), or strengths of

different sources and approaches were not included, as they did not explore adolescents' preferences for that source above others.

At the end of the source selection process, 11 articles remained to include in the review.

Critical Appraisal

Following the selection process, each article was critically appraised using the Mixed Methods Appraisal Tool (MMAT) to rate methodological quality and reliability (Hong et al., 2018). Based on MMAT criteria for the study design (see full criteria in Appendix 1), articles were assigned ratings of strong, moderate, or weak quality. Articles were classified as weak when one of the following criteria was met: sampling was not explained at all in the article; or there was no clear connection between data collected and research conclusions made. Articles rated moderate did not have strong, explicit details of sampling strategies or explanations of methodological choices, or interpretations were missing connections to data. Strong articles had explicit methodological choices, and clear, well-explained interpretations of data with explicit descriptions of implications for the target population and research question. No explicit rubric was followed for the MMAT ranking (for example, "yes" on four out of five questions generally resulted in a "moderate" ranking); instead, articles were initially assessed based on the aforementioned approach and then adjusted based on a comparison to the whole. Overall, the research included in this review was moderate in reliability and methodological quality: out of the 11 articles appraised, three were rated as strong, six as moderate, and two as weak (see Table 6). The full breakdown of criteria can be found in Appendix 1.

Articles were then analyzed by hand to identify common themes, categories of findings, and commonalities across different sub-groups. These themes are elaborated on in Chapter 4.

Analysis Methodology

Articles were analyzed using a "constant comparison" approach to critical appraisal, coding topics under emerging categories to formulate a theoretical position on the category (Bryman, 2016, p. 573). The Charmaz approach to coding was utilized, specifically, which begins with an "initial coding" stage and then compares the data to itself (ibid, p. 574). This was employed to create more structure in the appraisal process. This approach can also be named as "thematic analysis," where the researcher identifies key themes that emerge in the literature (ibid, p. 584). Using this approach, three main themes were identified as a commonality between sources; details can be found in Chapter 4.

4. Results

The search strategy yielded 999 total articles and 72 duplicates were removed. From the 927 titles reviewed, 622 were screened for abstract relevance. From the abstracts reviewed, the full text of 54 were assessed for eligibility. Of the 54 articles, 11 were ultimately included in this review. The PRISMA flowchart for this process can be seen in Figure 3.

Study Characteristics

The studies included used multiple study designs, including qualitative (n=2), quantitative descriptive (n=9), and mixed methods (n=1). A total of 4,607 adolescents were surveyed among the 11 articles: 4,545 in quantitative questionnaires or surveys, and 90 in qualitative in-depth interviews. Eight countries throughout Sub-Saharan Africa were represented, with one article including adolescents from 3 countries: Nigeria (n=3), South Africa (n=3), Botswana (n=2), Ghana (n=1), Kenya (n=1), Somalia (n=1), Tanzania (n=1), and Uganda (n=1). Two articles were focused specifically on refugee populations in humanitarian contexts. Research participants in all 11 articles were youths aged between 10 and 20 years old. Ages surveyed ranged from article to article, including 10-14 years (n=1), 13/14 to 18/19 years (n=6), 18-20 years (n=3), and the broadest, 12-20 years (n=1). In five of the studies, the majority of adolescents surveyed (over 80%) identified as Christian; the remaining six articles declined to include religious affiliation. On average, 42% of the youth studied identified as male, and 58% identified as female.

The full data extraction of all 11 articles, also known as the summary of articles included, is detailed in Table 6.

Table 6: Summary of Articles Included in the Review

Title	Countries	Research Aim	Study Design and Setting	Research Population Demographics	Sources Preferred	Additional Findings on Preferences	MMAT Score
Exploring Ghanaian Adolescent Sexual and Reproductive Health (SRH) Information Source(s): A Qualitative Approach **(Adzovie & Adzovie, 2022)**	Ghana	What are adolescent's trusted sources of information on Sexual and Reproductive Health in Cape Coast, Ghana? Why do adolescents trust SRH information source(s)?	Qualitative Descriptive approach, interviews Undergraduate first year students at University of Cape Coast, December 2019 - February 2020	21 adolescents Aged 18-20 57% male, 43% female 71% Christian Representative of growing up in almost all 16 regions of Ghana	"Trusted" sources of information: Parents: 76% of adolescents (78% of females, 75% of males) Most who trusted parents would replace parents with teachers when in senior high school Most who trusted parents most ranked peers as third-most trusted 14% reported the internet as a most trusted source	Researchers note the difference between "main" sources of information and "trusted" sources of information. For example, parents were not the main sources of information for many adolescents, but were the most trusted sources of information for 76%. Many reported receiving information from another source and verifying with parents. Why trust? Confidentiality - especially for parents. Peers - feeling understood Internet - confidentiality, social media as a group of like-minded people.	Weak

Contraceptive literacy among school-going adolescents in Botswana **(Barchi et al., 2022)**	Botswana	To examine adolescent contraceptive literacy and condom knowledge in Botswana.	Quantitative Descriptive Cross-sectional Public schools in Maun; part of the Aka! Re Koo! Project, a 2-year program to reduce adolescent sexual risk behaviors	233 respondents Aged 14-19 45.5% male, 54.5% female, 20.6% had sex, 79% had not	"Most important information source" Family member (28.3%) Teacher (49.4%) Nurse/doctor (8.2%) Peer (11.6%)	Most important source for males: Family (28.2%), Teacher (45.6%), Nurse/Doctor (9.7%), Peer (16.5%) Most important source for females: Family (29.8%), Teacher (54.8%), Nurse/Doctor (7.3%), Peer (8.1%) Adolescents who said they would go to a nurse with a question on SRH matters are 8 times more likely to feel confident in their ability to use condoms correctly than those that turned to teachers.	Moderate
Sources of Awareness of HIV/AIDS Prevalence among Secondary School Students in Southern Cross River State, Nigeria **(Eneji et al., 2022)**	Nigeria	To examine the various sources of information available to secondary school students and how these influence their attitude to the prevalence of HIV/AIDS in the Southern Senatorial district of Cross River State.	Quantitative Descriptive Questionnaire Cross River State, Southern senatorial district	800 secondary school students Aged 12+ 81% age 12-15, 15.2% 16-19, 3.8% >20 years old 63% female, 37% male 88.6% Christian	71.1% do not value parents' instruction about contraceptive use over other sources 73.4% believed mass media generally is the most valuable source of information about HIV/AIDS	63.5% of adolescents did not believe "domestic sex education" prevents children from contracting HIV/AIDS 82% believed that their parents did not know much about HIV/AIDS 89.8% agreed/strongly agreed that newspapers information about HIV/AIDS is more reliable	Weak

A cross-sectional mixed-methods study of sexual and reproductive health knowledge, experiences and access to services among refugee adolescent girls in the Nakivale refugee settlement, Uganda **(Ivanova et al., 2019)**	Uganda	To fill the knowledge gap and provide an overview of the situation on sexual and reproductive health experiences, knowledge, and access to services among adolescent refugee girls living in a humanitarian setting in Uganda.	Mixed Methods Survey + semi-structured interviews (260 girls in survey, 28 selected for interviews, 23 interviews included) Nakivale refugee settlement in Isingiro District in Southwest Uganda (oldest and largest settlement in Uganda). Consists of refugees from Burundi, Rwanda, DR Congo, Somalia. Nearly half are girls, half are under 18 years old. March - May 2018	260 girls Aged 13-19 (mean age 15.9) 30% born in DR Congo, 17.3% in Burundi, 13.5% in Rwanda, 12.6% in Ethiopia, 9.6% in Somalia, 8.1% in Uganda, 5% in South Sudan, 3.1% in Tanzania, <1% in Eritrea, <1% in Kenya 71% completed primary education, 26% secondary, 63.5% currently in school 93.7% Christian Unaccompanied adolescents were excluded	Sources identified by main, secondary, and preferred source. Preferred sources: Parents/guardians (38.4%) Doctor/nurse (16.9%) School/teachers (13.8%) Friends/peers (11.5%) Other female relatives (6.9%) Sisters (4.2%) Any reliable person (2.6%) Religious organizations (1.5%) Neighbors (1.1%) Organizations/ seminars (1.1%) Books/magazines (<1%) Partners (<1%) Brothers (<1%) TV, Internet, and radio were not at all preferred sources of information.	Girls named their mothers as the "first and closest" person to approach, but were hesitant to do so because of shame, fear, and due to limited subject matter (menstruation and abstinence). TV and internet were also not listed as a main or secondary source of information by any girls.	Moderate

Transitions into puberty and access to sexual and reproductive health information in two humanitarian settings: a cross-sectional survey of very young adolescents from Somalia and Myanmar **(Kågesten et al., 2017)**	Ethiopia Somalia	To describe transitions into puberty (including pubertal status, reactions to pubertal changes, and menstrual hygiene access) among VYA in two humanitarian settings, as well as whether and how they have access to SRH information related to body changes and pregnancy.	Quantitative Descriptive Cross-sectional Part of "Sexual and Reproductive Health Needs and Risks of VYA in Humanitarian Contexts" Kobe refugee camp, part of the Dollo Ado refugee camp complex Hosted Somali refugees since 2011 (38,000) 33% of camp are <17, 52% female	406 very young adolescents Aged 10-14 (mean age 12.3) Somali living in refugee camp 47.3% male, 52.7% female 95.8% lived in the camp <5 years 91.4% currently enrolled in school	From whom they would like to learn more about body changes For Females: Friends (32.2%) Siblings (19.6%) Mother (19.2%) Teacher (7.5%), Religious leader (4.7%) Doctor/nurse (4.7%) Father (3.3%) Other relative (3.3%) For Males: Siblings (26.6%) Friends (25%) Mother (10.9%) Father (10.4%) Other relative (6.3%) Teacher (5.7%) Doctor/nurse (4.7%) Religious leader (2.6%) Media (0.5%)	87.9% feel comfortable sharing personal things with their parents <1% reported media as their main puberty info source, <1% wanted more puberty info from media "Some" indication that youth with parents present during the interviewed preferred to get more information about puberty from doctors/nurses than those interviewed alone Who do you turn to for advice about health? Family (mother, father, siblings), friends	Strong

Where and how do young people like to get their sexual and reproductive health (SRH) information? Experiences from students in higher learning institutions in Mbeya, Tanzania: a cross-sectional study **(McHaro et al., 2021)**	Tanzania	To describe the experience and preferences of young people regarding their SRH education and learning, and in particular the importance of communication with their parents/guardians regarding sexuality.	Quantitative Descriptive Cross-sectional Self-administered questionnaire Mbeya Region, Southern Tanzania March 2019 - January 2020	504 students Aged 18-24 (mean age 21.5) Attending 5 Higher Learning Institutions 57.3% male, 42.7% female 84.7% Christian, 12.5% Muslim 88.5% sexually active	From whom would they have liked to learn more about SRH matters that they knew little about at the time of first having sex? Parents (20.3%) (7.8% father, 12.5% mother) Friends (18.2%) Media/books/ newspapers/Internet/ pornographic sites (16.2%) School lessons (14.2%) Doctor/nurse/clinic (12.9%) Siblings (9.7%) First sexual partner (7.8%)	61% found it difficult to discuss or did not discuss SRH matters with parents 47.5% of females preferred discussing SRH matters with female adults 42.9% of males preferred discussing with male adults 41.6% had no preference in gender of parent/guardian	Moderate
Sexual knowledge and practice of adolescent learners in a rural South African school **(Mostert et al., 2020)**	South Africa	To report on the sexual knowledge and activity of learners at a rural school before the implementation of the Steppingstones project in this particular community.	Quantitative Descriptive Cross-sectional Questionnaires Secondary school in a rural, resource-poor community in North-west Province	79 participants Aged 12-18 (mean age 13) 46.8% grade 8, 12.7% grade 9, 15.2% grade 10, 25.3% grade 11 78.5% female, 20.3% male 98.7% Christian	Person: Mother (50.6%) Sister (19%) Teacher (15.2%) Father (5%) Other (3.8%) Grandparents (2.5%) Brother (2.5%)	"Preferred sources" were generally framed as which sources could be better utilized as a teaching aid in the future. "Many participants did receive information from parents but were not satisfied with the information supplied (38%)." (p. 32)	Moderate

					Friend (2.5%) Source: Magazines/Books (32.9% TV (17.7%) Social media (12.7%) Other (11.4%) Films/videos (8.9%) Internet (7.6%) Posters (6.3%) Radio (3.8%) Leaflets (1.3%)		
Adolescent sex education: Prevalence, sources and perspective among senior secondary school students in Obio/Akpor Local Government Area of Rivers State **(Nneka & Okagua, 2019)**	Nigeria	To determine the proportion of adolescents who have had access to sex education, their source of information and their perception about sexuality education.	Quantitative Descriptive Cross-sectional Secondary schools in Obio/Akpor local government area in Rivers State April - July 2017	1142 adolescents in secondary schools (2 public, 2 private) Aged 13-19 (mean age 15.5) 52% male, 48% female	Preferred location: School (74%) Home (1.4%) Place of worship (10.3%) Health centers (8.9%) Media (5.4%) Preferred person: School teachers (81.4%) Parents (0.3%) Friends (5.4%) Religious teachers (1.6%)	96.5% of respondents said that sex education should be incorporated into school curriculum	Strong

					Healthcare workers (9.2%) Other relatives (2.2%)		
Sexuality Education in the Digital Age: Modelling the Predictors of Acceptance and Behavioural Intention to Access and Interact with Sexuality Information on Social Media **(Olamijuwon & Odimegwu, 2022)**	Kenya, Nigeria, South Africa	To illuminate the individual-level characteristics associated with the intention to use and interact with sexual health information on social media.	Quantitative Descriptive Survey Countries selected due to having the highest number of internet users in sub-Saharan Africa Sampled through Facebook advertising platform May - June 2020	936 young adults Aged 18-24 (mean age 20.8) 57.1% female, 42.9% male From Kenya (43.8%), Nigeria (29.7%), South Africa (26.5%)	Preferred digital platforms for sexual health promotion: Facebook (39.9%) A public dedicated website (20.9%) Mass media (TV, radio) (15.7%) WhatsApp (14.5%) Twitter: (2.8%) Instagram: (1.8%)	Focused on technology acceptance	Moderate

Adolescent experiences of HIV and sexual health communication with parents and caregivers in Soweto, South Africa **(Soon et al., 2013)**	South Africa	To explore adolescent perspectives on HIV and sexual health communication with parents and/or caregivers; and to contribute new information regarding adolescent sexual information seeking behaviors to better understand gaps in knowledge and opportunities for positive mentorship among adolescents living in HIV-endemic communities	Qualitative Questionnaires, focus groups, semi-structured interviews Grounded theoretical analysis Kganya Motsha Adolescent Centre in Kliptown, Soweto: First adolescent-only health center in the region that provides comprehensive sexual health services. Soweto is South Africa's largest urban population. HIV is endemic there June - August 2009	41 adolescents Aged 14-19 (mean age 17.2) 56% female, 44% male	Parents/caregivers were the desired source of information. Many adolescents expressed a desire for more communication about HIV and sexual health with their parents. If parents were not available/ approachable, peers and siblings were used as sources of information, although adolescents expressed that this was not preferred. Some adolescents said that peers were not trustworthy, and instead preferred to communicate with elders, extended family members, or community leaders (e.g., pastors).	While most adolescents preferred to communicate with parents about HIV/sexual health matters, they noted multiple barriers to doing so: Sociocultural barriers Intergenerational relations Unidirectional conversations about HIV and abstinence Emotional barriers Potential violent responses	Strong

Gender differences in sexual and reproductive health protective and risk factors of Batswana adolescents: Implications for parent and adolescent interventions **(Sun et al., 2018)**	Botswana	To assess gender differences among sexual and reproductive health protective and risk factors.	Quantitative Descriptive Self-administered survey Lower- and upper-secondary schools and after school and sports programs Gaborone March - July 2012	228 adolescents Aged 13-20 (median age 16.3) 54.8% male, 45.2% female 30.3% had sex	"Should teach about sex" Parents (75.9%) School (62.2%) Aunt/Uncle (24.1%) Other Adult (14%) Initiation school (9%) Females: Parents (82.5%) Males: Parents (70.4%)	Differentiated between who they went to first, most common source of information, and preferred source. "Would ask question about sex" Friends (36%) Parent (24.6%) Aunt/Uncle (7.5%) Teacher (6.1%) Nurse/doctor (6.1%)	Moderate

Sexual Health Information Sources Identified in Studies

In the 11 articles reviewed, different potential sources of sexual health information were identified by researchers and included in qualitative interviews or quantitative surveys. These included: parents, siblings, other family members, teachers, peers, healthcare professionals (including nurses and doctors), religious organizations, community members, romantic or sexual partners, the Internet, pornographic sites, social media, television, and books and magazines.

Parents were the most preferred source of information for adolescents in six of the reviewed articles (Adzovie & Adzovie, 2022; Ivanova et al., 2019; McHaro et al., 2021; Mostert et al., 2020; Soon et al., 2013; Sun et al., 2018). Interestingly, however, even among adolescents who identified parents as a preferred source of information, adolescents confided that the information that they received from parents fell short of what they hoped for and needed. For example, the adolescents interviewed by Soon et al. (2013) identified a disconnect between the information offered by parents and their lived experiences. Adolescents described conversations with parents as "unidirectional" and hyper-focused on abstinence and preventing the transmission of HIV (ibid, p. 166). Despite these hesitancies, parents were viewed as trusted adults that adolescents wanted to discuss sexual health matters with (ibid).

Teachers or adults at school were also identified as the most preferred source of information in two studies (Barchi et al., 2022; Nneka & Okagua, 2019). Peers and friends were also identified by adolescents in six studies as one of the top three most preferred sources of sexual health information (Adzovie & Adzovie, 2022; Barchi et al., 2022; Kågesten et al., 2017; McHaro et al., 2021; Nneka & Okagua, 2019; Soon et al., 2013).

The mass media, often defined as the Internet, social media, films, television, magazines, books, and radio, was only identified as the most preferred source of knowledge over any other in one study (Eneji et al., 2022). Olamijuwon & Odimegwu (2022) study focused specifically on sources of digital information; even in this article, mass media was the second and third (public website, and TV/radio, respectively) after the preferred source (Facebook). This resonates with the preference towards personal interactions and close relations as sources in other studies, as noted above. In many articles (n=5), mass media was either not an option in the survey or was not preferred as a source for adolescents at all (Barchi et al., 2022; Ivanova et al., 2019; Kågesten et al., 2017; Soon et al., 2013; Sun et al., 2018). Young people appear to prefer sources of information with whom they have intimate relationships, rather than potential experts who are strangers. This is also reflected in their lack of interest in mass media and social media, which can feel less personal as a means of education and communication.

Identified Themes

The research question framing the scoping review was "How do adolescents in Sub-Saharan Africa prefer to access sexual health information?" Using this as a guide, three main themes were identified from the articles reviewed. First is the focus of the article on the adolescents' preferences themselves, including a sub-theme on the preference of sources based on different types of information sought (such as body changes in puberty versus contraceptive education, for example). The second is sociocultural factors and barriers to accessing preferred sources of

sexual health information. The third is the impact of gender on source preferences and sexual health behaviors.

Focus on Adolescent Preferences

Most articles did not actually focus on adolescents' preferences for source information. Instead, the research questions were mostly oriented around examining the depth and breadth of sexual health knowledge of a target population; exploring which sources adolescents used or had access to (with minor mention of their preferences); or assessing the efficacy of a specific source of sexual health information. Preferences were generally discussed minimally. In fact, only two articles, on youth Ghana and Tanzania (Adzovie & Adzovie, 2022; McHaro et al., 2021), outlined the explicit goal of understanding source preferences or "trusted sources" in the research objectives. Four additional articles (Barchi et al., 2022; Kågesten et al., 2017; Nneka & Okagua, 2019; Sun et al., 2018) focused on the identified source preferences in the research discussion and potential implications, and as a main finding of the research.

Table 7 presents the focus of each article on sexual health source preferences specifically, with one column on how many words or pages each spent on discussing preferences in the research findings, and another on if the findings on source preferences were mentioned in the article discussion.

Table 7: Articles' Focus on Source Preferences

Title	**Preferences Identified (in order of preference)**	**Number of Words/Pages in Findings that Explicitly Discuss Preferences**	**Included in Discussion?**
Exploring Ghanaian Adolescent Sexual and Reproductive Health (SRH) Information Source(s): A Qualitative Approach (Adzovie & Adzovie, 2022)	Parents Teachers Peers Internet	1+ page (out of 4 on results)	Yes, main focus of discussion
Contraceptive literacy among school-going adolescents in Botswana (Barchi et al., 2022)	Family Teacher Nurse/doctor Peer	73 words	Yes, in implications for nursing policy
Sources of Awareness of HIV/AIDS Prevalence among Secondary School Students in Southern Cross River State, Nigeria (Eneji et al., 2022)	Mass Media	90 words	No

A cross-sectional mixed-methods study of sexual and reproductive health knowledge, experiences and access to services among refugee adolescent girls in the Nakivale refugee settlement, Uganda (Ivanova et al., 2019)	Parents Doctor/nurse School Peers Other female relatives Siblings Religious organizations Neighbors	140 words	Yes, minor (<100 words; 2 sentences)
Transitions into puberty and access to sexual and reproductive health information in two humanitarian settings: a cross-sectional survey of very young adolescents from Somalia and Myanmar (Kågesten et al., 2017)	Friends Siblings Mother Teacher Religious leader Doctor/nurse Father	237 words + 1 page table	Yes, with discussion of education centers and qualification of teachers
Where and how do young people like to get their sexual and reproductive health (SRH) information? Experiences from students in higher learning institutions in Mbeya, Tanzania: a cross-sectional study (McHaro et al., 2021)	Parents Friends Media School Health workers Siblings First sexual partner	96 words	Yes, very briefly to confirm need for parents to speak with youth
Sexual knowledge and practice of adolescent learners in a rural South African school (Mostert et al., 2020)	Mother Sister Teacher Magazines/books Television Social media	109 words	No
Adolescent sex education: Prevalence, sources and perspective among senior secondary school students in Obio/Akpor Local Government Area of Rivers State (Nneka & Okagua, 2019)	Teacher Healthcare workers Friends Religious teachers Relatives	43 words	Yes (2 paragraphs)

	Parents		
Sexuality Education in the Digital Age: Modelling the Predictors of Acceptance and Behavioural Intention to Access and Interact with Sexuality Information on Social Media (Olamijuwon & Odimegwu, 2022)	Preferred digital platform: Facebook Public website Mass media WhatsApp	1 paragraph	No (focused on reasons for using social media)
Adolescent experiences of HIV and sexual health communication with parents and caregivers in Soweto, South Africa (Soon et al., 2013)	Parents/caregivers Peers Siblings Community leaders	1 page (out of 7 total)	Yes, 1 line highlighting their desires for parent communication as a theme
Gender differences in sexual and reproductive health protective and risk factors of Batswana adolescents: Implications for parent and adolescent interventions (Sun et al., 2018)	Parents School Aunt/uncle Another adult Initiation school	1 paragraph (out of 5)	Yes, major in discussing difference of actual and preferred sources

Preferences Based on Health Information Topic

Across the articles surveyed, three main types of sexual health information were discussed specifically, in addition to the broad examination of sexual and reproductive health:

1. Puberty, menstruation, and body changes (Adzovie & Adzovie, 2022; Ivanova et al., 2019; Kågesten et al., 2017)
2. STIs; HIV/AIDS specifically (Eneji et al., 2022; Ivanova et al., 2019; Soon et al., 2013)
3. Contraceptives and condom use specifically (Adzovie & Adzovie, 2022; Barchi et al., 2022; Ivanova et al., 2019; Mostert et al., 2020)

It is important to note that only one study actually inquired as to which topics of sexual health youth would have liked to receive more information on (McHaro et al., 2021). And among the topics reported by adolescents, the highest percentage preferred topics of sexual feelings, emotions and relationships; practicing safe sex; how to be able to say “no” to sex; how to use a condom correctly; and how to make sex more satisfying for participants (ibid, p. 8). Notably, only one of these topics, using condoms correctly, was investigated by researchers.

Preferences for Puberty Information

One main aspect of CSE, especially for young adolescents, is understanding puberty. In the three articles that focus on this topic, "body changes" and menstruation – specifically, young girls' first period and the initiation of other body changes – dominated the conversation. This was both due to the framing by researchers as well as the adolescents themselves. For example, Adzovie & Adzovie asked interviewees about their experience with knowledge preparation for the changes brought about during adolescence (2022, p. 655). Whereas in the qualitative interviews conducted by Ivanova et al. (2019), with the refugee girls focused on menstruation as a key topic of discussion among preferred and actual sources of sexual and reproductive health information.

Across all three studies discussing body changes, adolescents identified a need for increased education before the onset of puberty. Among very young adolescent (aged 10 – 14) Somali refugees, for example, 87.4% of girls and 82.2% of boys wished that they had more access to information on body changes (Kågesten et al., 2017, p. 17). This is supported by their actual knowledge of their own bodies: among those surveyed by Kågesten et al., 25% of adolescents aged 10 through 12 did not know if they had reached puberty; and for 13- to 14-year-olds, this was true for 10.2% of girls and 18% of boys (ibid, p. 15). This lack of information led some youth, especially girls, to seek information on the internet prior to adolescence and after first menstruation (Adzovie & Adzovie, 2022, p. 656).

Across all three studies, parents and teachers were the two main sources of sexual health information, and especially information about puberty (Adzovie & Adzovie, 2022; Ivanova et al., 2019; Kågesten et al., 2017). Mothers specifically were identified by research with refugee populations as the main source of information about body changes (Ivanova et al., 2019, p. 6; Kågesten et al., 2017, p. 17). In fact, for Somali refugee youth, mothers are overwhelmingly the most reported source of information for "pubertal body change:" 74.8% for girls, and 60.9% for boys (Kågesten et al., 2017, p. 17).

Only one out of the three articles that specifically highlighted puberty as a topic of CSE actually inquired into the preferred source of puberty information. The very young adolescent Somali refugees, who reported learning about puberty from their mothers, told researchers that they would like to "learn more about body changes" from friends, parents, and siblings. This differed by gender: girls preferred friends (32.2%), siblings (19.6%), and mother (19.2%); boys would like more information from siblings (26.6%), friends (25%), mother (10.9%), and father (10.4%) (Kågesten et al., 2017, p. 17).

Preferences for STI Information

Three of the eleven articles reviewed explicitly discussed how adolescents receive or prefer to receive information about STIs. Of these three, two articles had a research aim to explore experiences of receiving information on HIV and AIDS (Eneji et al., 2022; Soon et al., 2013). One additional article asked adolescents about their knowledge of STIs broadly in addition to HIV specifically (Ivanova et al., 2019). Parents were reported as the main sources of information on HIV prevention in two of the studies (Eneji et al., 2022; Soon et al., 2013); in the third study, school was the main source of information for 38.4% of refugee girls, compared with parents for 35.7% of the population (Ivanova et al., 2019, p. 6). The manner of information presented appears to be similar across all three studies, however, with both parents and teachers promoting

abstinence as the best (or only) method of HIV prevention. For example, the refugee girls in Uganda surveyed by Ivanova et al. overwhelmingly (80.4% of them) listed abstinence as the way to prevent HIV transmission (2019, p. 4). This can be tied to what they were learning from teachers, with one girl telling researchers, "…at school they [teachers] taught us to abstain from sex until we finish our studies and get married" (ibid, p. 6).

Adolescents who noted parents as the primary source of HIV information also reported that abstinence was the main focus of HIV prevention conversations, with researchers noting that "communication with parents regarding sexual health was unidirectional and did not necessarily leave open the possibility for discussing topics other than HIV/AIDS and abstinence" (Soon et al., 2013, p. 166). Adolescents surveyed in Nigeria generally did not receive HIV/AIDS information from their parents (with 82.6% saying that they had not), and (82%) believed that their parents did not know much about HIV/AIDS (Eneji et al., 2022, p. 141). Over 70% also said that they did not have better knowledge through their parents' knowledge about HIV/AIDS (ibid).

Interestingly, in studies where youth were asked their specific preferences for receiving HIV information, these barriers to speaking with parents were treated differently by different populations. Among secondary school students in Nigeria, the lack of trust in parents' expertise on HIV led them to view the mass media (radio, print, and TV) as the most valuable source of information about HIV/AIDS, with 73.4% agreeing and 11% strongly agreeing (Eneji et al., 2022, p. 144). Specifically, 89.8% of them believed that newspapers were the more reliable source of information about HIV/AIDS (ibid). Adolescents in South Africa, however, despite living in an area similarly targeted by health centers for HIV prevention as their Nigerian peers, preferred that their parents and/or caregivers deliver HIV information (Soon et al., 2013, p. 166). This is despite the lack of practical information delivered by parents (for example, how to use a condom) and the "unidirectional" focus of conversations towards abstinence (ibid). Multiple adolescents expressed a desire to discuss sexual health matters, and HIV specifically, with parents:

> *"Even though I feel comfortable with other people telling me about AIDS, I wish though it could come from my parents" (Soon et al., 2013, p. 166).*
>
> *"Parents should talk about sensitive things like HIV, sex and so on…" (ibid).*

The main difference between the preferences of these two groups of adolescents appears to be the perceived expertise of parents on the subject matter. For example, the Nigerian youth who did not trust their parents' information on HIV did say that if parents had taught them about HIV/AIDS prevention, they would know more about the topic (Eneji et al., 2022, p. 141). Whereas for the South African youth, the bigger barrier to information was social norms that led parents to overemphasize abstinence or react poorly to topics of CSE (Soon et al., 2013, p. 167).

Preferences for Contraceptive Information

In addition to discussion of how sexual activity can lead to STIs and HIV, adolescents also reported receiving information about contraceptive methods, both for STI and pregnancy prevention. Four of the eleven articles reviewed specifically examined adolescents' knowledge of contraceptive methods; two of the four explicitly tested for knowledge about condoms (Barchi

et al., 2022; Mostert et al., 2020). Adolescent preferences for sources of CSE varied across the four studies. Interestingly, although adolescents in all four of these studies listed teachers as one of, if not the, main sources of sexual health information, and on contraceptives and condoms specifically, teachers were not universally the most preferred source of information. Nor was relying on teachers for information correlated with high condom usage across populations: 71% of rural South African adolescents whose source was teachers (a reported 58% of the population) did not use condoms (Mostert et al., 2020, p. 32). Similarly, among refugee girls in Uganda, although teachers were the main source of information for the largest percentage of girls (38%), interviews with the population revealed that most teachers did not actually discuss contraceptive methods with students (Ivanova et al., 2019, p. 6). In fact, one girl mentioned learning about contraceptive methods by "overhearing women in the neighborhood talking about them" (ibid). Both of these findings suggest that adolescents in these contexts may not be receiving adequate information from teachers or may not trust teachers to provide non-abstinence-focused information. This could explain why the refugee girls in Uganda listed their parents and healthcare workers as more preferred sources of CSE, and their South African peers similarly preferred speaking with mothers or sisters (Ivanova et al., 2019, p. 6; Mostert et al., 2020, p. 32).

This is supported by research in Botswana on contraceptive literacy. Adolescents listed teachers both as the "most important" information source and the person to whom they were "most likely to talk if [they had] a question about SRH system in men and women" (Barchi et al., 2022, p. 89). And in both cases, adolescents chose teachers by at least a 20-point margin to the next listed source (ibid). However, adolescents who were most likely to speak with a family member or healthcare worker were 1.05 times and 8.11 times, respectively, more likely to self-report correct condom use than adolescents who were likely to speak with a teacher (ibid, p. 92). This may suggest that adolescents are not receiving the information that they need from teachers to conduct informed sexual behavior.

The research conducted by Adzovie & Adzovie is an outlier in this dataset: while many adolescents reported that they received accurate information from teachers on contraceptives and condom use (including male and female condoms), parents were still listed as the most trusted source of CSE (2022). This deviation – receiving accurate information from teachers, yet preferring parents as a source – may be explained by the importance placed on confidentiality by the adolescents surveyed (ibid). This will be further explored in the next theme.

Sociocultural Factors and Barriers to Knowledge Access

Three articles explored the reasons behind adolescents' stated source preferences, often pointing to sociocultural factors as explanation. Four articles of note discussed these sociocultural factors in depth (Adzovie & Adzovie, 2022; Ivanova et al., 2019; Soon et al., 2013). These factors can be divided into two main groups: those related to cultural values and attitudes towards sex and intergenerational relations; and logistical realities of their context.

Adolescents in all three surveys preferred parents as their main source of CSE (Adzovie & Adzovie, 2022; Ivanova et al., 2019; Soon et al., 2013). When asked why, one main reason for this preference was the expectation of privacy in conversations with parents: "Those who reported that they trusted their parents believe that their parents would not disclose whatever information they sought to any other person" (Adzovie & Adzovie, 2022, p. 657).

Confidentiality was also cited as a reason for turning to the internet, "because…nobody knows that they are searching for such information, so it is safer" (ibid, p. 658). Refugee girls in Uganda also emphasized the importance of privacy, citing its lack as a reason that they did not prefer to seek information from healthcare workers or teachers: "Some of them [teachers] when you tell them some problems of yours they also go to speak with fellow teachers" (Ivanova et al., 2019, p. 6). Adolescents clearly see sexual health topics as sensitive and personal, so despite doubts on parents' breadth of sexual health knowledge or emotional barriers, parents remain the preferred source that are perceived to keep discussions private.

Adolescents also expressed a desire to feel understood by their CSE sources. This may explain the preference of some adolescents across studies for peers as a source of information. Adzovie & Adzovie discovered that some adolescents felt their peers "have some experiences and can also understand them better than their parents would" (2022, p. 658). Adolescents also cited the group pages on the social media app WhatsApp as a good place for information because they included "like-minded people" of a similar age bracket (ibid). This desire to be seen and understood also could explain why Facebook was the most preferred digital platform for CSE among adolescents in Kenya, Nigeria, and South Africa (Olamijuwon & Odimegwu, 2022, p. 1246). And preferred by a large margin: nearly 20 points more than the next preferred source, a public dedicated website (ibid).

This desire to feel understood also connects to barriers to speaking with parents and other adults identified by adolescents. Notably, the fear of being shamed by parents was shared by adolescents across studies (Adzovie & Adzovie, 2022; Ivanova et al., 2019; Soon et al., 2013). Adolescents connected this hesitation to traditional values within their culture that promoted abstinence, with one girl telling researchers, "I talk to my mother, of course, but mostly I don't share with my mother because I feel shy" (Ivanova et al., 2019, p. 6). Adolescents in Soweto, South Africa, were more explicit:

> "I don't think that if I were to talk to them [family] about HIV or AIDS they would support me" (Soon et al., 2013, p. 167).
>
> "I stay with my granny and uncle, but when I ask them about HIV and AIDS they become sensitive, it is as if they are angry and so I also become shy to ask them about such issues. I don't become free" (ibid).
>
> "I talk a lot to my parents but when it concerns like HIV they say nothing to me because of things like traditional values" (ibid).
>
> "I asked my granny that at 16 is it okay if I can sleep with a girl and my granny said no…sex before marriage is a sin" (ibid).

Adolescents in South Africa also suggested that discussing sexual health with parents would be a sign of disrespect to their elders. One girl said, "There are things that I don't talk to [my parents] about like sex. I stay away from that especially when I'm around them because of the respect I show them…my father is old school [traditional/conservative] so I can't discuss with him" (Soon et al., 2013, p. 167).

Beyond parents, many researchers focused on the relationships that adolescents may have with healthcare workers, hypothesizing that their position as experts in communities with high rates of HIV may lead to increased usage and preference for healthcare workers as sources of CSE

(Barchi et al., 2022). The results, however, did not confirm this theory – healthcare workers were neither the primary preferred nor current source of CSE in any study. Ivanova et al. discovered that the refugee girls in Uganda surveyed were unaware of the location of health centers (2019, p. 6). The researchers hypothesized that this lack of awareness could account for the number of low visits to health centers, as girls who had lived in the camp longer had more knowledge of the services (ibid). However, in addition to privacy concerns mentioned above, distance to the centers and lack of health personnel were cited as main barriers to healthcare access for sexual health issues (ibid).

Gender Differences

Preferred sources of information did not vary significantly based on adolescents' stated gender. While one study found that girls preferred to speak only with female adults, and boys only with male adults (McHaro et al., 2021, p. 6), another found that boys actually would prefer slightly to speak to mothers over fathers (Kågesten et al., 2017, p. 17). This difference across studies could be due to the high rates of mother-led households in some cultures, or traditional gender roles of mothers as more caring and approachable; however, more research is needed to accurately ascertain the cause (Adzovie & Adzovie, 2022; Barchi et al., 2022).

Rather than drawing broad conclusions about the preferences of girls versus boys across countries, regions, cultures, and sociodemographic characteristics, it is most helpful to examine the gender differences or similarities within each study. Table 8 breaks down the preferences by gender of each study (studies that did not include a gendered breakdown are excluded). First, second, and third ranked preferences are included to maximize comparison potential.

Table 8: Source Preferences by Gender, by Study

	(Adzovie & Adzovie, 2022)		(Barchi et al., 2022)		(Kågesten et al., 2017)		(McHaro et al., 2021)		(Sun et al., 2018)	
	Girls	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**	**Boys**
Preference 1	Parents	Parents	Teacher (54.8%)	Teacher (48.4%)	Friends (32.3%)	Siblings (26.6%)	Mother (22.4%)	Friends (19.3%)	Parents (82.5%)	Parents (88%)
Preference 2	Teachers	Peers	Family member (29.8%)	Family member (28.3%)	Siblings (19.6%)	Friends (25%)	Doctor, nurse or clinic (16.7%)	Media/ Books/ Internet/ Pornographic websites (16.9%)	School (56.3%)	School (67.2%)
Preference 3	Peers	Internet	Peer (8.1%)	Peer (11.6%)	Mother (19.2%)	Mother (10.9%)	Friends (16.5%)	School (15.6%)	Aunt/ Uncle (22.3%)	Aunt/ Uncle (25.6%)

As seen in Table 8, many boys and girls have similar preferences. Three of five studies found that the first source preference was the same regardless of gender. The main gendered difference here is that boys appear to have a higher preference for using peers and the Internet or media as sources of CSE (Adzovie & Adzovie, 2022; McHaro et al., 2021). Notably, however, girls have a higher preference for speaking with peers in one study (Kågesten et al., 2017). Additionally, girls have a higher reported preference for speaking with mothers in two studies (Kågesten et al., 2017; McHaro et al., 2021). The reason for these differences is not explored in any of the articles; potential reasons and opportunities for further research are explored in the Discussion section of this review.

5. Discussion

This review aimed to answer the question, "How do adolescents in Sub-Saharan Africa prefer to access sexual health information?" Among the 11 articles reviewed, adolescents preferred to discuss sexual health topics with people closest to them, especially parents, other relatives, and peers. Very few adolescents surveyed (across rural and urban areas) preferred to use mass media (TV, the Internet, social media, books, etc.) to access sexual health information. It is important to note that the preferences of youth across studies, regions, and communities were not universal. Different circumstances, cultures, family realities, and individual characteristics may impact the general trends identified in this review. However, given the not only limited quantity of articles on this topic, but also limited investigation within each study into adolescent motivations, it is difficult to ascertain the reasons for these preferential differences. As such, general trends in the reviewed research are be discussed below, but no one conclusive narrative may be drawn.

Lack of Focus on Adolescent Preferences

Any discussion of the research reviewed must begin with an examination of the paucity of studies that actually examined the preferences of adolescents on accessing sexual health information. Only 1% of articles that matched the search string actually mentioned the preferences of adolescents – and, as discussed in Table 7, only two articles had the explicit aim of exploring adolescent preferences.

Why this scarcity? One potential cause could be a lack of interest in Sub-Saharan adolescents' sexual health. However, there is an abundance of literature on Sub-Saharan adolescents and sex: a search in Scopus of the adolescent and Sub-Saharan Africa terms used in this review and "sex*" returned nearly 20,000 articles in the past decade. This is not unique to the region: without a geographic restriction, there are over 200,000 articles on adolescents and sex in Scopus globally. Neither is the lack of discussion on adolescent preferences restricted to Sub-Saharan Africa. A rudimentary search of global adolescent CSE preferences returned limited results, most of which were based in Europe, the United States, and Australia. And these studies, scarce in number, were either focused on very narrow segments of the population, such as sexual minorities (Baker et al., 2021), or did not, in fact, mention adolescent preferences at all (Guttmacher Institute, 2017).

Another potential barrier to research on this topic in Sub-Saharan Africa could be a fear that speaking with young people about sex – even when asking about CSE – could lead to an increase

in adolescent sexual behavior. Additionally, ethical standards in research generally require caregiver consent when including adolescents in research and adults may be hesitant to encourage or allow the young people in their care to discuss sex with strangers, due to cultural stigma. However, given the nearly 20,000 articles on adolescent sex in Sub-Saharan Africa that appeared in a Scopus search for the past decade, it appears that research on adolescents and sex more broadly is not restricted by these ethical and cultural concerns. Instead, anthropological perspectives on research and cultural attitudes towards children and adolescents may be more applicable here: adults see young people as recipients of care and actions, not actors themselves (Boyden & Levison, 2000, p. 32). The apparent lack of interest in adolescent preferences follows this mindset. While adolescents may be asked about where they receive their CSE from, or what their sexual reality is, these studies position young people as the recipients of adult actions, and their behavior as reactions to those actions. Sun et. al (2018), included in this review, is a good example of this perspective. The researchers attempted to tie adult actions (who gave youth their sexual health information) to adolescents' sexual outcomes of condom use and STI knowledge. Elevating adolescent preferences means treating young people as actors in their own lives with an importance equal to that of adults, which much of the reviewed literature did not emphasize.

Preferences for Personal Sources of CSE

Collectively, the studies reviewed here suggest that adolescents have strong preferences for where and from whom they receive CSE; and their preferences are generally for sourcing from individuals with whom they have personal relationships. There was a notable preference for discussing sexual health with parents across cultures and state lines. This was also true despite the gender of the adolescent, as well as across religions. This is notable, given many adolescents reported feeling nervous about speaking with elder members of the community due to a culture focused on abstinence, yet still preferred talking to those trusted adults anyway (Adzovie & Adzovie, 2022; Ivanova et al., 2019; Soon et al., 2013).

This preference for speaking with parents, and mothers especially, is also true for adolescents globally. The limited global research on adolescent preferences indicates that young people feel the most comfort speaking with their parents, in the United States (Somers & Surmann, 2004), India (Dorle et al., 2010), Spain (Cerezo & Estrada, 2001), Iran (Baheiraei et al., 2014), and the United Kingdom (Whitfield et al., 2013). Across regions, countries, and communities, adolescents find informal sources of CSE – especially from personal connections such as parents, family members, and peers – to be the most helpful and comforting (ibid). In fact, in studies where young people named parents as their most preferred source of CSE, peers were most often listed as the second preferred source (ibid).

The desire for personalized, comfortable conversations appears to be universal for adolescents across the globe. For example, while some studies reported teachers or doctors as the preferred source of CSE (Kumar et al., 2017; Zhang et al., 2007), others reported similar findings as this review. Namely, that more formal sources of education such as teachers and healthcare workers tend to focus on scare tactics and negative aspects of sex, can be judgmental, and often do not offer the personalized advice and comfort that young people seek in these conversations (Hoopes et al., 2017; Ivanova et al., 2019; Unis & Sällström, 2020).

Despite this demonstrated preference for speaking with parents and other close community members about sexual health, interventions aimed at improving adolescent sexual health knowledge often do not include parents. For example, interventions described in Kågesten et al. (2017) and Mostert et al. (2020) in this review focused on healthcare- and school-based programming. A systematic review of interventions in Sub-Saharan Africa found that 2 out of 15 interventions (13%) focused on parents in any capacity (Wamoyi et al., 2014). There is a gap between what adolescents need and what sexual health interventions are providing. This may be dangerous, as many adolescents reported that their parents did not have accurate sexual health information, which was then passed down to their children (Eneji et al., 2022; Soon et al., 2013).

Skeptical Attitudes Towards the Internet as a Source of CSE

Interestingly, while studies across the world have found that adolescents use the Internet and social media to access sexual health information, and that this use can increase sexual health knowledge (Gabarron & Wynn, 2016; Simon & Daneback, 2013), the Internet was not a commonly preferred source for adolescents in this review. For example, Sun et al. found that while media was the most common actual source of sexual health information, it was not adolescents' preferred source (2018, p. 41).

As discussed previously, one main reason for this lack of interest is young people's desire for connection. Media – in most studies, defined as the Internet, books, TV, and other forms of mass media – was not viewed as providing the human connection that adolescents crave (Sun et al., 2018). This also explains the preference for Facebook over educational webpages reported in Olamijuwon & Odimegwu (2022), and the interest in using WhatsApp groups of like-minded peers in Adzovie & Adzovie (2022, p. 658). This is supported by other investigations into adolescents' use of the Internet and social media for CSE, which found that young people see the Internet as a potential source of interactive education; as such, they did not "[seek] websites that present textbook-like information" (Selkie et al., 2011, p. 210).

Furthermore, many adolescents in Sub-Saharan Africa do not have access to the Internet, social media, or digital devices. In fact, despite adolescents surveyed by Eneji et al. agreeing that social media provided more information about HIV and AIDS; they did not prefer to use the internet to access CSE (2022). This can be explained by the fact that 92% of those adolescents did not use social media because they did not have access to a media-enabled phone (Eneji et al., pp. 142-143). This tracks with regional data. As of 2020, 39% of people in Africa had access to the Internet, as compared with the world average of 59% ("Internet penetration in Africa 2020 - Q1 - March," 2020). This number is even lower when reflecting on children and adolescents' access to the Internet at home: in Eastern and Southern Africa, 313 million people aged 0-25 years old (87%) did not have access; and in West and Central Africa, 329 million (95%) did not (UNICEF, 2020, p. 5). These disparities were even greater between household income levels, with the lowest income youth having the least access (ibid, p. 4).

This contrasts with the increasing focus of international organizations such as UNESCO on digital education. In 2020, UNESCO released a report on sexuality education in the digital space that urged educators and healthcare workers to utilize digital spaces to best deliver CSE to youth (2020). The report found that 70% of the global youth aged 15-24 are "online" and turn to media for information on sexual and reproductive health, especially topics viewed as private, such as

masturbation, LGBTQ+ perspectives, and abortion (ibid, p. 9). Digital media may provide access to taboo and private topics and has been found to reach marginalized youth where other interventions cannot (ibid, p. 11). However, the findings of this review suggest that policymakers, educators, healthcare workers, and social work practitioners globally must consider the realities of the youth that they are supporting. Prioritizing digital interventions may not be the most effective means of CSE for different populations; as such, it is key to diversify interventions to make different types of information accessible to different audiences.

Topic Preferences

Adolescents in this review expressed a desire to speak about a greater range of topics than what are typically covered by schools and sexual health interventions in Sub-Saharan Africa. Notably, these focus on health concerns such as STIs and teenage pregnancy, and moralistic approaches to sex (Wangamati, 2020, p. 2). For example, adolescents surveyed by Adzovie & Adzovie (2022), Ivanova et al. (2022) and Kågesten et al. (2017) reported a lack of information received about puberty, body changes, and menstruation. This is reflective of debates in Sub-Saharan Africa, at both the policy and cultural/community level, over the appropriate age to begin sexual health education (Wangamati, 2020, p. 1). Young people may not receive CSE before they undergo puberty, and as such are left wanting more information, as indicated in this review.

Even more notably, CSE has not been adopted into law by many members of the African Union; despite initiating the 2003 Maputo Protocol which encouraged the integration of CSE, gender sensitization, and human rights into all levels of education, two-thirds of member states have not ratified the Protocol (Wangamati, 2020, p. 1). As such, CSE and other sexual health interventions for young people are generally donor-driven by nonprofit organizations (including government stakeholders) but very infrequently pursue input from adolescents themselves (ibid). This is evident from the focus of CSE and other interventions, which focus on the negative outcomes of sexual behavior. Instead, adolescents report a desire for advice on living a more fulfilling sexual life, such as: navigating sexual feelings, emotions and relationships; practicing safe sex; how to be able to say "no" to sex; and how to make sex more satisfying for participants (McHaro et al., 2021, p. 8). The current status of CSE at the policy and community level leave these needs unmet.

Implications for Future Research

This scoping review revealed that existing research exploring the desires of Sub-Saharan adolescents in accessing CSE is scarce. Yet the studies found suggest that adolescents have strong preferences for the education that they receive, including the source, topics, and quantity. To best inform policy and social work practice, accurate research is needed on how best to empower adolescents' CSE. As discussed in Chapter 2, empowerment positions individuals – in this case, adolescents – to act as "collaborators" that are actors in their own lives, rather than recipients of expertise (Boyden & Levison, 2000, p. 32; Perkins & Zimmerman, 1995, p. 570).

This review raises many potential topics of future, empowerment-led research with adolescents, such as:

- Which topics do adolescents want to learn about within CSE?

- At what age do adolescents wish they learned about different CSE topics?
- Further investigation into preferences by gender, religion, country, income, sexual orientation, parent schooling level, average age of marriage and pregnancy, and other demographic identifiers.
- Deeper qualitative explorations of why young people have the source preferences expressed; and how sex educators and nonprofits can best reach them through these sources.

Overall, more research is needed on the topic of adolescent sexual health broadly. A previous scoping review by Ajayi et al. concluded that existing studies have not equally studied all countries throughout the region, nor focused on early adolescents or access to CSE (2021).

Implications for Policy Leaders

Currently, there is an absence of CSE-focused policy in Sub-Saharan Africa (Wangamati, 2020, p. 1). Policy leaders in the region, then, must be focused on how best to empower young people to make healthy sexual decisions and have fulfilling sexual lives. There is no one approach to this, especially across a region as diverse as Sub-Saharan Africa. Rather, policy must work to incorporate social and cultural norms – for example, viewing abstinence as the morally correct behavior – with the preferences and needs expressed by young people. The adolescents in this review identified cultural norms as both a guidance for sexual behavior and hindrance to accessing CSE. As such, effective policy may marry cultural practices with adolescent needs by, for example, prioritizing interventions that target teaching parents age-appropriate conversations to have with their children.

Implications for Social Work Practitioners

Many people assign sexual health as a focus of practice to healthcare workers; however, the articles scoped in this review suggest that relying on doctors and nurses to provide CSE fails to reach adolescents where they are most comfortable. For one, there is a marked lack of preference for receiving sexual health information from doctors and nurses; secondly, studies with high-risk adolescents (primarily refugees) found that youth do not know the location of the nearest health center (Ivanova et al., 2019, p. 6). This resonates with previous research into adolescent utilization of health centers for sexual health needs in Sub-Saharan Africa: young people, especially girls, are hesitant to rely on healthcare workers for fear of stigma and lack of confidentiality, as well as logistical barriers to access such as proximity (Edwards et al., 2021; Hall et al., 2018; Nyblade et al., 2022). As such, there is a need for other health-conscious workers to support the promotion of CSE among adolescents. Studies, including one included in this review, suggest that community health workers may be a solution trusted by young people. For example, 86% of secondary students in Southern Cross River State, Nigeria reported learning about HIV prevention from a community health worker in their village, as opposed to 36% from a family doctor (Eneji et al., 2022, p. 143). Additional research suggests that community health committees run by community members drive primary health care utilization across Sub-Saharan Africa (Karuga et al., 2022).

A more community oriented, social work-based approach, then, may be successful in reaching young people on sexual health topics. Especially in areas where adolescent preference is for speaking with parents and other family members in the home, social and community workers can bolster the knowledge and help guide the approach of these guardians. Additionally, school social workers and counselors are primed to support teachers and facilitate peer conversations in settings where youth prefer to learn CSE outside the home. This is especially true for youth with marginalized identities, such as LGBTQ+ youth and adolescents with disabilities, who may need the support of social workers to address unique topics and "exosystemic needs" (Adams Rueda et al., 2014).

Additionally, social workers are trained to approach individuals as whole humans, through a holistic approach rather than solely a biological one – a method favored by STI-focused education (Alzate, 2009). It is the role of the social worker to meet individual needs within the perspective of the systems (communities, families, regional policies, cultural norms) one lives in; whether that is arming parents with more information or discussing with religious centers how to provide accurate information that is culturally appropriate. Anderson, et al. emphasize the need for social work to reflect the principle of "indigenization," or a practice that is appropriate to individuals and cultures (1994, p. 75). This approach is essential to sensitive topics like sexual health.

Limitations

At the time of this review, there are a limited number of studies (n=11) that discuss adolescent preferences of CSE sources in Sub-Saharan Africa. There is little examination into distinctions among different control variables, such as country of origin, religion, rural versus urban, gender, degree of education, degree of parental education, sexual orientation, etc. As such, it is not appropriate to conclude that "Sub-Saharan adolescents prefer" any one thing; the region itself is incredibly rich in culture, with a myriad of individuals with individual preferences. The findings and discussion of this review simply aim to understand general trends in adolescents' preferences on CSE, and in no way are conclusive. This review surveyed five globally oriented databases; it is plausible that additional studies on these topics may exist in more regional journals. An additional and significant limitation of this review is the limitation to English-only studies; relevant articles in other languages, especially native to the region, may be more revealing.

One additional limitation of this review lies in the content surveyed: there is a noticeable lack of acknowledgement of sexuality. Interestingly, research on adolescent CSE preferences in countries such as the United States seems to skew towards the experiences of lesbian, gay, bisexual, trans, and queer (LGBTQ+) youth (Flores et al., 2019; Mata et al., 2022); however, none of the 11 articles reviewed mentioned this population. This is unsurprising, given the state of LGBTQ+ rights in Sub-Saharan Africa. As of 2020, 25 of the 46 countries in Sub-Saharan Africa had laws that criminalized same-sex sexual practices (Mendos et al., 2020). Given this legal reality, explicitly including LGBTQ+ adolescents, or discussing sexuality topics, may not be possible for many studies conducted in the region. Despite this, these young people still exist, and have preferences of their own; however, this review is limited in its understanding of their experiences.

Given the time limitations of this review and the lack of a research team, the review is also limited by a lack of quality checks that are generally standard for systematic reviews (Pati & Lorusso, 2018). While the author of this review worked independently, attempts were made to rectify the lack of a research team to conduct screening and critical review quality checks by ongoing check-ins and document reviews with a thesis advisor, an expert in public health and nursing, with extensive experience in writing systematic reviews.

Potential of Bias

The personal background of the researcher may serve to limit any interpretations of the studies reviewed. As a white woman from the United States, the researcher comes from a different background than the adolescents reviewed in these studies. This certainly limits the ability to understand the culture and sociodemographic background that impacts how adolescents in Sub-Saharan Africa approach the topic of CSE. For example, the researcher's background as the member of an individualistic nation, compared with the more collectivist cultures in Sub-Saharan Africa, may influence the ways that analysis is approached and desires to speak with parents and other community members about sexual health topics are understood. To combat this potential bias, frequent consultations with the thesis supervisor on conclusions drawn and themes identified served to check biases in analysis.

6. Conclusion

This scoping review found a very limited scope – in both extent and nature – of literature on Sub-Saharan adolescents' preferences for sources of sexual health information. Despite this dearth in research, existing literature suggests that adolescents have strong preferences for CSE. The preferences identified in this review – namely, of discussing sexual health with personal connections, and parents especially – resonated with existing global research. This suggests that young people worldwide seek personal connection and a feeling of comfort when learning about sexual health. Despite these findings, sexual health interventions, especially in developing regions such as Sub-Saharan Africa, are oriented around school- and health center-based learning. This review suggests that practitioners in adolescent sexual health, including researchers, policymakers, and social workers, must reorient their approach. Young people are the experts in their own experiences and preferences. The best way to empower them to lead healthy sexual lives is to shift focus in research, policy, and practice to what adolescents themselves identify as preferable.

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8. Appendices

MMAT Guidelines: Qualitative Studies

Article	Quality Score	Are there clear research questions?	Do the collected data allow to address the research questions?	Is the qualitative approach appropriate to answer the research question?	Are the qualitative data collection methods adequate to address the research question?	Are the findings adequately derived from the data?	Is the interpretation of results sufficiently substantiated by data?	Is there coherence between qualitative data sources, collection, analysis and interpretation?
(Adzovie & Adzovie, 2022)	Weak (After comparing with other articles)	Yes	Yes	Yes Qualitative description; phenomenology could have been used, but description works to answer the question.	Yes In-depth interviews audio recorded Some were contacted through phone calls, although given the descriptive nature of the study, this is acceptable to this researcher.	Yes In vivo coding as a method to adjust to language of participant; participant direct quotes used in findings.	No Themes were extremely broad, and while numbers of different males/females' preferences were listed, quotes were not used to substantiate interpretation.	No While there is a link between sources and analysis method, the interpretation took logical leaps (for example, calling parents the most important source due to confidentiality, with little evidence).
(Soon et al., 2013)	Strong	No, but there are clear research objectives	Yes	Yes Phenomenology: exploring a shared phenomenon of discussing SRH with parents (although not explicitly stated)	Yes Focus groups + semi-structured interviews as follow up; audio recordings	Yes Grounded theory + axial coding	Yes Themes are directly linked to verbatim quotes from participants	Yes

MMAT Guidelines: Quantitative Studies

Article	Quality Score	Are there clear research questions?	Do the collected data allow to address the research questions?	Is the sampling strategy relevant to address the research question?	Is the sample representative of the target population?	Are the measurements appropriate?	Is the risk of nonresponse bias low?	Is the statistical analysis appropriate to answer the research question?
(Barchi et al., 2022)	Moderate (Sampling strategies unclear)	No, but clear objectives	Yes	Unclear Sample pulled from ARK Project, but no mention of the sampling strategy of the project	Unclear No description of the target population/comparison to the sample	Yes Questions adapted from the WHO; pilot testing conducted prior	Yes Nonresponse justified (absences, gender not clarified)	Yes Bivariate analyses associated variables with gender; logistic regression for self-reported knowledge
(Eneji et al., 2022)	Weak (Limited by lack of cross-variable analysis)	Yes	Yes	Yes Proportional sampling to represent districts proportional to their population size	Yes Proportional delineated sampling based on population in different districts and number of students across class levels	Yes Pre-test with interviews and focus groups to test validity of questionnaire + Cronbach alpha method used to confirm validity	Yes 800 contacted, 789 responded; 1.4% nonresponse rate	Unclear No statistical analysis used to further interpret results - the data interpretation was limited by a lack of cross-variable analysis
(Kågesten et al., 2017)	Strong	No, but clear objectives	Yes	Yes Multi-stage cluster sampling design	Yes Extensive background on target population	Yes In-depth definitions of variables	Yes Also conducted a "sensitivity analysis" for interviews where a parent insisted on being present	Yes Items were analyzed continuously; survey weights used to account for multi-stage cluster design

(McHaro et al., 2021)	Moderate (Analyzing methods unclear, could have been taken further)	No, but clear objectives	Yes	Yes Probability proportional to size used to determine number of students by sex from each higher learning institution	Unclear Target population not described	Yes Customized questionnaire from existing research studies for Tanzanian setting; pre-testing conducted from nearby region	No 25% of nonresponse could not be reached, no explanation for the other 75%. Additionally, nonresponse was 20%.	Yes Variables analyzed answered the research questions broadly
(Mostert et al., 2020)	Moderate (Not many connections to multi-variable conclusions)	No, but clear objectives	Yes	Yes Not probability, but offered to all students	Yes "This age group of the learners involved is characterised by sexual debut and vulnerability to STDs"	Yes Literature-based, with input from teachers, learners, NGOs, university lecturers	Unclear No mention of nonresponse Could be relevant, given the sensitivity of the discussed topic	Yes Descriptive statistics
(Nneka & Okagua, 2019)	Strong	No, but clear objective	Yes	Yes Sample size calculated by using Cochran formula; sampling error calculated to be low; multi-stage sampling technique used to select schools	Unclear Stratification between public and private schools attempted, but no clarification of target population	Yes Pre-tested questionnaire, multiple responses allowed (which makes sense given the objectives)	Yes High response rate of 97.2%	Yes Chi-square test used for association, discussion of what is statistically significant
(Olamijuwon & Odimegwu, 2022)	Moderate (High measurement quality, but unclear sampling methods)	No, but clear objectives	Yes	Yes No real sampling frame of adolescents in Africa with access to the internet; so they used what they could with quasi-random sampling via	Unclear No discussion of target population, selection of countries based on internet penetration	Yes Multiple approaches to the survey were taken; attention check questions utilized; measurements also adopted from existing literature	Unclear Mention that 13% of responses were excluded as they were "ineligible" and 8% were missing information -	Yes Confirmatory factor analysis to assess multidimensionality and validity; structural equation modelling to evaluate research model

				Facebook; aimed to minimize homogenous biased sample			but no additional detail	
(Sun et al., 2018)	Moderate	No, but there are clear objectives	Yes	Yes No probability sampling needed; all eligible participants were recruited	Unclear No mention of target population	Yes Individual sections outlining the validity and reliability of each section of the survey	Unclear Mean substitution used for missing data, but no mention of nonresponses	Yes Cronbach's alpha and Kuder-Richardson 20 scales used

MMAT Guidelines: Mixed Method Studies

Authors	**Quality Score**	**Are there clear research questions?**	**Do the collected data allow to address the research questions?**	**Is there an adequate rationale for using a mixed methods design to address the question?**	**Are the different components of the study effectively integrated to answer the research question?**	**Are the outputs of the integration of qualitative and quantitative components adequately interpreted?**	**Are divergences and inconsistencies between quantitative and qualitative results adequately addressed?**	**Do the different components of the study adhere to the quality criteria of each tradition of the methods involved?**
(Ivanova et al., 2019)	Moderate (Sampling in quantitative unclear)	No, but clear objectives	Yes	Yes Comparison of quantitative/ qualitative to link common themes; qualitative interviews used to supplement questionnaire answers and represent different countries and age groups	Yes Questionnaire aims at high-level questions, interviews followed up on narrative	Yes Themes emerged from questionnaire responses that were supplemented by direct quotes	No/yes No mention of inconsistencies, although there was mention of topics that arose during interviews that had not been broached by the questionnaire	Yes/No Yes – qualitative No - quantitative