

**SEXUAL AND REPRODUCTIVE HEALTH LITERACY AND  
ADOLESCENT HEALTH OUTCOMES IN NIGERIA: A  
NARRATIVE REVIEW OF EVIDENCE AND INTERVENTION  
STRATEGIES**

**Udukhomose Suleiman Omokhabi<sup>1</sup>, Foyinsola Genevieve Ogunniyan<sup>2</sup>, Adetutu  
Olubukola Oyelowo<sup>3</sup>, Olumide Ephraim Olajide<sup>4</sup> & Abiola Adiat Omokhabi<sup>5\*</sup>**

<sup>1</sup>Department of Adult Education, Federal University Oye Ekiti, Ekiti State, Nigeria

<sup>2-5</sup>Department of Adult Education. University of Ibadan, Ibadan, Oyo State, Nigeria

\*adiatomokhabi@gmail.com

**ABSTRACT:** This narrative review considers the contribution of sexual and reproductive health literacy (SRHL) to adolescent health outcomes in Nigeria in the context of ongoing challenges, including high rates of unintended pregnancies, sexually transmitted infections (STIs), and poor access to youth-friendly services. Adolescent sexual and reproductive health literacy (SRHL) is the capacity to access, comprehend, critically evaluate, and apply sexual and reproductive health knowledge to make informed decisions. Evidence suggests that poor SRHL contributes to risky sexual behaviour, low uptake of contraceptives, susceptibility to misinformation, and harmful socio-cultural norms. In contrast, improved SRHL is associated with reductions in unintended pregnancies and STIs, including HIV, as well as better mental and emotional well-being. Adolescents with higher SRHL are more likely to delay sexual debut, practise safer sex, and utilise health services. However, progress remains hindered by barriers such as gender inequality, weak school-based sexuality education, and poor parent–child communication. A narrative review was conducted using a structured search strategy across PubMed, Scopus, Google Scholar, and AJOL. Studies published in English between 2015 and 2026 were retrieved using relevant keywords and Boolean operators. Eligible studies focused on adolescents aged 10–24 years, addressed reproductive health literacy or related concepts, and reported on sexual and reproductive health outcomes. Data were screened, extracted, and narratively synthesised. Findings indicate that interventions such as community-based programmes, community health workers, sexuality education, youth-friendly health services, counselling, mobile health interventions, financial empowerment programmes, and mass media have positive effects on SRHL. Emerging approaches, including smartphone-based tools, school-based interventions, game-based learning, and family-based programmes, also show promise when adapted to socio-cultural contexts. Strengthening SRHL is therefore critical to improving adolescent reproductive health outcomes in Nigeria, highlighting the need for context-specific, multi-level interventions and sustained policy attention.

**Keywords:** Sexual and reproductive health literacy, Adolescents, Nigeria, Health outcomes, Interventions

## INTRODUCTION

Young people, defined as individuals aged 10–24 years, constitute a substantial proportion of the global population (World Health Organisation (WHO), 2021). Whilst the largest population of youth is in Sub-Saharan Africa (SSA), the human resource potential remains largely untapped with far-reaching consequences for the region's socio-economic development both now and in the future (United Nations, 2019). Adolescence is characterised by rapid biological, cognitive, and sociocultural changes, which may increase vulnerability to adverse sexual and reproductive health (SRH) outcomes in the absence of accurate knowledge and access to youth-friendly services. It is estimated that globally, there are 374 million new sexually transmitted infections (STIs) every year, of which almost half are among individuals aged 15–24 (United Nations Population Fund, 2023). Based on WHO figures, nearly 5.6 million unsafe abortions were performed among adolescent girls aged 15–19 years, and 800,000 young people living with HIV/AIDS in developing regions (Mesfin, 2021), including Nigeria. In low- and middle-income countries (LMICs), there are an estimated 21 million pregnancies among females under age 19, with 777,000 (6.48%) annual births (Bolarinwa et al., 2022).

Moreover, adolescents and young people constitute an increasing proportion of those living with HIV globally. In 2024, 370,000 (250,000–490,000) young people aged 15 to 24 were newly infected with HIV, including 145,000 (37,000–270,000) adolescents aged 15 to 19 (UNICEF, 2025). Nonetheless, young people have historically experienced substantial barriers to utilising SRH services owing to stigma, lack of confidentiality, insufficient knowledge, and traditional taboos (Lirios et al., 2024). This population is vulnerable to a number of SRH concerns, including unsafe abortion, young maternal death, violence, and sexually transmitted infections, such as HIV/AIDS (Envuladu et al., 2022). Negative sexual and reproductive health outcomes among youth remain a major public health concern in many countries, including Nigeria (Agu et al., 2024; Mukeshimana et al., 2025; Nkrumah et al., 2025). Hence, young people, particularly those in low-income countries, are confronted with huge challenges, particularly in terms of SRH (Vongxay et al., 2019).

Reproductive health information is comprehensive education and information on physical, psychological and social dimensions of sexuality and reproduction, including the delivery of factually correct, developmentally-relevant and currently accurate information (WHO, 2017; Sawyer et al., 2018). Currently, adolescents have many sources of information on reproductive health, among which are social media, friends, role models, celebrities and published material. When adolescents make accurate choices based on the knowledge of reproductive health, this will be called reproductive health literacy and is anticipated to contribute to positive adolescent health outcomes in this population. Yet, the decision on what kind of information is right and adequate among reliable sources is still a challenge for young people, as the absence of trustworthy information could exacerbate risk behaviours among youth (Maitz et al., 2020).

Reproductive Health Literacy (RHL), as a derivative of Health Literacy (HL), is the information and knowledge concerning RHL and related applications. It includes the individuals' motivation and capacity to access, understand, evaluate and apply reproductive health information to make informed decisions about their reproductive health and reproductive health choice (RHC) (Chandra-Mouli et al., 2014). RHL may also enable a person to be aware that they have the right to say no to

sex without permission and to seek answers about STIs, its appropriate prevention methods, and have access to reproductive health services if needed (Alhussaini et al., 2025). This has also been reiterated in terms of the critical importance of adolescent reproductive health education and empowerment through the promotion of health equity and the improvement in adolescent reproductive health outcomes, and this is where RHL has a significant role to play (Berkman et al., 2011). With low RHL, adolescents face difficulties in taking appropriate actions for their reproductive health, and as a result, they are at risk of experiencing poor reproductive health outcomes (Ghanbari et al., 2016). A lack of RHL can also contribute to misconceptions about fertility, leading to unplanned pregnancies and insufficient preparation for parenthood (Newton et al., 2020). Obstacles to RHL remain a concern for adolescents; misinformation and insufficient access to trustworthy sources of information continue to play a major part. The absence of accurate information has been specifically reported to promote such behaviour among young people (Lopez et al., 2015).

Addressing the barriers, RHL is therefore critical to ensuring adolescents achieve literacy in reproductive health matters, which would result in positive health behaviours and hence impact positively on health outcomes in them (Chen et al., 2021; Lirios et al., 2024). Considering the above, RHL is still a key factor for the health of the adolescents, especially in the low and middle-income countries like Nigeria, where youths are exposed to a lot of sexual and reproductive health challenges. Although better information sources are becoming more available, many of the young people in Nigeria still are struggling to get accurate, understandable and actionable information about sexual and reproductive health and rights. Such a gap in their sexual and reproductive health knowledge makes them vulnerable to high risk sexual acts and negative health consequences. While some barriers to adolescent reproductive health have been reported by previous evidence, findings are disjointed and cannot be adequately synthesised due to variation in study designs, scopes and methodologies of quality assessment. In addition, there is a dearth of evidence synthesis on the association between sexual and reproductive health literacy and adolescent health outcomes in Nigeria. In light of the reviewed facts, this narrative review intends to provide a critical appraisal of and bring together information on sexual and reproductive health literacy and its impact on the adolescent health outcomes in Nigeria. The review seeks to evaluate the extent, quality, and consistency of the evidence, potential gaps of critical importance in knowledge, and potential action for effective intervention. It is foreseen that the review will result in the generation of additional policy-relevant insights which could inform the design of focused health education programmes, reinforce the policy frameworks to advocate evidence-based interventions that enhance adolescent sexual and reproductive health outcomes in Nigeria.

## **METHODOLOGY**

This paper adopts the narrative review method to analyse the evidence on the state of reproductive health literacy, and adolescent health outcomes in the Nigeria context, and intervention strategies studies from Africa and developed countries focusing on the delivery of sexual and reproductive health (SRH). To improve transparency and reproducibility, a protocolised search was undertaken to select applicable studies. A search of the literature was performed through the electronic databases of PubMed, Scopus, Google Scholar, and African Journals Online (AJOL). These databases were chosen to allow a comprehensive inclusion of both international and regional

literature. The literature search was restricted to the English language and from 2015 to 2026 in order to obtain both baseline and up-to-date information. A set of keywords and their combinations was used in different search term combinations with the help of Boolean operators to find relevant studies. Search terms were: “reproductive health literacy”, “health literacy”, “adolescent reproductive health”, “sexual and reproductive health”, “youth”, “adolescents”, “Nigeria”, “sub-Saharan Africa”, and “sexual and reproductive health intervention for adolescents”. These were combined using operators such as “AND”, and “OR” to improve/limit/focus the search. The sensitivity of the searches could be modified by adding or removing these keywords with the use of the boolean operator “AND” or ”OR.”.

### **Inclusion Criteria**

Studies were eligible if (1) they were targeting adolescents or young individuals in the age range of 10-24 years, (2) they focused on reproductive health literacy or a synonymous term (for example, sexual health knowledge; information-seeking), and (3) they included information on reproductive or sexual health outcomes. Empirical studies as well as reviews deemed relevant to this topic were included. The aim was to identify all studies conducted in Nigeria, but in the absence of Nigerian data, evidence from other low- and middle-income countries was to be included to allow for contextualisation. Studies were excluded that (1) were not focused on adolescents or youth, (2) were not related to reproductive or sexual health, or (3) were neither a description of methods nor relevant to the study aims. Non-peer-reviewed sources, opinion papers that lacked empirical and/or theoretical support and duplicate records were excluded. The selection process involved a first screening of titles and abstracts to identify potentially relevant articles, and a second screening of the full text for final determination of inclusion. Information relevant to the aims of the review was extracted and thematically synthesised within core areas such as sources of RH information, RH literacy, barriers to accessing reliable information, and health outcomes. Owing to the narration style of this review, no formal meta-analysis was conducted. However, a more nuanced and critical review of the literature was attempted by comparing and contrasting findings across studies and highlighting areas of agreement, disagreement, and lacunae in the literature.

### **Conceptual Clarification**

#### **Health literacy**

According to WHO's definition, to be health literate, an individual must be able to find, understand, evaluate and apply health information within the context of making health-related decisions (Mirmohammadkhani, Ziari & Momeni,2020). Health literacy (HL) covers various aspects rather than one single aspect. Furthermore, it is not interpreted as the knowledge level or information quantity what an individual holds about his or her health or a certain health-related question (Olajubu, Komolafe & Fatusi,2026). In contrast, it involves the individual's ability to access relevant and high-quality information about their health, process and understand the data correctly, and apply the acquired knowledge to take health-promoting actions (Liu et al., 2020). HL refers to individuals' ability to obtain, process, and understand health information and services needed to make appropriate health decisions (Coughlin et al., 2020; Centre for Disease Control and Prevention, 2024). Thus, HL is a concept which refers to the cognitive capacity of an individual,

and is associated with the individual's ability to process, anticipate, evaluate and utilise critical health information to issue decisions relevant to life in the field of the care of own health and the health of others, and also related to participate in preventive practices of disease, which both influences health and is influenced by it through deciding in relation to health (Liu et al., 2020).

HL is considered an important social determinant of health and predictor of health outcomes, and the determinant of the success of health education programmes, and their success in leading to positive health behaviours in people and the health benefits gained thereby. It is considered a public health resource that can contribute to health equity and the improvement of social capital (Ghanbari et al., 2016). Because of its significance, HL was identified as a priority for action to address health inequities by the WHO (2017). Through an education and health lens, HL is a conceptual framework that equips individuals with the capacity to attain positive health across the life course (Ghanbari et al., 2016). HL is thus a complex, multi-faceted concept which is amenable to learning and change (Broder et al., 2020).

### **Reproductive Health (RH)**

In a recent article, the scholars testified to it being the traditional stance of the United Nations that RH is a component of general health and well-being and that it is a means and end for social, economic and human development; and that family planning (FP), sex and maternal health are just subsets of RH (Akanbi et al., 2024). Women's participation in these sequences that lead to health, and even/especially their very activity, relies on their being in good physical and mental health. Prevention and treatment of infertility and sexual dysfunction in men and women, safe motherhood (antenatal care), safe childbirth, essential obstetric and neonatal care, postnatal care, breastfeeding and prevention and management of reproductive tract infections, with particular emphasis on Sexually Transmitted Infections, Human Immunodeficiency/ Virus (HIV) Infections and Acquired Immune Deficiency Syndrome (AIDS) are part of RH (Omokhabi, 2014). Menstruation, menarche, fertility, pregnancy, labour, gynaecology, cancer, STD, sex, sexuality and sexual health and function are all aspects of women and girls' reproductive health (Omokhabi, 2024). A measure of progress in protecting and advancing women's health, including RH, has been reported. Omokhabi (2016) asserts that for women to be able to take on such health matters, they must be physically and mentally healthy. In Nigeria, as in other parts of the world, women were disenfranchised and had no voice in decisions that concerned their lives, which contributed to their sense of powerlessness (Olajide & Omokhabi, 2014). RH and family planning (FP) have historically been two of the strongest and most pervasive messages found within conventional media advertising in the developing world (Omokhabi & Egunyomi, 2016).

### **Sexual and Reproductive Health and Literacy**

Sexual and reproductive health (SRH), the right to it, and related services are part of people's broader right to health and constitute a fundamental human right (WHO, 2022). SRH is also essential for gender equality and the empowerment of individuals (Excell, 2011) SRH and the rights that enable it are a key aspect of human rights (United Nations Population Fund, 2016). SRH refers to the knowledge and the application of knowledge on sexual and reproductive health. It involves more than just health implications, and addressing the concerns. SRH seems to be the

highest priority in the developing world. For example, early pregnancy and early marriage are more common in poor, uneducated, and rural communities than elsewhere (UNFPA, 2016). SRHL is, therefore, an individual's ability to access, gain, and understand relevant SRH information and knowledge to make informed decisions that contribute to the individual's sexual and reproductive health (Vongxay et al., 2019).

There are a few studies available that indicate the young populations, particularly in low and middle-income countries such as Nigeria, have poor SRH literacy (Mukeshimana et al., 2025; Nkrumah et al., 2025). This ultimately can result in poor decisions regarding SRH, such as engagement in unprotected sexual activity and unsafe abortion, which could lead to detrimental social and health conditions (Ross et al., 2021). Young people are at greater risk of unsafe abortion, maternal death, sex-for-products and sexually transmitted infections (STIs), including HIV/AIDS, in developing countries, and this group is more vulnerable to the negative social effects of school dropout and early marriage (Debella et al., 2024). Extending from the framework of health literacy, reproductive health literacy can be defined as knowing and acting upon what one needs to know about reproductive health. RHL is the motivation and ability of individuals to access, understand, evaluate, and use information related to RH to make decisions about their RH and life (Chandra-Mouli et al., 2014).

Therefore, RHL is defined as an individual's self-perceived ability to seek, read, understand, and evaluate information to make decisions and take actions that affect their own reproductive health. Thus, RHL is not only knowledge and behaviour, but also the reasoning process behind decisions related to reproductive health (Sørensen et al., 2012). Even with the value placed on health literacy, low health literacy remains a worldwide issue. It is estimated that 48%, 64.8%, and 67.5% of adults in Europe, Sub-Saharan Africa and South Asia have inadequate health literacy, respectively, based on a systematic review. Poor health literacy in the general population is linked to reduced use of health care services, poorer health outcomes, increased cost of health care, and widening disparities in health (Baccolini et al., 2021).

Sexual and reproductive health (SRH) education and literacy are important for adolescents, especially in Sub-Saharan Africa (SSA), where health, social, and developmental complexities remain. Positive change in adolescent health can be brought about as a result of factors including delayed sexual debut, promotion of abstinence, increased knowledge of modern contraceptives, elimination of misconceptions about contraceptive effectiveness and decreased high-risk sexual behaviour (Yakubu et al., 2019; Chipako, Singhal & Hollingsworth, 2024). It is also important to address SRH education during adolescence, of which the health, economic potential and well-being of adolescents are affected (Viner et al., 2012). The benefits are many and valid for adults and adolescents, including making appropriate SRH-related decisions, self-detecting and good health-seeking behaviour, higher use of SRH services, positive behaviours and good health outcomes (Leekuan et al., 2022). SRH decision making and interactive health literacy (Mancuso, 2008), which is defined as an individual's ability to read, interpret and then apply health information to make informed decisions. The ability to make decisions is important for adolescents and young people to develop and maintain safe and healthy sexual behaviour (WHO, 2024). Informed adolescents have ownership of their bodies and choices that safeguard their futures. SRH decision-making capacity in adolescents will also decrease health disparities and contribute to better gender

equality (Dagadu et al., 2022). Adolescent choice is important in particular as it can have a long-term impact on their health and fits well in the public health agenda for reducing sexually transmitted infections (STIs), and teenage pregnancy (Conroy et al., 2016).

### **Dimensions and Domains of Sexual and Reproductive Health Literacy**

In the context of health, sexual health is an important aspect and is a significant indicator of community health among different aspects of health (Nematzadeh et al., 2024). SRHL includes a variety of skills related to sexual health. Such knowledge provides advantages in such issues as sexual development, puberty, pregnancy, contraceptive methods, unintended pregnancies, sexually transmitted diseases, obtaining the skills needed to manage sexual relationships, including discussions concerning preferences and boundaries themselves and recognising the positive and romantic aspects of these relationships (WHO, 2017). Comprehensive sexual health literacy enables people to critically evaluate, decide upon, and adapt their sexual practices, facilitating the positive evolution, maintenance, and achievement of sexual health (Gilbert et al., 2015). Simply put, sexual health literacy contributes to a more accurate understanding of assessment of risks involved with sexual health, resulting in more protective sex, fewer unintended pregnancies and infections, and better family and community health (Graf & Patrick, 2015).

SRHL is the application of the health literacy idea, more especially connected to sexuality and reproduction (Dongarwar & Salihu, 2019). SHRL encompasses not only the acquisition and comprehension of reproductive and sexual knowledge but also the integration of that knowledge into the processes of decision-making that dictate behaviour (Graf & Patrick, 2015). Adolescents who have limited SRHL abilities make harmful decisions, participate in dangerous sexual activities, have poorer health and exhibit less self-management (Dongarwar & Salihu, 2019). Based on frameworks aligned with the WHO (2026), principles, Reproductive Health Literacy is a multidimensional construct that enables individuals to manage their sexual and reproductive health. It is frequently operationalised into four main functional dimensions: access, understand, appraise, and apply information

### **Sexual and Reproductive Health Literacy (SRHL) on Adolescent Health Outcomes**

Adolescence (10–24 years of age) is an important stage of development that is changing rapidly across its mental, physical, and behavioural aspects. The theoretical constructs that are influenced by physiologic, psychosocial, temporal and cultural perspectives shape adolescence, a period that is associated with risk-taking behaviours. This stage is a critical developmental period and is generally regarded as the time between the onset of puberty and the formation of social identity. Emerging adulthood is a time to develop autonomy in decision-making; hence, it is important to provide young people with accurate and reliable health information so that they may become healthy adults (Ghanbari et al., 2016; Rizky, 2020).

Teenagers' health is under pressure, which predisposes them to adverse effects during adolescence. Among these barriers are issues related to reproductive health, which place a heavy burden on this demographic, making this group at high risk of experiencing negative health outcomes (Vongxay et al., 2019). Adolescent RH is the focus of major public health initiatives globally, with Sub-

Saharan Africa carrying a larger share of the burden than other regions (Melesse et al., 2020). Health detriments reported in young people include teenage pregnancy, which is frequently followed by life-threatening abortion, and the young mother and her child risk death, sexually transmitted infections/diseases (STIs/STDs), HIV infection, sex exploitation, multiple pregnancies, and inconsistent and incorrect contraceptive use. Consequently, they are at greater risk of suffering from adverse social consequences such as school drop-out, early marriage and poverty. The adverse impact of these challenges on adolescents leaves them vulnerable to be trapped in a cycle of poverty and educational deprivation and exposed to further unsafe and risky practices (Vongxay et al., 2019; Gillespie et al., 2022; Ahinkorah et al., 2023).

The relevance of health literacy to public health has gained worldwide attention in recent years, particularly in adolescent health (Loer et al., 2020). The association between health literacy and health outcomes has been reported: adolescents with limited health literacy are at risk of poorer health outcomes, they make poor decisions regarding reproductive health, and they face increased financial burdens related to health care (Kickbusch, 2013). Adolescents require developmentally appropriate information. Inadequate education about reproductive health can result in undesirable consequences. Accordingly, HL has indeed been considered a means to deter engagement in health-risk behaviours and to support positive development among adolescents (Broder et al., 2019). It enables young people to find, engage with, and use reliable health information, make informed decisions about their health, and work on and influence the determinants of their health prospects (Kickbusch, 2013).

Hence, RHL is a pivotal aspect that could contribute to fighting SRH-related challenges among adolescents, more so in low-income countries where SRH issues such as teenage pregnancy, life-threatening abortion and STDs, to mention a few, are still unacceptably high (Yakubu & Salisu, 2018; Väisänen et al., 2021). It is especially Adolescent RHL that influences their capacity to make informed SRH decisions, and this has been established to be a strong determinant of adolescents' SRH outcomes. For this reason, it is important to educate young adolescents about reproductive health to reduce negative consequences, particularly as the risks associated with peer pressure and negative social interaction are increasing. (Dongarwar, 2019). At a time when most new and different health problems associated with commencing sexual activity, emotional regulation and conduct typically pose a major threat to what adolescents' present and future health and welfare. Moreover, they are in a phase of life in which they are making the most of cognitive growth, information-processing, and thinking abilities (Steinberg et al., 2018). Given these susceptibilities and opportunities, the adolescent phase is an appropriate developmental stage at which to target health literacy, particularly in the RH domain, as health literacy interventions in adolescence may positively affect adolescent health outcomes and their life journey (Broder et al., 2020).

### **Impact of Reproductive Health Literacy on Adolescent Health Outcomes**

Effects of RHL on adolescent health outcomes are complex and involve various behaviours and health measures.

### **Unintended Pregnancy Prevention**

There are several results of high RHL in young people that have a positive influence, and fewer unintended pregnancies is one of these. Teenagers with comprehensive knowledge of contraception (including its availability, use, and efficacy) are more likely to use it consistently and correctly. What they know also enables them to make informed decisions about sex and to take action if they want to prevent pregnancy. Conversely, low RHL is associated with inconsistent or incorrect use of contraceptives, leading to higher rates of unintended pregnancies, which may have damaging implications for a young person's educational, financial and social status (Morris & Rushwan, 2015).

### **Reduction of Sexually Transmitted Infections (STIs)**

RHL is important for the acquisition and transmission of STIs. Adolescents with high levels of RHL are more likely to be aware of the risks associated with risky sexual behaviours, the importance of barrier methods such as condoms, and the signs and symptoms of common STIs. This knowledge leads to safer sexual practices, including consistent condom use and timely testing and treatment if necessary. Besides, RHL can help adolescents to talk with their partners about sexual health, thereby reducing the risk of transmission. Contrarily, poor RHL is associated with dangerous behaviours, delayed diagnosis, and an increased prevalence of STIs, which may have long-term health consequences, including infertility and chronic pain (Almeida et al., 2017).

### **Healthy Relationship and Consent Promotion**

Beyond its biology, RHL is also evident in the development of good relationship skills and in understanding consent. Adolescents with higher RHL were more frequently able to recognise the importance of mutual respect, communication, and boundaries in sexual and romantic relationships. They can better tell when they are being coerced or abused, and they can better say that they have a right to their own bodies. This information is critical to the success of both sexual-violence prevention and positive sexual health. In contrast, individuals with low RHL might be left vulnerable to manipulation and may find it difficult to engage in complex relationship dynamics in a safe manner (Lehmiller, 2023).

### **Access to and Use of Services for Reproductive Health**

RHL plays a key role in determining whether adolescents will be able or willing to seek reproductive health services. This includes knowing where to obtain confidential services, having information about the services that are available (including information on contraception, STI testing, and counselling), and feeling comfortable talking with health providers. Adolescents with higher levels of RHL are more likely to use such services, be diagnosed and treated for STIs earlier, use contraceptives more consistently, and have better reproductive health outcomes overall (Morris & Rushwan, 2015). Challenges in service access, which are often exacerbated by poor RHL, may lead to delayed care, poorer health outcomes, and a higher propensity for risk-taking behaviours. The advantages of family planning use are not limited to the area of health. For example, full access to contraceptives can be expected to bring about a decrease in unplanned pregnancies and, as a

result, increase female education, women's empowerment, alleviation of poverty, and perhaps even environmental sustainability (Sonfield, Hasstedt, Kavanaugh and Anderson, 2013, cited in Omokhabi,2020).

### **Mental and Emotional Health**

The impact of reproductive health literacy (RHL) has also been identified as a factor influencing adolescent mental and emotional health. To be informed and confident in SRH matters is to ease the feelings of worry and stress related to sex, pregnancy, and the risk of sexually transmitted infections (STIs). A lack of RHL, on the other hand, could make them feel vulnerable, shamed, and frightened, which might lead to negative impacts on their self-esteem as well as their mental health. Understanding one's body and reproductive processes can empower individuals, leading to positive body image and self-esteem (Lehmiller, 2023).

## **FINDINGS AND DISCUSSION**

### **Empirical Evidence Supporting Sexual and Reproductive Health Interventions for Adolescents**

Evidence shows that SRH interventions span twelve key domains, including community-based programmes, community health worker (CHW) interventions, SRH education, youth-friendly health services (YFHS), counselling, mobile phone-based interventions, financial support, mass media campaigns, smartphone-based platforms, school-based programmes, game-based interventions, and family-based approaches. Although most of these interventions have not been widely implemented or rigorously evaluated in the Nigerian context, they represent promising strategies that could potentially be adapted to improve sexual and reproductive health outcomes among adolescents in Nigeria.

### **Community-based Programme Intervention**

Evidence from intervention studies demonstrates consistent improvements in reproductive health knowledge and service uptake among adolescents; however, the extent and sustainability of these outcomes vary across contexts and study designs. Several studies have examined community-based interventions related to adolescent sexual and reproductive health (ASRHR) in Africa, including those by Mmbaga et al. (2017) and Austrian et al. (2020). These interventions were delivered in school and community settings and included community-based education programmes, peer education, sports-based initiatives, internet-based programmes, or multi-component approaches combining several strategies. Across these studies, multi-component interventions were generally more effective in improving both knowledge and behavioural outcomes, suggesting that combining education, service access, and community engagement enhances adolescent SRHL. Nevertheless, these results, while showing practical efficiency, need to be interpreted with a more robust theoretical perspective. For instance, Nutbeam's (2000) model on health literacy at three levels: functional, communicative, and critical literacy, is a valuable model to shed light on ways in which young people receive, interpret and use information on reproductive health. Conceptualizing SRHL as a four-dimensional concept in this review, including access, comprehension, critical

appraisal and application, draws directly on these models and further refines the concept of how knowledge may be transformed into a change in behaviour.

In another study, for instance, Thakuri et al. (2023) conducted a pre- and post-intervention study evaluating the Healthy Transitions project, which reported significant improvements in both knowledge and utilisation of modern family planning methods among adolescent girls and young women (AGYW). Knowledge increased from recognition of seven methods at baseline to all ten methods at endline ( $p < 0.001$ ), while awareness of service delivery points rose from 92% to 99% ( $p < 0.001$ ). Similarly, the proportion of married AGYW using modern contraceptives increased from 26% to 33% ( $p < 0.001$ ), suggesting a positive effect of the intervention on behavioural outcomes. While these results are consistent with the broader body of evidence demonstrating that focused interventions can improve reproductive health knowledge and service utilization, they should be interpreted with caution. The pre- and post-intervention design without a control group also limits the attribution of changes to the intervention, as external influences could have contributed to the outcomes. Furthermore, the relatively brief follow-up limits the understanding of the durability of the effects.

### **Community Health Workers Interventions**

Community Health Workers (CHWs) have emerged as a critical strategy for improving adolescent sexual and reproductive health (ASRH) outcomes, particularly in underserved and rural areas where access to formal health services is limited (WHO, 2013; Malkin et al., 2022). Evidence consistently shows that CHWs, when combined with targeted interventions such as counselling or comprehensive sexuality education (CSE), enhance uptake of modern contraceptives among adolescent girls, including married, single, and pregnant adolescents (Brooks et al., 2019; Silverman et al., 2023; Erhardt et al., 2023). Mbizvo et al. (2023) further demonstrate that CHWs integrated with CSE improve pregnancy outcomes, highlighting the potential for combined educational and service delivery approaches to influence both knowledge and behaviour.

When synthesising across studies, a clear pattern emerges: CHWs are more effective when their roles encompass more than information delivery, engaging in counselling, linkages to services, and follow-up support. But gaps are still there. None of the studies disaggregates effects by age, marital status, or socio-cultural context to shed light on whether and how effects differ. Furthermore, the scalability and sustainability of CHW programmes have not been fully evaluated, particularly in developing countries. Contradictions also emerge: some interventions have reported slight increases in contraceptive use, implying that the success of CHWs might be influenced by wider system-related factors such as commodity availability, community norms or training quality. From a theoretical perspective, these findings align with Nutbeam's (2000) conceptual model of health literacy, which divides health literacy into three levels. CHWs promote functional literacy by offering information about contraceptive methods, communicative literacy through the creation of dialogue and counselling, and critical literacy by assisting adolescents to assess options and make decisions under socio-cultural related constraints. Similarly, the HLS-EU concept (Sorensen et al., 2012) highlights system-level determinants, such as availability of services, accessibility of services, and trust in services, which may be moderated by CHWs. Treating SRHL as a 4-dimensional construct (access, comprehension, critical evaluation, application) in this manner

demonstrates how CHW activities simultaneously focus on multiple facets of literacy, ultimately supporting individuals to convert knowledge into informed decision-making and health-promoting behaviours.

### **SRH Education**

Nkurunziza et al. (2025) provide evidence that peer-led SRH education has a positive impact on adolescents' knowledge and attitudes, suggesting that it is one of the ways of addressing various aspects of SRHL. The decrease in health-related risks through increasing information, peer interaction, and active participation is consistent with strategy-based teaching interventions and promotes functional, communicative, and critical health literacy according to Nutbeam's (2000) taxonomy model. Consistent with the HLS-EU model (Sorensen et al., 2012), these findings also highlight the significance of contexts, such as peer networks and school systems, in predicting SRHL. This review is constrained by short follow-up periods, a lack of research on behavioural outcomes beyond knowledge and attitudes, and limited consideration of socio-cultural or gender-specific moderators that may influence intervention effectiveness.

Delivery of SRH education has also been recognised as a factor leading to positive changes in young people's SRH behaviours (Scull, Malik, Morrison & Keefe, 2021). Throughout the literature, there is agreement that structured, theory-based SRH education programmes, such as peer-led, abstinence-only Health Belief Model (Yakubu et al., 2019) and comprehensive sexuality education (CSE) models, increase knowledge, attitudes (Hegdahl et al., 2022) and, in mild terms, use of contraceptives (Makenzius et al., 2023). Peer-led strategies and youth-friendly health facility-based interventions (Fikree et al., 2018; Akuiyibo et al., 2021) were also associated with improvements in SRH knowledge and contraceptive use. However, significant limitations remain. Much of the literature is short-term in design and focuses on knowledge and attitudinal outcomes, with little known about whether such programmes lead to long-term behavioural changes. In addition, the inconsistent operationalisation of SRHL and the neglect of socio-cultural and gender-based contextual elements hinder comparability and transferability.

### **Youth-friendly Health Services (YFHS) Intervention**

Adolescent- and youth-friendly SRH services (YFHS) have been proposed as a critical approach to enhance adolescents' use of SRH services (Mekonnen-Munea, Alene & Debelew, 2020). Evidence continues to indicate a positive effect of YFHS interventions on knowledge and use of modern contraceptives in youth (Annor, Alatinga & Abihiro, 2021; Oberth et al., 2022). In addition, comprehensive approaches, such as delivering YFHS through peer education or CSE, seem to improve outcomes, including positive pregnancy-related outcomes among adolescent girls (Oberth et al., 2022; Mbizvo et al., 2023). To summarise the convergence of these results, YFHS are most likely to bring positive effects when they are part of multi-component approaches that respond to both service accessibility and health literacy. From a theoretical standpoint, YFHS enhance multiple facets of sexual and reproductive health literacy (SRHL), such as service utilization (functional literacy), engagement with providers (communicative literacy), and evidence-based decision making (critical literacy), in line with Nutbeam's (2000) model. However, there are still gaps, as the quality and consistency of service delivery and long-term behavioural outcomes are not

evaluated in many studies. Also, the success of YFHS may depend on wider contextual issues such as provider attitudes, cultural norms, and health system capabilities, which are not consistently considered in the literature.

### **Counselling Intervention**

Sidamo et al. (2024) indicated that 16.9% of adolescents accessed SRH services during the preceding 12 months, with greater use for those who possessed good knowledge of SRH rights, who participated in discussions with parents on SRH matters, who had robust family support and who enjoyed access to social media. These results are consistent with previous evidence demonstrating that information channels, communication, and enabling environments affect the SRH behaviours of adolescents. In particular, the beneficial effects of parental discussion and knowledge capture mechanisms through which counselling interventions may be effective. There is evidence that peer counselling can enhance uptake of modern contraceptives and dispel myths and misconceptions in adolescent girls aged 15–19 years (Bakesiima et al., 2021). Likewise, individual, group, and couples-based counselling has been linked to greater uptake and continued use of modern family planning methods, particularly when combined with more comprehensive approaches like community health workers (CHWs), economic assistance, and youth-friendly health services (YFHS) (Bhushan et al., 2021; Erhardt-Ohren et al., 2023). Collectively, these findings indicate that counselling enhances several core components of SRHL, such as knowledge, communication and making decisions in an informed manner, SRHL constructs which are also apparent in the Sidamo et al. (2024) identified predictors. However, while the associations are consistent, the evidence also indicates that counselling is most effective when embedded within multi-component interventions. Its independent contribution remains difficult to isolate, and there is limited longitudinal evidence on its sustained impact. This highlights the need for more rigorous and long-term studies to clarify the extent to which counselling alone can drive improvements in adolescents' SRH service utilisation.

### **Mobile phone-based Interventions (mHealth)**

With the rapid expansion of mobile phone access in low- and middle-income countries, mobile health (mHealth) interventions are increasingly recognised as promising tools for engaging adolescents, including marginalised populations, in sexual and reproductive health (SRH) services. The findings from the studies under review indicate some general consensus that adolescent SRH information access may be enhanced through mobile-based interventions and that information received can improve SRH knowledge and decision making. For instance, Nuwamanya et al. (2020) revealed that a mobile application on the internet increased access to SRH information, contraceptives, and services for university students in Uganda, while Macharia et al. (2022) established that a USSD-based platform increased knowledge among adolescents on contraception, sexually transmitted infections (STIs), and gender norms in resource-poor areas. In the same vein, Sharma et al. (2022) observed slight gains in condom-related knowledge and behavioural intentions through the Be in the Know Zambia (BITKZ) app, while Gichangi et al. (2022) highlighted that digital health interventions can be most potent when integrated within larger, complex approaches. Chima-Oduko and Odeyemi (2025) in Nigeria revealed that a mHealth (mobile health)-based comprehensive sexuality education (CSE) intervention significantly

increased adolescents' SRH knowledge, condom use and SRH services utilisation among university students. This is consistent with more general evidence that digital interventions can be effective in facilitating functional and communicative SRHL, particularly when delivering educational information and including interactive features. However, as with other mHealth interventions, the evidence on behavioural changes over a longer-term and the effects on critical SRHL is scarce, suggesting a need for further research and context-specific modifications. Though digital platforms offer scalability and appeal to youth, they generally have modest and variable effectiveness, with better results when used in conjunction with other interventions (such as counselling or community-based support). In addition, disparities in access to smartphones and network connectivity can affect their reach, particularly among marginalised youth, indicating that more basic technologies such as USSD-based applications may be more inclusive in resource-constrained environments.

### **Smartphone-Based Intervention**

Across digital SRH interventions, there is a strong consensus that technology-based interventions can positively influence adolescents' knowledge, attitudes, and some behavioural outcomes. For example, Scull et al. (2022) found that Media Aware, a media literacy-based web programme, increased critical thinking about sexual media messages, improved parent-adolescent communication, and decreased negative gender norms such as dating violence acceptance. Likewise, Tu et al. (2019) reported that the gain- and loss-framed health messages were similarly effective in fostering HPV knowledge and positive attitudes, indicating that message framing might not be as important as the opportunity to encounter fact-based information. Interventions that use SMS and mobile phones also display similar positive trends according to limited evidence. The Crush app (Martínez-García et al., 2023) and the ARMADILLO SMS programme (Perez-Lu et al., 2022), as well as the MASHS intervention (Wirsiy et al., 2022), resulted in modest but positive changes in knowledge pertinent to contraception and to perceptions of SRH among youth. Collectively, these findings indicate that digital programmes can play a constructive role in enhancing functional SRHL and perhaps communicative and critical skills, especially when they are delivered (or at least include) interactive and/or media literacy-based components, albeit to a certain degree. However, a major drawback of the examined studies is that the effects tend to be modest and short-term. This signals a critical gap; digital-only strategies may not be powerful enough to engender long-term behavioural change. Rather, the evidence suggests that digital platforms are most successful when they are leveraged as enabling tools to strengthen and extend the reach of multi-pronged SRH programmes.

### **Economic Support**

There is some evidence that economic support can enhance adolescent sexual and reproductive health (SRH) outcomes, particularly if implemented alongside comprehensive sexuality education (CSE) and community dialogue. Hegdahl et al. (2022) reported that this package led to higher levels of knowledge and use of modern contraceptives among young, recently sexually active adolescents, without negative evidence triggered by the economic support component by itself. In the same way, cash transfer programs might dissuade involvement in transactional sex as a means of survival (Gichane et al., 2020). This implies that the removal of structural and financial barriers has a

synergistic effect on the delivery of SRH programmes. However, a number of studies examine only short-term outcomes, and there is little knowledge regarding the longer-term behavioural impact or the relative contribution of each component of the interventions, delineating an avenue for further research

### **Mass Media**

Mass media campaigns and peer-education programmes have been demonstrated to enhance adolescent sexual and reproductive health (SRH) knowledge, attitudes and behaviours. Mass media such as radio, television, newspapers, magazines, social media and billboards have the potential to impart messages to a large number of people in an effective and cost-efficient manner. In Sierra Leone, youth receiving family planning messages on the radio or via mobile phones were more likely to use contraceptives, with young women among those who received such messages on the radio more likely to use modern contraceptives compared to those unexposed (Sserwanja et al., 2022). In Zambia, daily reading a newspaper or magazine or using the internet was associated with a reduced likelihood of adolescent pregnancy (Sserwanja et al., 2022). Likewise, peer-led initiatives such as MTV Shuga in Nigeria recorded dramatic positive change on knowledge, attitudes and perceptions among adolescents relating to HIV, STIs, condoms, and stigma. Continued interaction with group-based peer education was associated with strengthened functional and communicative SRHL and with the uptake of protective behaviours (Akuiyibo et al., 2021). Taken together, these results indicate that mass media and peer-led approaches are well placed to complement digital, counselling, and community-based programmes by furthering reach, enhancing knowledge and facilitating informed decision-making for adolescents.

### **School-Based Interventions**

Digital school-based SRH interventions increase contraceptive knowledge and use, especially if designed to engage adolescents for a longer time. For example, the CyberRwanda intervention demonstrated significantly higher modern contraceptive use among sexually active participating youth, which indicates that the full effects of such interventions may only be realized as adolescents become more sexually active and increasingly in need of contraception (Hémono et al., 2024). This underscores a more general trend across digital and mHealth interventions, while improvement in knowledge and attitudes are commonly observed in the short term, longer-term follow-up is critical to assess whether changes in behaviours are sustained, and when intervention effects might be manifest.

Another investigation on Curriculum-based sexual and reproductive health education (CBSRHE) in Ethiopia, a school-based programme to evaluate a sexual and reproductive health curriculum, found that there was a significant knowledge and attitudinal difference toward sexual behaviours among students (Boti Sidamo et al., 2023). The results of Hinson et al. (2023) on the (re)solve intervention demonstrate that digital SRH programmes have the potential to positively affect adolescents' attitudes towards contraception, even if behavioural impacts are not yet statistically significant. Girls who were exposed to the intervention were significantly more likely to have positive attitudes and a higher intention to use contraception, particularly among younger and sexually inexperienced girls. Qualitative findings indicate positive changes in health seeking, but

enduring myths and misconceptions still act as barriers. These findings suggest that digital interventions may potentially have a significant role in influencing attitudes and intentions, which are important components of SRHL; however, complementary strategies are required to sustain these improvements in behaviour.

This research aimed to develop and evaluate integrated reproductive health (RH) lesson materials within problem-based pedagogy (PBP) to promote soft skills for safe sexual behaviour among Tanzanian adolescents (Millanzi, Kibusi, & Osaki, 2022). The intervention positively impacted soft skills for safe sexual behaviour among male and female adolescents. Alekhya et al., (2023) evidenced that SRH interventions delivered in school settings are able to bring about substantial positive change in adolescents' knowledge, attitudes, and practices. Employing a manualised, intervention-based approach administered after baseline evaluation, the investigation found significant proportional increases on all assessed domains at endline. These results further support the relevance of school-based interventions to improve functional and communicative SRHL. Yet, in line with a larger body of evidence, it remains unclear whether these improvements are sustainable and whether they will eventually result in long-term behavioural change.

### **Game Intervention**

Interventions that leverage games are also promising for addressing SRH outcomes. For instance, according to da Silva Carvalho et al., (2024), it is proven that PreVina the board game is a viable instrument for education to increase knowledge about prevention, treatment and control of the sexually transmitted infections (STIs), mainly in risk groups. The research reveals that the success of such programmes is highly dependent on sound theoretical and methodological underpinnings, and positive user involvement. These results imply that game-mediated interventions have the potential to foster functional SRHL through interactive learning, albeit evidence regarding their wider applicability and long-term behavioural outcomes is scarce. da Silva Carvalho et al. (2023) study on the PreVina board game was found to significantly increase knowledge about sexually transmitted infections (STIs) among 64 women incarcerated in a school within a prison in Recife, Brazil, with knowledge gains being maintained at follow-up. This indicates game-based interventions may elicit both immediate as well as sustained gains in functional SRHL, at least under conditions of structured learning environment. However, considering the target population of the study, additional research is required to determine the extent to which such strategies are transferable to larger adolescent populations, as well as their potential impact on longer term behavioural outcomes.

### **Family-Based Intervention**

Family is also important for improving adolescent SRH outcomes through (positive) sex communication and (appropriate) parental monitoring. Guilamo-Ramos et al., (2020) demonstrated that the FTT (family-based triadic) intervention promoted contraception knowledge, delayed sexual debut, and decreased sexual risk behaviours among adolescents. As for the Gesualdo et al., (2023) findings, parents' participation in the programmes promoted family dialogue, increased parent–

child communication about SRH issues, and fostered adolescents' STI prevention and safe sex conduct. Cumulatively, these results emphasise the relevance of family inclusion to fortify communicative SRHL and positive behavioural outcomes. However, the success of such programmes may be influenced by the culture of the community and family, suggesting they should be culturally tailored and their efficacy tested in other sociocultural contexts.

## **Conclusion**

SRHL is a key determinant of adolescent health in Nigeria, with evidence consistently linking higher levels to improved outcomes, including reduced unintended pregnancies, lower incidence of sexually transmitted infections (including HIV), better understanding of consent and healthy relationships, and enhanced mental and emotional well-being. This review contributes by providing a consolidated and context-specific synthesis of evidence on SRHL in Nigeria, an area where existing studies have remained fragmented and insufficiently integrated, and by highlighting that SRHL is shaped not only by individual capacity but also by broader socio-cultural and health system factors. The findings indicate that diverse interventions ranging from community- and school-based programmes to family, digital, and media approaches can positively influence SRHL when appropriately adapted to context. However, the evidence base remains constrained by measurement of SRHL, and limited attention to marginalised populations. Persistent barriers, including socio-cultural norms, gender inequality, weak sexuality education, and poor access to youth-friendly services, continue to limit the effectiveness and scalability of interventions. Future research should prioritise longitudinal and mixed-methods designs to better establish causal pathways, develop standardised measures of SRHL, and rigorously evaluate multi-level interventions across diverse settings in Nigeria. Greater attention to underserved and vulnerable adolescent groups is also needed. In conclusion, strengthening SRHL is essential for improving adolescent health outcomes in Nigeria; however, achieving meaningful impact will require more coherent, evidence-driven, and context-sensitive strategies supported by sustained policy commitment.

## **Recommendations**

Improving adolescent sexual and reproductive health literacy (SRHL) and up-take of services in Nigeria would require context-specific and evidence-based interventions, considering that most of the interventions identified in the literature are not yet comprehensively applied or evaluated in the Nigerian context. Therefore, guidance should be oriented towards how to tailor, test and scale-up effective approaches instead of directly transfer them. In the first place, comprehensive sexuality education (CSE) should be reinforced in Nigerian schools, and appropriately contextualised to the cultural and policy milieu. Although evidence from other contexts demonstrates the efficacy of participatory and counselling-integrated strategies, there is need for pilot programmes to evaluate their feasibility, acceptability and applicability to the Nigerian setting, in particular, within varying regional and school systems. Secondly, youth-friendly health services (YFHS) should be strengthened by offering organised counselling services in general primary health care infrastructure. In the absence of strong local evidence, we recommend that implementation start with demonstration projects involving community health workers (CHWs), and evaluate the subsequent effect on knowledge, attitudes, and service use among adolescents.

Digital and mobile health (mHealth) interventions, including SMS-based education, social media engagement, and Web-based peer support, have the potential to effectively reach adolescents, particularly in light of the observed relation between access to social media and use of SRH services. However, these approaches should be piloted with community-based approaches to mitigate digital divides and ensure equitable reach. Moreover, enhancing family and community involvement is pivotal in the Nigerian setting, where socio-cultural practices have much influence over adolescent conduct. Approaches to encourage parent–adolescent communication and with community and religious leaders should be adapted and evaluated for their potential to increase SRHL and to reduce barriers to service use. Furthermore, to ensure quality delivery of SRHL interventions, teachers, healthcare providers and CHWs need to be trained in terms of building their capacities. Training should be context-specific and be supported by follow-up supervision in order to ensure quality and sustainability. Finally, there is an imperative for strong monitoring and evaluation frameworks to inform local evidence of what works in Nigeria. Longitudinal and implementation research is needed to determine the effectiveness, scale-up potential and sustainability of adapted interventions. Structural barriers such as poverty and gender inequality also need to be incorporated into future intervention designs.

## REFERENCES

- Agu, O., Agu, I.C., Eigbiremolen, G., Akamike, I., Okeke, C., Mbachu, C., & Onwujekwe, O. (2024) Sexual and reproductive health information needs; an inquiry from the lens of in-school adolescents in Ebonyi State, Southeast Nigeria. *BMC Public Health*, 24(1):1105. doi: 10.1186/s12889-024-18584-w.
- Ahinkorah, B.O, Aboagye, R.G, Okyere, J., Seidu, A.A, Budu, E., & Yaya, S. (2023) Correlates of repeat pregnancies among adolescent girls and young women in sub-Saharan Africa. *BMC Pregnancy Childbirth*, 23(1):93. doi: 10.1186/s12884-023-05361-7.
- Akanbi, F. O., Osu U. C., Omokhabi, A. A., & Omokhabi, U. S. (2024) Factors influencing public health care patronage among women of reproductive age in Akinyele Local Government Area Oyo State *Ibadan Journal of Sociology*:15 (2):.14-27
- Akuiyibo, S., Anyanti, J., Idogho, O., Piot, S., Amoo, B., Nwankwo, N., & Anosike, N. (2021). Impact of peer education on sexual health knowledge among adolescents and young persons in two North Western states of Nigeria. *Reproductive health*, 18(1), 204. <https://doi.org/10.1186/s12978-021-01251-3>
- Alekhyia, G., Parida, S. P., Giri, P. P., Begum, J., Patra, S., & Sahu, D. P. (2023). Effectiveness of school-based sexual and reproductive health education among adolescent girls in Urban areas of Odisha, India: a cluster randomized trial. *Reproductive health*, 20(1), 105. <https://doi.org/10.1186/s12978-023-01643-7>
- Alhussaini, N. W. Z., Elshaikh, U., Abdulrashid, K., Elashie, S., Hamad, N. A., & Al-Jayyousi, G. F. (2025). Sexual and reproductive health literacy of higher education students: a scoping

- review of determinants, screening tools, and effective interventions. *Global health action*, 18(1), 2480417. <https://doi.org/10.1080/16549716.2025.2480417>
- Almeida, R. A. A. S., Corrêa, R. D. G. C. F., Rolim, I. L. T. P., Hora, J. M. D., Linard, A. G., Coutinho, N. P. S., & Oliveira, P. D. S. (2017). Knowledge of adolescents regarding sexually transmitted infections and pregnancy. *Revista brasileira de enfermagem*, 70(5), 1033–1039. <https://doi.org/10.1590/0034-7167-2016-0531>
- Annor, C., Alatinga, K. A., & Abihiro, G. A. (2021). Is the presence of an adolescent reproductive health corner associated with adolescent knowledge and use of reproductive health services in Ghana?. *Sexual & reproductive healthcare : official journal of the Swedish Association of Midwives*, 27, 100583. <https://doi.org/10.1016/j.srhc.2020.100583>
- Austrian, K., Soler-Hampejsek, E., Behrman, J. R., Digitale, J., Jackson Hachonda, N., Bweupe, M., & Hewett, P. C. (2020). The impact of the Adolescent Girls Empowerment Program (AGEP) on short and long term social, economic, education and fertility outcomes: a cluster randomized controlled trial in Zambia. *BMC public health*, 20(1), 349. <https://doi.org/10.1186/s12889-020-08468-0>
- Baccolini, V., Rosso, A., Di Paolo, C., Isonne, C., Salerno, C., Migliara, G., Prencipe, G. P., Massimi, A., Marzuillo, C., De Vito, C., Villari, P., & Romano, F. (2021). What is the prevalence of low health literacy in european union member states? A systematic review and meta-analysis. *Journal of general internal medicine*, 36(3), 753–761. <https://doi.org/10.1007/s11606-020-06407-8>
- Bakesiima R., Beyeza-Kashesya J., Tumwine J.K., Chalo R.N, Gemzell-Danielsson K., Cleve, A., Larsson, E.C. (2021). Effect of peer counselling on acceptance of modern contraceptives among female refugee adolescents in northern Uganda: A randomised controlled trial. *PLoS One*;16(9):e0256479. doi: 10.1371/journal.pone.0256479.
- Berkman, N. D., Sheridan, S. L., Donahue, K. E., Halpern, D. J., & Crotty, K. (2011). Low health literacy and health outcomes: an updated systematic review. *Annals of internal medicine*, 155(2), 97–107. <https://doi.org/10.7326/0003-4819-155-2-201107190-00005>
- Bhushan, N. L., Fisher, E. B., Gottfredson, N. C., Maman, S., Speizer, I. S., Phanga, T., Vansia, D., Mtawali, A., Chisinga, R., Kapira, M., Pettifor, A. E., & Rosenberg, N. E. (2022). The mediating role of partner communication on contraceptive use among adolescent girls and young women participating in a small-group intervention in Malawi: A longitudinal analysis. *Global public health*, 17(7), 1392–1405. <https://doi.org/10.1080/17441692.2021.1924823>
- Bolarinwa, O. A., Tessema, Z. T., Frimpong, J. B., Babalola, T. O., Ahinkorah, B. O., & Seidu, A. A. (2022). Spatial distribution and factors associated with adolescent pregnancy in Nigeria: a multi-level analysis. *Archives of public health = Archives belges de sante publique*, 80(1), 43. <https://doi.org/10.1186/s13690-022-00789-3>

- Boti Sidamo, N., Hussien, S., Shegaze Shimbire, M., Zerihun, E., Godana Boynito, W., Abebe, S., Shibiru, T., Shibiru, S., Gebretsadik, W., Desalegn, N., Oumer, B., Temesgen Birgoda, G., & Abdulkadir, H. (2023). Effectiveness of curriculum-based sexual and reproductive health education on healthy sexual behaviors among year one students at Arba Minch University: A quasi-experimental study. *PloS one*, 18(10), e0288582. <https://doi.org/10.1371/journal.pone.0288582>
- Centers for Disease Control and Prevention.(2024) What is health literacy?. <https://www.cdc.gov/health-literacy/php/about/understanding.html>
- Chandra-Mouli, V., McCarragher, D. R., Phillips, S. J., Williamson, N. E., & Hainsworth, G. (2014). Contraception for adolescents in low and middle-income countries: needs, barriers, and access. *Reproductive health*, 11(1), 1. <https://doi.org/10.1186/1742-4755-11-1>
- Chen, S., Chen, K., Wang, S., Wang, W., & Li, Y. (2021) Initial validation of a Chinese version of the mental health literacy scale among Chinese teachers in Henan province. *Frontiers in Psychiatry* 12:661903. doi: 10.3389/fpsy.2021.661903
- Chima-Oduko, A. A., & Odeyemi, K. A. (2025). Effect of a digital intervention on sexual and reproductive health knowledge, behaviour, and service uptake among university youths in Lagos, Nigeria: a quasi-experimental study. *Reproductive health*, 22(1), 271. <https://doi.org/10.1186/s12978-025-02201-z>
- Chipako, I., Singhal, S., & Hollingsworth, B. (2024). Impact of sexual and reproductive health interventions among young people in sub-Saharan Africa: a scoping review. *Frontiers in global women's health*, 5, 1344135. <https://doi.org/10.3389/fgwh.2024.1344135>
- Conroy, K. N., Engelhart, T. G., Martins, Y., Huntington, N. L., Snyder, A. F., Coletti, K. D., & Cox, J. E. (2016). The enigma of rapid repeat pregnancy: A qualitative study of teen mothers. *Journal of pediatric and adolescent gynecology*, 29(3), 312–317. <https://doi.org/10.1016/j.jpag.2015.12.003>
- Coughlin, S. S., Vernon, M., Hatzigeorgiou, C., & George, V. (2020). Health literacy, social determinants of health, and disease prevention and control. *Journal of environment and health sciences*, 6(1), 3061.
- da Silva Carvalho, I., Mendes, R. C. M. G., de Souza Soares Lima, L. H., da Silva, G. P., de Freitas Gonçalves Lima, M., Guedes, T. G., & Linhares, F. M. P. (2024). Board game on sexually transmitted infections for imprisoned women. *BMC women's health*, 24(1), 24. <https://doi.org/10.1186/s12905-023-02801-6>
- da Silva Carvalho, I., Mendes, R. C. M. G., de Souza Soares Lima, L. H., da Silva, G. P., de Freitas Gonçalves Lima, M., Guedes, T. G., & Linhares, F. M. P. (2023). Effect of a board game on imprisoned women's knowledge about sexually transmitted infections: a quasi-

experimental study. *BMC public health*, 23(1), 690. <https://doi.org/10.1186/s12889-023-15646-3>

Dagadu, N. A., Barker, K. M., Okello, S. B. T., Kerner, B., Simon, C., Nabembezi, D., & Lundgren, R. I. (2022). Fostering gender equality and reproductive and sexual health among adolescents: results from a quasi-experimental study in Northern Uganda. *BMJ open*, 12(3), e053203. <https://doi.org/10.1136/bmjopen-2021-053203>

Debella, A., Tamire, A., Bogale, K., Berhanu, B., Mohammed, H., Deressa, A., Gamachu, M., Lami, M., Abdisa, L., Getachew, T., Hailu, S., Eyeberu, A., Heluf, H., Legesse, H., Mehadi, A., Husen Dilbo, J., Angassa Wkuma, L., & Birhanu, A. (2024). Sexual and reproductive health literacy and its associated factors among adolescents in Harar town public high schools, Harari, Ethiopia, 2023: a multicenter cross-sectional study. *Frontiers in Reproductive Health*, 6, 1358884. <https://doi.org/10.3389/frph.2024.1358884>

Dongarwar, D., & Salihu H.M. (2019) Influence of sexual and reproductive health literacy on single and recurrent adolescent pregnancy in Latin America *Journal of Pediatric and Adolescent Gynecology*. 32:506–513. doi: 10.1016/j.jpjag.2019.06.003.

Envuladu, E. A., Massar, K., & de Wit, J. (2022). Adolescents' Sexual and Reproductive Healthcare-Seeking Behaviour and Service Utilisation in Plateau State, Nigeria. *Healthcare (Basel, Switzerland)*, 10(2), 301. <https://doi.org/10.3390/healthcare10020301>

Erhardt-Ohren, B., Brooks, M., Aliou, S., Oseni, A. A., Oumarou, A., Challa, S., Tomar, S., Johns, N., & Silverman, J. (2023). Sustained impact of community-based interventions on contraceptive use among married adolescent girls in rural Niger: Results from a cluster randomized controlled trial. *International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics*, 160(2), 468–475. <https://doi.org/10.1002/ijgo.14378>

Gesualdo, C., Larsen, H., & Garcia, P. (2023). Inclusion of a Parental Component in a Sports-Based HIV Prevention Program for Dominican Youth. *International journal of environmental research and public health*, 20(12), 6141. <https://doi.org/10.3390/ijerph20126141>

Ghanbari, S., Ramezankhani, A., Montazeri, A., & Mehrabi, Y. (2016). Health Literacy Measure for Adolescents (HELMA): Development and Psychometric Properties. *PloS one*, 11(2), e0149202. <https://doi.org/10.1371/journal.pone.0149202>

Gichane, M. W., Wamoyi, J., Atkins, K., Balvanz, P., Maman, S., Majani, E., & Pettifor, A. (2020). The influence of cash transfers on engagement in transactional sex and partner choice among adolescent girls and young women in Northwest Tanzania. *Culture, health & sexuality*, 1–15. Advance online publication. <https://doi.org/10.1080/13691058.2020.1811890>

- Gichangi, P., Gonsalves, L., Mwaisaka, J., Thiongo, M., Habib, N., Waithaka, M., Tamrat, T., Agwanda, A., Sidha, H., & Temmerman, M. (2022). Busting contraception myths and misconceptions among youth in Kwale County, Kenya: results of a digital health randomised control trial. *BMJ Open*, *12*(1), 1-10.
- Gilbert, M., Ferlatte, O., Michelow, W., Martin, S., Young, I., Donelle L, Rootman, I., McDaid, L., & Flowers, P. (2015) Sexual health literacy an emerging framework for research and intervention to improve sexual health for gay men Poster presentation. World STI&HIV Congress, Brisbane, Australia, 13-16
- Gillespie, B., Allen, H., Pritchard, M., Soma-Pillay, P., Balen, J., & Anumba, D. (2022). Agency under constraint: Adolescent accounts of pregnancy and motherhood in informal settlements in South Africa. *Global public health*, *17*(9), 2125–2138. <https://doi.org/10.1080/17441692.2021.1981974>
- Graf, A.S, & Patrick, J.H. (2015) Foundations of life-long sexual health literacy. *Health Education*. ;115(1):56–70. <https://doi.org/10.1108/HE-12-2013-0073>
- Guilamo-Ramos, V., Benzekri, A., Thimm-Kaiser, M., Dittus, P., Ruiz, Y., Cleland, C. M., & McCoy, W. (2020). A triadic intervention for adolescent sexual health: A randomized clinical trial. *Pediatrics*, *145*(5), e20192808. <https://doi.org/10.1542/peds.2019-2808>
- Hegdahl, H. K., Musonda, P., Svanemyr, J., Zulu, J. M., Grønvik, T., Jacobs, C., & Sandøy, I. F. (2022). Effects of economic support, comprehensive sexuality education and community dialogue on sexual behaviour: Findings from a cluster-RCT among adolescent girls in rural Zambia. *Social science & medicine* (1982), *306*, 115125. <https://doi.org/10.1016/j.socscimed.2022.115125>
- Hinson, L., Pliakas, T., Schaub, E., Nourou, A. M., Angelone, C., Brooks, M. I., Abga, A. A., Congo, Z., Ki, B., & Trasi, R. (2023). Does a school-based intervention increase girls' sexual and reproductive health attitudes and intentions? Results from a mixed-methods cluster-randomized trial in Burkina Faso. *PLOS global public health*, *3*(12), e0000910. <https://doi.org/10.1371/journal.pgph.0000910>
- Hémono, R., Gatare, E., Kayitesi, L., Hunter, L. A., Packel, L., Ippoliti, N., Cerecero-García, D., Contreras-Loya, D., Gadsden, P., Bautista-Arredondo, S., Sayinzoga, F., Mugisha, M., Bertozzi, S. M., Hope, R., & McCoy, S. I. (2024). Effect of a digital school-based intervention on adolescent family planning and reproductive health in Rwanda: a cluster-randomized trial. *Nature medicine*, *30*(11), 3121–3128. <https://doi.org/10.1038/s41591-024-03205-1>
- Kickbusch, I., Pelikan, J., M., Apfel, F., & Tsouros, A.D. (2013) Health literacy: The solid facts. WHO Regional Office for Europe, Copenhagen, 7-8. <https://iris.who.int/server/api/core/bitstreams/50a8dd98-9a4d-449b-8549-63c8a6b05892/content>

- Leekuan, P., Kane, R., Sukwong, P., & Kulnitichai, W. (2022). Understanding sexual and reproductive health from the perspective of late adolescents in Northern Thailand: a phenomenological study. *Reproductive health*, 19(1), 230. <https://doi.org/10.1186/s12978-022-01528-1>
- Lirios, A., Mullens, A. B., Daken, K., Moran, C., Gu, Z., Assefa, Y., & Dean, J. A. (2024). Sexual and reproductive health literacy of culturally and linguistically diverse young people in Australia: a systematic review. *Culture, health & sexuality*, 26(6), 790–807. <https://doi.org/10.1080/13691058.2023.2256376>
- Liu, C., Wang, D., Liu, C., Jiang, J., Wang, X., Chen, H., Ju, X., & Zhang, X. (2020). What is the meaning of health literacy? A systematic review and qualitative synthesis. *Family medicine and community health*, 8(2), e000351. <https://doi.org/10.1136/fmch-2020-000351>
- Loer, A. M., Domanska, O. M., Kuhnert, R., Houben, R., Albrecht, S., & Jordan, S. (2020). Online survey for the assessment of generic health literacy among adolescents in Germany (GeKoJu): Study protocol. *International journal of environmental research and public health*, 17(5), 1518. <https://doi.org/10.3390/ijerph17051518>
- Lopez, J. R., Mukaire, P. E., & Mataya, R. H. (2015). Characteristics of youth sexual and reproductive health and risky behaviors in two rural provinces of Cambodia. *Reproductive health*, 12, 83. <https://doi.org/10.1186/s12978-015-0052-5>
- Macharia, P., Pérez-Navarro, A., Sambai, B., Inwani, I., Kinuthia, J., Nduati, R., & Carrion, C. (2022). An unstructured supplementary service data-based mHealth App providing on-demand sexual reproductive health information for adolescents in Kibra, Kenya: Randomized controlled trial. *JMIR mHealth and uHealth*, 10(4), e31233. <https://doi.org/10.2196/31233>
- Maitz, E., Maitz, K., Sendlhofer, G., Wolfsberger, C., Mautner, S., Kamolz, L. P., & Gasteiger-Klicpera, B. (2020). Internet-Based health information-seeking behavior of students aged 12 to 14 Years: Mixed methods study. *Journal of medical Internet research*, 22(5), e16281. <https://doi.org/10.2196/16281>
- Makenzius, M., Rehnström Loi, U., Otieno, B., & Oguttu, M. (2023). A stigma-reduction intervention targeting abortion and contraceptive use among adolescents in Kisumu County, Kenya: a quasi-experimental study. *Sexual and reproductive health matters*, 31(1), 1881208. <https://doi.org/10.1080/26410397.2021.1881208>
- Malkin, M., Mickler, A. K., Ajibade, T. O., Coppola, A., Demise, E., Derera, E., Ede, J. O., Gallagher, M., Gumbo, L., Jakopo, Z., Little, K., Mbinda, A., Muchena, G., Muhonde, N. D., Ncube, K., Ogbondeminu, F. O., Pryor, S., & Sang, E. N. (2022). Adapting high impact practices in family planning during the COVID-19 pandemic: Experiences from Kenya, Nigeria, and Zimbabwe. *Global health, science and practice*, 10(4), e2200064. <https://doi.org/10.9745/GHSP-D-22-00064>

- Mancuso, J. M. (2008). Health literacy: a concept/dimensional analysis. *Nursing & health sciences*, 10(3), 248–255. <https://doi.org/10.1111/j.1442-2018.2008.00394.x>
- Martínez-García, G., Ewing, A. C., Olugbade, Y., DiClemente, R. J., & Kourtis, A. P. (2023). Crush: A randomized trial to evaluate the impact of a Mobile Health App on adolescent sexual health. *The Journal of adolescent health : official publication of the Society for Adolescent Medicine*, 72(2), 287–294. <https://doi.org/10.1016/j.jadohealth.2022.09.019>
- Mbizvo, M. T., Kasonda, K., Muntalima, N. C., Rosen, J. G., Inambwae, S., Namukonda, E. S., Mungoni, R., Okpara, N., Phiri, C., Chelwa, N., & Kangale, C. (2023). Comprehensive sexuality education linked to sexual and reproductive health services reduces early and unintended pregnancies among in-school adolescent girls in Zambia. *BMC public health*, 23(1), 348. <https://doi.org/10.1186/s12889-023-15023-0>
- Mekonnen-Munea, A., Alene, G. D., & Debelew, G. T. (2020). Does youth-friendly service intervention reduce risky sexual behavior in unmarried adolescents? A comparative study in West Gojjam Zone, Northwest Ethiopia. *Risk management and healthcare policy*, 13, 941–954. <https://doi.org/10.2147/RMHP.S254685>
- Melesse, D. Y., Mutua, M. K., Choudhury, A., Wado, Y. D., Faye, C. M., Neal, S., & Boerma, T. (2020). Adolescent sexual and reproductive health in sub-Saharan Africa: who is left behind?. *BMJ global health*, 5(1), e002231. <https://doi.org/10.1136/bmjgh-2019-002231>
- Mesfin, Y., (2021), Disparities in sexual and reproductive health service utilization and associated factors among adolescents with and without disability in southern Ethiopia, *The Scientific World Journal*, (2) 5573687, <https://doi.org/10.1155/2021/5573687>
- Millanzi, W. C., Kibusi, S. M., & Osaki, K. M. (2022). Effect of integrated reproductive health lesson materials in a problem-based pedagogy on soft skills for safe sexual behaviour among adolescents: A school-based randomized controlled trial in Tanzania. *PloS one*, 17(2), e0263431. <https://doi.org/10.1371/journal.pone.0263431>
- Mirmohammadkhani, M., Ziari, A., & Momeni, M. (2020). Systematic review and meta-analysis of health literacy in Iranian older adults. *Salmand: Iranian Journal of Ageing*, 15(1), 2–13. <https://doi.org/10.32598/sija.2020.3.210>
- Mmbaga, E. J., Kajula, L., Aarø, L. E., Kilonzo, M., Wubs, A. G., Eggers, S. M., de Vries, H., & Kaaya, S. (2017). Effect of the PREPARE intervention on sexual initiation and condom use among adolescents aged 12-14: a cluster randomised controlled trial in Dar es Salaam, Tanzania. *BMC public health*, 17(1), 322. <https://doi.org/10.1186/s12889-017-4245-4>
- Morris, J. L., & Rushwan, H. (2015). Adolescent sexual and reproductive health: The global challenges. *International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics*, 131 Suppl 1, S40–S42. <https://doi.org/10.1016/j.ijgo.2015.02.006>

- Mukeshimana, M., Nkurunziza, A., Nyiringango, G., Karamage, E., Asingizwe, D., Nshutiyukuri, C., Musabwasoni, S., Bagweneza, V., Habtu, M., Uzayisenga, J., Adejumo, O., & Tamrat, E. (2025). Access and utilization of youth friendly sexual and reproductive health services among illiterate adolescents in Rwanda: A mixed-methods participatory study. *PloS one*, 20(6), e0325184. <https://doi.org/10.1371/journal.pone.0325184>
- Nematzadeh, S., Shahhosseini, Z., Moosazadeh, M., & Hamzehgardeshi, Z. (2024). Sexual health literacy level and its related factors among married medical sciences college students in an Iranian setting: a web-based cross-sectional study. *Reproductive health*, 21(1), 53. <https://doi.org/10.1186/s12978-024-01756-7>
- Newton, V. L., Dickson, J., & Hoggart, L. (2020). Young women's fertility knowledge: partial knowledge and implications for contraceptive risk-taking. *BMJ sexual & reproductive health*, 46(2), 147–151. <https://doi.org/10.1136/bmjsexrh-2019-200473>
- Nkrumah, J., Abuosi, A. A., Yarney, L., Abekah-Nkrumah, G., & Baku, A. A. A. (2025). Enhancing sexual and reproductive health decision-making skills in underserved communities in Ghana: A quasi-experimental study. *PLOS Global Public Health*, 5(7), e0004733. <https://doi.org/10.1371/journal.pgph.0004733>
- Nkurunziza, A., Habtu, M., Tuyisenge, G., Van Endert, N., Katende, G., Yamuragiye, A., Bagirisano, J., Hitayezu, J. B. H., Tengera, O., & Rwagasore, E. (2025). Peer education programme to improve adolescent sexual and reproductive health in Rwanda. *Journal of public health in Africa*, 16(1), 1342. <https://doi.org/10.4102/jphia.v16i1.1342>
- Nuwamanya, E., Nalwanga, R., Nuwasiima, A., Babigumira, J. U., Asiimwe, F. T., Babigumira, J. B., & Ngambouk, V. P. (2020). Effectiveness of a mobile phone application to increase access to sexual and reproductive health information, goods, and services among university students in Uganda: a randomized controlled trial. *Contraception and reproductive medicine*, 5(1), 31. <https://doi.org/10.1186/s40834-020-00134-5>
- Oberth, G., Chinhengo, T., Katsande, T., Mhonde, R., Hanisch, D., Kasere, P., Chihumela, B., & Madzima, B. (2021). Effectiveness of the Sista2Sista programme in improving HIV and other sexual and reproductive health outcomes among vulnerable adolescent girls and young women in Zimbabwe. *African journal of AIDS research :AJAR*, 20(2), 158–164. <https://doi.org/10.2989/16085906.2021.1918733>
- Olajide, O. E. & Omokhabi, A. A. (2014) Perception, knowledge level and barriers to reproductive health behaviour among community women in selected Local Government Areas (LGAs) of Oyo State, Nigeria. *African Journal of Sustainable Development*: 4 (2): 29-47.
- Olajubu, A. O., Komolafe, A. O., & Fatusi, A. O. (2026). Sexual and Reproductive Health Literacy and Service Utilization Among Young People in Southwest Nigeria. *SAGE open nursing*, 12, 23779608251411367. <https://doi.org/10.1177/23779608251411367>

- Omokhabi, A. A (2016) Factors influencing reproductive health behaviour of female non-academic staff in the Nigerian Universities. *Ibadan Journal of Education Studies*,: 13(1), 89-102.
- Omokhabi, A. A. (2014). Determinants of reproductive health behaviour among female workers in tertiary institutions in southwestern nigeria Unpublished Ph.D. Thesis, Department of Adult Education, Faculty of Education, University of Ibadan, Ibadan, Nigeria. 210 Pages.
- Omokhabi, A. A. (2024). Reproductive health needs of women with disabilities: A non-pharmaceutical interventions approach. *African Journal for the Psychological Study of Social Issues*, 27(2): 82 - 91
- Omokhabi, A. A.& Egunyomi, D. A. (2016) Predictors of female lecturers reproductive health behaviour in tertiary institutions in Nigeria. *African Journal of Educational Management* 17. (1): 21-54.
- Omokhabi, A. A.(2020) Testing theory of planned behaviour in predicting married women’s use of modern family planning methods at Ibadan North Local Government. In K. O. Kester, P. B. Abu, I. A. Abiona and E. J. Oghenekohwo (Eds.). Human and Social Development Investment,; 364-390. Ibadan: Department of Adult Education, University of Ibadan. <https://repository.ui.edu.ng/items/35d620b8-3e4e-4a32-935d-d3ba4637043f>
- Perez-Lu, J. E., Guerrero, F., Cárcamo, C. P., Alburqueque, M., Chiappe, M., Hindin, M. J., Habib, N., Say, L., Gonsalves, L., & Bayer, A. M. (2022). The ARMADILLO text message intervention to improve the sexual and reproductive health knowledge of adolescents in Peru: Results of a randomized controlled trial. *PloS one*, 17(2), e0262986. <https://doi.org/10.1371/journal.pone.0262986>
- Rizky, A. (2020) Sexual and Reproductive Health- Fact Sheet 2020. Geneva: WHO <https://www.afro.who.int/sites/default/files/2020-06/Sexual%20and%20reproductive%20health-%20Fact%20sheet%2028-05-2020.pdf>.
- Ross, D. A., Mshana, G., & Guthold, R. (2021). Adolescent Health Series: The health of adolescents in sub-Saharan Africa: Challenges and opportunities. *Tropical medicine & international health : TM & IH*, 26(11), 1326–1332. <https://doi.org/10.1111/tmi.13655>
- Sawyer, S. M., Azzopardi, P. S., Wickremarathne, D., & Patton, G. C. (2018). The age of adolescence. *The Lancet. Child & adolescent health*, 2(3), 223–228. [https://doi.org/10.1016/S2352-4642\(18\)30022-1](https://doi.org/10.1016/S2352-4642(18)30022-1)
- Scull, T. M., Dodson, C. V., Geller, J. G., Reeder, L. C., & Stump, K. N. (2022). A media literacy education approach to high school sexual health education: Immediate effects of Media Aware on adolescents' media, sexual health, and communication outcomes. *Journal of youth and adolescence*, 51(4), 708–723. <https://doi.org/10.1007/s10964-021-01567-0>

- Scull, T., Malik, C., Morrison, A., & Keefe, E. (2021). Promoting sexual health in high school: A feasibility study of a web-based media literacy education program. *Journal of health communication, 26*(3), 147–160. <https://doi.org/10.1080/10810730.2021.1893868>
- Sharma, A., Mwamba, C., Ng'andu, M., Kamanga, V., Zoonadi Mendamenda, M., Azgad, Y., Jabbie, Z., Chipungu, J., & Pry, J. M. (2022). Pilot implementation of a user-driven, web-based application designed to improve sexual health knowledge and communication among young Zambians: Mixed methods study. *Journal of medical Internet research, 24*(7), e37600. <https://doi.org/10.2196/37600>
- Sidamo, N. B., Abebe Kerbo, A., Gidebo, K. D., & Wado, Y. D. (2024). Adolescent utilization of sexual and reproductive health services in Gamo Zone, Southern Ethiopia. Insights from multilevel and latent class analysis. *Frontiers in reproductive health, 6*, 1356969. <https://doi.org/10.3389/frph.2024.1356969>
- Silverman, J. G., Brooks, M. I., Aliou, S., Johns, N. E., Challa, S., Nouhou, A. M., Tomar, S., Baker, H., Boyce, S. C., McDougal, L., DeLong, S., & Raj, A. (2023). Effects of the reaching married adolescents program on modern contraceptive use and intimate partner violence: results of a cluster randomized controlled trial among married adolescent girls and their husbands in Dosso, Niger. *Reproductive health, 20*(1), 83. <https://doi.org/10.1186/s12978-023-01609-9>
- Sonfield, A., Hasstedt, K., Kavanaugh, M.L. & Anderson, R. (2013). The social and economic benefits of women's ability to determine whether and when to have children, New York: Guttmacher Institute [https://www.guttmacher.org/sites/default/files/report\\_pdf/social-economic-benefits.pdf](https://www.guttmacher.org/sites/default/files/report_pdf/social-economic-benefits.pdf)
- Sørensen, K., Van den Broucke, S., Fullam, J., Doyle, G., Pelikan, J., Slonska, Z., Brand, H., & (HLS-EU) Consortium Health Literacy Project European (2012). Health literacy and public health: a systematic review and integration of definitions and models. *BMC public health, 12*, 80. <https://doi.org/10.1186/1471-2458-12-80>
- Sserwanja, Q., Turimumahoro, P., Nuwabaine, L., Kamara, K., & Musaba, M. W. (2022). Association between exposure to family planning messages on different mass media channels and the utilization of modern contraceptives among young women in Sierra Leone: insights from the 2019 Sierra Leone Demographic Health Survey. *BMC women's health, 22*(1), 376. <https://doi.org/10.1186/s12905-022-01974-w>.
- Sserwanja, Q., Sepenu, A. S., Mwamba, D., & Mukunya, D. (2022). Access to mass media and teenage pregnancy among adolescents in Zambia: a national cross-sectional survey. *BMJ open, 12*(6), e052684. <https://doi.org/10.1136/bmjopen-2021-052684>
- Steinberg, L., Icenogle, G., Shulman, E. P., Breiner, K., Chein, J., Bacchini, D., Chang, L., Chaudhary, N., Giunta, L. D., Dodge, K. A., Fanti, K. A., Lansford, J. E., Malone, P. S., Oburu, P., Pastorelli, C., Skinner, A. T., Sorbring, E., Tapanya, S., Tirado, L. M. U.,

- Alampay, L. P., & Takash, H. M. S. (2018). Around the world, adolescence is a time of heightened sensation seeking and immature self-regulation. *Developmental science*, 21(2), 10.1111/desc.12532. <https://doi.org/10.1111/desc.12532>
- Thakuri, D. S., Bhandari, R., Khatri, S., Dhungana, A., Balami, R., & Hanson-Hall, N. A. (2023). Effect of healthy transitions intervention in improving family planning uptake among adolescents and young women in Western Nepal: A pre-and post-intervention study. *PloS one*, 18(6), e0286705. <https://doi.org/10.1371/journal.pone.0286705>
- Tu, Y. C., Lin, Y. J., Fan, L. W., Tsai, T. I., & Wang, H. H. (2019). Effects of multimedia framed messages on Human Papillomavirus Prevention among adolescents. *Western Journal of Nursing Research*, 41(1), 58–77. <https://doi.org/10.1177/0193945918763873>
- UNICEF (2025) Adolescent HIV prevention <https://data.unicef.org/topic/hivaids/adolescents-young-people/>
- United Nations (2019). Population Division. World population prospects 2019. <https://www.un.org/development/desa/pd/news/world-population-prospects-2019-0>
- United Nations Foundation. (2024). 1.8 Billion young people deserve power over their reproductive futures. <https://www.fp2030.org/news/1-8-billion-young-people-deserve-power-over-their-reproductive-futures/>
- United Nations Population Fund (2023) State of world population 2023: 8 billion lives, infinite possibilities. New York: UNFPA. 2023 <https://www.unfpa.org/swp2023>
- Väisänen, H., Moore, A. M., Owolabi, O., Stillman, M., Fatusi, A., & Akinyemi, A. (2021). Sexual and reproductive health literacy, misoprostol knowledge and use of medication abortion in Lagos State, Nigeria: A mixed methods study. *Studies in family planning*, 52(2), 217–237. <https://doi.org/10.1111/sifp.12156>
- Viner, R., M., Ozer, E. M., Denny, S., Marmot, M., Resnick, M., Fatusi, A., & Currie, C. (2012). Adolescence and the social determinants of health. *Lancet (London, England)*, 379(9826), 1641–1652. [https://doi.org/10.1016/S0140-6736\(12\)60149-4](https://doi.org/10.1016/S0140-6736(12)60149-4)
- Vongxay, V., Albers, F., Thongmixay, S., Thongsombath, M., Broerse, J. E. W., Sychareun, V., & Essink, D. R. (2019). Sexual and reproductive health literacy of school adolescents in Lao PDR. *PloS one*, 14(1), e0209675. <https://doi.org/10.1371/journal.pone.0209675>
- Wirsiy, F. S., Atuhaire, C., Ngonzi, J., & Cumber, S. N. (2022). A randomized controlled trial on mobile phone text messaging to improve sexo-reproductive health among adolescent girls in Cameroon. *Contraception and reproductive medicine*, 7(1), 12. <https://doi.org/10.1186/s40834-022-00180-1>

- World Health Organisation (WHO) (2017) Consolidated guideline on sexual and reproductive health and rights of women living with HIV. <https://iris.who.int/server/api/core/bitstreams/611f9d21-8170-495c-89b2-903886a83aee/content>
- World Health Organisation (WHO) (2020). Adolescent pregnancy.. <https://www.int/newsroom/fact-sheets/detail/adolescent-pregnancy7>.
- World Health Organisation(WHO) (2021). Adolescent health in the South-East Asia region. World Health Organization, Regional Office for South-East Asia. 2021.
- World Health Organisation (WHO) (2026) Sexual and reproductive health and rights. [https://www.who.int/health-topics/sexual-and-reproductive-health-and-rights#tab=tab\\_1](https://www.who.int/health-topics/sexual-and-reproductive-health-and-rights#tab=tab_1)
- World Health Organisation(WHO) (2012). Early marriages, adolescent and young pregnancies. Geneva: WHO. 2012:1–4.
- Yakubu, I., & Salisu, W. J. (2018). Determinants of adolescent pregnancy in sub-Saharan Africa: A systematic review. *Reproductive health*, 15(1), 15. <https://doi.org/10.1186/s12978-018-0460-4>
- Yakubu, I., Garmaroudi, G., Sadeghi, R., Tol, A., Yekaninejad, M. S., & Yidana, A. (2019). Assessing the impact of an educational intervention program on sexual abstinence based on the health belief model amongst adolescent girls in Northern Ghana, a cluster randomised control trial. *Reproductive health*, 16(1), 124. <https://doi.org/10.1186/s12978-019-0784-8>