

## REVIEW ARTICLE

## Demand and supply of adolescent and young adult's sexual and reproductive health services during COVID-19 in sub-Saharan Africa: A scoping review

**Olutoyin O. Ikuteyijo<sup>1\*</sup>, Taofeek K. Aliyu<sup>2,3</sup>, Akanni I. Akinyemi<sup>2</sup>, Lanre O. Ikuteyijo<sup>2</sup>, Oladimeji R. Ogunoye<sup>2</sup>, Oluwaseun I. Obasola<sup>4</sup>, John O. Abe<sup>2</sup>, Jacob W. Mobolaji<sup>2</sup>, Opeyemi O. Ekundayo<sup>2</sup>, Ojo M. Agunbiade<sup>2</sup>, and Sonja Merten<sup>1</sup>**

<sup>1</sup>Swiss Tropical and Public Health Institute, University of Basel, Basel, Switzerland

<sup>2</sup>Department of Sociology and Anthropology, Faculty of Social Sciences, Obafemi Awolowo University, Ile Ife, Osun, Nigeria

<sup>3</sup>Department of Sociology, and Center for Demography and Aging Research (CEDAR), Umea University, Umea, Sweden

<sup>4</sup>Kenneth-Dike Library, University of Ibadan, Ibadan, Nigeria

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**Abstract**

The COVID-19 pandemic and its associated containment strategies have significantly impacted the logistics of supplying sexual and reproductive health (SRH) services to adolescents and young adults (AYA) in sub-Saharan Africa (SSA). Studies conducted in the region indicate an increase in sexual activity, particularly among young people, during the pandemic. However, the impact of these changes on their utilization of SRH services remains unclear. This scoping review aims to synthesize the available evidence on the impact of COVID-19 on the SRH behavior and service utilization of AYA. This review focuses on examining the demand and supply of SRH for AYA during the COVID-19 lockdown period (January 2020 – December 2021). Following the Arksey & O'Malley (2005) procedure and the Joanna Briggs Institute (JBI) Reviewer's Manual (2020), the review encompasses comprehensive search strategies, analysis, and reporting of results. The search for relevant articles was conducted across various databases, including Medline Complete, Africa-Wide, SocINDEX, Academic Search Complete (all through EBSCOhost), Public Health, Social Science & Sociology databases, the Middle East & Africa Database (all through ProQuest), and Web of Science. Articles published between January 2020 and December 2021 were included in this review. The studies discussed in this review shed light on the discrepancies in the demand for and supply of SRH services during the COVID-19 pandemic, exposing a substantial gap in addressing the specific SRH needs of AYA. This review also examines the strategies adopted by countries in SSA to mitigate these effects. Several countries in SSA demonstrated resilience as health providers fulfilled their role, while AYA sought alternatives to mitigate the shortage in the supply chain for SRH services and commodities, often resorting to alternative medicine. The findings underscore the urgency of further research to address the risks imposed by COVID-19 on the utilization of SRH services by AYA in SSA. The evidence presented in this review can inform strategic efforts to ensure the availability and accessibility of SRH services for AYA during any unforeseen emergency or future pandemic.

**Keywords:** COVID-19; Adolescents and young adults; Sexual and reproductive health service; Demand and supply; sub-Saharan Africa

**\*Corresponding author:**

Olutoyin O. Ikuteyijo  
(toyin.ikuteyijo@swisstph.ch)

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## 1. Introduction

The World Health Organization declared COVID-19 as a pandemic on March 11, 2020 (World Health Organization, 2020). Between the onset of the outbreak in March and a reference period in September 2020, the African region recorded numerous deaths, with South Africa reporting 15,641 deaths (65% of the total deaths in the region), Algeria 1,632 (6.7%), Nigeria 1,088 (4.5%), Ethiopia 1,035 (4.3%), and 634 in Kenya (2.6%) (World Health Organization, 2020). These five countries accounted for 83% of the total recorded COVID-related deaths in the African region during this period. Health workers bore a significant burden of infections, with South Africa reporting about 27,360 infections among their health workers, followed by Algeria with 2,300, Nigeria with 2,065, Ethiopia with 1,291, and Kenya with 970 (World Health Organization, 2020). These numbers compounded the challenges faced by the health-care system, impacting its optimal functionality during the pandemic.

Many countries in Africa resorted to enforcing measures to curtail the spread of the pandemic. Some of the containment strategies employed included lockdowns, border closures, and export restrictions, which led to a drastic reduction in the supply of sexual and reproductive health (SRH) services. Studies across the world have shown increased sexual activity during the lockdown (UNFPA, 2021; World Health Organization, 2020). On the other hand, the lockdown disrupted service delivery in all sectors, including SRH service delivery worldwide (Adelekan *et al.*, 2021; Togun *et al.*, 2020; Wood *et al.*, 2021). For example, studies have documented some challenges in maintaining the supply of family planning services during the pandemic, such as the shutting down of contraceptive manufacturing factories and the closure of some health-care facilities (AHB, 2020; Ahmed & Sonfield, 2020). These service delivery disruptions negatively impact access to SRH care, including family planning (Isiugo-Abanihe, 2005), in many developing countries. Similar evidence in some African countries also attested to the fact that the lockdowns and restriction of movement also affected the demand for personalized SRH services, such as access to contraceptives, maternal care, pregnancy care, and safe abortion (UNFPA, 2021; Adelekan *et al.*, 2021).

In the wake of the pandemic, the provision of health services became more challenging for most countries, with a heightened focus on the COVID-19 response at the expense of other health-care services (Togun *et al.*, 2020; Wood *et al.*, 2021). Essential services like SRH consequently took a secondary position, exerting a significant toll on the mental and sexual well-being of individuals in many sub-Saharan African (SSA) countries where 70 – 90% of medical commodities are imported (AHB, 2020).

The disruptions in the supply chain of essential SRH commodities and services led to substantial gaps between the growing demand and the decreasing supply of SRH services (Ahmed & Sonfield, 2020).

Adolescents and young adults (AYA) have specific SRH needs due to their development stage and engagement in adventurous sexual activities (Isiugo-Abanihe, 2005). Even before the pandemic, there was a high unmet need for adolescent SRH services in SSA (Okawa *et al.*, 2018), a situation further exacerbated by the COVID-19 lockdown. AYAs access to SRH services in SSA is generally limited due to various barriers, including individual perceptions, misconceptions about SRH, lack of confidentiality, and health providers' attitudes (Mutea *et al.*, 2020; Ninsiima *et al.*, 2021; Watara *et al.*, 2020), which continue to influence the level of utilization of SRH services. This situation is bound to amplify the unintended consequences COVID-19 had on the utilization of SRH services for AYA (Mmeje *et al.*, 2020).

There are numerous negative health effects that could result from diverting medical attention from SRH of AYA to the COVID-19 response. This diversion may lead to an increase in unplanned pregnancies, a reduction in antenatal coverage, and a decrease in the percentage of births attended to by skilled health workers (Mmeje *et al.*, 2020), ultimately contributing to elevated maternal mortality and morbidity. Additional consequences include diminished access to SRH information, potentially resulting in increased exposure to sexually transmitted infections (STIs), adolescent pregnancies, and their associated health risks (Adelekan *et al.*, 2021). Moreover, this situation has exposed AYA to illegal and unsafe practices for the termination of unwanted pregnancy (abortion) (Wusu, 2020), which occurred during this period due to the lack of access to SRH services.

Several studies in SSA have explored the health impacts of COVID-19, including investigations into the use of SRH services. To the best of our knowledge, no review has synthesized the impact of the pandemic on the demand and supply of SRH services for AYA in SSA. This scoping review aims to identify factors responsible for the discrepancies in demand for and supply of SRH, the strategies adopted, and the resilience built over time. This knowledge can inform strategic planning for future crises. The study findings provide evidence for the imperative need to focus on the sustained supply of SRH services and commodities during periods of emergency. More specifically, the review has the following objectives:

- (i) To examine the converging evidence on explanatory factors for the discrepancies in the demand and supply gap in SRH services for AYA during the outbreak of COVID-19 in SSA

- (ii) To identify strategies adopted by countries in SSA to mitigate the effects of the demand-supply gap for SRH among AYA during the 2020 COVID-19 pandemic and afterward.
- (iii) To identify lessons learned across SSA countries to strengthen resilience in meeting AYA's needs for SRH services during health emergencies.

## 2. Data and methods

This study represents a scoping review aimed at examining evidence related to the demand and supply of SRH services for AYA during the COVID-19 pandemic in SSA. This study adopted the updated methodological guidance provided by Joana Briggs Institute (JBI) (2020) (Peters *et al.*, 2020) and followed the Arksey & O'Malley (2005) procedure for conducting a scoping review. In addition, we adhered to the guidelines outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Review (PRISMA-ScR) (Tricco *et al.*, 2018), and all literature searches were imported to Covidence ((Producer)) (<https://www.covidence.org/>) for extensive screening and data extraction.

The reviewers systematically searched for articles reporting on SRH and corresponding service utilization for AYA during the COVID-19 pandemic in SSA published between January 2020 and December 2021. To ensure an exhaustive and comprehensive search, the following databases were searched: Medline Complete, Africa-Wide, SocINDEX, Academic Search Complete (all through EBSCOhost), Public Health, Social Science & Sociology databases, the Middle East & Africa Database (all through ProQuest), and Web of Science. In addition, a hand search of all identified articles was carried out to locate other studies reporting on SRH services for AYA during the COVID-19 pandemic in SSA. Original studies in the English language were screened and considered for inclusion following the JBI recommendations. Two independent reviewers meticulously screened all citations, full-text articles, and abstract data. A narrative summary of findings was conducted, synthesized, and presented. In the electronic database search, medical subject headings (MeSH) were used, and Boolean terms (NOT/OR/AND) were used to separate keywords. The search strings included a range of relevant combinations of search terms and keywords, encompassing "COVID-19," "SRH services," "adolescents," "young people," "young adults," and "sub-Saharan Africa."

In accordance with JBI guidelines, the inclusion criteria for the studies were outlined in the following sub-sections, namely population, concept, and context.

- (i) Population: The population under consideration included female AYA aged 15 – 24 years in all SSA countries.

- (ii) Concept: The concept focused on SRH services, including maternal health care, contraceptive use, HIV/AIDS treatment, and abortion services.
- (iii) Context: The review considered the demand and supply of SRH services for AYA, specifically examining the availability of sexual and reproductive commodities (drugs, pills, contraceptives, pre-exposure prophylaxis [PrEP], HIV drug therapy, abortion drugs, or treatment).

### 2.1. Study selection

The study selection process occurred in three stages. First, title screening was performed on resources retrieved from the previously mentioned databases. Second, I.O.O and A.T.K performed a two-level screening, eliminating studies that did not align with the study objectives. Finally, O.I.O was engaged to verify all studies deemed eligible for abstract and full-text consideration and to resolve any discrepancies that emerged during the initial two reviewers' assessments.

### 2.2. Eligibility criteria

#### 2.2.1. Inclusion criteria

The study exclusively considered published research, encompassing both peer-reviewed and gray literature, which presented primary and secondary data. Additionally, only literature published in the English language was included. The scope of literature reviewed extended to materials reporting on SRH services for AYA during the COVID-19 pandemic in SSA, with a publication timeframe from January 2020 to December 2021. The justification for including articles within this specific timeframe is rooted in our intention to capture research conducted during the COVID-19 period, regardless of whether COVID-19 was the main focus of the study. For the purpose of this review, adolescents were defined as individuals within the age range of 10 to 19, while young adults were considered to be those aged 20 to under 24 years. Both quantitative and qualitative study designs were deemed eligible for inclusion in this review.

#### 2.2.2. Exclusion criteria

Studies published between 2020 and 2021 that collected data before 2019 were excluded from consideration. Additionally, case reports, correspondence, commentaries, opinion pieces, case series, and editorials were excluded due to their tendency to offer relatively limited evidence for review. Comprehensive reviews, including systematic reviews and scoping reviews, were also excluded from the study selection process. Furthermore, guidelines issued by the governmental and other agencies were excluded.

## 2.3. Study domain

This review focuses on assessing the impact of COVID-19 on the demand and supply of SRH services among AYA in SSA countries. The study was restricted to articles that sourced their data within the timeframe of January 2020 to December 2021.

## 2.4. Data charting

Two reviewers used a data sheet specifically developed by the authors to systematically extract data from the included articles following a thorough screening. The extracted data encompassed the following information from each included study: author and year of publication, study setting (country), study aim, study design, study population, key findings, and implications or conclusions drawn. The results were categorized into three main domains: factors contributing to the discrepancies in demand and supply of SRH services, strategies adopted to mitigate the impact of the demand-supply gap, and approaches to build resilience in the supply chain of SRH services in SSA. For a comprehensive understanding of the data collection process, please refer to Appendices 1 and 2. Appendix 1 provides the search string employed for data collection, while Appendix 2 outlines the search terms used and the results obtained from the ProQuest databases.

## 3. Results

The exploration of databases yielded a total of 1,062 publications. The utilization of the Covidence platform (Covidence) significantly facilitated the identification of duplicates and the systematic screening of abstracts and full-text articles. To ensure a robust evaluation, a third reviewer was engaged to resolve any discrepancies that arose between the initial two reviewers before the conclusive inclusion of studies. The screening process of the articles is visually depicted in [Figure 1](#).

### 3.1. Characteristics of the included studies

[Table 1](#) provides an overview of the characteristics of the 10 studies included in this scoping review, all of which gathered data within the timeframe of 2020 – 2021 [[Figure 2](#)]. Among these studies, one conducted a survey across 9 Francophone countries in West Africa (Mongbo *et al.*, 2021), while the rest were domiciled in Nigeria, South Africa, Kenya, Uganda, and Ethiopia (Binezoro Mambo *et al.*, 2021; Decker *et al.*, 2021). The central theme in all the included studies was the investigation into the repercussions of the COVID-19 pandemic on the SRH of AYA (Adelekan *et al.*, 2021), encompassing an examination of service delivery as well as various challenges (Hailemariam *et al.*,

2021; Mutea *et al.*, 2020) encountered by both adolescents and health providers. Additionally, the studies delved into the dynamics of access to and utilization of these services (Binezoro Mambo *et al.*, 2021).

In the included studies, three employed a qualitative study design, three used mixed methods, and four used a quantitative design. The study settings varied, with one publication centered on Francophone countries (Mongbo *et al.*, 2021), three in Nigeria (Adelekan *et al.*, 2021; Odo *et al.*, 2021; Wusu, 2020), one in South Africa (Bolarinwa, 2020), two in Kenya (Decker *et al.*, 2021; Mutea *et al.*, 2020), one in Uganda (Binezoro Mambo *et al.*, 2021), and two in Ethiopia (Hailemariam *et al.*, 2021; Tilahun *et al.*, 2021).

Eight of the studies focused on the access of AYA to SRH services while the remaining two focused on challenges faced by health facilities and proposed solutions to enhance SRH access during potential future health emergencies. The majority of the articles mentioned SRH, with the rest specifically concentrating on family planning or contraception. The Francophone study enumerated one of the challenges faced by health workers during the pandemic: limited knowledge on how to manage coronavirus while incorporating SRH service (Mongbo *et al.*, 2021). This finding was corroborated by a study from Nigeria, highlighting issues such as stock-outs of essential commodities such as drugs and contraceptives (Adelekan *et al.*, 2021). In terms of SRH, all included studies explored both demand and supply aspects of essential services and commodities, including contraception, menstrual hygiene, and management of STIs. Additionally, two studies investigated social-interactive barriers related to SRH services, including socio-cultural influences, lack of privacy, and health provider attitudes (Hailemariam *et al.*, 2021; Mutea *et al.*, 2020).

### 3.2. Factors responsible for the discrepancies in the demand for and supply of SRH services

In the studies included in this review, several factors were identified as responsible for the discrepancy in demand for SRH services and the corresponding supply. Sociodemographic and psychocultural factors, including gender, age, education status, income level, and living status, were identified as predictors of AYA demand for SRH services (Odo *et al.*, 2021). Client utilization of services, especially among young people, witnessed a notable reduction. The uncertainty about the availability of SRH services in health facilities, exacerbated by the pandemic, contributed to this decline. Studies from Ethiopia highlighted various factors influencing the utilization of SRH services, including the adolescents' age, a history of sexual intercourse, the availability of health services, and awareness of SRH services

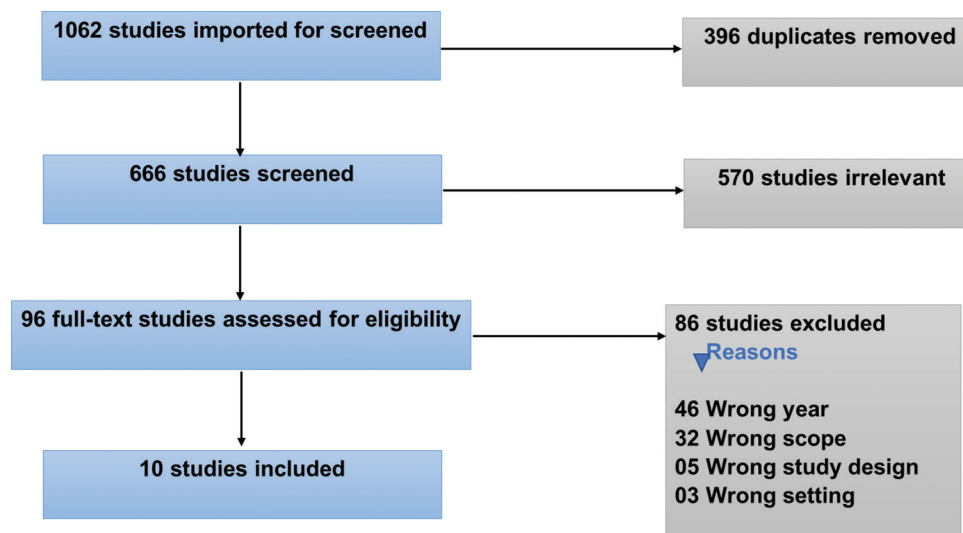


Figure 1. PRISMA flow diagram for the present scoping review

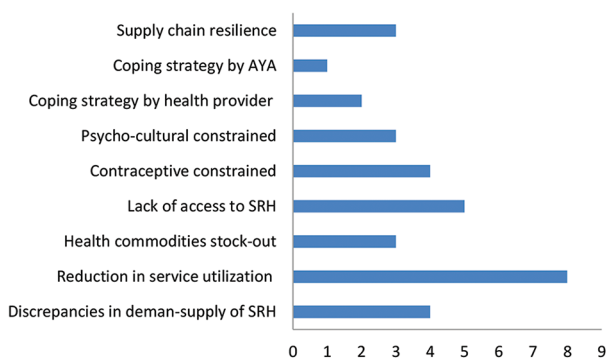


Figure 2. Different areas addressed by the included studies  
Abbreviations: AYA: Adolescents and young adults; SRH: Sexual and reproductive health.

for young people (Hailemariam *et al.*, 2021; Tilahun *et al.*, 2021). A similar trend was observed in Nigeria, where the utilization of SRH services decreased during the pandemic (Adelekan *et al.*, 2021). The widespread stock-outs of health commodities, particularly contraceptives, were a major challenge during the lockdown. The majority of the countries in our review reported issues of limited access and stock-outs of contraceptives essential for the needs of AYA (Adelekan *et al.*, 2021; Bolarinwa, 2020; Mongbo *et al.*, 2021). The availability and accessibility of essential SRH commodities during the pandemic should be prioritized to avoid complications, as some countries experienced an increased demand for contraception, which, if unaddressed, may lead to a high rate of unplanned pregnancies among young people (Wood *et al.*, 2021). The lack of equitable access to SRH services among young women also contributed to the discrepancy in demand and supply. A study from Kenya reported barriers to accessing SRH services specific to AYA,

including negative attitudes of health workers, distance to health facilities, and unaffordable costs of services, among others, contributing to inequitable access by AYA (Mutea *et al.*, 2020). The constrained access to contraceptives, especially among users who rely on both government and private health facilities, remains a concern during any health emergency. This constraint was documented in a study in South Africa, where a significant number of people solely relied on government facilities for contraceptive commodities, and the impact during lockdown was enormous (Bolarinwa, 2020). Neglecting SRH services and a lack of strategies to address health emergencies could lead to an increase in unintended pregnancies among young people and potentially among older individuals, with inevitable consequences for the economy of any country (Oyediran *et al.*, 2020). This emphasizes the importance of preserving the gains achieved in the field of SRH.

### 3.3. Strategies adopted to mitigate the effects of the demand-and-supply gap

A study conducted in Francophone West Africa surveyed nine countries to assess the continuity of essential SRH services during the COVID-19 pandemic. The findings revealed that health providers were aware of challenges affecting the demand and supply for SRH services. These challenges included limited knowledge among health workers regarding the novel coronavirus disease, anxieties among both health workers and the public, shortages of health commodities, and ineffective organization of services. Despite these challenges, the study proposed various strategies, including the need for adapted guidance and care procedures, the effective use of social media by providers to debunk misconceptions during the pandemic,

Table 1. Summary of research findings from the ten included publications

Authors/years	Settings and countries	Aim of study	Study design	Study population	Findings	Conclusions/Implications
Decker <i>et al.</i> , 2021	Nairobi Kenya	To examine the economic, health, social, and safety impact of COVID-19 on AYA in Nairobi	Mixed methods	1,217 male and female (aged 16 – 26)	During COVID-19, gender symmetry was observed in constrained access to contraception among contraceptive users (40.4% men; 34.6% women) and depressive symptoms (21.8% men; 24.3% women). Gender disparities rendered young women disproportionately unable to meet basic economic needs (adjusted odds ratio [aOR] = 1.21; $p < 0.05$ ) and in need of health care during the pandemic (aOR = 1.59; $p < 0.001$ ). Gender-specific concerns for women included menstrual hygiene access challenges (52.0%), increased reliance on transactional partnerships and gender-based violence, with 17.3% reporting past-year partner violence and 3.0% non-partner sexual violence.	AYA face gendered impacts of COVID-19, reflecting both underlying disparities and the pandemic's economic and social shock. Gender-responsive recovery efforts are necessary and must address the unique needs of youth.
Bolarinwa, 2020	South Africa	To examine the factors contributing to inadequate access to contraception and sources of contraception during the COVID-19 pandemic in South Africa	Cross-sectional	6,829 participants aged above 17	Over one-quarter of South Africans could not access contraception, and more than seven in 10 South Africans preferred a public or government hospital as a source of contraception.	Findings from the study suggest strategies and interventions that will be tailored toward non-obstruction of contraception access during the ongoing COVID-19 or any future pandemic. Special consideration should be given to those in 3 <sup>rd</sup> quintile of wealth income.
Wusu, 2020	Nigeria	To explore the contexts, persistence and implications of high age of consent for accessing family planning in Lagos State	Qualitative	75	The contexts formed the basis for the exclusion of adolescents from family planning services. Therefore, sexually active adolescents adopted local herbs, a combination of different medicines, concoctions and local alcoholic drinks ( <i>ogogoro</i> ) to prevent or abort pregnancies.	Community-based NGO engagement to promote community perception change about adolescents accessing family planning. Involvement of community representatives in government to influence policy on age for accessing family planning.
Mongbo <i>et al.</i> , 2021	Francophone in West Africa	To analyze the challenges and solutions for maintaining the continuity of essential health services during the COVID-19 pandemic in Francophone West Africa	Cross-sectional	18 participants	The challenges include a lack of standardized guides and procedures for appropriate care, limited knowledge of health workers on the new coronavirus disease, lack of diagnostic materials and kits, ineffective organization of services, anxieties of health workers and populations, and postponement of immunization mass campaigns.	This study showed that the managers of RMNCAH programs were aware of the challenges that could limit the supply and use of essential services during the COVID-19 pandemic.
Adelekan <i>et al.</i> , 2021	Nigeria	To investigate the extent to which the COVID-19 pandemic and related lockdowns had affected the provision of essential reproductive, maternal, child, and adolescent health (RMCAH) services in primary health-care facilities across the Nigerian States	Cross-sectional	307	Between 76 and 97% of the PHCS offered RMCAH services before the lockdown. During the lockdown, full-service delivery was reported by 75.2%, whereas 24.8% delivered partial services. Difficulties experienced during the lockdown included stock-out of drugs (25.7%), stock-out of contraceptives (25.1%), harassment by law enforcement agents (76.9%), and transportation difficulties (55.8%).	Considering the several difficulties reported, efforts by the government and NGOs are required to strengthen the delivery of SRH in primary health centers in Nigeria during the pandemic.

(Contd...)

Table 1. (Continued)

Authors/years	Settings and countries	Aim of study	Study design	Study population	Findings	Conclusions/Implications
Tilahun <i>et al.</i> , 2021	Ethiopia	To assess factors associated with the utilization of adolescent and youth SRH services in this area	Mixed methods	771 participants age (15 – 24)	28% of participants reported that they had never heard about adolescents' and youths' SRH services. Only 8.6% have visited health facilities for SRH services. Age was found to be one of the factors responsible for low utilization, including never heard of SRH services and having sexual intercourse.	Need to improve awareness of adolescents and youth towards SRH services and integrate these services into other routine services.
Hailemariam <i>et al.</i> , 2021	Ethiopia	To explore the challenges faced by female out-of-school adolescents in accessing SRH services in the Bench-Sheko zone	Qualitative	8 focus group discussions and 8 in-depth interviews	The study revealed that out-of-school adolescents encounter several challenges in accessing SRHS in the zone, which include socio-cultural barriers, health-care system barriers, perceived legal barriers, inadequate information regarding SRH services, and low parent-adolescent communication.	The need to engage community influencers (religious leaders, community leaders, and elders) in overcoming the challenges. Also, the need for programs and policymakers to create adolescent-friendly environments in SRH service areas.
Mutea <i>et al.</i> , 2020	Kenya	To describe barriers to and facilitators of access to adolescent SRH services in Kisumu and Kakamega counties, Kenya	Qualitative	113 participants	Findings show that the barriers to access to SRH services and information were health workers' negative attitudes, distance to the health facility, unaffordable cost of services, negative socio-cultural influences, and lack of privacy and confidentiality.	The need for counties to sensitize all stakeholders on adolescent SRH problems and support the development of multi-sectoral, sustainable solutions to adolescent health needs.
Odo <i>et al.</i> , 2021	Nigeria	To determine factors that predict the utilization of SRH services among young people in Enugu State, Nigeria	Mixed methods	1447	The results show that sociodemographic factors of gender, age, education, income, and living status ( $p < 0.05$ ), as well as psycho-cultural and health-care systems, were significant predictors of utilization of SRH services.	The study suggested that the predictors found could be addressed through home sex education, regular training of health-care providers on youth-friendly service delivery, and policy reforms.
Binezoro Mambo <i>et al.</i> , 2021	Uganda	To explore factors that influenced access and utilization of SRH services among Ugandan youths during the COVID-19 pandemic lockdown	Cross-sectional	724 participants	Sexually transmitted infections were the most common SRH problems during the lockdown (40.4%), followed by unwanted pregnancy (32.4%) and sexual abuse (32.4%). Access to HIV services and menstrual supplies was also impaired. Lack of transportation was the factor cited as limiting access to SRH services during the lockdown (68.7%), alongside with high cost of services (42.2%), and inaccessibility to contraceptive supplies (27.2%).	Access to SRH information and services for Ugandan youths was restricted during the COVID-19 lockdown and may have increased the incidence of poor SRH outcomes. The government and other stakeholders should incorporate SRH among the priority services to be preserved during future outbreaks.

Abbreviations: SRH: Sexual and reproductive health; AYA: Adolescents and young adults.

and the continuous supply of essential family planning services (Adelekan *et al.*, 2021; Mongbo *et al.*, 2021). The study also highlighted the importance of regular training for providers on youth-friendly service delivery. Additionally, despite a few facilities being opened, some faced challenges such as stock-outs of essential commodities, especially affecting AYA. Furthermore, as a coping strategy during the pandemic, some sexually active AYA resorted to herbal remedies and local alcoholic drinks (Wusu, 2020), though such behaviors posed potential risks.

### 3.4. Building resilience in the supply chain of SRH service in SSA

Two of the included studies (Adelekan *et al.*, 2021; Mongbo *et al.*, 2021) focused on supply, gathering data from health providers to guide strategies for overcoming disruptions in essential services and the supply of health commodities during the pandemic. A crucial initial step in building resilience involves creating awareness of adolescent and youth-friendly SRH services (AYF-SRHS) and ensuring their availability in all primary health facilities, integrating them into routine services. This was particularly evident in Nigeria, where providers demonstrated resilience during the pandemic (Adelekan *et al.*, 2021). In addition, resilience can be strengthened through the continuous training and re-training of health providers in AYF-SRHS, coupled with an awareness of policy reforms.

## 4. Discussion

This study aims to identify factors contributing to the discrepancies in demand and supply of SRH services and commodities in SSA, with the goal of identifying the research gaps. It also seeks to analyze the strategies adopted and resilience built over time, offering valuable insights for future emergency planning. The search was restricted to studies published from January 2020 to December 2021, encompassing articles addressing the SRH needs (family planning, maternal health, and abortion services) and commodities (contraceptives) for female AYA aged 15 – 24.

The included studies underscored the challenges faced by AYA in SSA during the COVID-19 lockdown. Sexually active AYA requires continuous access to specific SRH services, which are deemed essential at all times, even amid a pandemic. The included studies highlighted several issues related to the lack of access to SRH services in most SSA countries during the lockdown, including reduced service utilization, constraints on contraceptive availability, and psycho-cultural challenges (culture, attitudes, discrimination, stress, and social capital), as observed during the pandemic.

The majority of the included studies highlighted a concerning prevalence of the gap between demand for

SRH services and the limited supply during the lockdown. Among the contributing factors to the discrepancies in demand for and supply of SRH services was the reduction in client's utilization of services (Adelekan *et al.*, 2021; Hailemariam *et al.*, 2021). During the pandemic, both health-care providers and the public faced confusion and anxiety regarding protection against the coronavirus. This may be a major reason why people, especially women, reduced their visits to health-care facilities. AYA utilize health-care facilities less frequently due to widespread stock-outs (Adelekan *et al.*, 2021; Mongbo *et al.*, 2021) of health commodities during the pandemic. The stock-out of contraceptives further diminished utilization, as there was no guarantee of provisions amid the prevailing focus on COVID-19. Several studies have mentioned the diversion of attention from SRH services and its consequences. Even before the COVID-19 pandemic, there were existing challenges related to equitable access to SRH services among adolescents and women. The current situation exacerbates and exposes these issues. For instance, a study reported a 5% increase in the need for contraception among women in Lagos (Wood *et al.*, 2021), indicating that equal access to SRH services still did not reach certain areas in SSA. Constrained access and increased need among users were predominantly observed during the lockdown (Bolarinwa, 2020; Mutea *et al.*, 2020; Wood *et al.*, 2021). The lack of utilization was mainly attributed to various factors such as age, income status, psycho-cultural issues, parental orientation, health-care system barriers (Binezero Mambo *et al.*, 2021; Decker *et al.*, 2021; Hailemariam *et al.*, 2021; Odo *et al.*, 2021), and low decision power. These findings underscore the urgent need for reorientation of SRH services for young people at the grassroots level, increased parental involvement, and health-care systems with a dedicated focus on SRH services, ensuring pandemic resilience by incorporating AYF-SRHS into primary health-care facilities across SSA.

Two studies (Adelekan *et al.*, 2021; Mongbo *et al.*, 2021), which focus on health providers, discuss the challenges faced and strategies adopted to mitigate the effects of the demand-supply gap. A study conducted in West Africa surveyed key health professionals across nine Francophone countries, inquiring about challenges during the pandemic. Recorded challenges included the lack of basic materials and limited knowledge among health workers about COVID-19. The issue of stock-outs of health commodities requires relevant authorities to ensure an adequate supply of basic materials. Even with a few facilities open during this period, the problem of stock-outs (Mongbo *et al.*, 2021) discouraged young people from utilizing the facilities for their health needs. A systematic review also supports concerns about stock-outs in contraceptives,



limiting individuals' ability to use their preferred methods, influencing where they are obtained and their associated costs (Zuniga *et al.*, 2022). This problem has led young people to adopt alternatives such as using herbs to prevent pregnancy or resorting to abortion. Nigeria, among the countries under review, has a low uptake of contraception among adolescents in SSA, and the pandemic exacerbates the issue as young people resort to herbal concoctions and alcoholic drinks (*Ogogoro*) for abortion and protection during the pandemic (Wusu, 2020). Although risky, the use of alternative prevention methods was only mentioned in Nigeria among the countries reviewed. It is crucial to sustain the gains achieved in SRH to guarantee the achievement of the Sustainable Development Goals in SSA.

There is a crucial need to build resilience in the supply chain of SRH services, a major gap evident in this review. It is evident that the supply of SRH services was limited in SSA countries, with profound consequences during the pandemic. One of the studies, conducted in a Francophone country among health professionals, proposed several strategies, including better organization of services to ensure that pandemic disruptions do not impede the flow, the adaptation of guides and care procedures, training of health workers, and the effective use of information and communication technology (Mongbo *et al.*, 2021). To build resilience in this area, SSA countries should prioritize the availability, awareness, and removal of barriers to AYA-SRHS in all primary health centers, integrating them into routine services (Adelekan *et al.*, 2021; Eremutha & Gabriel, 2019; Habtu *et al.*, 2021; Haile *et al.*, 2020). Additionally, the training of health providers on AYA-friendly SRH services is crucial. While concerns about the re-training of health providers on AYA-friendly SRH services have been raised in the past as drivers for service utilization (Gausman *et al.*, 2021; Habtu *et al.*, 2021; Weiss *et al.*, 2018), this issue was emphasized in the included studies (Mongbo *et al.*, 2021; Mutea *et al.*, 2020).

#### 4.1. Policy and program implications

This scoping review underscores the imperative for improved and increased preparedness of health-care systems to address the specific needs of young people during health emergency situations. Health services, especially those tailored for young people, should adopt innovative and technology-driven service delivery approaches, particularly in resource-constraint societies in SSA.

#### 4.2. Strengths and limitations of the present scoping review

One of the major strengths of this study lies in its rigorous search and screening process, facilitated by the use of the

Covidence (Kellermeyer *et al.*, 2018) for thorough article screening. The results of this scoping review adhere to the PRISMA guidelines and follow a systematic approach to identify relevant studies, conduct screening and charting, and analyze the outcomes thematically. However, it is important to acknowledge certain limitations; only articles published in English were included, potentially introducing bias at the selection level and influencing results due to the exclusion of articles in other languages. Additionally, despite searching several databases and websites, our search remains constrained by the time frame, and some studies related to SRH during the COVID-19 pandemic may not have been published online or in peer-reviewed journals.

## 5. Conclusion

The study findings highlight the pressing need to address logistical challenges in providing SRH commodities to AYA during future health emergencies. Key strategies to consider include the integration of AYA-SRHS, the incorporation of telemedicine, and the deployment of mobile clinics to reach underserved areas (such as rural areas and slums). These services should be prioritized within primary health-care facilities to mitigate the difficulties associated with supplying essential health commodities. Recommendations for closing the SRH demand-supply gap during public health emergencies, like the COVID-19 pandemic, include ensuring a consistent supply of health commodities, particularly for AYA, and the widespread availability of mobile clinics across all low and middle-income countries areas and regions. It is crucial to sustain the successes achieved in health care, preventing any decline and continuously striving to bridge the gap between health-care supply and demand.

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The authors report no conflict of interest.

## Author contributions

*Conceptualization:* Akanni I. Akinyemi

*Writing – original draft:* Olutoyin O. Ikuteyijo, Taofeek K. Aliyu, Lanre O. Ikuteyijo, Oladimeji R. Ogunoye, Oluwaseun I. Obasola, John O. Abe, Jacob W. Mobolaji, Ojo M. Agunbiade, Opeyemi O. Ekundayo  
*Writing – review & editing:* Akanni I. Akinyemi, Sonja Merten

All the authors reviewed and agreed to the manuscript.

## Ethics approval and consent to participate

Not applicable.

## Consent for publication

Not applicable.

## Availability of data

Data used in this work is available from the corresponding author upon reasonable request.

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## Appendix

### Appendix 1

#### Search terms

1. Demand[tiab] OR Supply[tiab] OR Demand-Supply OR Accessibility[mh] OR Acceptability[mh] or Availability[mh] OR Acceptance[mh] OR Accessibility[mh] OR Affordable[mh] or Affordability[mh] OR Use [tiab] OR Usability[mh]
2. Adolescent OR Teen\* OR Young\* OR Youth OR Boys OR Girls
3. “SRH Service\*”[tiab] OR “Sexual Health Service\*”[tiab] OR “Reproductive Health Service\*”[tiab] OR “Sexual Reproductive Health Service\*”[tiab] OR Health Services, Adolescent Use[mh] OR Service, Reproductive Health Use[mh] OR “Adolescent Health Service”[mh] OR
4. “Sub-Saharan Africa”[tiab] OR Africa[tiab] OR “West\* Africa”[tiab] OR “South\* Africa”[tiab] OR “Central Africa” [tiab] or “Northwest\*”[tiab] or “Southwest\*”[tiab] OR “East\* Africa”[tiab] or “Northeast\* Africa” [tiab] OR Angola[tiab] OR Benin[tiab] OR Botswana[tiab] OR “Burkina Faso”[tiab] OR Burundi[tiab] OR Cameroon” [tiab] OR “Cape Verde” [tiab] OR “Central African Republic”[tiab] OR “Chad” [tiab] OR “Comoros” [tiab] OR “Congo Brazzaville” [tiab] OR Congo[tiab] OR “ Democratic Republic of Congo”[tiab] OR “Côte d’Ivoire” [tiab] OR Djibouti [tiab] OR “Equatorial Guinea”[tiab] OR Eritrea [tiab] OR Ethiopia[tiab] OR Gabon[tiab] OR Gambia [tiab] OR “The Gambia”[tiab] OR Ghana[tiab] or Guinea[tiab] or Guinea-Bissau[tiab] OR “Guinea-Bissau”[tiab] OR Kenya[tiab] OR Lesotho[tiab] OR Liberia[tiab] OR Madagascar[tiab] OR Malawi[tiab] OR Mali[tiab] OR Mauritania[tiab] OR Mauritius[tiab] OR Mozambique[tiab] OR Namibia[tiab] OR Niger[tiab] OR Nigeria[tiab] OR Rwanda[tiab] OR “Sao Tome and Principe”[tiab] abstract] OR Senegal[tiab] OR Seychelles[tiab] OR “Sierra Leone”[tiab] OR Somalia[tiab] OR “South Africa”[tiab] OR Sudan[tiab] OR Swaziland[tiab] OR Tanzania[tiab] OR Togo[tiab] OR Uganda[tiab] OR “Western Sahara”[tiab] OR Zambia[tiab] OR Zimbabwe[tiab].

Appendix 2

ProQuest

Search strategy

Filters: Africa, 20190101-20210801

Set#	Searched for	Databases	Results
S1	ab(Demand OR Supply OR Demand-Supply OR Accessibility OR Acceptability OR Availability OR Acceptance OR Accessibility OR Affordable OR Affordability OR Use OR Usability) AND ti(Demand OR Supply OR Demand-Supply OR Accessibility OR Acceptability OR Availability OR Acceptance OR Accessibility OR Affordable OR Affordability OR Use OR Usability) AND su(Demand OR Supply OR Demand-Supply OR Accessibility OR Acceptability OR Availability OR Acceptance OR Accessibility OR Affordable OR Affordability OR Use OR Usability) AND pd(20190101-20210801)	Middle East and Africa Database, Public Health Database, Social Science Database, Sociology Database	6,718
S2	ab(Adolescent OR Teen* OR Young* OR Youth OR Boys OR Girls) AND ti(Adolescent OR Teen* OR Young* OR Youth OR Boys OR Girls) AND su(Adolescent OR Teen* OR Young* OR Youth OR Boys OR Girls) AND pd(20190101-20210801)	Middle East and Africa Database, Public Health Database, Social Science Database, Sociology Database	14,448
S3	AB("SRH Service*" OR "Sexual Health Service*" OR "Reproductive Health Service*" OR "Sexual Reproductive Health Service*" OR Health Services, Adolescent Use OR Service, Reproductive Health Use OR "Adolescent Health Service") OR SU("SRH Service*" OR "Sexual Health Service*" OR "Reproductive Health Service*" OR "Sexual Reproductive Health Service*" OR Health Services, Adolescent Use OR Service, Reproductive Health Use OR "Adolescent Health Service") OR TI("SRH Service*" OR "Sexual Health Service*" OR "Reproductive Health Service*" OR "Sexual Reproductive Health Service*" OR Health Services, Adolescent Use OR Service, Reproductive Health Use OR "Adolescent Health Service") AND pd(20190101-20210801)	Middle East and Africa Database, Public Health Database, Social Science Database, Sociology Database	5,874
S4	(ab(Demand OR Supply OR Demand-Supply OR Accessibility OR Acceptability OR Availability OR Acceptance OR Accessibility OR Affordable OR Affordability OR Use OR Usability) AND ti(Demand OR Supply OR Demand-Supply OR Accessibility OR Acceptability OR Availability OR Acceptance OR Accessibility OR Affordable OR Affordability OR Use OR Usability) AND su(Demand OR Supply OR Demand-Supply OR Accessibility OR Acceptability OR Availability OR Acceptance OR Accessibility OR Affordable OR Affordability OR Use OR Usability) AND pd(20190101-20210801)) AND(ab(Adolescent OR Teen* OR Young* OR Youth OR Boys OR Girls) AND ti(Adolescent OR Teen* OR Young* OR Youth OR Boys OR Girls) AND su(Adolescent OR Teen* OR Young* OR Youth OR Boys OR Girls) AND pd(20190101-20210801)) AND(AB("SRH Service*" OR "Sexual Health Service*" OR "Reproductive Health Service*" OR "Sexual Reproductive Health Service*" OR Health Services, Adolescent Use OR Service, Reproductive Health Use OR "Adolescent Health Service") OR SU("SRH Service*" OR "Sexual Health Service*" OR "Reproductive Health Service*" OR "Sexual Reproductive Health Service*" OR Health Services, Adolescent Use OR Service, Reproductive Health Use OR "Adolescent Health Service") OR TI("SRH Service*" OR "Sexual Health Service*" OR "Reproductive Health Service*" OR "Sexual Reproductive Health Service*" OR Health Services, Adolescent Use OR Service, Reproductive Health Use OR "Adolescent Health Service") AND pd(20190101-20210801))	Middle East and Africa Database, Public Health Database, Social Science Database, and Sociology Database; these databases are searched for part of your query.	60