Lyon *et al. Reproductive Health* (2025) 22:195
https://doi.org/10.1186/s12978-025-02127-6

Reproductive Health

RESEARCH Open Access

Assessing the impact of the COVID-19 pandemic on adolescent pregnancy in Southwestern Uganda: a qualitative analysis using the socio-ecological model

Sophie E. Lyon[1†], Elizabeth Kemigisha[2,3*†], Rupa Ramachandran[5], Shakillah Namatovu[3], Dorcus Achen[4], Daniel Atwine[6], Olena Ivanova[7,8] and Viola N. Nyakato[3]

Abstract

Adolescent childbearing remains a major public health challenge in Uganda. This study explores the impact of the COVID-19 pandemic on teenage pregnancy. This qualitative study, using a case study approach, conducted interviews with stakeholders affected by or involved with the prevention of adolescent pregnancy, such as young girls, their partners, their parents or caregivers, community health workers, and other community leaders. Data collection took place in 4 districts in Southwestern Uganda between March and June 2023. A total of 103 participants took part in 14 focus group discussions (FGDs) and we additionally conducted 28 individual in-depth interviews (IDIs). A codebook guided by a socio-ecological model focusing on individual, interpersonal, community and organizational, and policy factors that contribute to teenage pregnancy was developed for collaborative thematic analysis. Themes on the impact of COVID-19 on teenage pregnancy at the individual and interpersonal level included transactional sex, fear of COVID-19, and unsavory peer relationships. Community and organizational level factors included poverty, unsafe physical environments, limited access to SRH information and services, and lack of access to education. Policy level factors included ineffective political systems and procedures, encompassing restrictive lockdown policies and limited legal redress of violence against adolescent girls. Our results indicate that the global pandemic exacerbated many pre-existing risk factors of adolescent pregnancy across the community and organizational, interpersonal, and individual levels, most notably including increased poverty and limited education. New strategies are needed to bolster protective factors at the organizational and community levels to mitigate the risks associated with adolescent pregnancy.

Keywords Adolescent pregnancy, Early childbearing, Risk factors, Sub-Saharan Africa, Socioecological model, COVID-19, Pandemic

†Sophie E. Lyon and Elizabeth Kemigisha joint first authorship.

*Correspondence:
Elizabeth Kemigisha
ekemigisha@must.ac.ug

Full list of author information is available at the end of the article

© The Author(s) 2025. **Open Access** This article is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License, which permits any non-commercial use, sharing, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if you modified the licensed material. You do not have permission under this licence to share adapted material derived from this article or parts of it. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit http://creativecommons.org/licenses/by-nc-nd/4.0/.

Content courtesy of Springer Nature, terms of use apply. Rights reserved.

Background

Adolescent pregnancy remains a serious public health challenge, especially in low- and middle-income countries (LMICs), where 95% of all global adolescent childbearing occurs [1]. Adolescent pregnancy leads to poor health outcomes, as maternal conditions are the second leading cause of mortality and the fourth leading cause of disability-adjusted life years for girls aged 15-19 [2]. Girls who become pregnant in their adolescence are also at increased risk of poor social (e.g., abuse, abandonment, stigma), economic (e.g., poverty, limited workforce participation), and mental (e.g., depression, suicide) well-being [3–6]. These unsatisfactory outcomes emphasize the dire need to reduce the risk of early pregnancy for adolescent girls.

Uganda is a low-income country in East Africa with some of the world's highest reported adolescent birth rates. As of 2022, about 24% of all girls give birth before the age of 18 and half of these girls go on to become pregnant multiple times in their adolescence [7]. Further, adolescent childbearing contributes to 17% of maternal mortality in Uganda, which is nearly double the global average of 10% [7, 8]. While rates of adolescent pregnancy declined significantly throughout the end of the 20th century [9], these figures have stagnated in recent decades with only a 1% reduction in rates reported between 2006 and 2022 [7]. With limited progress being made in lowering adolescent childbearing incidence in Uganda, the onset of the COVID-19 pandemic created new concerns surrounding this issue.

The COVID-19 pandemic caused significant disruptions for adolescents in Uganda. When the pandemic struck, the Ugandan government instituted strict lockdown policies [9]. This included suspending mass gatherings, banning public and private transportation, establishing a nationwide curfew, and closing all non-essential business. Most notably, they also closed all educational institutions beginning in February 2020, which lasted nearly two years and became the longest school closure in the world, impacting over 15 million students [10]. As over 41% of public schools in Uganda are boarding schools, the lockdown created a drastic environmental change for adolescents who were abruptly sent back to their villages. Throughout the pandemic, rates of adolescent pregnancy increased dramatically, most significantly seen by a tripling of incidence amongst girls aged 10-14 [11]. Multiple studies investigating the effect of the COVID-19 lockdown in Uganda showed a relative increase in teenage pregnancy across different regions in Uganda [12–14]. Related studies have discussed risk factors such as limited use of contraception [12], lack of knowledge on ovulation, limited sexual education from school or family settings [13], and lack of partner support and diminished community protective factors as contributors to heightened rates of adolescent pregnancy in this context [15, 16]. However, the full scope of how the pandemic may have influenced existing risk factors and contributed to new vulnerabilities remains poorly understood.

A wealth of prior literature has explored the array of risk factors contributing to adolescent pregnancy. A systematic review across LMICs discussed the risk factors of adolescent pregnancy using an ecological model of human development [17]. At the community level, low economic status, rural residence, neighborhood violence, and limited access to health services were associated with a higher risk of adolescent pregnancy. Organizational-level risk factors included low educational attainment and unsupervised extracurricular activities. At the interpersonal level, risk factors encompassed peer pressure, misinformation from peers, and inadequate parental care. Individual-level risk factors involved unemployment, employment in high-risk professions (e.g., domestic work), early marriage, sexual abuse, transactional sex, and limited contraceptive knowledge and usage. Additional studies within sub-Saharan Africa [18], and more specifically Uganda [19–23], have supported these findings. However, there still exists a paucity of evidence investigating how the COVID-19 pandemic affected these established risk factors or created new pathways to adolescent pregnancy. To limit adolescent pregnancy, reduce maternal mortality, and improve the well-being of young girls in Uganda, the key contributors to adolescent pregnancy must be understood in the unique socio-ecological context created by the COVID-19 pandemic.

Given that the long-term effects of the pandemic are still coming to light, there is a need to better understand the potentially-lasting social impacts of the lockdown to create sustainable solutions and address the ongoing needs of community members. Additionally, the identification of risk factors unique to this context may be relevant to future times of crisis. In this paper, we seek to examine these and similar risk factors in the context of the COVID-19 pandemic in Uganda, with particular attention to experiences of adolescent repeat pregnancy. Using the socio-ecological model [24, 25], we discuss risk factors of adolescent pregnancy at the policy, community and organizational, interpersonal, and individual levels, and explore the unique role that the global pandemic played in exacerbating young girls' risk of becoming pregnant.

Methods

This qualitative analysis was conducted as part of larger quasi-experimental study to evaluate the effectiveness of a group intervention to promote post-delivery uptake of contraception among adolescents in Southwestern Uganda [26]. This arm of the study employed a case study

Content courtesy of Springer Nature, terms of use apply. Rights reserved.

approach to investigate complex phenomena within their real-life context using multiple data sources and perspectives [27, 28]. This work focused on understanding the socio-ecological factors influencing adolescent pregnancy during the COVID-19 pandemic, using in-depth interviews and focus group discussions with adolescents, caregivers, partners, and community stakeholders, to enable a rich, contextualized exploration of stakeholder perceptions and experiences.

Study site and setting

We conducted the study within four districts in Southwestern Uganda, including Mbarara, Rwampara, Isingiro, and Ibanda. The districts chosen were within the catchment area of Mbarara Regional Referral Hospital (MRRH), a public teaching hospital associated with Mbarara University of Science and Technology, and were selected as part of the hospital partnerships' funding requirements. The hospital serves four million people from six districts in Southwestern Uganda and neighboring countries including Rwanda, the Democratic Republic of Congo, and Tanzania. It provides inpatient, outpatient, and outreach services in various medical specialties, including sexual and reproductive health (SRH) services.

Study population

The main target groups of the study were adolescents who had ever been pregnant following delivery or abortion. While the adolescent age range is typically described to be between 10 and 19 years of age [29], we expanded the age range in this study to girls aged 13–22 years. First, we wanted to account for the fact that pregnancy is unlikely to occur before the age of 13, the average age menstruation begins in Uganda [30, 31]. Additionally, we wanted to include older girls who may have experienced teenage pregnancy in prior years as they may be more comfortable discussing their experiences given the greater time separation between their pregnancy and the interviews. Although girls aged 20 years and older were included, study participants had to have experienced pregnancy at some point in their teenage years. Overall, girls aged between 13 and 22 years including pregnant, postpartum, and post-abortion, who were willing to provide written consent or through a witness in case of illiteracy, were included in the study. These girls were selected from outpatient services units for maternal and child health care such as immunization or family planning clinics and mobilized from the nearby communities with the help of community health volunteers known as village health teams. Additional participants included stakeholders such as partners of adolescents aged 18 years and older, parents/caregivers of adolescent mothers, local leaders from the village level to the district level, religious leaders, and health workers. These participants were selected using purposive sampling techniques.

Data collection

Data were collected between March 1st and June 30th of 2023. Qualitative data were collected by four trained research assistants with previous training and experience in interviewing adolescents in this setting, using structured interview guides exploring stakeholders' perceptions of and experiences regarding adolescent pregnancy. The structured interview guides were initially developed using a deductive approach drawing on literature reviews, and were then further refined using an inductive approach following iterative discussions throughout piloting questions and conducting interviews.

The qualitative data collection utilized in-depth interviews (IDIs) with 28 individuals and 14 focus group discussions (FGDs), with FGDs comprised of about 6–8 participants. We utilized Creswell's widely-accepted definition of data saturation, which refers to the point at which no new emerging themes are uncovered from further data collection [32]. To ensure data saturation, we recruited a minimum of two stakeholders of each category per region, and required a minimum of ten stakeholders per category across all discussions. Data saturation informed how many IDIs or FGDs were needed, and if further recruitment of participants were required. The number and types of interviews with each stakeholder group are recorded in Tables 1 and 2. All research assistants conducting interviews received training for

Table 1 Characteristics of participants in individual in-depth interviews (IDIs)

Participant category	Participant description	Gender	Number of IDI Interviews
Community leaders	1 Village Health Team coordinator (VHT) 1 Reproductive Health Uganda (RHU) - NGO 2 religious leaders 3 probation officers	5 Male 2 Female	7
Parents of adolescent mothers	3 fathers 2 mothers	3 Male 2 Females	5
Adolescent mothers	6 girls with single pregnancy 6 girls with repeat pregnancy	12 Female	12
Partners of adolescents	4 adolescent partners	4 Male	4
Total participants			28

Content courtesy of Springer Nature, terms of use apply. Rights reserved.

Table 2 Characteristics of participants in focus group discussions (FGDs)

Participant category	Number of FGDs	Participant description	Gender	Number of Participants
Health workers (midwives)	2	Ibanda district (1) Isingiro district (1)	All Female	13
Community leaders (VHTs)	2	Mwizi, Rwampara (1) Ruhoko, Mbarara (1)	8 Female 5 Male	13
Parents of adolescents with early pregnancy	4	FGD1 Fathers (Ibanda district) FGD2 Fathers (Mbarara) FGD3 Mothers (Mbarara) FGD4 Mothers (Ibanda district)	14 Males 20 Female	34
Adolescents with early pregnancy	4	2 FGDs Adolescents with single pregnancy (Mbarara) 2 FGDs Adolescents with repeat pregnancy (1 in Mbarara, 1 in Rwampara)	All Female	28
Male partners of adolescents with early pregnancy	2	Mbarara (1) Rwampara (1)	All Male	15
Total participants				103

conducting discussions regarding SRH topics and maintaining confidentiality and anonymity. To limit social desirability bias, selected interviewers were near the same age range as study participants to make an adolescent feel more comfortable sharing personal experiences without bias. Interviews were primarily conducted in the local language, Runyankole, a common dialect in the four districts. Interviewers were familiar with the local language and had copies of the interview guide translated from English to the local language to aid the interview. Occasionally, a few adolescents were interviewed in English. All interviews were conducted in person, audio recorded, and later transcribed and translated by trained study team members. Interviews were deidentified prior to data analysis. Individual interviews typically lasted one hour while focus group discussions lasted approximately one and a half hours.

Data analysis

For qualitative data analysis, transcripts were securely imported into a qualitative content analysis software, Dedoose (Version 9.0.107), and analyzed by several team members. A codebook was collaboratively created before analysis using themes outlined in the data collection tool as well as those described in prior literature. Four team members (SEL, EK, DA, and VNN) individually coded interviews and met frequently to discuss findings, build consensus, and suggest alterations to the codebook to reflect emergent themes in the data.

Results

A total of 28 individual interviews and 14 FGDs were performed with 103 participants, as summarized in Tables 1 and 2. Participants discussed many risk factors of adolescent pregnancy, but for this paper, we analyze these discussions in the context of how the conditions created by the COVID-19 pandemic altered the typical socio-ecological environment of adolescents. We discuss the different aspects of the socio-ecological model from the highest (policy) to lowest (individual) levels regarding adolescent girls being exposed to heightened risk of adolescent pregnancy. The researchers' interpretations of each socioecological level as guided by relevant literature as well as the key findings are recorded in Table 3. Many of these themes overlap and are highly interrelated. Primary exemplary quotes are included within the text, while supporting quotes are listed in Supplementary Table 1 (S1) (referenced in the text by their corresponding quote number (Q#)).

Policy factors

Most policy-level factors existed prior to but were made more prominent during the COVID-19 pandemic. The following findings display the wider political and legal environment as it exists in relation to the pandemic.

Political systems and procedures

Participants described how one of the greatest political factors impacting adolescent pregnancy was the nationwide lockdown instituted by the government at the onset of the pandemic. The lockdown, having closed both schools and businesses, was widely perceived to have negative impacts on the state of adolescent pregnancy and communities more generally:

> *"The issue of COVID-19 made matters worse and that is when most of the teens got pregnant…when COVID-19 hit us, a lockdown was imposed and all the student were sent back home…during the lockdown, a lot of businesses were shut down, even bars were closed and people became so poor." (IDI, single pregnancy).*

Content courtesy of Springer Nature, terms of use apply. Rights reserved.

Table 3 Summary of findings from a social-ecological perspective on the impacts of COVID-19 on adolescent pregnancy

Socioecological Level	Socioecological Level Description [24, 25]	Category	Impact of COVID-19 on heightening the risk of adolescent pregnancy
Policy	National, regional, and local laws and policies.	Ineffective political systems and procedures	- The government instituted restrictive lockdown policies with limited alternatives for education for young people or economic support for communities - Gaps exist in policy implementation efforts related to provision of SRHR information and services - Corruption within law enforcement systems inhibits legal redress for adolescent sexual and gender-based violence
Organizational and community	Organizations, schools, workspaces, resources, cultural norms, and social structures.	Poverty	- The national lockdown closed businesses, limiting work opportunities and creating widespread poverty - Girls may find alternative, high-risk ways to provide for themselves including accepting jobs in unsafe industries or trading sexual favors for money - Girls may drop out of school if their parents cannot afford school fees - Families may live in more remote, unsafe locations
		Unsafe neighborhoods and physical environments	- Adolescent's primary environment changed from the school to the village setting - Girls were now in much closer proximity to predatory figures - Widespread community and familial violence placed girls at risk of physical, emotional, and sexual abuse - Certain workplaces including bars and hotels were considered high-risk
		Lack of education	- Schools were closed for nearly two years and adolescents were sent home - Students lost the protective figures of school teachers/matrons - Adolescents' time was now largely unstructured and/or unsupervised - Girls often chose not to continue their schooling after the pandemic
		Limited access to SRH information and services	- Adolescents faced difficulty accessing SRH services due to transport costs - Significant misconceptions about SRH exist within communities - Loss of anonymity within the community limited privacy and increased stigma among adolescents seeking SRH services
Interpersonal	Social networks and engagement (friends, family, etc.)	Unsavory peer groups	- An altered physical environment allowed new peer groups to form - Adolescents were introduced to mature topics at a younger age - Peers spread SRH misinformation within/between groups - Adolescents often acted on social pressures to obtain the same popular commodities as their peers
Individual	Individual knowledge, attitudes, skills, and behaviors.	Transactional sex	- Lack of money drove girls to trade sexual favors for basic or luxury items to meet their needs - Male 'providers' were more accessible during the lockdown
		Fear of COVID-19	- Adolescents wanted to engage in sexual acts out of fear of dying of the virus - Adolescents avoided accessing SRH services at hospitals out of fear of contracting the virus

Content courtesy of Springer Nature, terms of use apply. Rights reserved.

Outside of the context of the pandemic, most participants expressed frustration and dissatisfaction when discussing ongoing government involvement with adolescent pregnancy prevention at both the local and national level. While many credited the government with creating policies to address the problem, participants generally viewed the government's actions as ineffective due to poor implementation of such policies:

> *"The government is not concerned about the issue of preventing teens from getting pregnant because if they were concerned, they would be in a position to come back and tell us what they are doing and how. Policies and laws are there but it is as if they are not there, not one is bothered to follow and implement them where necessary." (FGD, father of teenage mother).*

Similarly, multiple participants conveyed the desire for the government to treat the issue of adolescent pregnancy with greater prioritization:

> *"The government needs to put extra efforts in fighting teenage pregnancy just like what they doing in the fight against HIV/AIDS." (FGD, VHT).*

Many participants credited challenges with policy implementation to criminal justice systems that are affected by corruption, bribery, and limited redress of adolescent sexual violence. Participants described how high levels of corruption affect reporting of defilement cases from communities, and may result in failure to prosecute the offenders once reporting has occurred, leaving victims disappointed:

> *"When it comes to the police, the situation is worse because of the issue of corruption, corruption is becoming too much and it has spoilt everything and in case there is a [defilement] case to handle, there is nothing done." (FGD, father of teenage mother).*

Organizational and community factors

Poverty

Socio-economic status was the most widely discussed factor across individual interviews and focus group discussions, and participants often described low socioeconomic status to be both a risk factor and a result of adolescent pregnancy. Participants discussed multiple ways in which individual and community-level poverty could increase a girl's likelihood of becoming pregnant, both within and outside of the context of COVID-19.

With limited jobs available during the lockdown, families often lacked the financial means to provide for themselves (S1, Q1), and poverty became a common experience across communities, families, and individuals:

> *"During [the COVID-19 lockdown], poverty hit most families so badly, there was no food, no money and no basic needs of life. There was no source of income." (FGD, single pregnancy).*

Participants revealed how poverty is the main underlying factor spanning multiple levels of the socioecological model, describing how risk factors at the organizational, individual, and interpersonal levels either resulted from or were exacerbated by poor economic conditions. For instance, many participants discussed how experiencing poverty may result in adolescents dropping out of school (S1, Q2) (Education), spending time in unsafe environments (S1, Q3; Q4) (Physical Environment), or in other cases, lead girls to trade sexual favors for money (S1, Q5) (Individual: Transactional Sex). These specific experiences are explored in-depth in the corresponding sections.

While these experiences were also discussed outside of the context of COVID-19, these experiences only grew more commonplace when a greater extent of the population was impacted by poverty due to the pandemic.

Physical environment

The physical environment that adolescents occupy can either expose them to or protect them from heightened risk factors contributing to adolescent pregnancy. As described by participants, adolescents' primary environments included their schools, homes and villages, and workplaces. However, the stipulations of the COVID-19 lockdown significantly altered which of these environments adolescents occupied. Prior to the pandemic, adolescents spent most of their time in a school-setting, but with the onset of the lockdown, adolescents now spent the majority of their time in their villages, which was described to be significantly different from the typical educational setting.

Overall, the village environments were described to be much more unstructured than the school environment. Girls now lacked the protective figures they were previously surrounded by (i.e., teachers) and instead were exposed to many more unsavory figures who may be looking to take advantage of them:

> *"COVID-19 lockdown... forced all the teen girls out of school, they all went back to their home and they were all over into the communities. Remember men out there are always interest in having sex with young girls and during the lock-down, it was the time when these girls could easily be accessed and taken advantage of." (FGD, single pregnancy).*

Content courtesy of Springer Nature, terms of use apply. Rights reserved.

Participants described how girls were now able to interact with a wider range of individuals and peer groups whom they would not typically meet in a school setting, which may result in adolescent pregnancy (S1, Q9; Q10) (Interpersonal: Peer Groups). Adults also discussed how girls were placed at greater risk of encountering predatory figures when they were asked to perform tasks that put them in dangerous environments, such as fetching firewood or water, and further described how these tasks were far riskier during nighttime hours (S1, Q11).

> *"When the COVID-19 lockdown came in, schools were closed and children had to go to their communities where they had to do chores such as fetch water, fetch firewood where most of them encountered boys or men who seduced them or even forced them into sex resulting into unwanted pregnancies" (IDI, single pregnancy).*

Certain workplaces were also described as placing girls at higher risk of becoming pregnant at a young age. Many adolescent girls described meeting their partner at their workplace, often including salons, bars, or hotels. Multiple older participants discussed this as a pressing issue and described the danger of employing young girls in these environments as they were often "places with immoral behaviors," and many described the need for additional protections for young girls to keep them out of these spaces (S1, Q12):

> *"Our chairmen also have the responsibility of ensuring that teens girls are not employed anymore in bars, restaurant and guest houses. But also as parents if you come across a child who is underage, we discourage them from getting in such job and instead we encourage them to get back in school because such jobs are dangerous to their lives." (FGD, mother of teenage mother).*

Participants further specified how girls were more likely to occupy these spaces during the COVID-19 pandemic (S1, Q13). One girl described how her parents found her employment at a salon, where she ended up becoming pregnant (S1, Q4), while another described how girls would continue working in these unsafe environments rather than return to school:

> *"The chances of teenage pregnancies are very high because for example the number of bars in my community has increased and this is usually the place with higher chances of girls getting unwanted pregnancies since they are usually taken advantage of. And to make matters worse, even when the lockdown was removed, some girls did not go back to school they completely dropped out and ended up doing jobs in bars, this is very common in my community, girls at a very young age are working in bars." (IDI, single pregnancy).*

During the COVID-19 lockdown, adolescents spent much of their time idle in their homes with their families. For some, this was discussed to place them at much higher risk of experiencing physical and emotional violence, as well as sexual abuse (S1, Q14). Many participants discussed how gender-based violence was a wide-reaching problem in communities and often stemmed from the home. In some cases, violence between parents may drive children away from the home and force them to seek shelter in unsafe locations (S1, Q15). Other girls described being sexually abused at the hand of family members (S1, Q16), and in some cases, discussed how emotional and sexual abuse in the home would drive them to seek refuge with boys, resulting in early marriage or unplanned pregnancy (S1, Q20):

> *"As a teen girl, I was sent to stay somewhere with my relatives far from my family and the same family that I stayed with is the same family that tortured me. The man who was supposed to take care of me… is the one who used to rape me repeatedly—something that I never wanted to happen to me in my life. Life was so miserable, I suffered a lot and eventually I had to ran away from that family… in the process, I also came across a young man who supported me and eventually I ended up engaging in early marriage which I thought would never happen to me" (FGD, single pregnancy).*

Education

Participants widely viewed education as a protective factor from adolescent pregnancy, and one of the key action items described by many adults to reduce early pregnancy was to keep young girls in school for as long as possible:

> *"School is considered to be a family planning method and a contraceptive method." (IDI, RHU).*

As discussed by participants, girls who completed more schooling would be surrounded by protective figures (e.g., teachers) for longer periods of time. School leaders were not only said to provide physical protection through their monitoring of adolescents, but they also taught necessary SRH information to aid adolescents in avoiding early pregnancy:

> *"The school matrons also have a big role… they usually monitor students so well; they follow them and*

Content courtesy of Springer Nature, terms of use apply. Rights reserved.

they know what they are doing and at what time. So if the matron is a very responsible person, they will also do something to stop these teens from getting pregnant" (FGD, midwives).

On the contrary, girls who completed less formal schooling often lacked these protective figures and environment, exposing them to heightened risk factors of adolescent pregnancy. They would additionally have fewer skills, thus limiting the job opportunities available to them and making it more difficult to support themselves financially in the long term. This may result in them accepting jobs in high-risk environments (Physical Environment) or being financially dependent on a male partner. While limited education has consistently been reported as a risk factor for adolescent pregnancy, the conditions created by the COVID-19 lockdown exacerbated these concerns and placed a significant portion of the adolescent population at greater risk.

When adolescents returned to their villages as a result of the lockdown, the lack of school environment placed adolescents at much higher exposure to multiple risk factors in facing adolescent pregnancy. First, adolescents occupied more unsafe physical environments as they no longer lived in their school setting. Additionally, many adolescents described how without the time commitment required of being in school, they now had much more time to socialize with peer groups, often outside their norms. Multiple adolescents described how this seemingly unlimited free time led to increased interactions with members of the opposite sex and often led to accidental pregnancy:

"I became pregnant because I was idle, we were dating for a long time but because we used to go to school we never had the time, but during the lockdown we had a lot of time and would meet a lot so we engaged in sexual activities and I became pregnant." (FGD, repeat pregnancy).

Although schools were reopened when the lockdown ended, many girls discussed how they did not return to school. They further described how they were unable to pay tuition due to the poor economic conditions fostered by the pandemic (S1, Q6), while others chose not to return due to a general disinterest (S1, Q7):

"I was not able to continue with education to the higher levels because of financial challenges. I did not have school fees and the only option that I had was to step out of school and find another life to live" (FGD, single pregnancy).

However, participants generally reiterated the protective nature of education and described the importance of adolescents returning to school. Now emerging from the pandemic, one girl described how the reopening of schools has reduced the risk of adolescents becoming pregnant in the community (S1, Q8). Overall, participants remained hopeful that the return to school would afford adolescents greater protection from early pregnancy.

Access to sexual and reproductive health resources

Adolescent's behaviors and ability to access SRH services were also influenced by the pandemic. Generally, adults agreed that adolescents do not receive enough SRH information (S1, Q31) and would be more protected from adolescent pregnancy if they were better informed:

"Our children…lack SRH knowledge and information. I think if they are aware, maybe they would not engage themselves in such bad behavior and end up getting pregnant." (IDI, religious leader).

As discussed in the *Education* section, children received basic sexual education in schools, but now that schools were closed, they lacked a comprehensive SRH education and were thus at higher risk of becoming pregnant (S1, Q32).

One health worker discussed how she witnessed an increase in the number of adolescents attending the health facility to seek SRH knowledge during the pandemic (S1, Q33). However, one young girl described a dearth of adequate SRH resources during the pandemic, primarily arising from accessibility challenges for adolescents as they could not afford to travel to health facilities to obtain them (S1, Q34). Adolescents also discussed a fear of accessing services at health facilities out of fear of contracting the COVID-19 virus while they were there:

"We feared getting infected with COVID-19 while going to the hospital for family planning. That is why we could not use protection" (FGD, single pregnancy).

Additional disincentivizing factors to accessing SRH resources were discussed outside of the context of COVID-19. One such barrier cited by multiple participants is that family planning and SRH services are intended for adults, and no youth-friendly services exist (S1, Q35). One health worker described helping young girls in secret with SRH knowledge to reduce the stigma they faced when attending the clinic alongside adults:

"On some days when we have family planning sessions, girls who need our services fear to join the

Content courtesy of Springer Nature, terms of use apply. Rights reserved.

other group of adults being trained/equipped, they fear that rumors about them starting family planning at a young age might spread throughout their places of residence; whenever I see them peeping/hiding themselves, I work on them secretly" (FGD, VHT).

While most young girls were aware of family planning services, significant misconceptions were also discussed throughout the interviews. For example, some girls thought that using family planning services would cause infertility or illness (S1, Q36); others reported that the use of contraceptives could cause cancer or death (S1, Q37). Some were generally unaware of basic SRH knowledge (S1, Q38). Coupled with the fear-factor of the pandemic, these misconceptions dissuaded young girls from accessing SRH services:

"I was always scared of using family planning methods because I used to hear people say that family planning is dangerous and have adverse side effects. That if you use it at a very young age, you may never have any children of your own in future. So I could not risk using family planning and that is how I ended up getting pregnant." (FGD, single pregnancy).

Interpersonal factors

Peer groups

The conditions created by the COVID-19 lockdown fostered the development of new social networks amongst adolescents. The change in physical environment from the school to the village setting was described to expose adolescents to a much wider range of individuals, thus facilitating the formation of new peer groups (S1, Q18). Outside of the context of the pandemic, many participants described how an adolescent's social groups could negatively influence sexual behavior, and many girls blamed their peer groups for their early pregnancy (S1, Q19).

Peer groups were described to influence adolescent's behavior in many ways. Adolescents described how their newly-formed peer groups introduced them to behaviors they were not previously aware of and thus engaged in sexual acts that resulted in adolescent pregnancy (S1, Q20), and adults similarly agreed (S1, Q21) that these groups would introduce adolescents to sexual behaviors at a young age:

"As all the teens were forced into their homes during the Covid-19 lockdown, we became so many in the villages, we were so idle with nothing to do and instead we started forming some peer groups. So in the process, we learned a lot of bad behaviors which resulted into getting pregnant." (FGD, single pregnancy).

In addition to learning these behaviors, adolescents described how they now interacted with members of the opposite sex much more frequently than usual, also leading to early pregnancy (S1, Q22).

The social influence of peers also played a role in shaping adolescent's sexual activity (S1, Q23). Both adolescents and adults described the social pressure created within peer groups, especially in regard to owning luxury items such as smartphones. This influence may pressure young girls to trade sexual favors for money in order to become more like their peers (S1, Q24):

"When they start seeing their colleagues owning phones which they do not have, that is how they end up getting tempted into sexual acts at a young age because they also want to own phone just like their colleagues." (FGD, mother of pregnant adolescent).

Additionally, multiple participants described how peers may share inaccurate information that results in confusion surrounding SRH topics and ultimately lead to pregnancy (S1, Q25):

"We all passed through these groups and we know exactly what happens. While in these groups, teens tend to mislead, they tell lies [to] each other about the use and side effects of family planning services. They also share experiences they have gone through engaging in sex without family planning and in the process, they encourage each other not to practice family planning because of the misconception they already have about using family planning services." (FGD, mother of pregnant adolescent).

Individual factors

Transactional sex

The majority of participants discussed the high risk of young girls engaging in transactional sex and becoming pregnant, often as a result of poverty. If a girl did not have the means to provide for herself, she may turn to a man who offers her gifts in exchange for sexual favors. Participants described how these goods could either be luxury items (i.e., smartphones, laptops, purses (S1, Q26)) or basic needs (i.e., menstrual hygiene products, food, money (S1, Q27)). This was often said to result from their parents' inability to afford their children's desires, thus causing young girls to depend on older men to obtain their wishes (S1, Q28):

"Some of the parents have got financial challenge and are not able to take care of their own children.

Content courtesy of Springer Nature, terms of use apply. Rights reserved.

So, when these teens come across rich men who are ready and willing to provide them with some financial favors, they will not hesitate to have sex with them." (FGD, father of pregnant adolescent).

Participants discussed how the poor economic conditions resulting from the pandemic exacerbated this issue. Many participants described how the significant increase in familial poverty caused girls to turn to these other sources of financial support much more easily, and how it would often result in adolescent pregnancy (S1, Q29; Q:30)

"When COVID-19 broke out, schools were closed for a long time. As students, we didn't have any job or even the skills to work when the situation wasn't good and parents did not have money. So when a man would offer to give you money and convince you to marry him to support each other, you would also accept and get pregnant along the way." (FGD, single pregnancy).

One participant also described how these 'providers' were more readily accessible during the lockdown:

"During the lockdown, some teens–especially those who are interested in engaging with old men–also took advantage of the situation because these men were always available and ready to provide." (FGD, single pregnancy).

Fear of COVID-19

Multiple participants discussed the role of fear in exacerbating adolescent pregnancy during the COVID-19 pandemic. Overall, many participants described being fearful of the COVID-19 virus. Many adolescents described how the pandemic instilled a fear of death, and thus they would want to engage in sexual activities before dying (S1, Q39):

"[Men in villages] would approach [young girls] and since these girls are not advised by their parents, they end up accepting to have sex because they did not want to die of COVID-19 before having sex." (FGD, adolescent partner).

Fear also impacted adolescent's desire to access family planning services, as they described being fearful of contracting COVID-19 when attending a hospital to receive SRH services (S1, Q40), and thus would not attempt to obtain these services.

Discussion

This study explored how the socio-ecological context shaped adolescent pregnancy in Southwestern Uganda and more specifically, how the components of this context were altered by the COVID-19 pandemic. Our findings display that the pandemic exacerbated pre-existing risk factors at the policy, community and organizational, interpersonal, and individual levels of the socio-ecological model. At the individual and interpersonal level, participants discussed unsavory peer relationships, transactional sex, and need for distraction due to fear of dying from COVID. At the community and organizational level, discussion themes included poverty, unsafe physical environments, limited access to SRH information and services, and lack of access to education. At the policy level, participants discussed ineffective political systems and implementation procedures.

Although we differentiated our findings by impacts at the policy, community and organizational, interpersonal, and individual levels, many of these risk factors were interrelated and their effects were observed across multiple levels. Most significantly, we observed how the factors existing at the community and organizational level (i.e., increased poverty and lack of education) had significant downstream effects at the interpersonal and individual levels. For example, increased poverty may drive girls to engage in acts of transactional sex, limit their ability to pay for transport to access SRH services, or prevent them from affording school fees. Similarly, we observed how the lack of an educational environment progressively drove adolescents to form atypical peer groups, engage in risky behaviors, and occupy spaces that placed them at higher risk of experiencing violence.

The risk factors we uncovered align with those identified in pre-pandemic research. The greatest impact of the pandemic, other than the virus itself, was therefore to expand and prolong pre-existing conditions in Uganda. The only new risk factor to emerge from our interviews was fear of contracting the COVID-19 virus, which was described by participants to impact adolescent pregnancy through multiple avenues. First, the apparent crisis increased adolescent's desire to have sex before they could potentially die. Studies in Uganda and sub-Saharan Africa more generally have similarly found that mental health factors such as depression and psychological distress are associated with risker sexual behavior [33, 34], which align with the mental health impacts of this risk factor. Fear of COVID-19 additionally dissuaded adolescents from accessing SRH resources at local hospitals as they did not want to risk contracting the virus. While this risk factor is likely unique to the context of the global pandemic, the resulting increased sexual engagement and limited SRHR access prove that fear of the pandemic

Content courtesy of Springer Nature, terms of use apply. Rights reserved.

was a contributing factor to increased risk of adolescent pregnancy.

Prolonged school closures

Certainly, one of the most significant changes in the socio-ecological context was at the organizational level, stemming from nationwide school closures with limited alternatives to engage learners while at home. As previously discussed, Uganda instituted the longest school closure of any country during the pandemic [10, 35]. As education was described to be one of the primary protective factors from adolescent pregnancy, this organizational change was considered by participants to be a driving factor in the rise of adolescent pregnancy rates across the country. This is substantiated by the findings of multiple systematic reviews that describe how higher levels of education and fewer school absences are associated with lower levels of teenage pregnancy [17, 18]. These findings have been reflected in Ugandan studies as well. Wado et al. found that girls with secondary levels of education or higher were 68% less likely to experience adolescent pregnancy than their peers with no schooling [36], and Chemutai et al. similarly reported that adolescent mothers were ten times more likely to have obtained only a primary level of education [19]. Our findings, along with those of previous literature, emphasize the importance of empowering girls to pursue and complete their education.

Over half (64%) of Ugandans reported that they were not satisfied with the government's efforts to minimize disruptions to education during the pandemic [37]. While limited data is available, preliminary research has found that enrollment rates among all students dropped by 31% once schools reopened, and young girls were less likely to return to school than their male counterparts [38]. The educational disruption created by the pandemic coupled with the low rate of return to schools points to the need for the Ugandan government to adopt new strategies. One meta-analysis of education initiatives in LMICs determined that successful actions to improve student learning and retention include improved teacher training, increasing the availability of computer and technology materials, modifying sizes of learning groups, and offering performance incentives [40]. Additional high-investment initiatives include cash transfer programs, developing new schools and infrastructure, and improving school management [39, 40]. Allocating a portion of the educational budget to small-scale initiatives may prove effective in improving education retention and completion rates as Uganda emerges from the pandemic, which in turn may reduce rates of adolescent pregnancy. It may be beneficial to begin by targeting adolescents who did not return to school after the lockdown was lifted, and should also include girls who became pregnant during the lockdown. Efforts should be developed around the specific needs of these adolescents and ensure they have systems in place to support the completion of their education, including political, financial, and social support structures [41].

Violence within the physical environment

Our findings also highlight the importance of the physical environment that adolescents occupy. While school environments were deemed relatively safe by study participants, communities were not perceived to provide the same levels of protection, which agrees with the findings from our previous work [42]. Our previous research noted diminishing community protective factors where previously in traditional African society, a child's wellbeing was a concern of an extended family or community. However, due to increasing modernity, these protective structures have weakened as the nuclear family has become more common, further exposing girls to violence and limited social support [15]. These perceptions of community safety not only support the value of keeping girls in school but also highlight the clear need for better child protective services in local communities. Sexual abuse, domestic violence, and community crime are too common an experience among adolescents – especially young girls – and these issues must be addressed to make communities a safe space for adolescents when they are not in a school setting.

Organizational-level efforts have identified increased policing and neighborhood watch efforts as having a modest to strong effect in preventing and suppressing violence against women (VAW) [39]. However, many of our participants cited barriers to addressing adolescent pregnancy related to corruption within law enforcement agencies, as well as the high costs associated with these efforts. As such, these tertiary-level interventions may not prove as effective or sustainable as community-based approaches that seek to challenge prevalent inequitable gender norms at the community level.

The physical environment that adolescents occupy is shaped by the larger cultural environment [15]. Traditional beliefs are widely prevalent in Uganda and often reinforce patriarchal ideologies. For instance, a study by Farago et al. found that the majority of participants viewed certain behaviors to be unacceptable for women, including disagreeing with her husband, deciding not to have children, asking for a divorce, or saying no to sex [43]. Vu et al. similarly reported that the large majority of adolescents surveyed believed that women should tolerate violence to keep their families together [44]. These attitudes toward women reinforce harmful stereotypes and normalize VAW. Thus, community-based efforts are needed to change prevailing attitudes and eliminate harmful gender norms to create sustainable change in

Content courtesy of Springer Nature, terms of use apply. Rights reserved.

addressing adolescent pregnancy within communities. A qualitative study found that positive community action could be stimulated to address VAW by creating designated spaces for community members to discuss and learn about the topic, establishing positive role models in leaders against VAW, and achieving a community perception of VAW that establishes it as a problem worthy of community intervention [45]. Further studies have found that community-level or group-based interventions reduced the odds of women experiencing intimate partner violence [46, 47]. Similar efforts should be adopted by the Ugandan government to protect adolescents and young girls in village and community settings.

SRH access

SRH education and access to services also remain a challenge in Uganda. With over 82% of the population belonging to a Christian religion [48], conservative and/or traditional views often dominate the discourse, advocating against standardized SRH education for young people. This often leads to limited parent-child communication about SRH topics. Parents often lack sufficient knowledge and skills to communicate SRH with their children, are uncomfortable in discussing such subjects, or use fear-based approaches which do not reinforce positive behavioral change among adolescents [49, 50]. Furthermore, there is often insufficient sexual health education offered in school programs, resulting in a limited understanding of vital SRH topics [51]. For instance, a study by Sabrina et al. found that only 13% of girls could answer questions about SRH with high accuracy, and girls who had been pregnant as adolescents scored lower than their counterparts [52]. Resulting from this limited education, adolescents lacked vital information about basic SRH knowledge or protection from sexual abuse that may have protected them when they were sent to their villages.

Our findings also point to the need to address SRH services at health facilities. Most health facilities in Uganda from level II to IV as well as hospitals offer family planning services, including education, counseling, and contraceptives, although long-term and permanent methods are mostly available at level IV and hospital levels. However, as multiple participants discussed, these services are oriented toward older or married women and limited youth-friendly SRH services exist. One study investigating youth-friendly SRH services in the Wakiso district reported similar and additional barriers including long travel distances, limited separate space for adolescents, and insufficient supplies and equipment [53]. As health facilities may be the only way for some adolescents to receive SRH sensitization and resources, it is vital to limit barriers to access to these services. Multiple studies and systematic reviews have found that key features of youth-friendly SRH services include accessibility (e.g. distance, wait times), staff competency and characteristics (e.g. friendliness, knowledge, ability to talk to young people), and confidentiality and privacy, among other factors [54–56]. Utilization can be further stimulated by involving community outreach initiatives and health education [57]. These principles should serve as the foundation for establishing new youth-friendly services in Uganda. For example, SRH services could be expanded to be offered at Level III and II health facilities to improve accessibility, and staff members should be sufficiently trained on youth interaction and privacy practices. More accessible, youth-oriented SRH services will help to reduce stigma, improve knowledge, and ultimately reduce rates of adolescent pregnancy in communities.

Limitations

This study has several limitations. First, the purposive sampling method used to recruit participants may introduce selection bias into the research, as selected participants may have been more accessible or willing to discuss SRH topics and thus report different experiences than their counterparts. Second, this study is limited to a specific geographic region in Southwestern Uganda. Thus, these findings may not be reflected in different geographical contexts across the country or sub-Saharan African region more generally. Third, this study relied on stakeholders describing their personal experiences, which may result in recall bias, and social pressures may have influenced participants' responses within the FGDs, heightening the potential presence of social desirability bias. To limit these types of biases, we utilized experienced research assistants who were similar in age and were the same gender as the study participants they were interviewing, which made adolescents feel at ease in communicating with them. We also had relevant probes to ensure consistency and clarity regarding dates of occurrence of events to help minimize recall bias.

Conclusion

While the risk factors associated with adolescent pregnancy have been widely explored across the globe, limited research has evaluated the impact of the COVID-19 pandemic on this global health problem. Using the socioecological model, our research found that the global pandemic exacerbated many pre-existing risk factors of adolescent pregnancy across the community and organizational, interpersonal, and individual levels, most notably including increased poverty and limited education. As adolescent pregnancy remains a significant challenge in Uganda, new strategies are needed to bolster protective factors at the organizational and community levels to mitigate the risks associated with adolescent pregnancy, such as adopting school reentry initiatives, addressing

Content courtesy of Springer Nature, terms of use apply. Rights reserved.

community violence, and creating youth-friendly SRH services. Our findings also have implications for future potential epidemics at the regional and global level and highlight to the need to better understand the intersection between SRH and infectious diseases. While adolescents are at high risk of experiencing early childbearing, protective factors must be established much earlier in the lifetime to reduce risk factors in the years leading up to adolescence.

Abbreviations

FGD	Focus group discussion
IDI	Individual in-depth interview
LMIC	Low-and-middle-income country
MRRH	Mbarara regional referral hospital
RHU	Reproductive health Uganda (NGO)
SRH	Sexual and reproductive health
VAW	Violence against women
VHT	Village health team

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12978-025-02127-6.

Supplementary Material 1.

Acknowledgements

We thank all the participants for their valuable time and contribution to the study. We would like to acknowledge Vivienne Kirabo, Nakitende Declan, Aheebwe Lennah, Monica Natukunda, Jamila Nsamba, Iqra Aheebwa, Timothy Taremwa, and Edmand Tumwesiga who participated in the data collection and Rinah Marlone Arinaitwe who designed the database for data collection. We also thank the University of Virginia Center for Global Health Equity for their support of Ms. Lyon's work on this project.

Authors' contributions

SEL and EK drafted the manuscript. EK, VNN, and OI, designed and implemented the study and provided feedback on the thematic and statistical analysis. SEL, EK, DA, and VNN completed qualitative content analysis. DA, DA, and SN participated in the design and implementation of the study. RR reviewed the initial draft of the manuscript. All authors took part in reviewing the final manuscript.

Funding

This study was funded by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ, 81281920). SEL received a travel grant from the University of Virginia Center for Global Health Equity.

Data availability

The datasets analyzed during the current study are not publicly available due to protecting participants' privacy throughout discussions of sensitive information but are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate

The study was performed following the study protocol, the Declaration of Helsinki, and any other applicable national and other regulatory guidelines. Ethical approval was received from the Mbarara University Research Ethics Committee (REF: MUST-2022-656). The Ugandan ethics committees accorded a waiver of parental consent for adolescents less than 18 years, as they were considered emancipated minors who were able to provide informed consent on their own. Written informed consent was obtained from participants after a thorough explanation of the study.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Author details

[1]Department of Public Health Sciences, University of Virginia, Charlottesville, VA, USA
[2]Department of Health and Wellbeing, African Population and Health Research Center, Nairobi, Kenya
[3]Department of Human Development and Relational Sciences, Mbarara University of Science and Technology, Mbarara, Uganda
[4]Department of Planning and Governance, Mbarara University of Science and Technology, Mbarara, Uganda
[5]Department: Digital Health, Deggendorf Institute of Technology, European Campus Rottal-Inn, Bayern, Germany
[6]Department of Clinical Research, Soar Research Foundation, Mbarara, Uganda
[7]Institute of Infectious Diseases and Tropical Medicine, LMU University Hospital, LMU Munich, Munich, Germany
[8]German Centre for Infection Research (DZIF), Partner Site Munich, Munich, Germany

Received: 7 November 2024 / Accepted: 10 August 2025
Published online: 14 October 2025

References

1. Adolescent pregnancy [Internet]. United Nations Population Fund. 2017. Available from: https://www.unfpa.org/adolescent-pregnancy. Cited 2024 Aug 8.
2. Early childbearing and teenage. pregnancy rates by country. UNICEF DATA. 2024. Available from: https://data.unicef.org/topic/child-health/adolescent-health/. Cited 2024 Aug 7.
3. Crooks R, Bedwell C, Lavender T. Adolescent experiences of pregnancy in low-and middle-income countries: a meta-synthesis of qualitative studies. BMC Pregnancy Childbirth. 2022;22:702.
4. Boden JM, Fergusson DM, John Horwood L. Early motherhood and subsequent life outcomes. J Child Psychol Psychiatry. 2008;49(2):151–60.
5. Gibb SJ, Fergusson DM, Horwood LJ, Boden JM. Early motherhood and Long-Term economic outcomes: findings from a 30-Year longitudinal study. J Res Adolescence. 2015;25(1):163–72.
6. Urdinola BP, Ospino C. Long-term consequences of adolescent fertility: the Colombian case. Demographic Res. 2015;32:1487–518.
7. Demographic Uganda, Survey Health. Kampala. Uganda: Uganda Bureau of Statistics; 2022. p. 2023.
8. Nove A, Matthews Z, Neal S, Camacho AV. Maternal mortality in adolescents compared with women of other ages: evidence from 144 countries. Lancet Global Health. 2014;2(3):e155–64.
9. How did Uganda respond to the COVID-19. pandemic? | Exemplars in Global Health. 2022. Available from: https://www.exemplars.health/emerging-topics/ecr/uganda/how-did-uganda-respond-to-the-covid-19-pandemic. Cited 2024 Aug 7.
10. Bucholz K. The longest school closures of the pandemic. Statista Daily Data. 2022. Available from: https://www.statista.com/chart/26670/school-closures-covid-19. Cited 2024 Aug 7.
11. Research findings on the situation of, and impact of COVID 19 on school going girls and young women in Uganda. Forum for African Women Educationalists (FAWE) Uganda Chapter. 2021.
12. Musinguzi M, Kumakech E, Auma AG, Akello RA, Kigongo E, Tumwesigye R, et al. Prevalence and correlates of teenage pregnancy among in-school teenagers during the COVID-19 pandemic in Hoima district Western Uganda–A cross sectional community-based study. PLoS ONE. 2022;17(12):e0278772.
13. Okalo P, Arach AA, Apili B, Oyat J, Halima N, Kabunga A. Predictors of unintended pregnancy among adolescent girls during the second wave of COVID-19 pandemic in Oyam district in Northern Uganda. Open Access J Contracept. 2023;14:15–21.
14. Alunyo JP, Mukunya D, Napyo A, Matovu JKB, Okia D, Benon W, et al. Effect of COVID-19 lock down on teenage pregnancies in Northern uganda: an interrupted time series analysis. Reproductive Health. 2023;20(1):163.

Content courtesy of Springer Nature, terms of use apply. Rights reserved.

15. Nyakato VN, Kools S. 'It takes a village to Raise a child': loss of Ubuntu led to an escalation of teenage pregnancy during the COVID-19 lockdown in Uganda. Cult Health Sex. 2025; 0(0):1–13.
16. Batiibwe MSK, Nannyonga BK, Nalule RM, Mbabazi FK, Kyomuhangi A, Mbabazi DS, et al. Factors related to teenage pregnancy during the COVID-19 pandemic: a case of selected villages in Mayuge district, Eastern Uganda. SN Soc Sci. 2023;3(7):103.
17. Chung HW, Kim EM, Lee JE. Comprehensive Understanding of risk and protective factors related to adolescent pregnancy in low- and middle-income countries: A systematic review. J Adolesc. 2018;69:180–8.
18. Kassa GM, Arowojolu AO, Odukogbe AA, Yalew AW. Prevalence and determinants of adolescent pregnancy in africa: a systematic review and Meta-analysis. Reprod Health. 2018;15(1):195.
19. Chemutai V, Musaba MW, Amongin D, Wandabwa JN. Prevalence and factors associated with teenage pregnancy among parturients in Mbale regional referral hospital: a cross sectional study. Afr Health Sci. 2022;22(2):451–8.
20. Namiiro G. Factors influencing teenage preganancy among, girls aged 13–19 years attending antenental care at NKONI health centre III Lwengo districT. A descriptive cross-sectional study. Student's J Health Res Afr. 2023;4(9):16–16.
21. Ochen AM, Chi PC, Lawoko S. Predictors of teenage pregnancy among girls aged 13–19 years in uganda: a community based case-control study. BMC Pregnancy Childbirth. 2019;19(1):211.
22. Namutebi P, Otieno JO, Dyamuhaki D, A CROSS-SECTIONAL STUDY ABOUT FACTORS, ASSOCIATED WITH TEENAGE PREGNANCY AMONG TEENAGE GIRLS AT KAYUNGA HOSPITAL KAYUNGA DISTRICT. Student's J Health Res Afr. 2024;5(3):8–8.
23. Mbabazi C, Kintu A, Asiimwe JB, Ssekamatte JS, Shah I, Canning D. Proximate and distal factors associated with the stall in the decline of adolescent pregnancy in Uganda. BMC Public Health. 2021;21(1):1875.
24. Bronfenbrenner U. Toward an experimental ecology of human development. Am Psychol. 1977;32(7):513–31.
25. Bronfenbrenner U. Ecological systems theory. Encyclopedia of psychology. Volume 3. Washington, DC, US: American Psychological Association; 2000. pp. 129–33.
26. Ramachandran R, Namatovu S, Atwine D, Tumuhairwe J, Nyakato VN, Kemigisha E, et al. Repeat adolescent pregnancies in Southwestern uganda: A cross-sectional study. Women's Health. 2024;20:17455057241302449.
27. Yin RK. Case Study Research and Applications: Design and Methods. SAGE; 2017. p. 511.
28. Creswell JW, Poth CN. Qualitative Inquiry and Research Design: Choosing Among Five Approaches. SAGE; 2017. p. 488.
29. Adolescent health. World Health Organization. Available from: https://www.who.int/health-topics/adolescent-health. Cited 2024 Oct 23.
30. Miiro G, Rutakumwa R, Nakiyingi-Miiro J, Nakuya K, Musoke S, Namakula J, et al. Menstrual health and school absenteeism among adolescent girls in Uganda (MENISCUS): a feasibility study. BMC Women's Health. 2018;18(1):4.
31. Tanton C, Nakuya K, Kansiime C, Hytti L, Torondel B, Francis SC, et al. Menstrual characteristics, menstrual anxiety and school attendance among adolescents in uganda: a longitudinal study. BMC Women's Health. 2021;21(1):410.
32. Creswell JW. Qualitative inquiry and research design: Choosing among five approaches, 2nd ed. Thousand Oaks, CA, US: Sage Publications, Inc; 2007. xvii, 395 p. (Qualitative inquiry and research design: Choosing among five approaches, 2nd ed).
33. Agardh A, Cantor-Graae E, Östergren PO, Youth. Sexual Risk-Taking behavior, and mental health: a study of university students in Uganda. Int J Behav Med. 2012;19(2):208–16.
34. Lundberg P, Rukundo G, Ashaba S, Thorson A, Allebeck P, Östergren PO, et al. Poor mental health and sexual risk behaviours in uganda: A cross-sectional population-based study. BMC Public Health. 2011;11(1):125.
35. Nyakato VN, Kemigisha E, Mugabi F, Namatovu S, Michielsen K, Kools S. Pregnant and abandoned: qualitative assessment of COVID-19 pandemic educational challenges faced by pregnant college students in Uganda. Gend Educ. 2024;36(1):1–18.
36. Wado YD, Sully EA, Mumah JN. Pregnancy and early motherhood among adolescents in five East African countries: a multi-level analysis of risk and protective factors. BMC Pregnancy Childbirth. 2019;19(1):59.
37. Stevenson S, Amalo S. Ugandans give government mixed marks on education, see it as a priority to address. Afrobarometer; 2024. Report No.: 929.
38. Kahunde R, Ogwang A, Maya D, Lakuma CP, Sserunjogi B. School reopening in Uganda after the COVID-19 lockdowns: preparedness, attrition, challenges and prospects for recovery – Economic Policy Research Centre. Economic Policy Research Centre. 2022. Available from: https://eprcug.org/publication/school-reopening-in-uganda-after-the-covid-19-lockdowns-preparedness-attrition-challenges-and-prospects-for-recovery/. Cited 2025 Jul 14.
39. Snilstveit B, Stevenson J, Phillips D, Vojtkova M, Gallagher E, Schmidt T, et al. Interventions for improving learning outcomes and access to education in low- and middleincome countries: A systematic review. International Initiative for Impact Evaluation; 2015.
40. Anand G, Atluri A, Crawfurd L, Pugatch T, Sheth K. Improving school management in low and middle income countries: A systematic review. Econ Educ Rev. 2023;97:102464.
41. Opok S. Ensuring school reentry for pregnant girls and teenage mothers in Uganda. Brookings. 2024. Available from: https://www.brookings.edu/articles/ensuring-school-reentry-for-pregnant-girls-and-teenage-mothers-in-uganda/. Cited 2024 Aug 8.
42. Nyakato VN, Achen C, Chambers D, Kaziga R, Ogunnaya Z, Wright M et al. Very young adolescent perceptions of growing up in rural southwest Uganda: Influences on sexual development and behavior. African Journal of Reproductive Health. 2021;25(2). Available from: https://www.ajrh.info/index.php/ajrh/article/view/2680. Cited 2024 Sep 4.
43. Farago F, Eggum-Wilkens ND, Zhang L. Ugandan adolescents' descriptive gender stereotypes about domestic and recreational activities, and attitudes about women. Youth Soc. 2021;53(5):723–44.
44. Vu L, Pulerwitz J, Burnett-Zieman B, Banura C, Okal J, Yam E. Inequitable gender norms from early adolescence to young adulthood in uganda: tool validation and differences across age groups. J Adolesc Health. 2017;60(2S2):S15–21.
45. Lowe H, Brown L, Ahmad A, Daruwalla N, Gram L, Osrin D, et al. Mechanisms for community prevention of violence against women in low- and middle-income countries: A realist approach to a comparative analysis of qualitative data. Soc Sci Med. 2022;305:115064.
46. Leight J, Cullen C, Ranganathan M, Yakubovich A. Effectiveness of community mobilisation and group-based interventions for preventing intimate partner violence against women in low- and middle-income countries: A systematic review and meta-analysis. J Glob Health . 2023; 13:04115.
47. Yount KM, Krause KH, Miedema SS. Preventing gender-based violence victimization in adolescent girls in lower-income countries: systematic review of reviews. Soc Sci Med. 2017;192:1–13.
48. 2019 Report on International Religious Freedom. Uganda [Internet]. US Department of State; 2019. Available from: https://www.state.gov/reports/2019-report-on-international-religious-freedom/uganda/. Cited 2024 Aug 7.
49. Achen D, Nyakato VN, Akatukwasa C, Kemigisha E, Mlahagwa W, Kaziga R, et al. Gendered experiences of Parent-Child communication on sexual and reproductive health issues: A qualitative study employing community-Based participatory methods among primary caregivers and community stakeholders in rural South-Western Uganda. Int J Environ Res Public Health. 2022;19(9):5052.
50. Bastien S, Kajula L, Muhwezi W. A review of studies of parent-child communication about sexuality and HIV/AIDS in sub-Saharan Africa. Reprod Health. 2011;8:25.
51. Kemigisha E, Bruce K, Nyakato VN, Ruzaaza GN, Ninsiima AB, Mlahagwa W, et al. Sexual health of very young adolescents in South Western uganda: a cross-sectional assessment of sexual knowledge and behavior. Reprod Health. 2018;15:148.
52. Sabrina BK, Joseph R, Flavia N, Theresa PW, Fatuma N, Lorraine O, et al. Accuracy of sexual and reproductive health information among adolescent girls: A Cross-Sectional study. J Pediatr Adolesc Gynecol. 2023;36(3):291–7.
53. Bukenya JN, Mulogo E, Kibira SPS, Muhumuza C, Atuyambe LM. Health facilities' readiness to provide friendly reproductive health services to young people aged 10–24 years in Wakiso district, Uganda. Glob J Reprod Med. 2017;2(3):555588.
54. Mazur A, Brindis CD, Decker MJ. Assessing youth-friendly sexual and reproductive health services: a systematic review. BMC Health Serv Res. 2018;18(1):216.
55. Brittain AW, Williams JR, Zapata LB, Pazol K, Romero LM, Weik TS. Youth-Friendly family planning services for young people. Am J Prev Med. 2015;49(2 Suppl 1):S73–84.
56. Geary RS, Webb EL, Clarke L, Norris SA. Evaluating youth-friendly health services: young people's perspectives from a simulated client study in urban South Africa. Global Health Action. 2015;8(1):26080.

Content courtesy of Springer Nature, terms of use apply. Rights reserved.

57. Ninsiima LR, Chiumia IK, Ndejjo R. Factors influencing access to and utilisation of youth-friendly sexual and reproductive health services in sub-Saharan africa: a systematic review. Reprod Health. 2021;18(1):135.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Content courtesy of Springer Nature, terms of use apply. Rights reserved.

Terms and Conditions

Springer Nature journal content, brought to you courtesy of Springer Nature Customer Service Center GmbH (“Springer Nature”).
Springer Nature supports a reasonable amount of sharing of research papers by authors, subscribers and authorised users (“Users”), for small-scale personal, non-commercial use provided that all copyright, trade and service marks and other proprietary notices are maintained. By accessing, sharing, receiving or otherwise using the Springer Nature journal content you agree to these terms of use (“Terms”). For these purposes, Springer Nature considers academic use (by researchers and students) to be non-commercial.
These Terms are supplementary and will apply in addition to any applicable website terms and conditions, a relevant site licence or a personal subscription. These Terms will prevail over any conflict or ambiguity with regards to the relevant terms, a site licence or a personal subscription (to the extent of the conflict or ambiguity only). For Creative Commons-licensed articles, the terms of the Creative Commons license used will apply.
We collect and use personal data to provide access to the Springer Nature journal content. We may also use these personal data internally within ResearchGate and Springer Nature and as agreed share it, in an anonymised way, for purposes of tracking, analysis and reporting. We will not otherwise disclose your personal data outside the ResearchGate or the Springer Nature group of companies unless we have your permission as detailed in the Privacy Policy.
While Users may use the Springer Nature journal content for small scale, personal non-commercial use, it is important to note that Users may not:

1. use such content for the purpose of providing other users with access on a regular or large scale basis or as a means to circumvent access control;
2. use such content where to do so would be considered a criminal or statutory offence in any jurisdiction, or gives rise to civil liability, or is otherwise unlawful;
3. falsely or misleadingly imply or suggest endorsement, approval , sponsorship, or association unless explicitly agreed to by Springer Nature in writing;
4. use bots or other automated methods to access the content or redirect messages
5. override any security feature or exclusionary protocol; or
6. share the content in order to create substitute for Springer Nature products or services or a systematic database of Springer Nature journal content.

In line with the restriction against commercial use, Springer Nature does not permit the creation of a product or service that creates revenue, royalties, rent or income from our content or its inclusion as part of a paid for service or for other commercial gain. Springer Nature journal content cannot be used for inter-library loans and librarians may not upload Springer Nature journal content on a large scale into their, or any other, institutional repository.
These terms of use are reviewed regularly and may be amended at any time. Springer Nature is not obligated to publish any information or content on this website and may remove it or features or functionality at our sole discretion, at any time with or without notice. Springer Nature may revoke this licence to you at any time and remove access to any copies of the Springer Nature journal content which have been saved.
To the fullest extent permitted by law, Springer Nature makes no warranties, representations or guarantees to Users, either express or implied with respect to the Springer nature journal content and all parties disclaim and waive any implied warranties or warranties imposed by law, including merchantability or fitness for any particular purpose.
Please note that these rights do not automatically extend to content, data or other material published by Springer Nature that may be licensed from third parties.
If you would like to use or distribute our Springer Nature journal content to a wider audience or on a regular basis or in any other manner not expressly permitted by these Terms, please contact Springer Nature at

onlineservice@springernature.com