Research Square

Preprints are preliminary reports that have not undergone peer review.
They should not be considered conclusive, used to inform clinical practice,
or referenced by the media as validated information.

Access to Healthcare amongst Adolescent Girls and Young Women in Ugandan Artisanal and Small-Scale Mining Communities

Hanna Chidwick
McMaster University
Sabahat Balaban
McMaster University
Betty Kwagala
Makerere University
David Owiredu
University of Ghana
Lydia Kapiriri
kapirir@mcmaster.ca

McMaster University

Research Article

Keywords: artisanal and small-scale mining, adolescent girls and young women, health, access, Tanahashi model

Posted Date: March 28th, 2025

DOI: https://doi.org/10.21203/rs.3.rs-6130759/v1

License: This work is licensed under a Creative Commons Attribution 4.0 International License. Read Full License

Additional Declarations: No competing interests reported.

Version of Record: A version of this preprint was published at International Journal for Equity in Health on June 13th, 2026. See the published version at https://doi.org/10.1186/s12939-025-02717-7.

Abstract

Background

Artisanal small scale-mining (ASM) provides work to many adolescent girls and young women (AGYW) in Uganda. AGYW working in ASM face a unique set of health challenges such as exposure to toxins and increased vulnerability to contract HIV and sexually transmitted infections. AGYW in ASM are more vulnerable and less likely to access care given their remoteness and work in the informal sector, however their access to care, including SRH care, is not well understood or documented making it difficult to address despite Uganda's commitment to Universal Health Coverage (UHC). This paper aims to explore the current healthcare access challenges and bottlenecks amongst Ugandan AGYW working in ASM communities.

Methods

This study was conducted in Busia, Mubende, and Namayingo communities through a mixed methods approach. We completed in depth interviews and a survey with AGYW, focus group discussions with adolescent boys, older women, and AGYW, key informant interviews with local leaders and policymakers. Data were analyzed using the Tanahashi Model on access to care.

Results

Despite some variation between communities, results show that generally, access to healthcare for AGYW working in ASM communities is a challenge although some availability and accessibility of health facilities and care exists. All participants discussed challenges such as lack of personnel at facilities, lack of youth friendly services, limited resources, distance to facilities, cost of care, and negative provider attitudes especially towards sexual and reproductive health care for unmarried AGYW. Despite these challenges, participants reiterated the use of most healthcare services available amongst AGYW for family planning and treatment for sickness.

Conclusions

Findings indicate that despite some availability, accessibility, acceptability, and contact coverage, there is significant opportunity to strengthen health systems and especially sexual and reproductive health care available to AGYW in ASM communities in Uganda towards greater UHC and ultimately health equity. Mitigating the inequities in accessing care amongst ASM AGYW involves processes such as formalization, advocacy and rights-based accountability, and leveraging existing initiatives proposed in national Ugandan health policies.

BACKGROUND

Adolescents working in the artisanal and small-scale mining (ASM) sector in Uganda face a unique set of inequities which impact their health, including exposure to biochemical hazards, physical remoteness, limited health infrastructure, lack of occupational health standards, and unequal cultural norms (1–6). Despite these inequities and challenges, the ASM sector is a common workplace for many adolescents, including vulnerable adolescent girls and young women (AGYW) in Uganda. ASM is a form of low-tech, labour-intensive mineral processing commonly operating outside of legal regulations to extract minerals such as gold (3, 7, 8). These informal practices are usually conducted using hand tools by individuals or small groups (3, 9). In Uganda it is estimated that ASM revenue generation is 5% of the Gross Domestic Product (GDP) (2, 9). The sector, which is primarily located in Mubende, Karamoja, Namayingo, Busia, Kassanda and parts of Western Uganda, creates approximately 300,000 jobs, 40,000 of which are specifically in gold mining (3, 9). ASM has been particularly important for women and children as the sector provides a source of income to these vulnerable groups. In fact, 40–50% of miners working in ASM mines in Africa are women (5). Furthermore, approximately 2 million children and adolescents aged 5 to 17 years are involved in child labour in Uganda and about 51% of these children work in exploitative and hazardous work environments such as mines (10).

The impacts of ASM are somewhat contested in the literature. Some scholars support the sector as they argue that it contributes to the social and economic development of people living in impoverished conditions (3). On the other hand, scholars highlight the adverse environmental, health, and safety concerns that arise due to the unlicensed, unregulated, and, in most cases, illegal operations of these mines (3, 7). For example, a main chemical mine workers are often exposed to is mercury through the processing of gold which results in various health challenges and disease (1, 5, 9, 11). In addition to direct exposure to toxins and work hazards, adolescents in particular also experience heightened inequities and thus vulnerability in ASM communities leading to health challenges such as early sexual debut, early and unintended pregnancy, high HIV transmission, and sexual transmitted infections (12, 13). Similar to the literature, there are both positive and negative impacts of ASM in relation to the Sustainable Development Goals (SDGs). For example, ASM impacts both SDG 3 (Good Health and Well-being) and SDG 8 (Decent Work and Economic Growth) through providing a source of income to access healthcare and contrastingly, contributing to the threat of disease and limited access to care (1, 2, 6, 14). There are poor occupational health safeguards and health concerns that are significantly more prevalent in ASM due to informality and lack of regulation in these communities (2, 5). Not addressing people's health in ASM communities, limits achievements towards SDG 3 and perpetuates health inequities (1, 2). Addressing the health of adolescent populations, especially AGYW, in these communities is of particular concern, as AGYW are often more vulnerable and susceptible to several different health conditions.

In Uganda, healthcare is decentralized whereby districts are in charge of healthcare delivery and are overseen by the Ministry of Health (15, 16). Private and non-governmental organizations (NGOs), religious groups, community medicine distributors, traditional healers, and drug shops also provide services (17, 18). Health services range from health prevention, promotion, education, testing, and reproductive care to complex services such as surgery, and consist of several levels of care – primary level care consists of Health Centres II (HCII), Health Centres III (HCIII), Health Centres IV (HC IV), and lower units Village Health Teams (VHT); secondary level consists of a network of district and rural hospitals; tertiary level includes all Referral Hospitals located in regional capitals; and, quaternary or the highest level care includes four national hospitals in Mulago, Kawempe, Kiruddu, and Butabiika (18, 19).

Currently, Uganda has made a commitment to Universal Health Coverage (UHC) delivered through the Uganda National Minimum Health Care Package (UNMHCP) which includes childhood immunization, health promotion and education, treatment, and control of common infectious diseases like HIV and tuberculosis, as well as control of communicable and non-communicable diseases (20). Despite this commitment to UHC, most recent data show that the number of individuals within a five-kilometer distance of a healthcare facility who can access the facility is low resulting in distance and transportation as two key challenges in access healthcare (20, 21). According to the latest data from the Uganda Demographic Health Survey, 41% of women aged 15–49 years across the country have problems accessing healthcare due to the long distances to health facilities (20). In addition, access to care challenges in Uganda include inadequate care, dysfunctional facilities, limited infrastructure and resources, and lack of staff to provide care (20). Amongst adolescents and AGYW in particular, access to care is generally discussed in terms of SRH care specifically (22–26). Barriers to accessing care include lack of privacy, limited youth-friendly services, stigma, and limited resources/testing for SRH (25).

AGYW in ASM are more vulnerable and less likely to access care given their remoteness and work in the informal sector, yet their access to care, including SRH care, is not well understood or documented making it difficult to address despite Uganda's commitment to UHC. Using the Tanahashi Model on access to care (27), this paper aims to explore and outline the current health access challenges and bottlenecks amongst Ugandan AGYW working in ASM communities.

METHODS

As part of a larger mixed-methods study on health and economic resilience amongst AGYW in ASM communities (28), this paper used both quantitative and qualitative analysis of survey responses, focus group discussions, and in-depth interviews from AGYW in Uganda (Busia, Namayingo, Kassanda, Mubende). The paper also includes perspectives from older women, adolescent boys, and key informants (i.e., community leaders, policymakers, and government officials) in the study communities to gather a wide perspective of the AGYW experiences in accessing healthcare.

The study was approved by the research ethics committees in three countries – Uganda (The AIDS Support Organization-2022-169 and registered by the Uganda National Council for Science and Technology, UNCST – SS149ES); Ghana, (University of Ghana Ethics Committee for the Humanities (ECH109/22–23)); and, Canada (McMaster University Research Ethics Board, MREB #6257). All participation was voluntary, and all participants provided informed consent.

Data collection

The quantitative survey included 809 AGYW in Uganda who experience exacerbated vulnerability and challenges in ASM communities. We used the Yamane's (29) formula to determine the sample size, taking into consideration the design effect of 2 and anticipated response rate of 98%. We included young women aged 20–24 because most adolescent young women involved in ASM communities were within that range and had started work as younger adolescents. AGYW were eligible to participate if they either directly worked in the mines or provided services to ASM workers (i.e., food provision etc.). Data was collected through the Kobo Collect tool using a pre-tested survey questionnaire that was translated into the relevant local languages. Questions asked AGYW about their experience accessing healthcare services, where they access these services and for what health challenges.

Qualitative data collection was completed through in-depth interviews with AGYW, focus groups discussions with AGYW, adolescent boys, and older women, and key informant interviews with leaders and policymakers. Relevant questions across qualitative data collection methods for this analysis focused on AGYW's experiences accessing healthcare such as what kind of healthcare was commonly used and where this was provided.

In depth interviews with AGYW

We analyzed 8/10 in depth interviews with AGYW (2 in Busia, 3 in Kassanda, 2 in Mubende, and 1 in Namayingo). Trained adolescent peer research assistants conducted interviews with AGYW including those that were pregnant, have children, single, and married. These interviews aimed to gather in-depth sensitive information on AGYW's experiences and opinions that would not have been possible to collect in a group context. Interviews at community level were conducted in a private place and in the relevant local languages.

Key informant interviews

Key informant interviews were conducted at national and subnational levels. We conduced a total of 27 key informant interviews 4 from the national level, 9 in Mubende, 6 in Busia, 8 in Namayingo. Participants were from relevant ministries, national level NGOs and multilateral organizations. At subnational levels, participants included relevant district officers, NGO representatives, ASM association leaders, health workers and local leaders. Key informants provided perspectives on adolescents' health access experiences.

Focus group discussions

We conducted 8 focus group discussions (FGD) with AGYW (one each in Busia, Namayingo, and Mubende), older women (one each in Namayingo, Busia, and Mubende), and adolescent boys (one each in Namayingo and Mubende). These discussions were to gather wider community perspectives on AGYW's experiences accessing healthcare. Most of the adolescent boys who participated worked in the mines and made their main sources of income from gold extraction. AGYW participants largely worked in ore processing and provision of services in mining communities (i.e., food, salons etc.).

Analysis

The analysis was guided by Tanahashi's Model(27) which is used to identify bottlenecks in health service coverage. Health service coverage is defined as the proportion of the target population that can receive or have received the service (27). The model is a well-established and has been used in similar contexts. It also provides a comprehensive framework to understand complex aspects of coverage at a community level, and an opportunity to consider these aspects in terms of equity. The model describes five aspects of coverage namely - *availability*, *accessibility*, *acceptability*, *contact*, and *effectiveness* (see Table 1).

Table 1
Overview of Tanahashi model (27, 30)

Aspect of coverage	Description
Availability	Availability of resources (i.e., personnel, facilities, drugs) determines the extent to which a service can be provided
Accessibility	Population(s) who can use or access the service – is the service geographically accessible? Located within reasonable reach of people? Is financially affordable?
Acceptability	People who can access the service, are willing to use it and find it acceptable for example in terms of costs, waiting time, beliefs
Contact	People who have been in contact with the service provider and have utilized the service.

Quantitative surveys responses were synthesized and analyzed descriptively using STATA. Qualitative data were transcribed verbatim, translated into English when necessary and thematically analyzed first, through line-by-line coding of transcripts and then clustered based on emerging themes. Both qualitative and quantitative data were then further analyzed and synthesized based on the identified aspects of coverage identified in the Tanahashi access to care model (see Table 1) (27, 30). Based on the data collected, we analyzed availability, accessibility, acceptability, and contact coverage but did not analyze effectiveness of coverage as it was out of the scope of this study.

RESULTS

The results section is organized according to the coverage aspects in Tanahashi's model.

Availability Coverage

Key informants from Busia described the distribution of health centres in their districts noting that while some health centres do exist the quality of the health services is limited. Quality is impacted by the low capacity of facilities to meet the needs of the target population due to challenges such as lack of personnel and resources and as a result, miners often resort to private clinics.

"… when you look at the population density, the total population it is overwhelming for a Health Centre II and also, we have a few of the private health facilities in terms of clinics." (Key informant − 1, Busia)

"…health services are mainly available in the high-level facilities like Health Centre III and Health Centre IV but not in the one we have here, if you go to that health facility beyond 11:00 am you will not find any health personnel, the health facility will be locked. I remember when my child was in a terrible condition I rushed to that health facility at 1:30 pm and found it locked with no health personnel so I had to run back to the clinic where I got medical attention but expensively." (Adolescent mother − 1, Busia)

Focus group discussions with AGYW in Busia also noted the lack of services and resources. Participants explained that they often opt to use Health Centres that are farther away in the town and often provided by NGOs. One adolescent mother explained,

"It depends on the health facility you have gone to for example if it's like this health facility in Tiira you may not find adequate services because even getting a medical personnel at the health facility is a challenge, most of the time there are no drugs and the maternity services are not fully established, there is no labour suite, for maternity services we have to go to Red Cross (Busia HC IV) or Busitema Health Centre for those services." (Adolescent mother − 2, Busia)

"…I cannot fall sick and seek care from a clinic nearby, but move to Mubende, Mityana or Kampala where I am sure that they will give me proper treatment. And again, since these facilities [nearby] are slow, their drugs get expired, and they cannot throw them away but sell it to the people…. So I made a resolution that if there is any free treatment, I will never engage, and I did not even get the vaccine." (Older woman − 1, Mubende)

In terms of youth-friendly services, key informants noted that these services are non-existent in mining areas. One key informant explained,

“Actually, in the local governments those services [youth-friendly services] are majorly in the urban health facilities like Health Centre IV and above but Health Centre III and II these services are not there, [none existing], we have the VHTs who provide some youth-friendly services but I think they are not interested in the mines because there are no households there and there is also a possibility that even when they go there those people could be already in the mines.” (Key informant – 2, Busia)

However, 53% of AGYW in the survey indicated that adolescent friendly services are available at health centres. An adolescent mother in Busia explained that often the resources in Busitema Health Center IV were more readily available in comparison to the Health Centre II nearby.

“We do not have youth services in this Health Center but in Busitema Health Center there are youth services whereby there is some health personnel to speak and attend to only the youth and health services of all kinds offered to them, service like general consultation and treatment, pregnancy and family planning service, hygiene and HIV/ AIDS counseling, testing and treatment.” (Adolescent mother – 3, Busia)

Contrastingly, young single girls in Mubende and young married girls in Namayingo directly assert that youth-friendly services are available in their communities stating,

“[Family planning] are available and youth-friendly services are available.” (Adolescent girl – 1, Mubende)

“They [youth-friendly services] are available in clinics since most youths need those services.” (Married girl – 1, Namayingo)

Accessibility Coverage

Both physical and financial access to care was discussed by participants.

Physical Access

Key informants, in Busia especially, discussed the difficulty accessing health services due to the facilities with the requisite services being distant. Some key informants emphasized the importance of closer health facilities because of the high exposure to occupational and environmental hazards AGYW experience while working in the mines. While several different health centers and facilities exist in Busia, only two are within the vicinity of mines. The health facilities are ill equipped to handle chemical poisoning and accidents associated with mining.

“…the health facilities are not so many I think in that area we have just two which in many cases do not have a focal person to support such people and they do not even have the drugs or medicine for that…” (Key informant – 2, Busia)

A key informant in Mubende also reported challenges in accessing health facilities due to distance.

“Apart from going to the nearby clinics, we do not have any government health facility nearby. Butologo Health Centre III is very far it as around 5–7 km from here.” (Key informant – 3, Mubende)

Focus group participants similarly noted challenges in access based on distance – both AGYW from Namayingo and older women from Kassanda reported on how far these services are.

“Those kinds of services especially health services are very hard…they don’t exist…hospitals here are very far.” (Married girl – 1, Namayingo)

“[The facilities are] not here, [the facilities are] in Katutubo. It is about 1 mile [away]. It is Health Centre II, but they hope to elevate it.” (Older woman – 1, Kassanda)

Transport to health facilities was also reported as a challenge particularly in accessing family planning services during the COVID-19 pandemic.

“During COVID – 19 so many young women in the ASM could not have access to free family planning services because of the transport shortages and restricted movements yet the reliable health facility was a distance and there was no money for us to access family planning products from the private clinics so some of us ended up having unwanted pregnancies” (Adolescent mother – 4, Busia)

Despite variations in participant location, occupation, demographic profiles, and their roles in ASM communities, physical challenges such as distance and transport were consistently reported as a barrier to access healthcare.

Financial Access

Participants also shared that affordability is another barrier to accessing healthcare. Despite a commitment to UHC, results show that public healthcare facilities, although free, they do not always have the drugs forcing AGYW and those living in mining communities to opt for private for-profit clinics and drug shops where drugs can be bought at a cost. The concerns surrounding the financial burden of private clinics was consistent across study districts. One key informant in Mubende outlined this financial burden for AGYW.

“[For] those who go to drug shops, poverty sometimes hinders them from obtaining the services.” (Key informant – 4, Mubende)

Similarly, AGYW who participated in in-depth interviews expressed concerns about accessing resources in government hospitals and the importance of finances to access care.

“During [COVID-19], the major issue was money; the government hospitals were too complicated, so if one had money, all they had to do was go to the clinic and get help. Mostly those who had money found it easier to access medication.” (Adolescent girl – 1, Busia)

“No, I get [vaccination and medicine], but these government hospitals sometimes don't have medicine, then if you have money, you just go and buy medicine for your child to take.” (Adolescent girl – 1, Namayingo)

Focus group participants also noted the financial challenges to accessing healthcare. They discussed both the physical challenges such as long distances to facilities result in AGYW accessing private clinics at a financial cost. Some AGYW also explained that some youth-friendly services are available through private clinics despite its cost.

“Since most of [the youth-friendly services] are private, most services are paid for since government [facilities are] distant, if there is a chance for a medical drive [outreach], that is when women get a chance to go, but because its distant you must use money to go there, so some end up failing and sometimes you are there for a full day because you need government services and people are so many- remember it is one facility and at times you come back [without receiving] the services.” (Married girl – 2, Namayingo)

“When we don’t find better health services at the government health facility the only option is a private clinic which is in most cases expensive.” (Adolescent mother – 5, Busia)

Despite noted challenges in accessing healthcare both physically and financially, some focus group participants from Mubende, Namayingo and Kassanda indicated that both government health centers and private clinics were accessible as distances to facilities vary.

“The health center is not very far, it is a walkable distance, boda bodas can charge 1,000/= to the facility.” (Adolescent girl – 2, Mubende)

“We have health facilities like Health Centre II a government facility which is near the mining area and also the private clinics that offer health services to us.” (Adolescent mother – 6, Busia)

“Private clinics are very many, though we also have a government facility…not far from here.” (Married girl – 3, Namayingo)

“There are also community health services offered by [the] VHTs.” (Older woman – 2, Kassanda)

Other participants shared that youth-friendly services are also accessible in Mubende particularly.

“Youth-friendly services are provided in the clinics and at the health center though are mostly used by older women.” (Adolescent girl – 3, Mubende)

“Youth-friendly services are very accessible and very easy to get and it is no shame because you get used to it.” (Adolescent girl – 4, Mubende)

Acceptability Coverage

Respondents indicated reservations with healthcare services such as youth-friendly services in Uganda due to previous negative experiences with providers holding religious reservations to services and fear of side effects. Many participants discussed lack of acceptable youth-friendly, SRH care, negative provider attitudes, limited SRH care counselling and information, and mistrust of services such as vaccine provision.

“…the health facilities are there, but the youth-friendly services are not… they continue explaining that…There is a girl who said she went to a health facility, and when she started explaining, the nurse started casting the demons away from her, and the girl was confused, so such a girl, when she starts feeling issues, she will not go back so such things need to be improved.” (Key informant – 5, Busia)

“The reason I didn’t seek some of these services especially family planning services was because of fear of its side effects like over bleeding, the last time I tried using injectable I almost died.” (Adolescent mother – 7, Busia)

Evidently participants indicate a lack of acceptable healthcare due to staff attitudes, stigma, mistrust, and lack of reliable information.

However, some AGYW noted that they embrace SRH care in particular including HIV/AIDS counselling, STI testing, and family planning/contraceptives indicating some acceptability coverage. Injectables and oral contraceptives were commonly referred to in interviews with AGYW.

“Some young women especially use short term methods like injectables… which last for three months, [they also use] oral contraceptives” (Adolescent mother – 8, Busia).

Contact Coverage

When exploring contact coverage in this study we examined responses that discussed any contact with or use of healthcare services. Focus group participants in Namayingo noted that young people do seek and use healthcare services.

“Yes they [young people] go [to seek health services] even the government health facility is in Nsango.” (Older woman – 1, Namayingo)

“Young people/youth make the effort to seek health care services.” (Older woman – 2, Namayingo)

Similarly in Busia, adolescent mothers noted use of health facilities including private clinics and different levels of health centres.

“[AGYW] use the services [at] a private health facility because the services are available and adequate as compared to the government health facility, but if the women are in need of maternity services they go to Red Cross or Busitema health Centre which are government health facilities.” (Adolescent mother – 8, Busia)

“When a girl or older woman becomes pregnant she goes to the health facility and is given health counseling, antenatal care, and safe child birth and family planning services.” (Adolescent mother – 9, Busia)

When we asked married AGYW the extent to which workers in mines in Namayingo use public healthcare services, one participant estimated that approximately 10% use services. This estimate, however, provides a glimpse into the extent to which the healthcare system could potentially be underutilized.

Respondents also discussed using health services to treat suspected symptoms of COVID-19 sickness including cough and fever. Of the 33% of participants that indicated they had experienced cough or fever during the pandemic, majority of participants (40%) said that they sought care at a health facility and 17% said they obtained medications from a drug shop or pharmacy. The rest of participants reported used herbal or other treatment methods outside of facilities. This indicates that when sick, majority of AGYW access care at health facilities or drug shops.

DISCUSSION

Exploring the experiences shared by AGYW living and working in ASM communities enabled us to highlight the inequitable challenges they experience while accessing healthcare and report on what is currently available to the community. Results indicate that despite some availability, accessibility, acceptability, and contact coverage, there is significant opportunity to strengthen health systems and especially SRH care available to AGYW in ASM communities in Uganda.

In regard to availability of coverage, results show that health centers, drugs, and staffing are only somewhat available depending on the ASM community and type of facility (i.e., public or private). In Busoga and Bukedi regions which include Namayingo and Busia, 2016 DHS data shows that only 27–32% of reproductive age women (15–49 years) have their family planning needs satisfied with modern contraceptives (31). However, in 2024, amongst women of reproductive age in Uganda overall, about 64% had their family planning needs satisfied with modern contraceptives, indicating regional inequities in availability and access to care (32). Existing literature further discusses the challenges with availability of care amongst last mile populations including adolescent refugees and migrants in Uganda including limited facilities and resources, distance to facilities, and lack of youth-friendly services showing that the inequities in accessing care are similar to those amongst last-mile AGYW (33, 34). For ASM AGYW, these availability and accessibility challenges could be addressed within the framework of formalization that is a significant discussion in the sector. Formalization pushes for structures of accountability amongst governments and companies while enforcing labour, health, and safety regulations (5, 35–37). Formalizing the ASM sector could lead to better availability and accessibility of care due to potential mandates for mining companies to ensure healthcare facilities are available in ASM communities that include quality of care standards and adequate, context-specific training for healthcare providers. Thus, formalization provides an opportunity for development towards SDG 3 and SDG 8 by improving working conditions, environmental regulations, and health and safety standards which is aligned with goals towards UHC and ultimately contributes to equitable access to health services amongst last mile populations.

Interestingly, there were contradictions between responses from key informants and AGYW specifically in terms of availability of youth friendly services. For example, in Busia, key informants explained that youth friendly services are non-existent whereas AGYW in Busia and Mubende described youth friendly services as available at certain facilities. Similar to the results on availability coverage, accessibility coverage was discussed in contradictory ways. Respondents discussed both the physical and financial barriers to services and in contrast, the accessibility of facilities such as private clinics. These contradictions could be the result of a lack of information on what youth friendly services technically entail including access to counselling, quality and stigma-free treatment, and family planning commodities (38). AGYW who indicated youth friendly services are available could be referring to Village Health Teams or services from private (for profit) sources that distribute or provide family planning commodities, but do not provide the full scope of counselling and stigma-free treatment. There also could be variations in services provided due to funding variations for youth friendly services in different communities.

In terms of acceptability coverage, study results show that SRH care including family planning services are not always acceptable amongst AGYW due to stigma, lack of resources and availability of quality information. Various participants including key informants, adolescents, and older women in Busia and Mubende in particular, shared a lack of trust in public

healthcare services especially in regard to SRH. This aligns with current literature about SRH care in Uganda that discusses a lack of capacity and training of service providers to provide youth friendly care, and ongoing judgement and discriminatory attitudes from care providers (24, 39, 40). However, Uganda has two national policies that emphasize the importance of youth friendly SRH care under the UHC umbrella (38, 41). These policies emphasize the need for greater access to SRH care, minimizing stigma and providing SRH information and counselling especially for adolescents (38, 41). These national policies create a strong basis for strengthening youth friendly SRH services through a coordinated, multi-faceted approach which is needed to improve access to SRH services as part of UHC for last-mile populations (39).

However, the contradictions with care availability and limited acceptability of care, also indicate a lack of quality of care where despite some services being available, the quality of those services is limited. Quality of healthcare has been discussed in terms of various aspects including timeliness, effectiveness, safety, patient-centred goals, resource availability, and training of personnel (42). In Busoga and Bukedi regions which include Busia and Namayingo, 53% of women indicated that when in contact with health personnel or at a health facility, they have not discussed family planning options (31), indicating some limitations to quality of SRH information and subsequent care (which could be a result of high patient to provider ratios and limited time to provide adequate family planning services and counselling). Previous reports on quality of care in the Karamoja region outline a lack of integrated SRH services (43) which is aligned with findings that the quality of SRH care in ASM communities is limited due to lack of resources, personnel, and stigma from health personnel. To increase the quality of care available to AGYW and thus ultimately health equity, staff training, capacity building and resource development needs to be prioritized. Furthermore, to enable acceptability of SRH care especially amongst adolescents it is critical for healthcare providers, leaders, and community members including AGYW to build trust within ASM communities, creating safe spaces to access SRH information and care (44). Some NGOs in Uganda prioritize advocacy and work through a rights-based accountability approach which emphasizes the importance of community-led SRH discussions and including AGYW into decision making through committees and community-based accountability structures (45–47). By promoting inclusion of adolescents in SRH care decision making there is opportunity to build more acceptable care in ASM communities.

Despite the challenges in availability, accessibility, and acceptability of care, results show that various health services are utilized. This is promising because it indicates that AGYW in ASM communities are seeking healthcare services despite existing barriers. Removing barriers associated with availability, accessibility, and acceptability can increase the contact and support of AGYW working in hazardous and unsafe ASM work environments, ultimately improving UHC and health equity. Considering the health issues associated with working in ASM, removing these barriers is critical.

Limitations

This study is limited in that it does not include perspectives from healthcare providers. However, it does include a wide range of perspectives including AGYW, older women, adolescent boys and multi-sectoral stakeholders to provide a robust understanding of access to healthcare and the subsequent inequities experienced by AGYW. Another study limitation is the idea that we only focused on access amongst AGYW and did not contrast this experience with other populations in ASM communities. As such, there is opportunity in future research to examine how the experiences of AGYW contrast with other populations including adolescent boys and older women.

CONCLUSION

With the ASM sector continuing to grow and engage various adolescents in work, it becomes increasingly important to critically examine the health and access to healthcare that AGYW in the sector experience. Study results show that equitable access to healthcare for AGYW working in ASM communities is limited due to challenges such as lack of personnel, resource challenges, limited facilities and distance to facilities, lack of youth-friendly services, and negative staff attitudes towards SRH care especially. Findings indicate that despite barriers to care, AGYW in ASM are keen to use both public and private care where available, accessible, and acceptable. As such, continuing to strengthen the equitable access ASM AGYW have to care is critical through processes such as formalization, advocacy and rights-based accountability, and leveraging existing initiatives proposed

in national Ugandan health policies and UHC. Future initiatives should prioritize the inclusion of adolescents in decision-making about care approaches and interventions.

Abbreviations

ASM	Artisanal and Small-Scale Mining
GDP	Gross Domestic Product
HC	Health Centre
MoH	Ministry of Health
NGO	Non-Governmental Organization
SDG	Sustainable Development Goals
SRH	Sexual and reproductive health
UHC	Universal Health Coverage
UNFPA	United Nations Populations Fund
UNMHCP	Uganda National Minimum Health Care Package
VHT	Village Health Team
WHO	World Health Organization

Declarations

Ethics approval and consent to participate: The study was approved by the research ethics committees in three countries – Uganda (The AIDS Support Organization-2022-169 and registered by the Uganda National Council for Science and Technology, UNCST – SS149ES); Ghana, (University of Ghana Ethics Committee for the Humanities (ECH109/22-23)); and, Canada (McMaster University Research Ethics Board, MREB #6257). In accordance to the Helsinki declaration, all participation was voluntary, and all participants provided informed consent.

Consent for publication: All participation was voluntary, and all participants provided informed consent.

Availability of data and materials: De-identified data showing key themes and aggregated findings is available from the corresponding author on reasonable request. Data are not publicly available to protect participant confidentiality.

Competing interests: The authors have no declarations of interest to disclose.

Funding: This work was supported by the International Development Research Centre (IDRC) under Project Number 110012.

Author contributions:

Study conception and design: BK, LK

Data collection: BK

Data coding and analysis: HC, SB, DO

Manuscript preparation: HC, SB, LK

Manuscript review and editing: HC, SB, DO, BK, LK

Acknowledgments: We thank IDRC and the rest of the study team including Deborah Mensah, Miriam Mutabazi, and Lydia Osei for their support. We also thank the adolescent young women and girls for their invaluable input in the study.

References

1. World Health Organization [WHO]. Artisanal and small-scale gold mining and health [Internet]. 2016 [cited 2025 Jan 7]. Available from: https://iris.who.int/bitstream/handle/10665/247195/9789241510271-eng.pdf?sequence=1
2. De Haan J, Dales K, McQuilken J. Mapping artisanal and small-scale mining to the Sustainable Development Goals. University of Delaware (Minerals, Materials and Society program in partnership with Pact). 2020. 1–59 p.
3. Serwajja E, Mukwaya PI. Environmental, health and safety intricacies of artisanal mining in the gold-rich landscapes of Karamoja, north-eastern Uganda. Journal of Sustainable Mining. 2021;20(2):90–108.
4. Chidwick H, Randolph-Koranteng N, Kwagala B, Mensah D, Osei L, Wandera SO, et al. Exploring economic and health interventions to support adolescents' resilience and coping in mining communities: A scoping review. Extractive Industries and Society [Internet]. 2023;16(October):101369. Available from: https://doi.org/10.1016/j.exis.2023.101369
5. Fritz MMC, McQuilken J, Collins N, Weldegiorgis F. International Institute for Sustainable Development. 2017. p. 91 Global Trends in Artisanal and Small-Scale mining (ASM): A review of key numbers and issues. Available from: http://www.iisd.org/sites/default/files/publications/igf-asm-global-trends.pdf
6. World Bank. 2023 State of the Artisanal and Small-Scale Mining Sector [Internet]. 2023. Available from: https://stateofthesector23.delvedatabase.org
7. Rutherford B, Buss D. Gendered governance and socio-economic differentiation among women artisanal and small-scale miners in Central and East Africa. Third World Thematics: A TWQ Journal. 2019 Jan 2;4(1):63–79.
8. Hilson G. Small-scale mining, poverty and economic development in sub-Saharan Africa: An overview. Resources Policy. 2009;34(1–2):1–5.
9. Barreto M, Schein P, Hinton J, Hruschka F. Economic Contributions of Artisanal and Small-Scale Mining in Uganda [Internet]. 2018 [cited 2025 Jan 7]. Available from: https://www.responsiblemines.org/wp-content/uploads/2018/03/Uganda_case_study.pdf
10. Njieassam E. Child Labour in Artisanal and Small-Scale Gold Mines in Uganda: Are Legal Protections Adequate? J Afr Law. 2023 Feb 13;67(1):45–57.
11. Wanyana MW, Agaba FE, Sekimpi DK, Mukasa VN, Kamese GN, Douglas N, et al. Mercury Exposure Among Artisanal and Small-Scale Gold Miners in Four Regions in Uganda. J Health Pollut. 2020;10(26).
12. Melesse DY, Mutua MK, Choudhury A, Wado YD, Faye CM, Neal S, et al. Adolescent sexual and reproductive health in sub-Saharan Africa: Who is left behind? BMJ Glob Health. 2020;5(1):1–8.
13. UNFPA. Fact Sheet: Investing in Sexual and Reproductive Health in Sub-Saharan Africa [Internet]. 2014. Available from: https://www.unfpa.org/sites/default/files/resource-pdf/383 AIU3 Regional_SSA_ENG 11.19.14 FINAL_0.pdf
14. United Nations General Assembly. Transforming our world: the 2030 Agenda for Sustainable Development [Internet]. 2015 p. 1–35. Available from: https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_70_1_E.pdf
15. Madinah N. Challenges and Barriers to the Health Service Delivery System in Uganda. 2016;5(2):30–8. Available from: www.iosrjournals.org
16. Ministry of Health Uganda. Hospitals [Internet]. 2025 [cited 2025 Jan 7]. Available from: https://www.health.go.ug/hospitals/
17. Ministry of Health Uganda. Uganda Hospital and Health Centre IV Census Survey [Internet]. 2014 [cited 2025 Jan 7]. Available from: https://health.go.ug/sites/default/files/Hospital%20Census%20Report%20Jan%202016.pdf
18. Ministry of Health Uganda. HEALTH SECTOR DEVELOPMENT PLAN 2015/16 - 2019/20 [Internet]. 2015 [cited 2025 Jan 7]. Available from: https://www.health.go.ug/wp-content/uploads/2019/11/Health-Sector-Development-Plan-2015-16_2019-20.pdf
19. Dowhaniuk N. Exploring country-wide equitable government health care facility access in Uganda. Int J Equity Health. 2021 Dec 1;20(1).

20. Odokonyero T, Mwesigye F, Adong A, Mbowa S. Universal Health Coverage in Uganda: The critical health infrastructure, healthcare coverage and equity [Internet]. 2017 [cited 2025 Jan 7]. Available from: https://nru.uncst.go.ug/server/api/core/bitstreams/6d2fa8a2-b348-4c84-8032-7b5161617088/content
21. Kinney RG, Zakumumpa H, Rujumba J, Gibbons K, Heard A, Galárraga O. Community-funded integrated care outreach clinics as a capacity building strategy to expand access to health care in remote areas of Uganda. Glob Health Action. 2021;14(1).
22. McGranahan M, Bruno-McClung E, Nakyeyune J, Nsibirwa DA, Baguma C, Ogwang C, et al. Realising sexual and reproductive health and rights of adolescent girls and young women living in slums in Uganda: a qualitative study. Reprod Health. 2021 Dec 1;18(1).
23. Nambile Cumber S, Atuhaire C, Namuli V, Bogren M, Elden H. Barriers and strategies needed to improve maternal health services among pregnant adolescents in Uganda: a qualitative study. Glob Health Action. 2022;15(1).
24. Bukuluki PMW, Kisaakye P, Wandiembe SP, Kiwujja V, Kajungu C, Mugwanya W, et al. Utilization of sexual and reproductive health services among young people in refugee settings in Uganda. Frontiers in Reproductive Health. 2023;5.
25. Miller KK, Saftner MA, McNamara M, McMorris B, Olupot-Olupot P. Provision of adolescent health care in Resource-Limited Settings: Perceptions, practices and training needs of Ugandan health care workers. Child Youth Serv Rev. 2022 Jan 1;132.
26. Mambo SB, Sikakulya FK, Ssebuufu R, Mulumba Y, Wasswa H, Adomi Mbina S, et al. Challenges in Access and Utilization of Sexual and Reproductive Health Services Among Youth During the COVID-19 Pandemic Lockdown in Uganda: An Online Cross-Sectional Survey. Frontiers in Reproductive Health. 2021;3.
27. Tanahashi T. Health service coverage and its evaluation [Internet]. Vol. 56, Bulletin of the World Health Organization. 1978 [cited 2024 Dec 11]. Available from: https://pmc.ncbi.nlm.nih.gov/articles/PMC2395571/
28. Kapiriri L, Chidwick H, Kwagala B, Mensah D, Osei L. Implementing evidence-based participatory research approaches to empower last mile adolescent girls and young women: A detailed description of the study methods (Forthcoming).
29. Yamane T. Statistics: An Introductory Analysis. 1973.
30. McCollum R, Taegtmeyer M, Otiso L, Mireku M, Muturi N, Martineau T, et al. Healthcare equity analysis: Applying the Tanahashi model of health service coverage to community health systems following devolution in Kenya. Int J Equity Health. 2019;18(1):1–12.
31. Uganda Bureau of Statistics. Uganda Demographic Health Survey [Internet]. 2022 [cited 2025 Feb 17]. Available from: https://www.ubos.org/?pagename=explore-publications&p_id=25
32. Sustainable Development Report. Demand for family planning satisfied by modern methods [Internet]. 2024 [cited 2025 Feb 3]. Available from: https://dashboards.sdgindex.org/explorer?metric=demand-for-family-planning-satisfied-by-modern-methods
33. Ivanova O, Rai M, Kemigisha E. A systematic review of sexual and reproductive health knowledge, experiences and access to services among refugee, migrant and displaced girls and young women in Africa. Vol. 15, International Journal of Environmental Research and Public Health. MDPI; 2018.
34. Ivanova O, Rai M, Mlahagwa W, Tumuhairwe J, Bakuli A, Nyakato VN, et al. A cross-sectional mixed-methods study of sexual and reproductive health knowledge, experiences and access to services among refugee adolescent girls in the Nakivale refugee settlement, Uganda. Reprod Health. 2019;16(1):1–11.
35. Hilson G, Osei L. Tackling youth unemployment in sub-Saharan Africa: Is there a role for artisanal and small-scale mining? Futures [Internet]. 2014;62(2014):83–94. Available from: http://dx.doi.org/10.1016/j.futures.2014.05.004
36. Maconachie R. Dispossession, exploitation or employment? Youth livelihoods and extractive industry investment in Sierra Leone. Futures [Internet]. 2014;62:75–82. Available from: http://dx.doi.org/10.1016/j.futures.2013.08.003
37. Maconachie R. Youthscapes of Change? Diamonds, Livelihoods and Extractive Industry Investment in Sierra Leone. 2016;259–74.
38. Ministry of Health Uganda. National Strategy for Integration of Sexual Reproductive Health and Rights and HIV/AIDS 2017–2021 [Internet]. 2017. Available from: https://platform.who.int/docs/default-source/mca-documents/policy-documents/plan-strategy/UGA-RH-18-03-PLAN-STRATEGY-2017-eng-SRH-HIV-integration-Implementation-Guide.pdf

39. Guttmacher Institute. In Uganda, Sexual and Reproductive Health Services and Information Fall Short for Adolescents [Internet]. 2019. Available from: https://www.guttmacher.org/node/30509/printable/print
40. Mambo SB, Sikakulya FK, Ssebuufu R, Mulumba Y, Wasswa H, Adomi Mbina S, et al. Challenges in Access and Utilization of Sexual and Reproductive Health Services Among Youth During the COVID-19 Pandemic Lockdown in Uganda: An Online Cross-Sectional Survey. Frontiers in Reproductive Health. 2021;3.
41. Uganda Ministry of Health. Ministry of Health Strategic Plan [Internet]. 2020. Available from: https://www.health.go.ug/cause/ministry-of-health-strategic-plan-2020-21-2024-25/
42. Mwesigwa D, Wahid KA, Sohheng N. A case study on the quality of healthcare in Uganda: Examining the effectiveness, safety, patient-centred and timeliness of district healthcare facilities. Journal of Governance and Accountability Studies [Internet]. 2021 Jul 25;1(2):133–44. Available from: https://goodwoodpub.com/index.php/jgas/article/view/741
43. Marotta C, Lochoro P, Pizzol D, Putoto G, Mazzucco W, Saracino A, et al. Capacity assessment for provision of quality sexual reproductive health and hiv-integrated services in karamoja, uganda. Afr Health Sci. 2020;20(3):1053–65.
44. Rutgers. Increasing youth-friendly sexual and reproductive health services - Uganda [Internet]. 2016 [cited 2025 Feb 5]. Available from: https://rutgers.international/wp-content/uploads/2021/11/Advocacy_Uganda_0.pdf
45. CARE. Ensuring rights-based accountability for SRHR in humanitarian settings in Uganda [Internet]. 2021 [cited 2025 Jan 7]. Available from: https://www.care-international.org/stories/ensuring-rights-based-accountability-srhr-humanitarian-settings-uganda
46. Uganda Ministry of Health. Government of Uganda declaration of the Uganda FP2030 Commitment. 2021; Available from: http://www.track20.org/pages/data_analysis/in_depth/opportunities/quality.php
47. Ministry of Health Uganda. National Family Planning Advocacy Strategy & Costed Implementation Plan 2020/21 – 2024/25 [Internet]. 2021 [cited 2025 Jan 7]. Available from: https://uganda.unfpa.org/sites/default/files/pub-pdf/national_fp_advocacy_strategy.pdf