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ORIGINAL ARTICLE

The factors associated with utilization of sexual and reproductive health services among Batwa adolescents in Kisoro District, Uganda: a cross-sectional study

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ABSTRACT

BACKGROUND:
Adolescents' sexual and reproductive health (SRH) needs are crucial and meeting such needs presents with a unique challenge among minority and marginalized populations, such as the Batwa of southwestern Uganda.

OBJECTIVE:
The study investigated the factors influencing utilization SRH among Batwa minority adolescents in Kisoro district.

METHODS:
A cross-sectional study was adopted, incorporating both qualitative and quantitative methods. Data was collected from a random sample of 241 adolescents from a target population of 608 aged 10–18 years using validated interviewer-administered questionnaires, focus group discussions, and key Informants interviews. Qualitative data were coded into themes and analyzed thematically, while quantitative data was analyzed using frequencies, Chi-square tests, and multinomial logistic regression.

RESULTS:
The majority of adolescents (59.3%, CI: 52.84 - 65.60), were aware of the voluntary counseling services provided, 76.8% (CI: 70.91 - 81.94) were aware of family planning services, but 53.5% (CI: 47.01 - 59.95) were not aware of SHR related issues. About 44.8% (CI: 38.24 - 51.36) had visited health facility once in the past year, while 55.2% (CI: 48.67 - 61.57) had never utilized adolescent SRH. Furthermore, 71.8% (CI: 65.43 - 77.47) were aware of adolescent-friendly SRH services. Factors associated with SRH service utilization included education ($p = 0.029$), source of medical services ($p < 0.001$), and proximity to health facilities ($p < 0.001$). Findings from the multinomial logistic regression showed that SRH services utilization was associated with an increased odd of distance to health facilities (OR 3.74, 95% CI: 1.86 - 7.53).

CONCLUSION:
The study highlights high levels of SRH services awareness but low levels of utilization among Batwa adolescents. Strategic planning of reproductive health service programs in Batwa communities is strongly recommended to enhance accessibility, service ownership and utilization.

KEYWORDS:
Sexual reproductive health, Batwa adolescents, Marginalized populations, Services utilization.

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INTRODUCTION

The Batwa community, an indigenous group residing in the Kisoro district of Uganda, faces unique challenges regarding the utilization of sexual and reproductive health (SRH) services among its adolescents. They are originally forest dwellers, with an estimated population of 6,200 (0.2 per cent) in Uganda population and now inhabit districts of the Bundibugyo, Kabale, Kisoro and Rukungiri[1,2]. This study examined the factors influencing the utilization of SRH services among Batwa adolescents, including demographic, individual, and health system-related factors. The use of SRH services by adolescents is a key determinant of their quality of health[3].

SRH concerns the physical and emotional wellbeing of an individual with regards to their reproductive health and ability to be free from unwanted pregnancy, unsafe abortion, sexually transmitted infections, and all forms of sexual violence and coercion. The majority of people become sexually active during the adolescent period, putting people in this age group at higher risk of sexual and reproductive health problems [4,5].

In a study that investigated access to SRH services by young people, it found low uptake, despite the increasing resources to meet the SRH needs of young people [6]. In another study among rural and marginalized adolescents in Ethiopia, it found 69.7% of female adolescents were utilizing RHS which is low compared to the national plan [7]. Similarly, a South African study found non-use of modern contraceptive methods was associated with employment status, educational level, comprehensive knowledge about SRH, HIV and other sexually transmitted infections (STIs), desire for a child, partner's age, and partner's educational level among other findings [8,9]. Also, positive health workers' attitude towards provision of sexual and reproductive services to young rural adolescents greatly improved the health service seeking behaviors of adolescents[10]. Even a study of street children found a low level of utilization of sexual and reproductive health services (18.13%). This level was 2.70 times lower than the level of service utilization of the non-minority population, among other findings [11].

In a study of health- seeking behavior among Batwa in Kanungu, Patterson found some Batwa used only indigenous or biomedical healthcare, while others preferred a combination, or no healthcare. Physical and economic access to care, and perceived efficacy and quality of care, influenced their health care seeking decisions of the Batwa [12].

The investigators adopted Andersen's health care utilization model, 2014 which suggests individuals' use of health care services can be classified as; predisposing factors that influence individual's choice to utilize sexual and reproductive health services, especially age, education, religion, contraceptive knowledge, and attitudes toward contraceptive use. Also, the enabling factors in the individual's immediate environment that determines or prompts the individual's choice to seek care including distance from the clinic, information availability at the clinic, friends using SRH services, availability of health services, and waiting time at the clinic. In addition, need factor; Andersen posits that an individual cannot seek care unless they feel there is a need for them to do so.

The global burden of sexually transmitted infections (STIs) and reproductive cancers has shown an increase in the past 25 years since the Cairo ICPD 1994[13] . Similarly, teenage pregnancies, teenage child birth and abortion have shown an increase in many of the countries in Sub-Saharan
Africa and South East Asia. This slow pace of progress in adolescent sexual and reproductive health in the global South (countries in Sub-Saharan Africa and South East Asia) reflects the slow improvement in health care, and more specifically, sexual and reproductive health in these countries [14]. This slow advancement is predicated by a number of factors, including poverty, low levels of education, and low government investment in health among others [14,15].

Current evidence shows that adolescent sexual and reproductive health and general health are improving world over [14,16]. These improvements are happening fastest in Europe, the Caribbean, and Latin America while Sub-Saharan Africa and South East Asia lag behind [17]. These improvements notwithstanding, there is still a significant unmet need for SRH among

adolescents, standing at 43% for unmarried adolescents and 23% for married adolescents [18].

About 57% of Batwa girls report sexual abuse, 40% drop out of school at an early age for marriage or physical labour and only 13% of Batwa women have a professionally assisted delivery at a suitable health facility.

sexual and reproductive health among adolescents and young people in Uganda with the later taking the lions share refers to the growing emphasis on addressing the unique challenges faced by young people, including access to information, contraceptive methods, and healthcare services aimed at preventing early pregnancies, sexually transmitted infections, and promoting overall well-being. [19]. The majority of adolescents fall within the 10–14 age cohort, highlighting the importance of targeted interventions tailored to different age groups within the Batwa community[1,2].

Awareness of SRH services emerges as a critical determinant of utilization among Batwa adolescents[20]. This underscores the importance of comprehensive education and awareness campaigns tailored to the specific needs and challenges faced by the Batwa community [21]. Demographically, the Batwa adolescents in Kisoro district exhibit distinct characteristics that shape their access to and utilization of SRH services. With 54.4% of participants being male, the study emphasizes the need to address gender-specific barriers to SRH service utilization [22,23]. ece the goal to assess the factors associated with SRH services.

Individual factors and cultural beliefs could shape adolescents' perceptions of modern medicine, impacting their willingness to utilize SRH service [20,21,24]. The health system presents unique challenges and opportunities for SRH service delivery[25].

The delivery of SRH services is even more likely to be challenging in cases of socially isolated poor and marginalized minority groups such as the Batwa [22,23]. Currently there is paucity of data about Batwa adolescents SRH services utilization. The Batwa being a minority group, socially isolated and marginalized exposes them to a more unique challenge regarding utilization of SRH services hence a dire need to create understanding about the factors associated with the utilization of SRH services among the Batwa adolescents in Kisoro district.

METHODS

The study employed a cross-sectional design, integrating both quantitative and qualitative approaches to examine sexual and reproductive health (SRH) service utilization among Batwa adolescents in Kisoro district. The quantitative aspect provided the main data body, while qualitative methods were used to elaborate on and deepen the understanding of the quantitative findings. The study ran from June 2021 to June 2022 a span of 13 months.

The study was conducted in Kisoro district, a mountainous southwest region of Uganda, on Batwa community, an indigenous group facing unique socio-economic and healthcare challenges. Kisoro is approximately 500 km from Kampala, the capital city. It shares borders with the Democratic Republic of Congo and Rwanda. The district's challenging terrain and poor road network significantly affect access to health services for its rural population. Kisoro district comprises three health sub-districts and 41 health facilities, including three health center IVs [1].

The study target population comprises 25% (608) that resides in Kisoro clusters out the total of approximately 2,432 in Kigezi Region based on Kisoro District Biostatistics Department (2021).
The Batwa, originally a hunter-gatherer community from the Bwindi and Mgahinga forests, live in organized residential settlements known as clusters. There are 27 residential clusters in total but only 23 for which data was available and whose cluster leaders gave consent were included in this study. The clusters groups are not political and their leaders do not hold political offices but have great control over the Batwa.

Inclusion criteria was that all Batwa adolescent girls and boys aged 10 – 18 and residing within Kisoro district were selected while Batwa adolescents with impairment that limits their ability to communicate, or those that were critically ill, dumb, or mentally ill were excluded in the study.

Sample size Calculation and Sampling Techniques:
The study sample size was derived using the formula [26] below using an estimated Batwa adolescent Population in Kisoro of 608 with the margin of 5% error to arrive at sample size of 241 adolescents as shown below

$$n = \frac{N}{1+N(e)^2}$$

Where;
n= calculated sample size,
N= population size
e= margin of error at 95% confidence level
Therefore;
$n = 608/1+608(0.05)^2$
n=241

Data was collected from Batwa adolescents who were randomly selected from each of the 23 clusters derived from a list of adolescents in the clusters and were drawn randomly until the number of adolescents necessary from the cluster was reached. Utilizing 0.3964 of the total number of adolescents in the cluster with ratio of 0.3964 reached at by dividing the calculated sample size of 241 by total number of adolescents 608 with the resulting number of adolescents drawn per cluster [27,28]. The key informants who were health service providers were selected purposively. The focus group discussion participants were purposively selected based on their willingness to participate and availability at the time of the interviews. An attempt was made to include several ages but not exceeding an age gap of 4 so as to ensure group heterogeneity [27,29].

The study utilized service access and utilization questionnaire, adapted from the WHO to collect detailed information on SRH service utilization among Batwa adolescents [28]. Also Service Availability and Readiness Assessment (SARA) Tool modified to capture sexual and reproductive health service components [30]. Interview guides were developed for key informant interviews and FGDs to explore attitudes, perceptions, and factors affecting SRH service utilization.

Data quality control was obtained by the validation of the study tool through pilot testing to suit study population for both validity and reliability. The questionnaires were checked for completeness, incomplete questionnaires were referred back to the different research assistants for completion. The Cronbach's Alpha test for 10 study items show reliability of the instrument is 0.864. While the validity test result was 0.875, the instrument is considered valid since the statistic is above 0.7. Data quality control was obtained by the validation of the study tool through pilot testing to suit study population for both validity and reliability. The Cronbach's Alpha test for 10 study items show reliability of the instrument is 0.864. While the validity test result was 0.875, the instrument is considered valid since the statistic is above 0.7. Data quality control was obtained by the validation of the study tool through pilot testing to suit study population for both validity and reliability. Partial analysis was conducted on the focus group discussion data to gauge when saturation had been achieved. Data security was ensured by making sure the researchers and supervisors had access to the raw data and kept secured [31,32].

Quantitative data collection was done by trained research assistants from the adolescent participants before the focus group discussion. The FGDs involved adolescents aged 10-18 years and were divided into groups of younger (10-14 years) and older adolescents (15-18 years) to ensure age homogeneity. Each FGD included 7-12 participants and was moderated by the principal investigator and a trained Mutwa youth. Additionally, key informant interviews were conducted with health service providers and administrators [33,34].

Data analysis followed data entry into IBM SPSS version 25 and was analyzed in frequency, percentages, chi-square test of association and multinomial regression analysis performed to identify significant predictors of SRH service utilization among Batwa adolescents. Qualitative data from the FGDs and key informant interviews were transcribed verbatim. The transcribed data were analyzed thematically in line with study-specific objectives and later compared with quantitative findings to provide deeper insights into the SRH service utilization among Batwa adolescents [35].

The study protocol was reviewed and approved by the Graduate Research Board of Kabale University, the Ethics Review Committee of Mbarara University of Science and Technology, and the National Council for

Science and Technology. Informed consent was obtained from all participants and their parents or guardians.

RESULTS

Community visit yielded the following information on the demographic characteristics of the study participants which showed that a total of 241 Batwa adolescents were interviewed, result showed that about 54.4% of them were males and 45.6% females. The majority, 73%, were aged 10-14 years. A significant number of respondents, 83%, identified as Christians, and 64.7% had no formal education. Furthermore, 66.4% lived with their parents. Furthermore, about 52.3% adolescents in the study, attended public health care facilities, and 66.8% resided within more than 5 kilometers distance from nearby health facility. The respondents were selected from 23 clusters, with each cluster's representation (Table1).

Table 1. Study participants socio demographic characteristics (n = 241)

S/ NO	Question Categories	Response Options	Percentage (%)	95%Confidence Intervals (%)
1	Respondent's Gender	Male	54.4	**(48-61)**
		Female	45.6	**(39-52)**
2	Age Category	10 years–14years	27	**(22-33)**
		15 years–18years	73	**(67-79)**
3	Religion	Christian	83	**(78-88)**
		Non-Christian	17	**(13-22)**
4	Educational Status	No formal education	64.7	**(58-71)**
		Completed Primary	23.7	**(18-30)**
		Attained secondary	10.8	**(07-15)**
		Higher education	.8	**(00-03)**
5	With whom do you live	Live with Parents	66.4	**(60-72)**
		With friends/Peers	12	**(08-17)**
		With relatives /Others	21.6	**(17-27)**
6	Parents' level of Education	Not educated	86.3	**(81-90)**
		Primary/Secondary	10.4	**(07-15)**
		Higher education	3.3	**(01-06)**
7	Source of medical services	Health center	39.8	**(34-46)**
		Nearby private clinic	7.9	**(05-12)**
		Public health care facility	52.3	**(46-59)**
8	How far is the health facility from where you stay	1-KM walking distance	33.2	**(27-40)**
		More than 5km distance	66.8	**(61-73)**
	Adolescents' employment Status	**Unemployed**	**74.3**	(68-80)
		Self employed	**11.6**	(08-16)
		Student	**14.1**	(10-19)

Respondents' sources of reproductive health service information

The Majority 75.5% of Batwa adolescents received SRH services information from: Health facilities, 54% from social media and 52.3% from Home and friends (Table 2).

Table 2. Respondents' sources of reproductive health service information

Sources of reproductive health services information	Yes	%	No	%
The school	70	29.0	171	**71.0**
Religious Place	75	31.1	166	**68.9**
From Friends and Peers	111	46.1	130	**53.9**
Health Facility	182	75.5	59	**24.5**
Home and Neighbors	126	52.3	115	**47.7**
Social media (TV, Radio)	**131**	**54.4**	**110**	**45.6**

Types of SRH services used by adolescents

The study showed that 60.6%, C.I 54 – 67, utilized counseling services, 70.5%, C.I, 64 - 76 had utilized Family Planning Services, and 52.7%, C.I, 46 - 59 got STI treatment. On the other hand, about 65.1%, C.I, 59 - 71 had not utilized antenatal services (pregnancy testing and follow-up in pregnancy), as well as about 74.3%, C.I, 68 - 80 that did not access reproductive health services for reproductive health related problems (Table3).

Table 3. Reproductive health services used by adolescents

Types of reproductive Health Services Utilized by the youths in the study	Options	Frequency	%	95% Confidence Intervals (%)
Counseling services/Voluntary Counseling	Yes No	146 95	60.6 39.4	**(54–67)** **(33-46)**
Family planning services (Sex Education, Condom distribution and contraception services)	Yes No	170 71	70.5 29.5	**(64-76)** **(24-36)**
Ante Natal services (Pregnancy testing and follow up in Pregnancy	Yes No	84 157	34.9 65.1	**(29-41)** **(59-71)**
Treatment of STIs (Screening Test and Counseling	Yes No	127 114	52.7 47.3	**(46-59)** **(41-54)**
Reproductive health - related problems like menstrual problems	Yes No	62 179	25.7 74.3	**(20-32)** **(68-80)**

Relationship between SRH services utilization and personal characteristics of the respondents

Results from chi-square analysis indicate that five (5) variables of the respondents' personal characteristics are statistically significant with the type of reproductive health services used per visit in1year.they include gender (p-value=0.02, age category (p–value=0.044), respondents; educational status (p – value= 0.001), source of medical services (p – value < 0.001 and how far the health facility is from where you stay (p – value < 0.001) respectively (Table 4).

Table 4. Cross tabulation showing relationship between reproductive health services utilization and personal characteristics of the respondents

Variables n = 241	SRH Utilization			P – value
	Low (%)	Medium (%)	High (%)	
Education				
None	93 (44.7)	48 (23.1)	67 (32.2)	0.017
Primary/secondary	6 (24)	03 (12)	16 (64)	
Higher education	04 (50)	00	04 (50)	
Facility used				
Health Center	17 (17.7)	18 (18.8)	61 (63.5)	
Private Clinic	10 (52.6)	6 (31.6)	3 (15.8)	0.000
Public Health Care Facility	76 (60.3)	23 (18.4)	27 (21.3)	
Distance from Facility				
Within 1 – 3 km				0.000
More than 5 km	19 (23.8)	14 (17.5)	47 (48.8)	
	84 (52.2)	37 (23)	40 (24.8)	
Gender				
Male	63 (47.1)	31 (23.8)	37 (22.2)	0.021
Female	40 (36.4)	20 (18.2)	50 (45.5)	
Age Category				
10 -14 years	35 (53.8)	08 (12.3)	22 (33.8)	0.044
15 – 18 years	68 (36.9)	43 (24.4)	65 (38.6)	
Education Status				
No formal Education	80 (51.3)	32 (20.5)	44 (28.2)	0.001
Completed Primary	20 (35.1)	11 (19.3)	26 (46.5)	
Completed Secondary	03 (11.5)	08 (30.8)	15 (57.7)	
Higher Education	0 (0)	0 (0)	2 (100)	

Respondents' Level of SRH services utilization

The most common SRH service utilized by Batwa adolescent was guidance and counseling 81.3% while 12% utilized ante–natal services and only 6.2% utilized Family Planning and contraception services (Figure1).

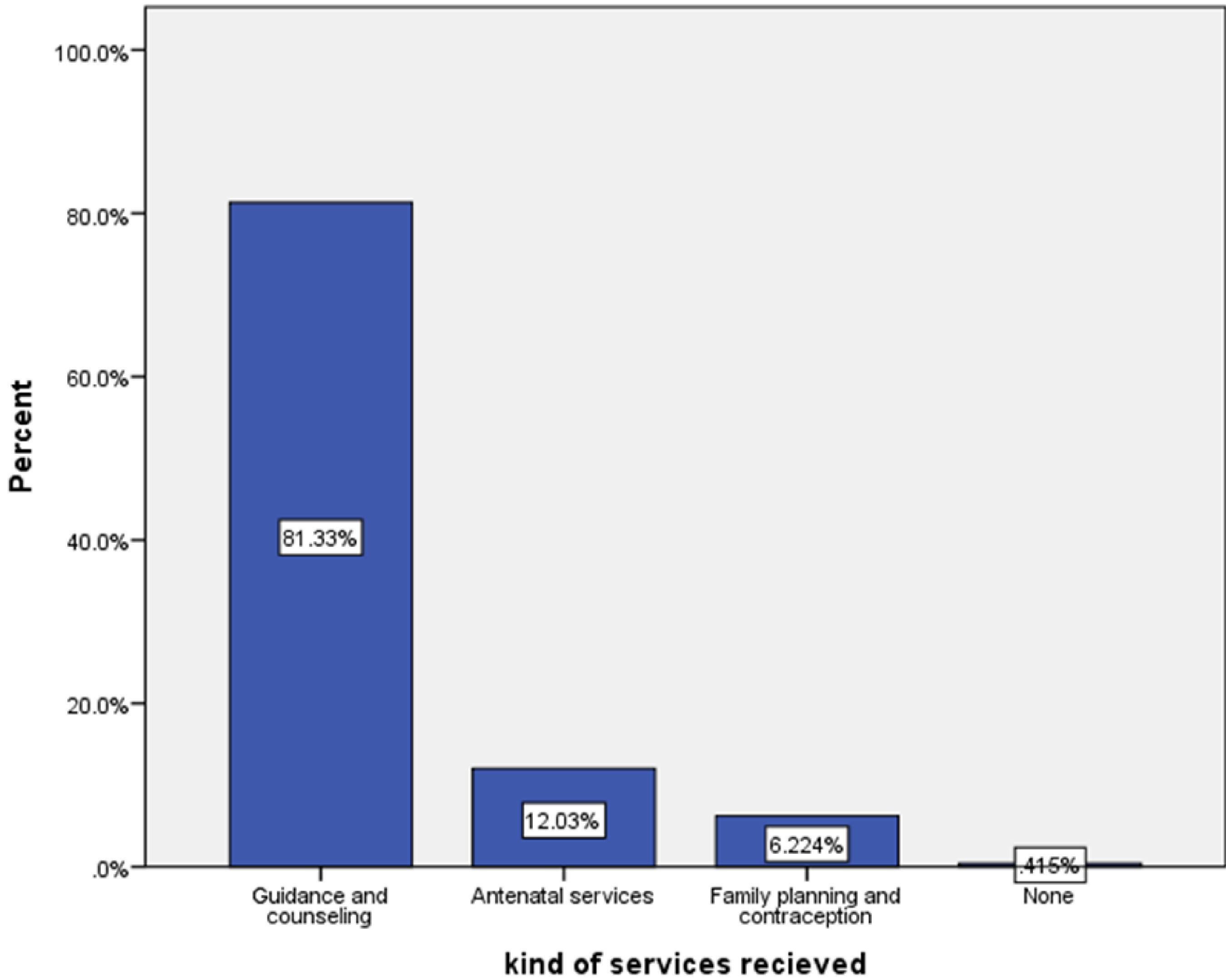

Figure 1. Reproductive health services used by Batwa adolescents

The study result showed that about 71.8%, C.I, 66 - 77 had ever heard of adolescent-friendly SRH services however 55.2%, C.I, 49 - 62 had never gone to use the SRH services. Furthermore, 58.9%, C.I, 52 - 65 had willingly went for RHS without being prompted, while 81.3%, C.I, 76 - 86 had been prompted by someone and 67.6%, C.I, 61 - 74 had not been accompanied by anyone to attend SRH (Table 5).

Table 5. Respondents' reproductive health service utilization

The level of utilization of sexual and reproductive health services among Batwa adolescents living in Kisoro district				
Reproductive Health Services Utilization	Options	Frequency	%	**95% Confidence Intervals (%)**
Ever heard of adolescent-friendly reproductive health Services	Yes	173	71.8	**(66-77)**
	No	68	28.2	**(23-34)**
Ever gone to use the Adolescent reproductive health services	Yes	108	44.8	**(38-51)**
	No	133	55.2	**(49-62)**
Have gone to access any of the productive health services in the past and how fast	As soon as the illness Develops	114	47.3	**(41-54)**
	Not really the same time but later on and delayed	127	52.7	**(46-59)**
Did anyone prompt you to go for these services?	Yes	99	41.1	**(35-48)**
	No	142	58.9	**(52-65)**
What kind of services did you receive	Guidance and Counseling	196	81.3	**(76-86)**
	Antenatal Services	29	12	**(08-17)**
	Family Planning and Contraception	15	6.2	**(04-10)**
	None	1	0.4	**(00-02)**
Had difficulties in locating the services	Yes	115	47.7	**(41-54)**
	No	126	52.3	**(46-59)**
Whether accompanied by anyone	Yes	78	32.4	**(27–39)**
	No	163	67.6	**(61-74)**

SRH services utilization and associated factors

Chi-square test analysis showed significant associations between SRH services utilization and educational status (p-value=0.029), Source of medical services (p-value<0.001) and distance to health facility (p-value<0.001) (Table 6). Level of SRH services Utilization over the past year indicated that 44.8% respondents never visited health facilities in the past year. A very small number, 0.4%, visited more than five times, 1.7% visited five times, and 2.9% visited four times. However, about 22.8% visited twice, and 20.3% visited once.

Table 6. Chi square test of the relationship between reproductive health service utilization and respondents' personal characteristics (Individual factors)

Variables n = 241	SRH Utilization		P – value
	Poor (%)	Adequate (%)	
Education			
None	78(50)	78 (50)	0.029
Primary	23 (40.4)	04(59.6)	
secondary	05 (19.2)	21(80.8)	
Higher	01 (50)	01(50)	
Facility used			
Health Center	25 (26)	71 (74)	
Private Clinic	10 (52.6)	9 (47.4)	0.000
Public Health Care Facility	72 (57.1)	54 (42.9)	
Distance from Facility			
Within 1 km	19 (23.8)	61 (76.3)	0.000
More than 5 km	88 (54.7.2)	73 (45.3)	
Gender			
Male	66 (50.3)	65 (49.7)	0.208
Female	66 (60)	44 (40)	
Age Category			
10 -14 years	32 (53.8)	33 (50.8)	0.359
15 – 18 years	75 (36.9)	101 (24.4)	
Education Status			
No formal Education	80 (51.3)	32 (20.5)	
Completed Primary	20 (35.1)	11 (19.3)	
Completed Secondary	03 (11.5)	08 (30.8)	0.001
Higher Education	0 (0)	0 (0)	

Multinomial regression analysis findings on relationship of study respondents' demographic variables that is associated with reproductive health service utilization showed distance to health facilities to be significant factor (p-value<0.001, 95% CI, 1.86 – 7.53, odds ratio [OR] 3.74). (Table7).

Individual factors associated with SRH services utilization

Study findings from individual factors associated with SRH services utilization showed that many respondents 29.9% were unaware they should seek hospital care, while 35.3% knew when to seek care, but about 57.7% did not. Additionally, 32.8% cited youth and fragility as barriers to addressing sexual harassment and abuse. The fear of discovering a health issue 35.3%, concerns about health workers' confidentiality and privacy were dismissed by 32%. In addition, 36.1% indicated financial barriers to pay for services and 38.2% felt embarrassed seeking SRH services (Table 8).

Table 7. Results of multinomial regression of study respondents' demographic variables that is associated with reproductive health service utilization

Reproductive Health Services Utilization		P-value	Odds ratio	95% CI	
				Lower Bound	Upper Bound
Adequate reproductive health services utilization	Not educated	0.10	0.98	0.05	19.00
	Primary	0.71	1.76	0.09	35.38
	Secondary	0.36	4.38	0.18	105.48
	Higher			Reference	
	Health center I	0.08	1.86	0.93	3.72
	Private facility	0.74	0.84	0.30	2.37
	Public facility			Reference	
	Within 1-5 km	0.00	3.74	1.86	7.53
	More than 5 km			Reference	

Table 8. Results of individual level factors in the utilization of sexual and reproductive health services among Batwa adolescents

Questions items for Individual level factors in the utilization of sexual and reproductive health services among Batwa adolescents	Strong Disagree	Disagree	Not Sure	Agree	**Strongly Agree**
Did not know that I should go to hospital	38 (15.8)	47 (19.5)	17 (7.1)	72 (29.9)	**67 (27.8)**
Being young and fragile made me be able to overcome sexual harassment and abuses during the lockdown	51 (21.2)	47 (19.5)	48 (19.9)	79 (32.8)	**16 (6.6)**
Lack of money to pay for the Services	51 (21.2)	61 (25.3)	42 (17.4)	58 (24.1)	**29 (12)**
Feelings of embarrassment about Using SRH services at my age	30 (12.4)	72 (29.9)	47 (19.5)	51 (21.2)	**41 (17)**
Do not think they will maintain confidentiality and privacy	34 (14.1)	37 (15.4)	77 (32)	61 (25.3)	**32 (13.3)**
Too busy with other activities and Thought that nothing will go wrong	28 (11.6)	65 (27)	57 (23.7)	59 (24.5)	**32 (13.3)**
Fear to discover that something has gone wrong with me	23 (9.5)	85 (35.3)	52 (21.6)	59 (24.5)	**22 (9.1)**
Not sure if my family will accept my visit to healthy facility	**36 (14.9)**	**47 (19.5)**	**72 (29.9)**	**59 (24.5)**	**27 (11.2)**

Health system factors associated with SRH services utilization

Health system factors influencing the utilization of SRHS included the friendliness of health workers 30.7%, feelings of shyness 27.8%, satisfaction with available services 30.3%, and concerns about the secrecy of consultations 39.4%, (Table 9). Chi-square analysis confirmed a significant relationship with reproductive health services utilization (p-value = 0.035), (Table 10). Multinomial regression analysis findings on relationship showed distance to health facilities to be a significant factor (p-value < 0.001, 95% CI, OR 3.74) (Table 11).

Table 9. Chi square test of the relationship between individual factors and the utilization of reproductive health services

The type of existing RHS		Adequate RHS Utilization (%)	In-adequate RHS Utilization (%)	P-value
Individual level factors in the utilization	High Individual factors to utilization	38 (30.2)	49 (42.6)	0.024
	Medium Individual factors to utilization	48 (38.1)	26 (22.6)	
	Low Individual factors to utilization	40 (31.7)	40 (34.8)	

Table 10. Chi - square test of the relationship between reproductive health service utilization and facility associated factors

Health facility associated factors		High health system Factors (%)	Low health system Factors (%)	P-value
Reproductive Health Services (RHS) Utilization	Adequate RHS used	57 (42.5)	77 (57.5)	
	Poor RHS used	59 (55.1)	48 (44.9)	**0.035**

Table 11. Results of multinomial regression of study respondents' individual characteristics and health system factors and their association with reproductive health service utilization

Reproductive Health Services Utilization		P-value	Odds ratio	95% CI	
				Lower Bound	Upper Bound
Adequate reproductive health services used	Individual level factor 1	0.87	1.05	0.55	2.00
	Individual level factor 2	0.15	1.61	0.84	3.11
	Individual level factor 3	Reference			
	Health System Factors 1	0.06	0.60	0.35	1.04
	Health System Factors 2	Reference			

Qualitative data generated from focus group discussions and key informant interviews:

Theme one: level of SRH services utilization

Level of utilization according FGDs

For Level of utilization of SRH services among Batwa adolescents living in Kisoro district; a number of health personnel decried the lack of SRH services among the Batwa adolescents; the district health administrator expressed the same opinion. Many Batwa adolescents are uneducated and do not understand most of what they are taught by the village health team, and often listen to rumors (R1: 12-year-old Boys FGD). I feel embarrassed using SRH services because some of the doctors are young; how can a young girl undress in front of him? You can feel ashamed. It's not easy (G6: 15 years, Girls FGD).

Levels of service utilization based on the Key informants

Key informants interviewed expressed concern over the low levels of utilization of SRH services among the Batwa adolescents. ... *I don't know if they are even there. (Mod: You mean you rarely see them?).*

Theme two: Individual-associated factors

Individual factors such as barriers like ignorance, discrimination, negative attitudes, fears, and poverty were reported to influence utilization of SRH services.

Theme three: Health System-associated factors

Health system factors primarily included fewer health facilities and long distances to those that exist. *Where are those hospitals where we can go? Can I move for a day to go for only two small tablets? I would rather stay and use the tree bark. I think it is also good*! (K3 combined FGD-3). Other concern includes health worker attitudes, and long waiting times.

DISCUSSION

Summary of key findings

The findings of this study shed light on the multifaceted factors influencing the utilization of the SRH services among Batwa adolescents in Kisoro district. The study shows that more than 50% of Batwa adolescents were aware of the availability of SRH services in their community. Adolescents with more education are also more likely to overcome the distrust and prejudices about modern medicine displayed by their less educated counterparts, hence more likely to seek care. The individual factors influencing the utilization of sexual and reproductive health services include fear, inadequate knowledge of SRH services among the Batwa adolescents in the study.

Health system and community factors like distance from the hospital, Health worker's attitude, Health worker's availability, and waiting time among others influence the adolescents' utilization of SRH services in the study.

Comparison with previous studies on the topic

The levels of utilization awareness of SRH services among Batwa adolescents; Firstly, the study found a high level of awareness of SRH services, particularly voluntary counseling and family planning, as well as sex education, condom distribution and contraception services. However, 53.5% of respondents had no knowledge of problems like menstrual problems. This level of awareness is higher than what was found by other studies in rural settings[20]. Findings from related studies showed that about six (6) variables were statistically significant including gender (0.028), educational status (0.004), with you live with (0.009), source of medical services (0.001), parents' educational status (0.018), and how far health facility is from where you stay (0.001) respectively [21,36].

Further findings from the study with regards to the level of utilization of reproductive health services in the past I year revealed that a sizeable proportion (44.8%) of Batwa adolescents have never visited the facility in the past year, while about 7.1% had visited three times, less than a quarter (20.3%) had visited once signaling poor service utilization. These results seem to concur with those found by other scholars in other populations [21,24].

On reproductive health services utilization the study showed 55.2 % Batwa youth who had never gone to use the adolescent reproductive health services, though a good number 81.3% went for guidance and counseling, 12% of them went for ante–natal services and 6.2% for family planning and contraception respectively. The low levels of SRHS utilization is consistent with other studies conducted in Ethiopia where around 30% of adolescents reported using sexual and reproductive health services that significantly older female

adolescents report using SRH services compared to both their younger female and male counterparts [36,37].

The study found educational status (p=0.029), source of medical services (p<0.001), and how far the health facility from where you stay (p<0.001) to influence SRH services utilization. A statistically significant association exists between adequate SRH services utilization and with a high level of awareness of reproductive health services (p<0.001) with Chi-square test. The health facility factors had a significant relationship with RHS utilization (0.035) with Chi – square test. Adolescents' sexual and reproductive health knowledge is shown to influence service utilization. This result is in line with the studies done by Ninsiima [21] and Tilahun [36] that found adolescents with more sexual and reproductive health knowledge would utilize sexual and reproductive health services just as increased educational status would. Although in the regression model the effect of education level on service utilization, which was significant in the Chi-square results turned out non- significant which points to some form of confounding relationship with the other factors in the model, other studies have suggested a role played by education in improving sexual and reproductive health care utilization [21,37].

The Multinomial regression in the study showed that shorter distance to the health facilities is strongly associated with higher SRH services utilization. People who live closer to the facilities are more likely to access the SRH services, suggesting that proximity to care is critical determination in health care utilization.

The individual associated factors with Batwa adolescent lack of willpower to seek care when faced with reproductive health challenges; others perceived that they were young and fragile. This finding agrees with Phongluxa [38], who also found out that young Vietnamese adolescents also lacked knowledge of when to seek care, feared discovering that something had gone wrong and others are not sure if health workers would maintain confidentiality and privacy. Similar studies by Abdurahmana [24] and Binu [39] also found such concerns about privacy to be an impeding factor in SRH service utilization. The Chi- square test showed a significant relationship with level of awareness of reproductive (p< 0.001) and type of existing reproductive health services (p= 0.024) respectively.

The health system-associated factors to SRH utilization in the study show that 27.8% feel shy to get the services related to SRH, while some other 30.3% adolescents were undecided on whether they are satisfied with the available services. Significant relationships exist between health facilities factors and level of awareness of reproductive health (p<0.001).

Interpretation of the findings

The study shows that more than 50% of Batwa adolescents were aware of the availability of SRH services in their community. This level of awareness is significantly higher than what was found by [20] i study which indicated lower levels of awareness.

Qualitative study results; findings agree with the results from the quantitative study with focus group discussion showing insufficient knowledge, fear of parents finding out they sought sexual and reproductive health services, fear of health workers' lack of confidentiality, poverty, negative attitude, long waiting hours in health facility, discrimination, and insecurity. These findings are consistent with the findings of other studies [20,21]. Higher levels of education might influence the utilization of SRH services [21,37]. Similarly, the distance to healthcare facilities emerged as a key determinant of service utilization [24].

Implications of findings

The study provides valuable insights crucial to addressing individual, community, and health system barriers. Targeted interventions can help improve access to SRH services and promote the sexual and reproductive health and rights of marginalized populations. However, sustained efforts and collaborative partnerships are needed to achieve meaningful and sustainable change in SRH.

Moreover, issues such as discrimination, negative attitudes from healthcare providers, and fear of community judgment underscore the importance of addressing systemic inequalities within the healthcare system through collaborative efforts with different stakeholders [21,39]. Furthermore, language barriers and cultural nuances, underscore the importance of engaging community members and local stakeholders

in the research process. Future studies should prioritize community-based participatory research [20,21].

Strengths and limitations of the study

Use of mixed methods was considered a strength as it the qualitative methods provided the personal individual phenomenon in addition to the quantitative methods. The batwa being a minority and marginalized group also provided a unique opportunity to study them. Batwa are a closed community that found it hard to talk freely to others which presents a significant limitation in the sharing of information. The researcher does not speak Echuya (Batwa Language) however used a translator and culture mediator which could have limited the primary information from the respondents.

CONCLUSION

The study highlights the complex interplay of individual, community, and health system factors that shape access to SRH care in marginalized populations.
The study's findings underscore the importance of targeted interventions to address the unique needs and challenges faced by Batwa adolescents. Efforts to improve access to SRH services must consider the socio-cultural context, including issues of discrimination, stigma, and fear of judgment.

The significant associations between demographic characteristics and SRH service utilization emphasize the need for tailored approaches to address disparities in access. By expanding access to healthcare facilities, improving provider-patient communication, and addressing systemic inequalities, policymakers and healthcare providers can help break down barriers to care and promote equitable access to SRH services for all adolescents.

Furthermore, the study's findings highlight the importance of community engagement and collaboration in addressing SRH disparities. By involving local stakeholders in the design and implementation of interventions, policymakers can ensure that solutions are culturally appropriate and responsive to the needs of marginalized populations.

This study provides valuable insights into the factors influencing SRH service utilization among Batwa adolescents and underscores the need for targeted, multi-faceted interventions to improve access to care. By addressing individual, community, and health system barriers, policymakers and healthcare providers can help promote the sexual and reproductive health and rights of marginalized populations, ultimately contributing to better health outcomes and well-being for all.

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CONFLICT OF INTEREST

We, Robert Kyambade, Chinenye Mercy Nwankwo, Munezero J.B. Tamu and Okafor Christiana confirm that neither us nor Kabale University fraternity are in any conflict of interest that could potentially influence or bias the work described in the manuscript. The relationships that exist among us are those of professional relationships and affiliation. We hereby agree to the publication of all such disclosure in the acknowledgement section of the article, should the manuscript be accepted for publication in the journal.

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