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Factors associated with the utilization of contraceptives among teenagers in western Uganda: a cross-sectional study

Moses Thembo[1,2]*, Maureen Andinda[1], Antony Ikiriza[1], Miisa Nanyingi[1] and Mathias Lwenge[1,3]

[1]**Department of Public Health, Faculty of Health Sciences, Uganda Martyrs University, Kampala, Uganda**
[2]**Faculty of Allied Health sciences, Kampala International University, Uganda**
[3]**Uganda Allied Health Examinations Board P.O BOX 22733 Kampala Uganda**
***Corresponding author: Thembo Moses; msibiling@gmail.com**

ABSTRACT

Teenage pregnancy continues to be a significant public health concern in Uganda, with approximately one thousand cases reported daily. The lack of access to and underutilization of contraceptives contribute to this issue. We aimed to investigate the factors associated with the utilization of contraceptives among teenagers. This cross-sectional study collected data on socio-demographics, health facility-related factors, access to contraceptive information and contraceptive utilization from 409 teenagers aged 13–19 years in Ntandi Town Council in Bundibugyo, western Uganda. Prevalence ratios (PR) with 95% confidence intervals were estimated using a modified Poisson regression analysis with robust standard errors to determine factors associated with contraceptive utilization considering significant factors with a p-value <0.05. The utilization of contraceptives among teenagers aged 13 to 19 years in Bundibugyo District was 53.1% (n=217 / 409) 95%CI=48.1% - 58%). The factors associated with contraceptive utilization included: being an older teenager (17-19 years aPR=0.931, 95%CI=0.87 - 0.99), being employed (aPR=2.177, 95%CI=1.06 - 4.48) teenagers having 3 to 4 children (aPR =1.28, 95% CI = 1.05–1.56), having attained a secondary education (aPR =1.37, 95% CI = 1.13–1.67), distance to the nearest health facility (aPR =1.07, 95% CI = 1.02–1.13), and preferred health facility type (preferring a Health Centre IV: aPR=1.050 95%CI=1.00 - 1.10); preferring a hospital: aPR =1.070, 95% CI = 1.02-1.12). The utilization of contraceptives was high 53.1% as compared to Uganda's 2030FP commitment of 39.6% by 2025 for all women. When targeting intervention for contraceptive utilization, emphasis should be put on younger teenagers and those with index pregnancies. Further research can be done on why teenagers prefer to receive contraception services from higher cadre facilities.

Keywords: Contraceptive utilization, Teenagers, Early pregnancies, Bundibugyo District

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INTRODUCTION

Teenage pregnancy remains a significant public health concern globally, and Uganda is no exception[1]. Sub-Saharan Africa, in particular, faces a high incidence of teenage pregnancies, contributing to rapid population growth due to low contraceptive prevalence rates[2]. Teenagers between the ages of 13 and 19 years who deliberately and regularly use contraceptives guard themselves against unexpected births. This gives them control over their reproductive health and the ability to make wise choices regarding their sexual and reproductive lives [3]. Hormonal techniques (such as oral contraceptives or patches), barrier methods (like condoms), intrauterine devices (IUDs), implants, and fertility awareness-based methods are some examples of contraceptive methods[4]. Despite a decrease in the global unmet need for contraceptives and an increase in contraceptive prevalence, approximately 23 million adolescent girls worldwide still lack access to modern contraception[5]. This puts them at risk of unintended pregnancies. Access to contraception for adolescents is critical, especially in sub-Saharan Africa, where unmet needs are significant [6]. Initiatives such as Family Planning 2020 aim to reach 120 million women and girls with contraceptive service[7]. Teenage pregnancies develop many devastating complications, both the mother and the neonate like developing anemia, nutritional deficiency, pregnancy induced hypertension, preterm baby, inadequate weight gains and obstructed labor, fistula and sepsis and those who use contraception are less likely to have unsafe abortions and unwanted pregnancies[6]. Adolescents may take charge of their reproductive health and make wise choices about their future thanks to it[8]. Teenagers can pursue education, job possibilities, and personal growth by delaying early marriage and childbirth. Contraceptive use can foster sustainable development and community empowerment among adolescents, their families, and communities by lowering teenage pregnancies. Effective contraceptive use saves lives, improves health, and promotes economic development, particularly in resource-limited settings. Previous studies in sub-Saharan Africa have shown a decline in unmet family planning needs among teenagers[2],[5]. Uganda continues to experience low contraceptive uptake and high unmet needs[9]. According to the data from the Biostatician of Bundibugyo district 2,327 teenage pregnancies were reported in 2021 during the COVID-19 lock down. To address teenage pregnancy and contraceptive underutilization in Bundibugyo, it is crucial to understand teenage contraception use and the factors associated with this utilization of contraceptives in a largely rural and mountainous area [10]. Access to healthcare services, including family planning, might be particularly difficult in rural and mountainous locations[11]. Understanding contraceptive use in these regions might help to better comprehend the challenges and constraints the population faces. These challenges may include a scarcity of healthcare services, remote locations, and challenging terrain[12]. This information can be used to develop targeted interventions and strategies suited to the needs of the population in the rural mountainous district. The objective of the study was to assess factors associated with contraceptive use among teenagers in Western Uganda.

METHODS

Aim of study: To assess factors associated with the utilization of contraceptives among teenagers in western Uganda.

Study Design: This cross-sectional study was conducted among teenagers aged 13-19 years between March 2022 and August 2022 in western Uganda.

Characteristics of respondents

The respondents where 409 respondents participated. The majority of participants were 13 to 16 years (50.4%), while the remaining respondents were aged 17 to 19 years (49.6%). The sample consisted of 72.6% males and 27.4% females. Regarding religion, the largest proportion is Adventist (44.4%), followed by Protestant/Anglican (21.0%), Pentecostal (15.8%), and Catholic (8.9%). Among the respondents, 17.1% were married or cohabiting, 66.5% were single, and 14.2% were classified as not applicable in terms of marital status. It was reported that 24.2% of the respondents had a child, with the majority having 1 to 2 children (66.3%), followed by 3 to 4 children (18.1%), and 5 or more children (15.7%). In terms of education level, 79.0% had completed primary education, 13.9% had completed secondary education, and 7.1% had attained a tertiary education level or above.

Study Setting: The study took place in Ntandi Town Council which is situated on the slopes of mountain Rwenzori in Bundibugyo District. Bundibugyo District has a population of approximately 277,900, according to the 2014 national census[13]. Ntandi town council, with a population of 9,830 people, was selected as the study area[14]. The district has twelve government health facilities, including Busaru Health Centre IV and Ebenezer SDA Health Centre III, which provide family planning services like youth friendly services with adolescent corners. As of August 2023, Bundibugyo district had a population of 47,520 teenagers with 25.3% teenage pregnancy rate as indicated in the District Health Information System Two (DHIS2). Subsistence agriculture and animal farming are the major economic activities and cocoa is the main cash crop [25].

Study Population: The study included teenagers aged 13–19 years residing in Ntandi Town Council, Bundibugyo District.

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Inclusion Criteria: Teenagers aged between 13 and 19 years who lived in Ntandi Town Council, Bundibugyo District, were eligible for the study because 2,327 teenagers had become pregnant. At the same time, we targeted this age group in the study to assess factors associated with utilization of contraceptives among teenagers age 13-19years.

Exclusion Criteria: Teenagers who did not consent to participate in the study and those who were absent or ill during the interview were excluded.

Sample Size Determination: The sample size was determined using the Kish Leslie (1965) formula[15]. This considered a conservative prevalence of 55% for family planning utilization among adolescents below 18 in Nakaseke District [16];

$$n = \frac{Z^2 P(1-P)}{d^2}$$

With a sampling error of 5% and a non-response rate of 10%, the calculated sample size was **422** participants. A total of 409 participants were interviewed in this study leading to a response rate of 96.9% and this implies that the response rate was good enough to conduct the analysis since a response rate of more than 70% is recommended by most of the study [23]. Those that were not included in the analysis was because of incomplete or missing data for key variables in the study [24].

Sampling Procedure: A multistage sampling technique was employed. Seven parishes were randomly selected from Ntandi town council. From each parish, one village was randomly sampled, Household lists were generated, and households were randomly selected to include one teenager aged 13–19 years in the study. The number of participants was proportionate to the village size.

Measurement of variables

Dependent Variable: Utilization of contraceptives

Measurement of Dependent Variable: We asked each participant if they ever utilized contraceptives before. Those that answered yes were categorized as ever utilized and coded one and those who answered No were categorized as never utilized and coded Zero. For those that answered yes, we asked them which method they have ever used. To which we got the responses as; condoms, injectables, IUD(Intra uterine Device)implants, safe days method and pills.

Independent Variables:

Socio-demographic factors (e.g., age, religion, ethnicity, employment status).
Individual factors (e.g., knowledge, attitudes, age at first sexual intercourse, number of sexual partners, health insurance).
Health system factors (e.g., health insurance, availability of services).

Data Collection Methods and Techniques: Experienced and qualified research assistants used structured questionnaires preloaded on tablets. The questionnaires covered demographic characteristics, contraceptive information, utilization of contraceptive methods, and perceptions related to contraceptive utilization. Open Data Kit (ODK) software was used for electronic data capture to minimize errors and save time on data entry.

Quality Control and Quality Assurance of Data: Data quality assurance included training of research teams, piloting of tools, and regular supervision. Research assistants trained and piloted tools for reliability and coherence. Tools were pretested and errors were corrected.

Data analysis: Data cleaning was conducted during data collection to address errors. The data was exported to STATA version 15.0 for analysis. The univariate analysis included frequencies and valid percentages. A generalized linear model using modified Poisson regression with robust standard errors was employed to estimate prevalence odds ratios and 95% confidence intervals for factors associated with contraceptive utilization among teenagers.

RESULTS

Characteristics of the respondents: Table 1 presents characteristics of the respondents where 409 respondents participated. The majority of participants were 13 to 16 years (50.4%), while the remaining respondents were aged 17 to 19 years (49.6%). The sample consisted of 72.6% males and 27.4% females. Regarding religion, the largest proportion is Adventist (44.4%), followed by Protestant/Anglican (21.0%), Pentecostal (15.8%), and Catholic (8.9%). Among the respondents, 17.1% were married or cohabiting, 66.5% were single, and 14.2% were classified as not applicable in terms of marital status. It was reported that 24.2% of

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the respondents had a child, with the majority having 1 to 2 children (66.3%), followed by 3 to 4 children (18.1%), and 5 or more children (15.7%). In terms of education level, 79.0% had completed primary education, 13.9% had completed secondary education, and 7.1% had attained a tertiary education level or above.

Table 1: characteristics of the respondents (n=409)

Variables		**Outcome**
Age(yrs)	13 to 16	206(50.4)
	17 to 19	203(49.6)
Sex	Male	297(72.6)
	Female	112(27.4)
Religion	Catholics	36(8.9)
	Protestant/Anglican	85(21.0)
	Adventist	180(44.4)
	Pentecostal	64(15.8)
	Moslems	26(6.4)
	No religion	14(3.5)
Marital Status	Married/cohabiting	70(17.1)
	Single	272(66.5)
	Separated/Divorced	9(2.2)
	Not applicable	58(14.2)
Has a child? (YES)		99(24.2)
Number of children	1 to 2	55(66.3)
	3 to 4	15(18.1)
	5 or more	13(15.7)
Education level	Primary	323(79.0)
	Secondary	57(13.9)
	Tertiary and above	29(7.1)

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PREVALENCE OF CONTRACEPTIVE UTILIZATION

Utilization of contraceptives among teenagers aged 13-19 years in Ntandi Town Council, Bundibugyo district was 217/409(53.1%) as indicated in Fig.1 with disaggregated data of different contraceptive methods; pills, safe days, IUDs, injectables, and condoms.

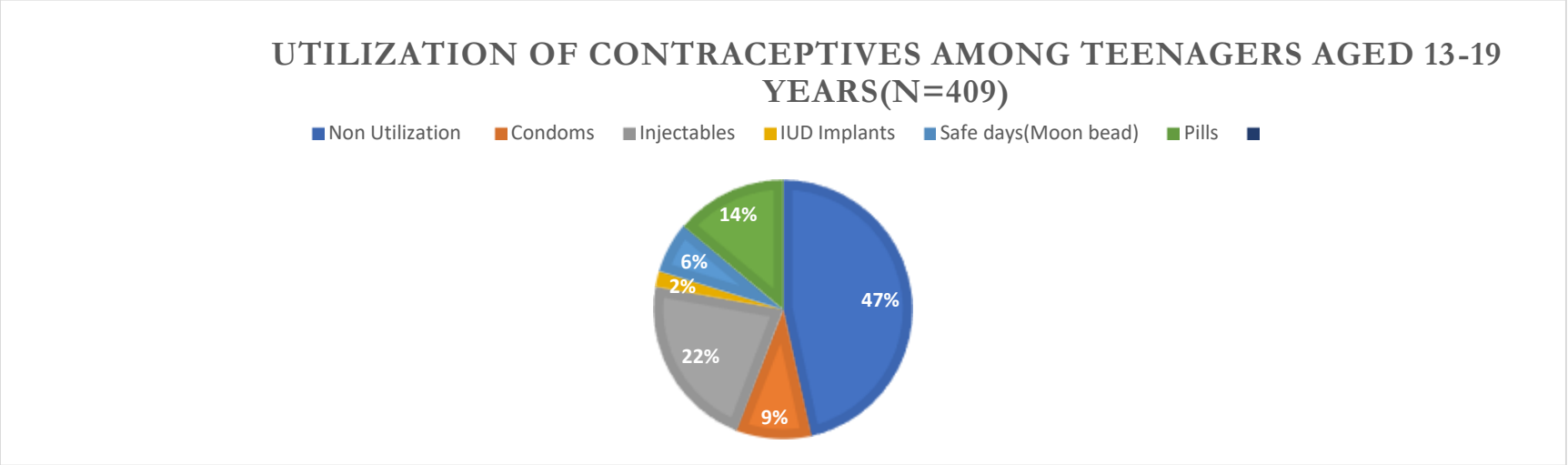

Figure 1: Utilization of contraceptives among teenagers aged 13-19 years in Ntandi Town Council

Factors associated with utilization of contraceptives at bivariate levels.

Table 2 explores the factors associated with contraceptive utilization among teenagers aged 13–19 years in Ntandi Town at bivariate analysis. The analysis revealed significant findings in several variables. Firstly, teenagers aged 17 to 19 years had significantly higher utilization of contraceptives than those aged 13 to 16 years.

Table 2: Factors associated with utilization of contraceptives

Individual Factors										
Variables				**Univariate n(%)**	**Bivariate**				**Multivariate**	
					Contraceptive Utilization, n(%)		**cPR(95% CI)**	**p-Value**	**aPR(95% CI)**	**p-Value**
					NO	**YES**				
Age(yrs)		13 to 16		206(50.4)	128(62.1)	78(37.9)	1		1	
		17 to 19		203(49.6)	64(31.5)	139(68.5)	1.808(1.483 2.206)	<0.001**	0845(0.684 1.044)	0.118
Sex		Male		297(72.6)	131(44.1)	166(55.9)	1			
		Female		112(27.4)	61(54.5)	51(45.5)	0.815(0.650 1.022)	0.076**		

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Religion		Catholics		36(8.9)	18(50)	18(50)	1			
		Protestant/ Anglican		85(21.0)	37(43.5)	48(56.5)	1.129(0.775 1.646)	0.527		
		Adventist		180(44.4)	83(46.1)	97(53.9)	1.078(0.757 1.535)	0.678		
		Pentecostal		64(15.8)	27(42.2)	37(57.8)	1.156(0.784 1.7050)	0.464		
		Moslems		26(6.4)	17(65.4)	9(34.6)	0.692(0.372 1.289)	0.246		
		No religion		14(3.5)	7(50)	7(50)	1(0.539 1.855)	1		
Marital Status		Married/cohabiting		70(17.1)	20(28.6)	50(71.4)	1			
		Single		272(66.5)	135(49.6)	137(50.4)	0.705(0.583 0.852)	<0.001**		
		Separated/Divorced		9(2.2)	0(0)	9(100.0)	1.400(1.207 1.624)	<0.001**		
		Not applicable		58(14.2)	37(63.8)	21(36.2)	0.507(0.349 0.736)	<0.001**		
Has a child? (YES)				99(24.2)	22(22.0)	77(77.8)	1.722(1.465 2.025)	<0.001**		
Number of children		1 to 2		55(66.3)	11(20)	44(80)	1		1	
		3 to 4		15(18.1)	1(6.7)	14(93.3)	1.167(0.965 1.411)	0.112**	1.282(1.054 1.560)	0.013*
		5 or more		13(15.7)	3(23.1)	10(76.9)	0.962(0.693 1.334)	0.815	1.157(0.819 1.634)	0.407
Education level		Primary		323(79.0)	160(49.5)	163(50.5)	1		1	
		Secondary		57(13.9)	15(26.3)	42(73.7)	1.460(1.208 1.764)	<0.001**	1.370(1.128 1.665)	0.002*
		Tertiary and above		29(7.1)	17(58.6)	12(41.4)	0.820(0.524 1.282)	0.384	0.328(0.096 1.119)	0.075
Occupation		Never employed		53(14.2)	13(24.5)	40(75.5)	1		1	
		Employed		9(2.4)	3(33.3)	6(66.7)	0.883(0.543 1.438)	0.618	2.177(1.059 4.475)	0.034*
		No formal Employment		36(9.6)	18(50)	18(50)	0.663(0.462 0.951)	0.026**	1.055(0.768 1.448)	0.741
		Self employed		68(18.2)	13(19.1)	55(80.9)	1.072(0.884 1.299)	0.481	1.009(0.800 1.272)	0.942
		Student		208(55.6)	124(59.6)	84(40.4)	0.535(0.427 0.671)	<0.001**	0.948(0.600 1.500)	0.821
Type of residence		Urban		168(41.1)	79(47.0)	89(53.0)	1			
		Rural		241(58.9)	113(46.9)	128(53.1)	1.003(0.833 1.207)	0.978		
Needs for care factors										
Reason for opting to use certain FP method										
		Avoid Pregnancy		27(12)	1(3.7)	26(96.3)	1		1	
		Avoid/prevent STIs		18(8)	4(22.2)	14(77.8)	0.106(0.624 1.046)	0.105	0.818(0.632 1.060)	0.129
		Fear of HIV		180(80)	5(2.78)	175(97.2)	1.010(0.934 1.092)	0.81	1.021(0.938 1.110)	0.635
Health system factors										

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Health facility type preferred by the teenager									
	Health Center II / III		152(70.3)	8(5.3)	144(94.7)	1		1	
	Health Center IV		6(2.8)	0(0)	6(100)	1.056(1.017 1.096)	0.005**	1.050(1.000 1.102)	0.044*
	Hospital		4(1.9)	0(0)	4(100)	1.056(1.017 1.096)	0.005**	1.070(1.020 1.123)	0.005*
	Pharmacy/drug shop		54(25)	2(3.7)	52(96.3)	1.016(0.953 1.084)	0.62	1.001(0.937 1.069)	0.972
Youth Friendly Corner									
	Not available		113(52.8)	7(6.2)	106(93.8)	1			
	Available		101(47.2)	3(3.0)	98(97.0)	1.034(0.976 1.097)	0.258		
Health worker availability whenever seek for contraceptives									
	Not available		36(16.4)	3(8.3)	33(91.7)	1			
	Always available		184(83.6)	7(3.8)	177(96.2)	1.049(0.947 1.163)	0.358		
Community Outreaches for contraceptives									
	Not available		133(42.2)	39(29.3)	94(70.7)	1		1	
	Available		182(57.8)	73(40.1)	109(59.9)	0.847(0.721 0.996)	0.045**	1.053(0.943 1.176)	0.357
VHTs involved in offering contraceptives									
	No		146(42.3)	50(34.3)	96(65.8)	1		1	
	Yes		199(57.7)	88(42.2)	111(55.8)	0.848(0.715 1.006)	0.059**	0.962(0.863 1.072)	0.479
Distance to nearest Health facility									
	5 or less KM		316(79)	158(50.0)	158(50.0)	1		1	
	More than 5 KM		84(21)	31(36.9)	53(63.1)	1.262(1.036 1.537)	0.021**	1.074(1.021 1.129)	0.006*
Trusted source of information for contraceptives									
	Place of worship		12(3.5)	7(58.3)	5(41.7)	1			
	Health facility		225(74.8)	95(37.3)	160(62.8)	1.506(0.765 2.964)	0.236		
	Media		74(21.7)	30(40.5)	44(59.5)	1.427(0.711 2.863)	0.317		
CU Contraceptive Utilization, PR Prevalence, aPR Adjusted Prevalence Ratio, cPR Crude Prevalence Ratio, CI Confidence Interval									

Gender was not a significant factor in contraceptive utilization. However, marital status played a role, with married or cohabiting teenagers and those separated or divorced having higher utilization rates than single teenagers. Teenagers with children also had significantly higher utilization rates of contraceptives than those without children. Additionally, teenagers with secondary education demonstrated higher utilization rates of contraceptives than those with primary education. Lastly, students had lower utilization rates than informal workers. These findings provide significant insights into factors influencing contraceptive utilization among teenagers. They emphasize the need for further analysis to assess independent effects while adjusting for other variables.

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Factors associated with contraceptive at multivariate level

Table 3; examines individual factors associated with contraceptive utilization among teenagers aged 13 to 19 years in Ntandi town council, Uganda. Teenagers in the age group of 17 to 19 years had significantly higher utilization of contraceptives than those aged 13 to 16 years (68.5% vs. 37.9%, p =0.044), even after adjusting for other factors. Having 3 to 4 children was associated with significantly higher utilization of contraceptives than having 1 to 2 children (93.3% vs. 80.0%, p = 0.021). Teenagers with secondary level of education were found to have significantly higher utilization of contraceptives than those with primary level of education (73.7% vs. 50.5%, p = 0.002). These findings highlight the importance of age, marital status, and education level in determining contraceptive service utilization among teenagers. Teenagers in the older age group and those who are married or cohabiting are more likely to utilize these services. Furthermore, higher education levels are associated with an increased likelihood of utilizing contraceptives among teenagers in the study population. These insights can inform targeted interventions and strategies to improve contraceptive utilization among teenagers in Ntandi Town Council, Uganda.

DISCUSSION

This study aimed to investigate the factors associated with contraceptive utilization among teenagers aged 13–19 years in Ntandi town council, Bundibugyo district, western Uganda. The findings revealed several significant factors that influenced contraceptive utilization among teenagers in the study population. One significant finding was the difference in contraceptive utilization between different age groups. Teenagers aged 17 to 19 years had significantly higher utilization of contraceptives than those aged 13 to 16 years. This finding suggests that older teenagers are more likely to seek and utilize contraceptives. This is possibly due to increased awareness, maturity, and understanding of family planning. The number of children also plays a role in contraceptive utilization among teenagers. Teenagers with 3 to 4 children were more likely to utilize contraceptives than those with 1 to 2 children. This finding emphasizes the importance of family size and reproductive decision-making among teenagers. Our findings in tandem with other studies for instance in a cross-sectional study conducted in Malawi among 383 post-partum women revealed that more than three quarters of post-partum women wanted to have 5 or more children and the desired number of children was significantly associated with current use of contraceptives [17]. It suggests that teenagers who already have a higher number of children may be more motivated to use contraception to prevent additional pregnancies. Education level emerged as a significant factor influencing contraceptive use among teenagers. Teenagers with secondary education had higher utilization of contraceptives than those with primary education. This finding highlights the importance of education in empowering teenagers with knowledge and understanding of contraceptives, their benefits, and how to access them. Our findings are in keeping with a study in Ethiopia which documented that adolescents with secondary education and above were about 9 times more likely to utilize contraceptives as compared to those with no formal education [18]. Similarly, [19], reported that the odds of contraceptive use were lower among female adolescents who had no formal education. In Indonesia, [20], found that students with high levels of knowledge are nearly twice as likely to utilize adolescent reproductive health services as those with low levels of knowledge. It suggests that educational interventions targeting teenagers with lower education levels may promote contraceptive utilization. Furthermore, the preferred type of health facility for contraceptive use also had an impact on utilization. Teenagers who preferred hospitals or health centers IV were more likely to utilize contraceptives than those who preferred health centers II/III. This finding underscores the significance of accessibility and availability of services in influencing contraceptive utilization. It suggests that ensuring that health facilities, particularly hospitals and higher-level health centers, are equipped to provide comprehensive family planning services can positively impact teenagers' contraceptive use. In Kinshasa capital of Democratic Republic of Congo found that the effect of community and facility-level access factors varies extensively but having fewer stocked-out facilities and more facilities with long-acting permanent methods (LAPM) increases the odds of using modern contraceptives among women in Kinshasa [21]. Lastly, distance to the health facility was found to be a significant factor affecting contraceptive utilization. Teenagers who lived more than 5 kilometers away from the health facility were more likely to utilize contraceptives than those residing closer. This finding may indicate that teenagers who face significant barriers to accessing health services, such as those living in remote areas, are more motivated to seek and utilize contraceptives when they have the opportunity. Our findings are in contrary to a study conducted in Malawi reported that social barriers to contraceptive use by girls included having to travel long distances to health facilities to access family planning services including emergency contraceptives [22-25]. The possible reason for this difference could be that the study consisted of only school-going adolescent girls whereas this study strictly focused on both boys and girls between 15 to 19 years whether school going or not school going [22-25]. The Differences in the composition of the study subjects might be the reason for the different findings.

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CONCLUSION

The utilization of contraceptives is 53.1%. When targeting intervention for contraceptive utilization, emphasis should be put on younger teenagers and those with index pregnancies. Further research can be done on why teenagers prefer to receive contraception services from higher cadre facilities.

Abbreviations:

FP Family planning
CPR contraceptive prevalence rate
ICPD International Conference on Population and Development
SDGs Sustainable Development Goals
UN United Nations
SRH sexual and reproductive health
WHO World Health organization
VHTs Village Health Teams
IUDs Intrauterine Device
CU Contraceptive Utilization

DECLARATIONS

Ethical approval and consent: Ethical approval to conduct the study was obtained from the Mildmay Uganda Research Ethics Committee with REC Number: **REC REF 0605-2022.** Ethical measures included obtaining informed consent, ensuring participant privacy with coded data collection, and offering counseling for distress. Trained researchers collected data, and participants received compensation in the form of a bar of soap.

Consent for publication: Not applicable to this study**.**

Availability of data and materials: The dataset used and analyzed in the current study can be obtained from the corresponding author upon reasonable request.

Competing interests: The study did not receive any form of funding. And no person received any financial assistance for their contribution in the research.
Funding: No external funding was received for this study.

Authors' contributions: The project was initiated by MT and ML. MT and SE conducted the data analysis with significant input from ML. MT was involved in developing the initial draft of the manuscript, which was reviewed by AN, JN, AM, AI, and MN. All authors contributed to subsequent manuscript versions. The authors take full responsibility for the content of this article, which may not necessarily reflect their respective institutions' views.

Strengths and limitations:

The findings in this study can provide relevant information as we are attaining Universal Health coverage through implementation of Sustainable Development Goals, since it highlights positive aspects that can be strengthened to increase the use of contraceptives.

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Conflicts of interest: The authors declare no conflicts of interest.

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