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Research

Factors Associated with Contraceptive Utilization among Adolescent Girls and Young Adult Women in Kigali, Rwanda.

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Abstract

Background: Contraceptive utilization among adolescent girls and young adult women in Rwanda remains a public health concern, particularly in Nyarugenge District. The Rwanda Demographic and Health Survey (RDHS) 2020 reported that 5% of adolescent girls had already begun childbearing. Limited contraceptive utilization, inadequate knowledge, and negative perceptions contribute to early pregnancy among young girls. This study aimed to determine factors influencing contraceptive utilization among young girls attending health centers in Nyarugenge District, Rwanda.

Methods: A health facility-based cross-sectional study using a quantitative approach was conducted among young girls aged 15–24 years attending selected health centers in Nyarugenge District from October to December 2024. Cochran's formula was utilized to determine a sample size of 255 participants. Data were collected using a structured questionnaire adapted from previous studies on contraceptive utilization. Data analysis was performed using SPSS version 21. Chi-square tests and logistic regression analyses were conducted to identify factors associated with contraceptive utilization at a 95% confidence interval and $p < 0.05$.

Findings: Overall, 47.3% of respondents reported current contraceptive utilization, while 52.7% were not using any contraceptive method. Adolescent girls and young adult women in wealth category 3 were more likely to utilize contraceptives compared to those in category 1 (AOR = 4.836, 95% CI: 1.682–13.905, $p = 0.003$). Participants knowledgeable about contraceptives were significantly more likely to utilize them (AOR = 4.272, 95% CI: 1.972–9.254, $p < 0.001$). Having two or more sexual partners was also significantly associated with contraceptive utilization (AOR = 3.939, 95% CI: 1.897–8.179, $p < 0.001$).

Conclusion: Contraceptive utilization among young girls in Nyarugenge District remains suboptimal. Economic status, contraceptive knowledge, perception, media exposure, number of sexual partners, and smoking behaviour significantly influenced contraceptive utilization.

Keywords: Contraceptive utilization, adolescent girls, young adult women, reproductive health,

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INTRODUCTION

Globally, in 2017, around 20 million of the 37 million young girls in the age of 15 to 19 who were either active sexually or married and wanted to prevent pregnancy in the upcoming years were not using modern contraceptive methods, despite needing them (Darroch et al., 2018). According to United Nations Population Fund (2021), the prevalence rate of contraceptive among cohabiting or married girls in the age group of 15-24 is 24% in the world (United Nations Population Fund [UNFPA], 2021). The 2019 global forecast on contraceptive utilization projected that addressing the unmet contraceptive needs of young women could annually prevent 2 million unwanted births, 4 million abortions, and 6 million unintended pregnancies (Sully et al., 2020).

Several factors influence contraceptive utilization among young girls including access to education, cultural and religious beliefs, socio-economic status, and availability of contraceptive services. For instance, girls who have higher levels of education are more likely to utilize contraceptives due to increased awareness and knowledge about reproductive health (UNFPA, 2023). Additionally, socio-economic status plays a crucial role, with girls from wealthier families having better access to contraceptives compared to those from poorer backgrounds (Guttmacher Institute, 2023). A study carried out in Nepal showed that 93(13.6%) of young women between 15 to 24 were using contraceptive. Injectables were the most commonly utilized modern contraceptive method, reported by 37.9% of utilizers. This was followed by male condoms, utilized by 35.9%, and implants, which were reported by 8.8% of utilizers (Angdembe et al., 2022).

Cultural and religious beliefs also significantly impact contraceptive utilization. In some cultures, there is a stigma associated with young, unmarried girls using contraceptives, which can discourage them from seeking these services (Plan International,

2023). Moreover, in many parts of the world, contraceptive services are not easily accessible to young girls due to legal restrictions, lack of youth-friendly services, and limited availability of contraceptives (UNFPA, 2023).

In Africa, the utilization of contraceptives by young girls is generally lower than the global average, with significant variations across countries and regions (African Union, 2023). The contraceptive prevalence rate among adolescents in sub-Saharan Africa is approximately 18%, with countries like South Africa and Kenya having higher rates of usage compared to others like Niger and Chad (African Union, 2023). The low utilization of contraceptives in many African countries is due to factors including absence of access to reproductive health services, cultural norms, and misconceptions about contraceptives (Marie Stopes International, 2023).

In many sub-Sahara African societies, discussing sexual and reproductive health is often taboo, leading to a lack of accurate information and knowledge among young girls. In Benin, the modern contraceptive utilization by young women aged 15 to 24 years was very low with 8.5% (Ahissou et al., 2022). This situation is exacerbated by cultural norms that discourage premarital sexual activity, resulting in limited access to contraceptives for unmarried girls (Plan International, 2023). Additionally, the high cost of contraceptives, coupled with limited availability in rural areas, further hinders their utilization (UNICEF, 2023).

Despite these challenges, there have been efforts to improve contraceptive utilization among adolescent girls and young adult women in Africa. Various governments and non-governmental organizations (NGOs) have implemented programs aimed at increasing awareness about reproductive health and making contraceptives more accessible to young people. For example, in Kenya, the government has introduced youth-friendly

services in health facilities to cater to the reproductive health needs of adolescents (Ministry of Health Kenya, 2023). In Democratic Republic of Congo, the utilization of contraceptive by young women between 15 to 24 years were 16.5% (Casey et al., 2020).

In Rwanda, contraceptive utilization among young girls has been a focus of public health efforts, particularly in urban areas like Nyarugenge District. According to the Rwandan DHS (RDHS, 2020), the prevalence of contraceptive among women aged 15-19 years was 23%, with modern methods being the most commonly utilized (NISR, 2020). However, there are still significant barriers to contraceptive utilization among young girls, including cultural beliefs, lack of knowledge, and limited access to youth-friendly services (Save the Children, 2023). In Nyarugenge District of Rwanda, contraceptive utilization among young girls remains an important health problem. The RDHS 2020 revealed that 5% of adolescent girls in the country have already begun childbearing, a trend that is reflective of the situation in Nyarugenge. This early childbearing is largely attributed to insufficient utilization of contraceptive methods, negative attitudes, and poor knowledge among young girls in the district (Hakizimana, 2021). The difficulties of accessing reproductive health services continue to contribute to this issue, leaving many young girls vulnerable to the consequences of early pregnancy.

Despite ongoing efforts to enhance contraceptive use and reproductive health education, substantial knowledge gaps persist regarding factors influencing contraceptive utilization among young girls in Nyarugenge District, Rwanda. This study investigated the factors associated with contraceptive utilization among adolescent girls aged 15–19 years and young adult women attending Nyarugenge health centers in Kigali City, Rwanda service utilization.

The add value of this study to the science

This study:

- Generates local public health evidence by identifying modifiable socio-economic, informational, and behavioral drivers of contraceptive use among adolescents, highlighting critical gaps in access and perception.
- Informs policy and program design by supporting investment in adolescent-friendly services, targeted media and school-based education, and pro-poor interventions to reduce unintended pregnancies and improve adolescent reproductive health outcomes.

METHODS

Study design

The study was conducted under a cross-sectional design and a quantitative method to determine the factors Associated with contraceptive utilization among adolescent girls aged 10 to 24 year attending health centers in Nyarugenge District, Rwanda. It was conducted in the period of three months (October to december-2024).

Study setting and study population

The study setting comprised eight health centers (HCs) with varying population sizes: Mwendo HC (63,092), Rwampala HC (27,359), Kabusunzu HC (30,346), Rugarama HC (56,748), Butamwa HC (25,640), Nyaruyenzi HC (23,385), Muhima HC (23,115), and Kanyinya HC (31,830), all located in Nyarugenge District. According to the Fifth Rwanda Population and Housing Census (RPHC5, 2022), the total female population aged 10 to 24 years was 36,527. However, the combined population of young adults and adolescent girls across the eight selected health centers was 281,515.

Sample size and sampling

The sample size of 256 study participants was obtained by using Cochran formula and 15%

adjustment of non-response bias. A prevalence (p) of contraceptive utilization of 17.4%=0.174 (Kawuki et al., 2022) and a Z score of 1.96 at 95% Confidence interval (CI), and margin error(E) of 5%. The population was recruited through proportionate stratified random sampling technique $nh = (NH/N) * n$ (Bhardwaj et al., 2019).

The dependent and independent variable of this study

In this study, the interaction among study variables showed that the independent variables are those variables related to demographic characteristics (Age, Gender, status (Cohabitation), level of education, Experience, Residence, Wealth index, Religion, Head household, TV exposure, Radio exposure and Internet Exposure), Knowledge on contraceptive utilization, Perception of contraceptive utilization, Family planning service access, Type of contractive utilized and Behavioral factors (Being sexually active, Having more sexual partners, Alcohol intake and Smoking). These variables have an impact on dependent variable which is the utilization of contraceptive by adolescent girls. The intervening variable for this study is the national policy on contraceptive utilization.

Study instruments

In this study, data were collected using a structured questionnaire adapted from previous research on contraceptive utilization (Garcia et al., 2023). The questionnaire had six sections: Section A captured socio-demographic details and factors like experience, residence, wealth index, religion, and media exposure. Section B assessed participants' knowledge of contraceptive methods, including their utilization, effectiveness, and side effects. Section C explored attitudes and beliefs, while Section D focused on access to family planning services and types of contraceptives utilized (Garcia et al., 2023). Section E examined behavioural factors such as sexual activity and

substance utilization. The questionnaire was translated into Kinyarwanda to aid in data collection.

Data analysis procedure

Data analysis, following the approach detailed by Bosnjak et al. (2020), involves using various specialized techniques to draw relevant insights and conclusions. The collected data was processed promptly through steps such as coding, cleaning, and tabulating. SPSS software version 21 was utilized to manage the data effectively. The analysis determined the prevalence of contraceptive utilization, distinguishing between those who utilize contraceptives and those who do not (Bosnjak et al., 2020).

Descriptive statistics were utilized for univariate analysis. For bivariate analysis, the test of chi-square and p-values analyzed the link between variables. Variables that are statistically significant with $p < 0.05$ were taken for further multivariate analysis. Logistic regression was employed to analyze the relationships between variables and contraceptive utilization, while adjusting for the encountered confounding factors. As such, the level of significance was $p < 0.05$ with a 95% confidence interval (CI).

RESULTS

Table 1 summarizes the socio-demographic characteristics of the 256 study respondents. Most participants were aged 20 years and above (81.2%), with smaller proportions aged 18–19 years (16.4%) and 15–17 years (2.3%). Nearly equal proportions were single (37.5%), cohabiting (31.2%), or married (30.9%). Secondary education was most common (41.4%), followed by primary (28.5%) and university education (20.3%). Most respondents belonged to wealth level 3 (73.0%), and Catholicism was the predominant religion (39.5%).

Table 1. Socio-demographic characteristics among adolescent girls and young adult women in Kigali, Rwanda

Variable	Frequency	Percentage
Age group		
15-17Y	6	2.3
18-19	42	16.4
20+ Y	208	81.2
Marital status		
Single	96	37.5
Married	79	30.9
Cohabitating	80	31.2
Divorced	1	0.4
Education Level		
Non-educated	25	9.8
Primary Education	73	28.5
Secondary education	106	41.4
University education	52	20.3
Occupation		
Student	44	17.2
Employee	85	33.2
Other	127	49.6

Source: Primary data, 2025

Table 2 indicates that healthcare workers were the primary source of contraceptive information (64.1%), whereas mass media and digital platforms played a limited role, with most

respondents not receiving information from television (66.4%), radio (57.8%), or social media (79.7%).

Table 2. Source of contraception information.

Variable	Frequency	Percentage
Contraception information from TV		
Yes	86	33.6
No	170	66.4
Contraception information from Radio		
Yes	108	42.2
No	148	57.8
Contraception information from Internet based social media (YouTube, etc)		
Yes	52	20.3
No	204	79.7
Contraception information from healthcare workers		
Yes	164	64.1
No	92	35.9
Contraception information from Community health workers		
Yes	79	30.9
No	177	69.1
Contraception information from interpersonal interaction		
Yes	53	20.7
No	203	79.3

Source: Primary data, 2025

Community health workers (30.9%) and interpersonal interactions (20.7%) were less commonly cited sources. Regarding marital status, the majority of respondents (69.9%) were unmarried, while among those married, most entered marriage between the ages of 21 and 23, with only a negligible proportion marrying before age 21.

The findings presented in Figure 1 show the prevalence of the utilization of contraceptive by Adolescent girls attending health centers in Nyarugenge District, Rwanda, where 47.3% of respondents reported currently using contraceptives, while 52.7% stated that they do not utilize any form of contraception.

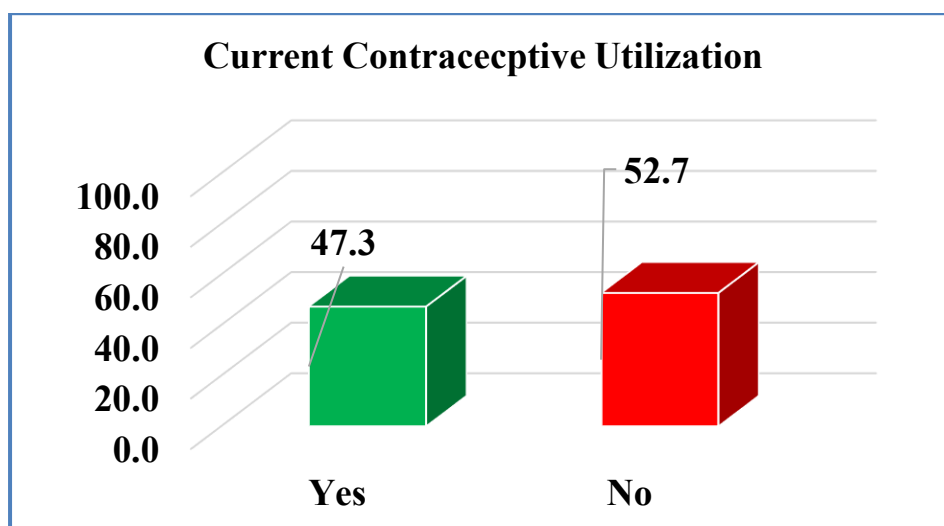


Figure 1. Distribution of the current contraceptive utilization among Adolescent girls and young adult women attending health centers of Nyarugenge District, Kigali, Rwanda.

The majority of the participants reported using pills (37.9%) as their contraceptive method, followed by condoms (24.2%) and injections (23.8%). A smaller percentage of participants

utilized IUDs (9.4%), emergency contraceptive pills (3.9%), and other methods (0.8%). (Table.3)

Table 3. Type of contraceptive utilized among Adolescent girls attending health centers of Nyarugenge District, Rwanda.

Variable	Frequency	Percentage
Current type of contraceptive utilized		
Condoms	62	24.2
Pills	97	37.9
Injections	61	23.8
IUDs	24	9.4
Emergency Contraceptive pill	10	3.9
Other	2	0.8

Source: Primary data, 20245

Table 4 shows the association between socio-demographic characteristics and contraceptive

utilization among respondents. Although contraceptive utilization varied across age

groups, the association was not statistically significant ($\chi^2 = 4.623$, $p = 0.099$). Among respondents using contraceptives, 36.3% ($n = 93$) were aged 20 years and above, 9.0% ($n = 23$) were aged 18–19 years, and 2.0% ($n = 5$) were aged 15–17 years, while among non-utilizers, 44.9% ($n = 115$) were aged 20 years and above. Marital status was also not

significantly associated with contraceptive utilization ($\chi^2 = 5.788$, $p = 0.122$), although higher proportions of contraceptive utilizers were single (18.0%, $n = 46$) and cohabitating (17.2%, $n = 44$). Similarly, age at marriage did not show a statistically significant association with contraceptive utilization ($\chi^2 = 8.358$, $p = 0.079$).

Table 4. Bivariate analysis of socio-demographic factors Associated with contraceptive utilization among Adolescent girls attending health centers of Nyarugenge District, Kigali, Rwanda.

Variables	Currently utilizing contraceptives		Chi-square	P-value
	Yes n(%)	No n(%)		
Age group			4.623	0.099
15-17Y	5(2.0)	1(0.4)		
18-19	23(9.0)	19(7.4)		
20+ Y	93(36.3)	115(44.9)		
Marital status			5.788	0.122
Single	46(18.0)	50(19.5)		
Married	30(11.7)	49(19.1)		
Cohabitating	44(17.2)	36(14.1)		
Divorced	1(0.4)	0(0.0)		
Age of starting marriage if married			8.358	0.079
20 Years	1(1.3)	0(0.0)		
21 Years	15(19.5)	25(32.5)		
22 Years	13(16.9)	14(18.2)		
23 Years	0(0.0)	9(11.7)		
Education Level			5.255	0.262
Non-educated	8(3.1)	17(6.6)		
Primary Education	33(12.9)	40(15.6)		
Secondary education	57(22.3)	49(19.1)		
University education	23(9.0)	29(11.3)		
Occupation			9.057	0.011
Student	16(6.2)	28(10.9)		
Employee	33(12.9)	52(20.3)		
No occupation	72(28.1)	55(21.5)		
Wealth Index			6.869	0.032
Level 1	9(3.5)	15(5.9)		
Level 2	29(11.3)	16(6.2)		
Level 3	83(32.4)	104(40.6)		

Source: Primary Data, 2025

Educational level was not significantly associated with contraceptive utilization ($\chi^2 = 5.255$, $p = 0.262$), despite respondents with secondary education accounting for the largest proportion of contraceptive utilizers at 22.3% ($n = 57$). However, occupation showed a

statistically significant association with contraceptive utilization ($\chi^2 = 9.057$, $p = 0.011$), with respondents without occupation representing the highest proportion of contraceptive utilizers at 28.1% ($n = 72$). Wealth index was also significantly associated

with contraceptive utilization ($\chi^2 = 6.869$, $p = 0.032$), as respondents in wealth level 3 constituted the highest proportion of contraceptive utilizers at 32.4% ($n = 83$). In

general, occupation and wealth index were the only socio-demographic variables significantly associated with contraceptive utilization among respondents. (Table 4)

Table 5. Bivariate analysis of source of information factors Associated with contraceptive utilization among Adolescent girls attending health centers of Nyarugenge District, Kigali, Rwanda.

Variables	Currently utilizing contraceptives		Chi-square	P-value
	Yes n(%)	No n(%)		
Contraception information from TV			12.523	0.001
Yes	54(21.1)	32(12.5)		
No	67(26.2)	103(40.2)		
Contraception information from Radio			14.367	0.001
Yes	66(25.8)	42(16.4)		
No	55(21.5)	93(36.3)		
Contraception information from Internet based social media (YouTube, etc)			0.241	0.623
Yes	23(9.0)	29(11.3)		
No	98(38.3)	106(41.4)		
Contraception information from healthcare workers			2.326	0.127
Yes	83(32.5)	81(31.8)		
No	37(14.5)	54(21.2)		
Contraception information from Community health workers			6.854	0.009
Yes	47(18.4)	32(12.5)		
No	74(28.9)	103(40.2)		
Contraception information from interpersonal interaction			0.105	0.745
Yes	24(9.4)	29(11.3)		
No	97(37.9)	106(41.4)		

Source: Primary Data, 2025

Table 5 revealed that television as a source of contraception information was linked to the utilization of contraceptive ($\chi^2 = 12.523$, $p = 0.002$). A higher proportion of contraceptive utilizers (21.1%) reported receiving contraception information from TV compared to non- utilizers (12.5%). Radio as a source of contraception information also showed a significant association with contraceptive

utilization ($\chi^2 = 14.367$, $p = 0.001$). Among contraceptive utilizers, 25.8% obtained information from the radio, compared to 16.4% of non- utilizers. Community health workers as a source of contraception information had a significant association with contraceptive utilization ($\chi^2 = 6.854$, $p = 0.009$). A higher percentage of contraceptive utilizers (18.4%) received information from community health

workers compared to non- utilizers (12.5%). The bivariate analysis in table 6 indicates a significant association between knowledge of different types of contraceptives and

contraceptive utilization among Adolescent girls in Nyarugenge District, Rwanda ($\chi^2 = 12.770$, $p = 0.001$).

Table 6. Bivariate analysis of knowledge factors Associated with contraceptive utilization among Adolescent girls attending health centers of Nyarugenge District, Kigali, Rwanda.

Variables	Currently utilizing contraceptives		Chi-square	P-value
	Yes n(%)	No n(%)		
Awareness of three different types of contraceptives			12.770	0.001
Yes: Able to enumerate 3 different types of contraception	89(34.8)	70(27.3)		
No=Unable	32(12.5)	65(25.4)		

Source: Primary Data, 2025

Table 7. Bivariate analysis of factors of perception factors Associated with contraceptive utilization among Adolescent girls attending health centers of Nyarugenge District, Kigali Rwanda.

Variables	Currently utilizing contraceptives		Chi-square	P-value
	Yes n(%)	No n(%)		
Do you think that contraceptive utilization is for preventing unintended pregnancies?			3.200	0.362
Disagree	6(2.3)	2(0.8)		
Neutral	19(7.4)	25(9.8)		
Agree	27(10.5)	26(10.2)		
Strongly agree	69(27.0)	82(32.0)		
Do you believe that using contraceptives is healthy and doesn't have negative effects to one's health?			85.028	<0.001
Strongly disagree	1(0.4)	0(0.0)		
Disagree	3(1.2)	32(12.5)		
Neutral	15(5.9)	65(25.4)		
Agree	53(20.7)	20(7.8)		
Strongly agree	49(19.1)	18(7.0)		
Adolescent women need to know how to prevent pregnancies.			83.373	<0.001
Disagree	3(1.2)	25(9.8)		
Neutral	6(2.3)	56(21.9)		
Agree	19(7.4)	19(7.4)		
Strongly agree	93(36.3)	35(13.7)		

Adolescent women should be allowed to obtain contraception if they want		70.945	<0.001
Strongly disagree	1(0.4)	2(0.8)	
Disagree	1(0.4)	26(10.2)	
Neutral	6(2.3)	47(18.4)	
Agree	56(21.9)	31(12.1)	
Strongly agree	57(22.3)	29(11.3)	

Source: Primary Data, 2025

Table 7 demonstrated that respondents' perceptions toward contraceptive use were significantly associated with current contraceptive utilization. Positive

perceptions regarding contraceptive safety and health benefits showed a strong association with utilization ($p < 0.001$).

Table 8. Bivariate analysis of other Family Planning factors Associated with contraceptive utilization among Adolescent girls attending health centers of Nyarugenge District, Kigali, Rwanda.

Variables	Currently utilizing contraceptives		Chi-square	P-value
	Yes n(%)	No n(%)		
If not, what are the main reasons for not using contraceptives?			2.560	<0.001
Lack of Knowledge	0(0.0)	53(20.7)		
Cultural or religious beliefs	0(0.0)	30(11.7)		
Inaccessible services	0(0.0)	8(3.1)		
Cost	0(0.0)	16(6.2)		
Side effects	0(0.0)	25(9.8)		
Others	0(0.0)	3(1.2)		
Which type of contraceptive do you currently utilize or have utilized?			53.132	<0.001
Condoms	50(19.5)	12(4.7)		
Pills	43(16.8)	54(21.1)		
Injections	11(4.3)	50(19.5)		
IUDs	14(5.5)	10(3.9)		
Emergency Contraceptive pill	3(1.2)	7(2.7)		

Source: Primary Data, 2025

The bivariate analysis in Table 8 showed that the reasons for not using contraceptives showed a significant link with contraceptive utilization ($\chi^2 = 2.560$, $p = 0.001$). The most reported barriers among non-utilizers were lack of knowledge (20.7%), cultural or religious beliefs (11.7%), and side effects (9.8%). Similarly, the

type of contraceptive utilized was linked to the utilization of contraceptive ($\chi^2 = 53.132$, $p = 0.001$). The most commonly utilized method was condoms (19.5%), followed by pills (16.8%), while injections were more frequently utilized among non-utilizers in the past (19.5%).

Table 9. Bivariate analysis of behavioral factors Associated with contraceptive utilization among Adolescent girls attending health centers of Nyarugenge District, Rwanda.

Variables	Currently utilizing contraceptives		Chi-square	P-value
	Yes n(%)	No n(%)		
How many sexual partners have you had in the last 12 months?			53.859	<0.001
None	0(0.0)	1(0.4)		
1 Partner	27(10.5)	74(28.9)		
2-3 Partners	33(12.9)	46(18.0)		
4+	61(23.8)	14(5.5)		
Do you consume alcohol regularly?			3.528	0.171
Yes	61(23.8)	54(21.1)		
No	60(23.4)	81(31.6)		
Do you smoke cigarettes regularly?			7.257	0.007
Yes	38(14.8)	23(9.0)		
No	83(32.4)	112(43.8)		

Source: Primary Data, 2025

The bivariate analysis in Table 9 showed that the number of sexual partners in the last 12 months was significantly associated with contraceptive utilization ($\chi^2 = 53.859$, $p = 0.001$). Girls with four partners and more (23.8%) had more chances to utilize contraceptives in comparison with those with

one partner (10.5%) or two to three partners (12.9%). Similarly, regular cigarette smoking showed a significant association with contraceptive utilization ($\chi^2 = 7.257$, $p = 0.007$). A higher percentage of contraceptive utilizers (14.8%) smoked regularly compared to non-utilizers (9.0%).

Table 10. Multivariate analysis of factors Associated with contraceptive utilization among Adolescent girls attending health centers of Nyarugenge District, Rwanda.

Variables	Description	AOR	(CI at 95%)	P-Value
Wealth index				
	Level1	1*		
	Level2	0.688	0.208-2.268	0.538
	Level3	4.836	1.682-13.905	0.003
Occupation				
	Student	1*		
	Employee	1.383	(0.488–3.913)	0.542
	Non-occupation	3.110	(1.160 - 8.335)	0.02
TV as a Source of Info				
	No	1*		
	Yes	3.322	(1.504-7.337)	0.003

Radio as a Source of Info				
	No	1*		
	Yes	2.688	(1.311 -1.311)	0.007
CHWs as a Source of Info				
	No	1*		
	Yes	1.820	(0.832 -3.979)	0.1
Knowledge				
	No	1*		
	Yes	4.272	1.972-9.254	<0.001
Overall perception				
	Poor perception	1*		
	Good perception	18.964	5.250-30.887	<0.001
Using Condoms and pills				
	No	1*		
	Yes	2.399	1.132-5.083	0.02
Having sexual partners				
	<=1	1*		
	>=2	3.939	1.897-8.179	<0.001
Smoking				
	No	1*		
	Yes	2.768	1.190-6.424	0.018

Source: Primary Data, 2025

The multivariate analysis revealed that wealth level plays a role in contraceptive utilization. Compared to Adolescent girls in the lowest wealth category (Level 1), those in Level 3 had more chances to be using contraceptives (AOR = 4.836, 95% CI: 1.682-13.905, $p = 0.003$). Though, no link was found for those in Level 2 (AOR = 0.688, $p = 0.538$). Occupation was also a significant factor. Compared to students, Adolescent girls who were not employed (non-occupation) had more chances to utilize contraceptives (AOR = 3.110, 95% CI: 1.160-8.335, $p = 0.02$). However, being employed did not have a significant effect (AOR = 1.383, $p = 0.542$). Media sources played a critical role in contraceptive uptake: Adolescent girls who obtained contraceptive information from TV were over three times likely of using contraceptives (AOR = 3.322, 95% CI: 1.504-7.337, $p = 0.003$).

Similarly, those who received information from radio had a significantly higher likelihood of using contraceptives (AOR = 2.688, 95% CI:

1.311-5.505, $p = 0.007$). However, information from community health workers (CHWs) did not show a statistically significant effect (AOR = 1.820, $p = 0.1$). Adolescent girls who had knowledge about contraceptives had 4.272 times more chances of using them in comparison with those without knowledge (AOR = 4.272, 95% CI: 1.972-9.254, $p < 0.001$). Perception was the most significant factor. Girls with a good perception of contraceptives were nearly 19 times more chances of using them compared to those with poor perception (AOR = 18.964, 95% CI: 5.250-30.887, $p < 0.001$). Girls who utilized condoms and pills had over twice chances of using contraceptives overall (AOR = 2.399, 95% CI: 1.132-5.083, $p = 0.02$).

Adolescent girls with two sexual partners or more had nearly four times more chances of using contraceptives in comparison with girls having one partner only (AOR = 3.939, 95% CI: 1.897-8.179, $p < 0.001$). Smoking was linked to the utilization of contraceptive.

Adolescent girls who regularly smoked had 2.768 times more chances of using

Discussion

The findings show that a substantial proportion of respondents were single (37.5%), while nearly equal proportions were married (30.9%) or cohabiting (31.2%), with very few divorced (0.4%). This pattern reflects changing marital trends among adolescents and young adults in urban settings. Similar results were reported by Dreyer et al. (2021) in South Africa, where cohabitation (37.8%) was more common than formal marriage (26.3), suggesting increasing acceptance of cohabitation due to socioeconomic factors such as education and career priorities.

The study population was predominantly urban (99.6%), consistent with the setting of Kigali and comparable to findings from Zimbabwe, where urban women constituted the majority of participants (Makoni et al., 2022). Additionally, only 23.0% of respondents were household heads, indicating that most adolescent girls were still dependents, likely due to schooling or living with family members. This finding aligns with results from Uganda, where Niwagaba et al. (2020) reported that only 22.5% of urban adolescent women headed households, reinforcing the association between age, marital status, and household leadership.

The study found that 47.3% of adolescent girls attending health centers in Nyarugenge District were currently using contraceptives, indicating moderate uptake alongside persistent gaps in utilization. This prevalence is comparable to findings from Kenya (42.1%) reported by Nyakundi et al. (2022) and higher than estimates from Uganda (39.4%) reported by Mukiibi et al. (2021), where access barriers and policy limitations were noted. However, contraceptive use in Nyarugenge District remains lower than the 53.2% reported among urban adolescents in Tanzania (Kamoga et al.,

contraceptives compared to non-smokers (AOR = 2.768, 95% CI: 1.190-6.424, $p = 0.018$).

2023). These comparisons suggest that while urbanization and service availability may support higher contraceptive use, socio-cultural barriers, misinformation, and access challenges continue to limit optimal utilization among adolescents.

Higher contraceptive utilization among adolescents in Tanzania has been attributed to the availability of youth-friendly services, comprehensive sexual education, and community-based programs, which may explain the relatively higher prevalence reported there compared with Rwanda. This suggests that remaining gaps in the availability and acceptability of adolescent-focused contraceptive services may limit optimal uptake in some urban areas of Rwanda. Additionally, adolescents in the highest wealth category were significantly more likely to use contraceptives, consistent with evidence from Uganda showing greater utilization among wealthier groups due to improved access to healthcare services (Katusiime et al., 2020).

Knowledge of contraceptives also emerged as a strong determinant of use, with informed adolescents being significantly more likely to utilize contraception. This finding aligns with results from Zimbabwe, where contraceptive knowledge substantially increased utilization among adolescents (Sithole et al., 2021). Collectively, these findings underscore the critical role of socio-economic status and targeted reproductive health education in improving contraceptive uptake among adolescents. Positive perceptions toward contraception emerged as the strongest determinant of contraceptive utilization among adolescent girls, with those holding favorable attitudes being nearly 19 times more likely to use contraceptives. This highlights the central role of beliefs and attitudes in shaping reproductive health behaviors. Similarly, a study conducted in Nigeria found that

adolescents with positive perceptions were significantly more likely to utilize contraceptives, largely due to beliefs that contraception helps prevent unintended pregnancies and promotes reproductive autonomy (Oluwadare et al., 2019). These consistent findings underscore the importance of addressing misconceptions and fostering positive attitudes to improve contraceptive uptake among adolescents.

The study found that adolescent girls with two or more sexual partners were significantly more likely to use contraceptives than those with a single partner, suggesting increased motivation to prevent unintended pregnancies and reduce sexual health risks. This finding is consistent with evidence from Ghana, where adolescents with multiple partners showed higher contraceptive utilization due to perceived risks of pregnancy and sexually transmitted infections (Tawiah et al., 2020).

Additionally, adolescents who reported smoking were more likely to use contraceptives, indicating a possible association between engagement in risky behaviors and greater awareness of preventive health measures. Similar findings were reported in Kenya, where smoking adolescents demonstrated higher contraceptive use, potentially reflecting heightened perception of reproductive health risks (Wagah et al., 2021).

Study Limitations

Despite its contributions, this study has several limitations. The use of self-reported data may introduce reporting bias, and the focus on a single district limits the generalizability of the findings. In addition, the cross-sectional design precludes causal inference, and the study did not examine qualitative factors such as cultural beliefs or family influences that may also affect contraceptive utilization among adolescent girls.

Study Implications

The results from this study have important implications for interventions in terms of public health and policies aimed at improving reproductive health among Adolescent girls in Rwanda. First, the significant association between wealth and contraceptive utilization suggests that economic empowerment initiatives could play a critical role in increasing access to family planning services. The strong influence of knowledge and perception also underscores the importance of comprehensive sexual education programs targeting Adolescent girls, emphasizing both the practical and positive aspects of contraception. Given the role of sexual behavior in contraceptive utilization, interventions aimed at promoting healthy relationships and reducing the number of sexual partners could further reduce the risk of unintended pregnancies. These findings can inform future health campaigns and policy changes aimed at increasing contraceptive utilization among adolescents and improving overall reproductive health outcomes in Rwanda and similar contexts.

CONCLUSION

The study's findings showed that nearly half of the Adolescent girls attending health centers in Nyarugenge District, Rwanda, utilization contraceptives. In addition, economic status, knowledge, positive perception, media exposure, number of sexual partners, and smoking behavior were the strongest predictors of contraceptive utilization. In contrast, factors such as occupation (being employed) and information from CHWs did not show significant effects. These findings emphasize the need for education campaigns, improved media outreach, and positive messaging on contraceptives to influence perception and increase uptake among Adolescent girls in Rwanda.

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Authors Contributions

“UR conceptualized the study, collected data, performed data analysis, and drafted the manuscript. “JCN contributed to data interpretation, manuscript review, and proofreading. “CN supervised the study, revised the manuscript critically for intellectual content, and approved the final version for publication.

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Data Availability

The dataset utilized and analysed during the current study is not publicly available due to participant confidentiality and privacy protection considerations but may be obtained from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate

Ethical approval for this study was obtained from the Mount Kenya University Ethical Review Committee under reference number MKU/ERC/2025/041. Written informed consent was obtained from all participants before data collection after explaining the purpose, benefits, and voluntary nature of participation in the study.

Confidentiality and privacy were ensured by using anonymous codes instead of participants’ names, and all collected data were securely stored and accessed only by the research team.

Competing interests

The authors declare that they have no competing interests.

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