

Uptake of contraception and associated factors among adolescents and young women aged between (15-24) years using the 2019-2020 Rwanda Demographic and Health Survey Data.

ABSTRACT

Background:

Globally, contraceptive uptake among married women was estimated at 65% in 2024, with modern methods accounting for 58.7% (Hellwig & Barros, 2022). In sub-Saharan African countries the uptake remained suboptimal, with considerable variation in the usage of modern contraceptive methods. Adolescents and young women aged 15–24 years represent a critical demographic group for reproductive health interventions, yet they often face barriers to accessing contraceptive services. In many low- and middle-income countries, including Rwanda, the uptake of contraception among this age group remains low, contributing to high rates of unintended pregnancies, early childbearing, and associated health risks.

Objectives

To assess contraception uptake and identify associated factors among Rwandan adolescents and young women aged 15-24.

Methods

The study analyzed secondary data from the 2019/20 Rwanda Demographic and Health Survey. The research employed a cross-sectional quantitative method approach. A representative sample of adolescents and young women aged 15-24 years were selected, and data were collected and analyzed on socio-demographic factors, maternal knowledge and attitudes towards contraceptive use, access to healthcare services, and cultural influences. Data analysis involved descriptive statistics summarized into categorical data with frequencies and percentages, continuous in mean and standard deviation. Bivariate relationship assessed using chi-square test with significance set at p-value less than 0.05, significant variable in bivariate were processed to multivariate analysis via logistic regression and the degree of association was reported using the adjusted odds ratio and 95% confidence interval.

Results

The study found that 14.17% of adolescents and young women aged 15-24 years were using contraception. Those aged 20-24 years were 4.5 times more likely, women with two or more children were 2 times more likely to use contraception. Higher education level had 3.5 times greater likelihood to those with no education. Catholic women were 4 times more likely to Protestants. Lastly, those who heard about contraceptive use at health facilities were 5 times more likely to use contraception.

Conclusions

Age, education, parity, religion, and information received at health facilities significantly influenced contraceptive use.

Keywords: *Contraception, adolescents, Rwanda, reproductive health, contraceptive uptake.*

INTRODUCTION

43 Contraceptive uptake, particularly among young women aged 15 to 24 years, was a critical societal
44 concern rooted in reproductive health and contraceptive use practices (Bhatt et al., 2021). This age group
45 represented a pivotal stage in a woman's life concerning reproductive decisions and contraception
46 choices (Wulifan et al., 2015). The role of contraceptive use in achieving sustainable development goals
47 and promoting overall well-being could not be understated (McCleary-Sills et al., 2014). Globally, the
48 rate of contraceptive uptake was estimated at 65% in 2022, with modern methods accounting for 58.7%
49 among married women (Hellwig & Barros, 2022). However, contraception uptake in sub-Saharan
50 African countries remained suboptimal, with considerable variation in the usage of modern
51 contraceptive methods.

52 Central African Republic, only 3.5% of women of reproductive age used contemporary contraceptives,
53 while Namibia had a greater prevalence, with 49.7% of the population using modern contraception
54 (Castro Torres et al., 2022).

55 Infants born within two years of an older sibling were found to have a 60% higher likelihood of
56 experiencing infant mortality. Similarly, infants born within a 2-3-year interval had a 10% greater risk
57 compared to those born after a gap of three years or more (Celik & Hotchkiss, 2015).

58 In Rwanda, despite significant progress in improving its healthcare system, including reproductive
59 health services, challenges persisted in ensuring universal access to contraception, especially among
60 young women (Cleland, 2012). The Rwanda Demographic and Health Survey (RDHS) 2019-2020
61 revealed a disparity in contraceptive usage across age groups. Among young women aged 15-24, the
62 contraceptive usage rate was 66.3%, the lowest across age groups. This rate increased to 77.6% for
63 women aged 25-29, peaked at 83% for those aged 35-39, and then declined to 60.8% for the 45-49 age
64 group (NISR, 2021). These statistics underscored the importance of a detailed examination of the factors
65 associated with contraceptive uptake among young women aged 15-24 (NISR, 2021).

66 **METHODS**

67 **Study design**

68 This study employed a retrospective cross-sectional design using secondary data from the 2019–2020
69 Rwanda Demographic and Health Survey (RDHS). A cross-sectional approach was appropriate, as it
70 enabled the analysis of data collected at a single point in time to assess contraceptive uptake and its
71 associated factors among adolescent and young women aged 15 to 24 years.

73

74 **Setting and Intervention**

75 The study focuses on Rwanda, a landlocked country in East-Central Africa that shares borders with
76 Uganda to the north, Burundi to the south, the Democratic Republic of the Congo to the west, and
77 Tanzania to the east. Rwanda's topography is diversified, with mountains, savannahs, and a large
78 number of lakes. The country is organized into administrative provinces, districts, sectors, and cells.
79 Rwanda's population is relatively youthful, with a considerable proportion falling between the ages of 15
80 and 24, making it an appropriate target for our study

81 **Study population**

82 The target population for this study comprised women aged 15 to 24 years, as identified in the 2019–
83 2020 Rwanda Demographic and Health Survey (RDHS) dataset.

84

85 **Sampling technique**

86 The RDHS for 2019/20 used a two-stage stratified cluster sampling design to select a nationally
87 representative sample of households and persons. The sampling frame was constructed using
88 enumeration areas (EAs) from the 2012 Population and Housing Census. The EAs were classified by
89 province and urban-rural habitation, followed by district, sector, cell, and hamlet within each stratum. A
90 total of 500 EAs were chosen, with a probability proportionate to size. Households in each selected EA
91 were listed, and 26 households were selected at random for the survey

92

93 **Data Collection Instruments**

94 Data extraction method utilizing the DHS data extraction form was employed. This form served as a
95 comprehensive tool to gather relevant information pertaining to contraception uptake and associated
96 factors among adolescents and young women (15-24 years) in Rwanda.

97 **Data analysis**

98 The secondary data extracted from the 2019–2020 Rwanda Demographic and Health Survey (RDHS)
99 were cleaned to identify and address inconsistencies, missing values, outliers, and potential input errors.
100 The cleaned dataset was initially coded in Microsoft Excel and subsequently imported into SPSS version
101 25 for statistical analysis. Descriptive statistics were conducted to summarize key variables. Categorical
102 variables were presented using frequencies and percentages, while continuous variables were
103 summarized using means and standard deviations. Bivariate analyses, including cross-tabulations and
104 chi-square tests, were performed to assess associations between contraceptive use and various socio-

demographic and economic factors. A significance level of $p < 0.05$ was used to determine statistical significance. Variables that showed significant associations in the bivariate analysis were included in a multivariate logistic regression model to identify factors independently associated with contraceptive uptake, while adjusting for potential confounding variables. The strength and direction of these associations were reported using adjusted odds ratios (aOR) with corresponding 95% confidence intervals.

Ethics

Ethical approval for this study was obtained from the Mount Kenya University Rwanda Ethical Review Board. Permission to access and use secondary data was granted by the National Institute of Statistics of Rwanda (NISR). The dataset utilized was fully de-identified, and no direct contact with human participants was involved; therefore, informed consent was not required for this secondary analysis. However, the original data collection adhered to strict ethical standards, including the acquisition of informed consent from all participants at the time of primary data collection. The Rwanda Demographic and Health Survey (RDHS) 2019/20 employed a standardized and methodologically rigorous approach to data collection, ensuring comprehensive coverage of key demographic and health indicators. The DHS used a structured, pre-tested questionnaire designed to collect reliable data on reproductive health, contraceptive use, maternal and child health, nutrition, and socioeconomic status. The questionnaire was carefully validated to ensure cultural sensitivity, clarity, and the ability to capture context-specific information accurately.

RESULTS

Socio-demographic and socio-economic characteristics of respondents

Study variables	Frequency (N)	Percent (%)
Age (years)		
15–19	1675	59.36
20–24	1147	40.64
Marital status		
Single	2,383	84.44
Married	89	15.56
Level of education		
No education	38	1.35
Primary	1,370	48.55
Secondary	1,349	47.8
Higher	65	2.3
Type of place of residence		
Urban	721	25.55
Rural	2,101	74.45
Region in Rwanda		
Kigali	360	12.76

South	655	23.21
West	650	23.03
North	439	15.23
East	718	25.44

Table 1: Socio-demographic characteristics of the study participants

Regarding the socio-economic characteristics as presented in table 2, the study shows that about wealth index, the majority of respondents were in the middle wealth category 1771(62.76%), with most having fewer than two children 2273(80.55%) and living in male-headed households 1872(66.34%). Catholics 1428(50.9%) and Protestants 1277(45.25%) dominated religious affiliations. Awareness of contraceptive use through media was low, but health facilities served as the main source of FP information 1492(52.87%). Most respondents had limited interaction with health facilities 2453(86.92% no visits in the past year) and were unemployed 1971(69.84%). Contraceptive use was minimal, with only 400(14.17%) using contraceptive.

Socio-economic characteristics of the study participants.

Study variables	Frequency (N)	Percent (%)
Wealth index categorized		
Poor	794	28.14
Middle	1771	62.76
Rich	257	9.1
Number of children ever born		
< two	2273	80.55
>= two	549	19.45
Household head		
Male	1872	66.34
Female	950	33.66
Religion		
Catholic	1,428	50.9
Protestant	1,277	45.25
Muslim	69	2.45
Others	48	1.7
Heard about FP On Television		
No	2139	75.8
Yes	683	24.2
Visit health facility in the last 12 months		
No	2453	86.92
Yes	369	13.8
Work status		
Not-working	1971	69.84
Working	851	30.16
Heard about FP On Radio		
No	2219	78.63
Yes	603	21.73

Heard about FP on Newspaper/Magazine		
No	2462	87.24
Yes	360	12.76
History of Terminating Pregnancy		
No	1969	69.77
Yes	853	30.23
Heard about FP at health facilities		
No	1330	47.13
Yes	1492	52.87
Contraceptive use		
No	2422	85.83
Yes	400	14.17

Table 2: Socio-economic characteristics of the study participants.

Prevalence of Contraceptive use.

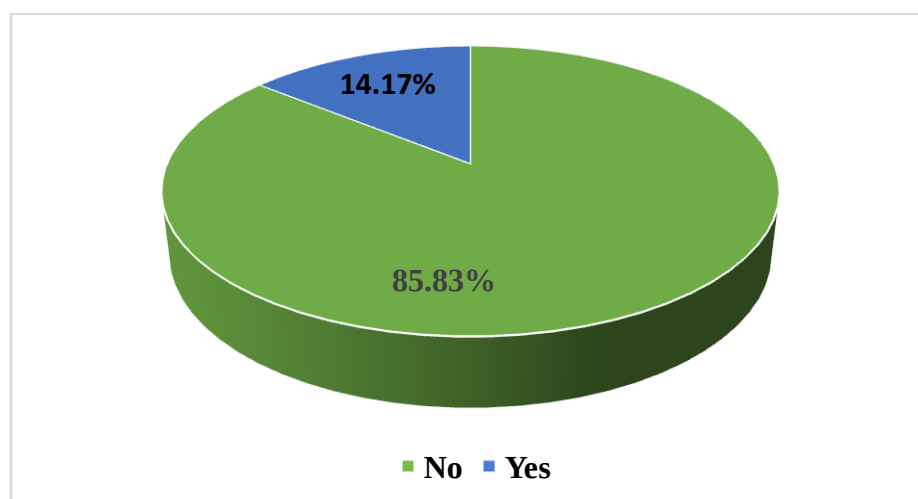


Figure 1: Prevalence of contraceptive use among the adolescents and young women aged between 15-24 years in Rwanda DHS2019/20.

The figure 2 presents the prevalence of contraceptive use among the adolescents and young women aged between 15-24 years in Rwanda using DHS2019/20. The results show that 14.17 percent among them use contraception while a very big percentage 85.83 percent do not use contraception.

Bivariate analysis of the association between sociodemographic and contraceptive use

Study variables	Contraceptive use		χ^2	P-value
	Yes	No		
	n (%)	n (%)		
Age (years)				
15–19	27(52.94)	1648(59.47)	81.62	<0.001
20–24	24(47.06)	1123(40.53)		
Number of children ever born				
< two	21(61.76)	2252(80.77)	9.31	0.013
>= two	13(38.24)	536(19.23)		
Level of education				
No education	9(15.00)	29(1.05)	36.18	<0.001

Primary	24(40.00)	1346(48.73)		
Secondary	24(40.00)	1325(47.97)		
Higher	3(5.00)	62(2.24)		
Type of place of residence				
Urban	23(65.71)	698(25.04)	3.08	0.079
Rural	12(34.29)	2089(74.96)		
Region in Rwanda				
Kigali	12(31.58)	348(12.50)		
South	10(26.32)	645(23.17)		
West	6(15.79)	644(23.13)	12.22	0.016
North	5(13.16)	434(15.59)		
East	5(13.13)	713(25.61)		
Wealth index categorized				
Poor	7(25.93)	787(28.16)		
Middle	9(33.33)	1762(63.04)	2.17	0.27
Rich	11(40.74)	2468(80)		
Marital status				
Single	11(78.57)	2372(96.50)	32.67	<0.001
Married	3(21.43)	86(3.50)		
Household head				
Male	5(41.67)	1867(66.56)	3.61	0.057
Female	7(58.33)	943(33.56)		
Religion				
Catholic	17(60.71)	1411(50.50)		
Protestant	2(7.14)	1275(45.63)	7.19	0.033
Muslim	4(14.29)	65(2.33)		
Others	5(17.86)	43(1.54)		
Heard about FP On Television				
No	3(18.75)	2136(76.12)	2.83	0.673
Yes	13(81.25)	670(23.88)		
Visit health facility in the last 12 months				
No	7(38.89)	2446(87.23)	1.83	0.873
Yes	11(61.11)	358(12.77)		
Work status				
Not-working	6(33.33)	1965(70.08)	4.52	0.0583
Working	12(66.67)	839(29.92)		
Heard about FP On Radio				
No	4(33.33)	2215(78.83)	7.94	0.049
Yes	8(66.67)	595(21.17)		
Heard about FP on Newspaper/Magazine				
No	3(30.00)	2459(87.45)	2.86	0.731
Yes	7(70.00)	353(12.55)		
History of Terminating Pregnancy				
No	14(87.50)	1955(69.67)	12.37	0.018
Yes	2(12.50)	851(30.33)		
Heard about FP at health facilities				
No	4(36.36)	1326(47.17)	8.26	0.041

Yes	7(63.64)	1485(52.83)
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Table 3: Factors associated with contraceptive use among adolescents and young women

During bivariate analysis, chi-square test was used to test if there is an association between sociodemographic and contraceptive use. The results show that, Age ($P < 0.001$), Number of children ever born ($P = 0.013$), Level of education ($P < 0.001$), Region in Rwanda ($P = 0.016$), Marital status ($P < 0.001$), Religion ($P = 0.033$), Heard about FP On Radio ($P = 0.049$), History of Terminating Pregnancy ($P = 0.018$), and heard about FP at health facilities ($P = 0.041$), were significantly associated with contraceptive use.

Binary logistic regression to determine factors associated with contraception uptake

Univariate and Multivariate Analysis for factors associated with contraceptive use, RDHS 2019/2020.

Study variables	Contraceptive use			
	COR (95%CI)	p-value	AOR (95%CI)	p-value
Maternal age				
15–19	1.00		1.00	
20–24	3.507(2.17-9.63)	0.001	4.88(1.27-18.77)	0.034
Region in Rwanda				
Kigali	1.00		1.00	
South	0.153(0.03-0.793)	0.025	0.164(0.017-1.588)	0.118
West	0.056(0.007-0.48)	0.009	0.117(0.008-1.688)	0.115
North	0.392(0.104-1.474)	0.166	2.348(0.279-19.781)	0.432
East	0.4(0.122-1.314)	0.131	1.499(0.195-11.501)	0.697
Marital status				
Single	0.145(0.056-0.375)	<0.001	0.162(0.035-0.758)	0.021
Married	1.00		1.00	
Number of children ever born				
< two	1.00		1.00	
>= two	1.453(1.561-3.753)	0.041	2.162(3.325-7.358)	0.021
Maternal education level				
No education	1.00		1.00	
Primary	1.141(0.42-3.097)	0.796	2.83(0.57-14.099)	0.203
Secondary	0.14(0.036-0.545)	0.501	0.55(0.063-4.874)	0.595
Higher	4.32(1.59-6.94)	<0.001	3.77(3.22-9.71)	0.002
Religion				
Catholic	1.69(0.60-4.77)	0.323	3.97(1.06-14.91)	0.041
Protestant	1.00		1.00	
Muslim	2.66(1.09-6.48)	0.031	3.04(0.79-11.70)	0.105
Others	0.84(0.27-2.61)	0.768	5.23(0.93-28.55)	0.056
Heard about FP On Radio				
No	1.00		1.00	

Yes	2.10(3.033-8.32)	0.005	0.86(0.076-9.814)	0.905
History of Terminating Pregnancy				
No	1.514(1.054-3.844)	0.028	1.85(0.234-14.634)	0.559
Yes	1.00		1.00	
Heard about FP at health facilities				
No	0.409(0.161-1.039)	0.06	4.86(1.36-7.33)	0.026
Yes	1.00		1.00	
P-value<= 0.05: Significant level				
95% C.I: Confidence interval, COR: Crude Odd Ratio, AOR: Adjusted Odd Ratio, Ref: Reference category				

Table 4: Multivariate analysis examining the association between study variables and contraceptive use among adolescents' young women aged between 15-24 years.

The table 3 presents the results of univariate and multivariate analyses examining the association between study variables and contraceptive use among adolescents' young women aged between 15-24 years in Rwanda. The analysis with multivariate model, some variables did not show the significant association with contraceptive use, however the respondents aged between 20-24 years old (AOR: 4.88, 95% CI: 1.27-18.77) were 4.5 times more likely to use contraception compared to those aged between 20-24 years old. The respondents who were single in marital status (AOR: 0.162, 95% CI: 0.035-0.758) were less likely to use contraception compared to the young women who were married. The respondent who had greater or equal to two children (AOR: 2.162, 95% CI: 3.325-7.358) were 2 times more likely to use contraception compared to those who had less than two children. Moreover, the respondents who had higher education level (AOR: 3.77, 95% CI: 3.22-9.71) were 3.5 times more likely to use contraception compared to those with no education. Additionally, the respondents whose they religion was catholic (AOR: 3.97, 95% CI: 1.06-14.91) also were found to be 4 times more likely to use contraception compared to those who were protestants. Furthermore, the participants who have ever heard about contraceptive use at health facilities (AOR: 4.86, 95% CI: 1.36-7.33) were 5 times more likely to use contraception compared to those who has ever heard about contraceptive use at the health facilities

DISCUSSION

This study, titled *Contraception Uptake and Associated Factors Among Adolescents and Young Women in Rwanda Using 2019/20 Demographic and Health Survey Data*, revealed a low contraceptive prevalence rate of 14.17% among adolescents and young women aged 15–24 years. This finding aligns with previous studies while also highlighting context-specific factors influencing contraceptive uptake.

The low prevalence of contraceptive use in Rwanda is consistent with a study by Alhassan et al. (2019) in Ghana, which reported an 18% prevalence among women in the same age group. Both studies

183 identified sociocultural barriers—such as stigma, limited access to contraceptive services, and
184 inadequate knowledge—as major contributors to low uptake. However, the Rwandan study emphasized
185 rural-urban disparities, with lower contraceptive use observed in rural provinces (Southern and Western)
186 compared to urban centers like Kigali. In contrast, Alhassan et al. (2019) found that urban residents in
187 Ghana had higher contraceptive uptake, likely due to better access to healthcare and contraceptive
188 education. These differences may stem from varying levels of healthcare infrastructure, public health
189 outreach efforts, and cultural attitudes toward contraception in each country.

190 Education was a key determinant of contraceptive use. The Rwandan study found that women with
191 higher education levels were significantly more likely to use contraception, a finding supported by
192 Eliason et al. (2022) in Kenya. The Kenyan study further highlighted that male partners' education
193 played a crucial role in contraceptive decisions—an aspect not explicitly explored in the Rwandan study.
194 This discrepancy may reflect cultural differences in male involvement in reproductive health, as Kenya
195 has actively promoted male participation in family planning campaigns.

196 Marital status also influenced contraceptive use, with married women in Rwanda more likely to use
197 contraception than their single counterparts. This finding aligns with Mekonnen and Worku (2015) in
198 Ethiopia, where married women exhibited higher contraceptive uptake due to societal acceptance of
199 contraception within marriage. Additionally, the Ethiopian study emphasized the role of spousal
200 communication in contraceptive decisions, an aspect not covered in the Rwandan study. This gap may
201 suggest differences in data collection or cultural norms regarding marital discussions on contraception.

202 Religion emerged as a significant factor influencing contraceptive use. In Rwanda, Catholics had higher
203 contraceptive uptake compared to Protestants, contrasting with Gebre et al. (2019) in Uganda, where
204 Catholic women reported lower contraceptive use due to religious opposition to modern contraceptive
205 methods. This difference may be attributed to the Catholic Church's relative flexibility in Rwanda,
206 where some religious leaders support contraceptive use in alignment with public health goals, whereas
207 in Uganda, stricter doctrinal adherence might discourage contraceptive use.

208 Exposure to contraceptive information significantly increased contraceptive uptake. In Rwanda, women
209 who received contraceptive information at health facilities were five times more likely to use

contraception. This finding is consistent with OlaOlorun et al. (2021) in Nigeria, which emphasized the role of healthcare settings as trusted sources of contraceptive education. The similarity suggests that across different regions, health facilities play a crucial role in raising awareness and counseling women on contraception.

Overall, the findings of this study align with previous research on education, marital status, access to information, and religious influence on contraceptive uptake. However, variations in the strength and direction of these associations underscore the importance of context-specific interventions. Differences in sociocultural norms, healthcare infrastructure, public health policies, and community attitudes contribute to these variations. Addressing these factors is essential for designing effective, tailored contraceptive programs.

Despite its contributions, this study has several limitations. First, the reliance on secondary data from the 2019/20 Demographic and Health Survey (DHS) restricts the ability to explore certain variables, such as male partner involvement and spousal communication, which have been highlighted in other studies (Eliason et al., 2022; Mekonnen & Worku, 2015). Second, the cross-sectional nature of the data limits the ability to establish causal relationships between factors and contraceptive use. Third, self-reported responses may introduce recall or social desirability bias, particularly on sensitive topics like contraceptive use. Fourth, while the study identifies key determinants, it does not explore deeper sociocultural beliefs and norms influencing contraceptive decisions, which qualitative studies could better address. Lastly, the findings may not be fully generalizable to all Rwandan adolescents and young women, as the study does not account for variations in socioeconomic status beyond the rural-urban divide

Conclusion

This study revealed that contraceptive uptake among adolescents and young women aged 15–24 years in Rwanda remains low, with only 14.17% currently using contraception. Several socio-demographic and economic factors significantly influence contraceptive use, including age, marital status, number of children, education level, religion, and access to contraceptive use information.

236 The socio-economic characteristics of adolescents and young women aged 15–24 years reveal key
237 demographic and social trends. Most respondents (59.36%) were aged 15–19 years, and the majority
238 (80.55%) had fewer than two children.

239 In terms of education, nearly half had completed primary (48.55%) or secondary (47.8%) education,
240 while very few had attained higher education (2.3%) or had no formal education (1.35%). Rural
241 residency was predominant (74.45%), and most participants fell into the middle wealth index category
242 (62.76%). Regionally, most participants came from the East (25.44%), South (23.21%), and West
243 (23.03%) regions, while Kigali had the lowest representation (12.76%). A significant majority were
244 single (84.44%), and most lived in male-headed households (66.34%). Catholics formed the largest
245 religious group (50.9%), followed by Protestants (45.25%), while Muslims and other religions were
246 minimally represented.

247 Awareness of contraceptive use was limited, with most respondents not exposed to FP information via
248 television (75.8%), radio (78.63%), or newspapers/magazines (87.24%). However, health facilities were
249 the primary source of FP information, with 52.87% of respondents hearing about FP through this
250 channel. Despite this, health facility visits were infrequent, as 86.92% reported no visits in the last 12
251 months. Most respondents (69.84%) were unemployed, and 30.23% had a history of terminating
252 pregnancy. Contraceptive use was notably low, with only 14.17% using contraception, while 85.83%
253 were not using any

254

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271 **Author Contributions**

272 Lyse Yvannie Girinka led the study design, conducted the literature review, managed the acquisition and
273 analysis of secondary data, interpreted the findings, and wrote the manuscript for publication. Michael
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282 **Data availability statement**

283 Upon reasonable request, the corresponding author will provide the data that supports this study's
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285 **Disclaims**

286 The writers' personal beliefs and viewpoints are reflected in this article, do not necessarily reflect the
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289 **LIST OF TABLE**

290	Table 1:Socio-demographic characteristics of the study participants	5
291	Table 2:Socio-economic characteristics of the study participants.....	6
292	Table 3:Factors associated with contraceptive use among adolescents and young women	8
293	Table 4:Multivariate analysis examining the association between study variables and contraceptive use among 294 adolescents' young women aged between 15-24 years.....	9

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