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Ever Use of Modern Contraceptive among Adolescents in Uganda: A Cross-Sectional Survey of Sociodemographic Factors

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Abstract

Background: Six in ten sexually active adolescent women in Uganda have an unmet need for contraception yet there is limited data on what is driving its use. This study aimed to determine the associations between sociodemographic factors and modern contraceptive ever-use among adolescents in Uganda. **Methods:** A crossectional study was conducted among 337 adolescents aged 13 - 19 years who had ever had sex in Wakiso (urban) and Kamuli (rural) districts in Uganda. The outcome of interest was the ever-use of modern contraceptives. Generalized linear models with a Poisson link were used to examine the associations between sociodemographic factors and contraceptive ever use. **Results:** The weighted prevalence of ever-use of modern contraceptives was 30.9%. Contraceptive ever use was more likely among the older adolescents (adjusted Odds Ratio) aOR 1.31 (95% CI = 1.06 - 1.55), married aOR 1.67 (95% CI = 1.09 - 2.58) and the less educated were aOR 1.79 (95% CI = 1.14 - 2.83) compared to their counterparts. Adolescents living in the urban district (Wakiso) aOR 0.67 (95% CI = 0.49 - 0.92) were less likely to use modern contraceptives. In stratified analysis, the urban poor were more likely to use modern contraceptives (moderate aPR 0.35 95%CI (0.17 - 0.68) ** or high socioeconomic status aPR 0.62, 95%CI (0.28 - 1.37). **Conclusions:** The study shows low contraceptive ever-use among adolescents. Adolescents with low education and those from rural settings were more likely to ever-use modern contraceptives. Having good knowledge of contraception and discussing sex with parents promoted contraceptives ever-use. We recommend further studies assessing barriers to contraceptive use among adolescents in Uganda.

Keywords

Adolescents, Contraceptive Use, Rural, Urban, Cross-Sectional Studies

1. Introduction

Adolescence, a period when young people develop from childhood to adulthood, presents vast opportunities and increased risky behaviors. It's time many young people become sexually active and get married with limited or no information and services on how to delay pregnancy. Globally an estimated 20 million pregnancies occur in adolescents every year [1]. There are disproportionately high rates of adolescent pregnancy in developing countries. In low resource settings, 2.5 million births occur in adolescents below the age of 16 years annually [2]. In Africa, 20% of all pregnancies occur in adolescents, with a big burden in the East African Region [3]. Within the developing countries, the burden of adolescent pregnancy is higher among the less privileged poor and the illiterate. Uganda is one of the countries with the highest rates of adolescent pregnancy, estimated at 25% [4]. Adolescent pregnancy has been attributed to various factors including sociocultural, environmental, and economic reasons [5].

Adolescent pregnancy has well-documented consequences for the mother and newborn. There is an increased risk of maternal and perinatal morbidity and mortality during adolescence [6]. Maternal deaths are more common in adolescents and young people with an even higher risk in those below 15 years. Babies born to adolescent mothers are at an increased risk of infant and childhood mortality and morbidity. On the other hand, it is associated with long-term socioeconomic consequences [7] [8]. Adolescent pregnancy is a recipe for poverty in these populations to school dropout and facing rejection from their families [5]. Reducing pregnancy rates in sexually active adolescents can be achieved by the use of modern contraceptives [9].

Low contraceptive prevalence has been reported among adolescents. In 2019, globally 10.2% of sexually active adolescent women 15 - 19 were using modern contraceptives with notably low prevalence and high unmet need in Sub-Saharan Africa [10]. Contraceptive prevalence rates in Uganda among married couples increased from 14% in 2011 to 35%, according to the 2016 Uganda Demographic Health Survey (UDHS 2016) yet that of sexually active married and unmarried adolescents was 25.1%. Uganda's National policies on contraception use among adolescents allow sexually active adolescents to access contraceptives without the consent of the parent/guardian [11]. To understand what drives contraceptive use in this age group, data on the association between demographic characteristics and the use of modern contraceptives among adolescents is crucial. The objective of this study was to determine the prevalence and factors associated with the ever use of modern contraceptives among adolescents in Uganda.

2. Methods

2.1. Study Design

Crossectional survey of adolescents who self-reported ever having sex. Data were obtained from a community-based survey looking at risk factors for adolescent pregnancy. The participants who self-reported ever having sex ("Have you ever had sexual intercourse?") were included in the cross-sectional analysis. The main outcome variable was self-reported ever-use of a modern contraceptive ("Have you ever used family planning/contraceptives?"). The Socio-demographic variables included were age in completed years, marital status, education level, employment, socioeconomic status, paternal and maternal education status, parenting styles, knowledge on pregnancy prevention, discussing sex with parents, having a peer who had ever been pregnant, and place of residence (classified as urban or rural). The variables with more than 10% missing data were eliminated from the analysis.

2.2. Setting

The primary study was a community-based survey done in Wakiso and Kamuli districts in Uganda. Wakiso district is situated in the central region of Uganda. It encircles Kampala, the capital city of Uganda, and is predominantly urban. Adolescents aged 10 - 17 years make up 17.3% of the total population in Wakiso [12]. Kamuli district is located in the eastern region of Uganda and is a predominantly rural population with adolescents contributing 28% of the population [12].

2.3. Sampling Procedure

A two-stage cluster sampling approach was employed to select study participants. In the 1st stage of sampling districts were divided into clusters. In the 2nd stage, within each district, a probability proportional to size (PPS) sampling of 20 villages or enumeration areas (clusters) were taken.

In each district, an up-to-date list of villages or enumeration areas with their sizes (number of households in each) was obtained. PPS was done in Stata to obtain 20 clusters/villages for each district. Each cluster was visited and with help LC and VHT and a systematic sample of 10 households was taken. Within each sampled cluster (village), 15 adolescents were selected using systematic random sampling. From the centre of the village, every 5th house was visited by research assistants who took opposite directions. If they did not have an eligible adolescent, the next house was taken until an adolescent was enrolled.

2.4. Participants

The study population involved adolescent girls residing in Wakiso and Kamuli districts. The inclusion criteria were adolescent girls aged 13 - 19 years residing in Wakiso and Kamuli districts. Adolescent girls aged 13 - 17 years who provided assent to participate in the study and whose parents provided written in-

formed consent and girls aged 18 - 19 years who provided informed consent were included in the study. Adolescents, who were mentally handicapped, had severe emotional distress and those who were too ill to participate were excluded.

2.5. Variables

Parental age, occupation and educational level which was classified as "no education," "primary," "secondary," and "tertiary/vocation" education was collected. Self-reported data on parenting style, and history of sexual abuse were collected using an interviewer-administered questionnaire. Data on socioeconomic status were assessed using ownership of household properties and were categorized as: rich, moderate, and poor. Parental marital status was classified as never in a union, married, living with a partner, widowed, divorced, and not living together and whether parents are alive or dead.

2.6. Sexual Reproductive Health Information

Awareness of adolescent sexual and reproductive health information by the adolescents and the sources of Sexual Reproductive Health Information. Knowledge about sexual reproductive health assessed included; Knowledge on prevention of (Sexually Transmitted Infection) STI/HIV, prevention of pregnancy, menstruation, knowledge, and usage of contraception. Data on sexual risk behavior and prevention and personal attitudes towards sexuality and reproduction and peer influences were collected.

2.7. Socioeconomic Status Assessment

A relative wealth index was constructed using principal component analysis from a set of seven questions relating to household assets such as type of material of the floor, type of material for the roof, walls, ownership of household assets, domestic animals, water, and electricity, TV, and Radio. The index was divided into quintiles where the bottom 40% classified as "poor," the next 40% as "middle," and the top 20% as "rich" [13].

2.8. Contraceptive Ever Use

Adolescents who reported ever having sex were asked whether they had ever used a modern contraceptive to delay or prevent conception. Modern contraceptive methods include short-acting contraceptives like pills, male and female condoms, diaphragm, emergency contraception, injectable and long-acting reversible contraceptives like Intrauterine devices, implants, and lactation Amenorrhea Method.

2.9. Determinants of Contraceptive Ever Use

Factors were selected to assess factors associated with contraceptive ever use based on Andersen's behavioral model [14]. It suggests three factors that influence the uptake of health services: 1) predisposing factors, 2) enabling factors 3)

required factors such as knowledge of contraception.

2.10. Sample Size

This study was conducted on a subset of participants of a community-based survey on determining risk factors for pregnancy among adolescents 13 - 19 years. In brief, all adolescents that reported to have had at least one sexual encounter were included in this analysis (n = 337). All adolescents had their demographic characteristics, household, sexual reproductive information, and family-related variables measured during data collection.

2.11. Data Tool Development

A structured questionnaire was used for data collection. The questionnaire included a sequence of questions from established tools such as demographic health surveys [4] (women's questionnaire) and adolescent sexual reproductive surveys [15]. The interviews sought information on socio-demographic and household characteristics, sexual reproductive health knowledge, and behaviors, among others. Data on SRH knowledge was collected using an instrument based on the "Illustrative Questionnaire for Interview-Surveys with Young People", a core set of instruments endorsed by the World Health Organization [16]. This instrument is widely used in low- and middle-income countries and has been used in several studies where validity has recently been reported to be high (Cronbach's alpha coefficient of 0.89) [17]. The study tool was pre-tested in Kampala before field data collection. The questionnaire used during data collection is attached as an appendix.

2.12. Data Sources/Measurement

Research assistants were taken through classroom training for two days. Training included adolescent (Sexual Reproductive Health) SRH, protocol training, and data collection techniques. This was followed by pilot testing of all the tools. Participating in pilot training was also a means of training the research assistants.

Data were collected using structured interviews among adolescents through a household-based survey. The interviews were administered on a one-to-one basis and in privacy to individualize the responses and to enhance their validity. This questionnaire captured socio-demographic characteristics of adolescents and their parents, SRH knowledge, behavior, and attitudes.

2.13. Field Data Collection

The field data collection was done from 6th July 2020. Data collection tools were written in English. A team of research assistants was recruited and trained. With the help of the Village Health Team or Local Council 1 Chairman, the interviewers reported to the community leaders and then proceeded to approach the community members. Once in a selected household, the interviewers asked to

speak to the selected respondent/adolescent, explained the survey, and obtained written informed consent before the survey proceeded. If the respondent was under 18 years, parental consent was asked before enrolment of the adolescents.

2.14. Data Analysis

The respondent characteristics were described using frequencies and percentages for categorical variables and means, and the standard deviation for continuous variables. The analysis was stratified by the district. The prevalence of contraceptive use among adolescent girls (13 - 19) was by computing the proportion of respondents that reported use of contraception at the time of the survey to the total number of adolescents that have ever had a sexual encounter. To explore the factors associated with modern contraceptive ever use in the rural and urban areas, stratified analysis was performed per the district of residence. We used generalized linear models with a Poisson link to examine factors associated with contraceptive use at both univariate and multivariate regression. The generalized linear models were used because they can estimate prevalence ratios directly compared to the logistic regression models. We assessed for the presence of multicollinearity using variance inflation factors (VIF). One variable was dropped if two or more variables were collinear. The model specification tests were conducted using AIC and BIC to determine the goodness of fit. STATA version 15 (Stata Corporation Ltd. Texas, USA) was used for analysis.

3. Results

3.1. Socio-Demographic Characteristics of Adolescent Girls

The study included 337 adolescents 13 - 19 years of age with a mean age of 17.8 years. The older adolescents 17 - 19 years were the greatest proportion among those who had ever had sex 290/337 (86.0%). More than a third of the adolescents 61/187 (32.6%) in the rural district had never attended school as compared to a quarter: 38 of 150 (25.3%) in the urban district. The majority of adolescents who had ever had sex were from families with poor economic status 149/337 (44.2%). The details of the demographics in the sexually ever exposed adolescents are shown in Table 1.

3.2. Family-Related Characteristics of Study Participants

About half 168 of 337 adolescents had ever discussed sex with a parent, which was proportionately higher in the urban compared to rural settings. Permissive parenting style 145/337(43.0%) was predominant in the adolescents. The adolescents across the regions generally had low knowledge of contraceptives and prevention of pregnancy (3.2) compared to that of prevention of STIs (7.9). Details of other factors related to ever having sex are shown in Table 2.

Table 1. Socio-demographic characteristics of adolescent girls.

Characteristic	Kamuli district	Wakiso district	All girls
N	187	150	337
Age group			
13 - 14	5 (2.7%)	1 (0.7%)	6 (1.8%)
15 - 16	25 (13.3%)	16 (10.6%)	41 (12.2%)
17 - 19	157 (84.0%)	133 (88.7%)	290 (86.0%)
Mean age (SD)	17.7 (1.3)	18.0 (1.1)	17.8 (1.2)
Marital status			
Single: not in relationship	74 (39.6%)	39 (26.0%)	113 (33.5%)
Single: in a relationship	84 (44.9%)	55 (36.7%)	139 (41.2%)
Married	29 (15.5%)	56 (37.3%)	85 (25.2%)
Highest level of education attained			
None	61 (32.6%)	38 (25.3%)	99 (29.4%)
Primary	97 (51.9%)	70 (46.7%)	167 (49.5%)
O-level	29 (15.5%)	42 (28.0%)	71 (21.1%)
Attended school at beginning of the year	103 (60.2%)	79 (65.8)	182 (62.5%)
Religion			
Catholic	41 (21.9%)	54 (36.0%)	95 (28.2%)
Anglican	71 (38.0%)	47 (31.3%)	118 (35.0%)
Born-again/Pentecostal	25 (13.4%)	21 (14.0%)	46 (13.6%)
Muslim	48 (25.7%)	26 (17.3%)	74 (22.0)
Others	2 (1.1%)	2 (1.3%)	4 (1.2%)
Paternal education			
None	44 (23.5%)	24 (16.0%)	68 (20.2%)
Primary	52 (27.8%)	12 (8.0%)	64 (19.0%)
O'level or above	38 (20.3%)	32 (21.3%)	70 (20.8%)
Don't know	53 (28.3%)	82 (54.7%)	135 (40.1%)
Maternal education			
None	58 (31.0%)	32 (22.7%)	92 (27.3%)
Primary	64 (34.2%)	16 (10.7%)	80 (23.7%)
O'level	25 (13.4%)	42 (28.0%)	67 (19.9%)
Don't know	40 (21.4%)	58 (38.7%)	98 (29.1%)
Social economic status			
Poor	73 (39.0%)	76 (50.7%)	149 (44.2%)
Moderate	77 (41.2%)	51 (34.0%)	128 (38.0%)
Rich	37 (19.8%)	23 (15.3%)	60 (17.8%)

Table 2. Family characteristics of the study participants.

Characteristic	Kamuli district	Wakiso district	All girls
N	187	150	337
Reported Sexual abuse	10 (5.3%)	17 (11.3%)	27 (8.0%)
Discussed sex with a parent	81 (43.3%)	87 (58.0%)	168 (49.8%)
A friend who got pregnant	132 (70.6%)	105 (70.0%)	237 (70.3%)
Tested for HIV	129 (69.0%)	113 (75.3%)	242 (71.8%)
Freedom to club and dance	35 (18.7%)	36 (24.0%)	71 (21.1%)
Safety environment at home	149 (79.7%)	128 (85.3%)	277 (82.2%)
Parenting styles by the guardian			
Disciplinarian/Authoritarian	71 (38.0%)	49 (32.7%)	120 (35.6%)
Permissive/Liberal	76 (40.6%)	69 (46.0%)	145 (43.0%)
Uninvolved	17 (9.1%)	17 (11.3%)	34 (10.1%)
Others	23 (12.3%)	15 (10.0%)	38 (11.3%)
Knowledge			
Mean Knowledge of pregnancy prevention (SD)	5.2 (1.2)	5.2 (1.2)	5.2 (1.2)
Mean Knowledge of avoiding STIs	8.1 (1.7)	7.6 (1.8)	7.9 (1.7)
Mean Knowledge of Puberty	6.1 (1.8)	5.5 (1.8)	5.8 (1.8)
Mean knowledge of personal attributes	4.1 (1.5)	3.8 (1.6)	4.0 (1.5)
Mean knowledge of contraception	3.1 (1.2)	3.4 (1.4)	3.2 (1.3)
Accuracy of SRH information	10.0 (1.5)	10.5 (1.5)	10.2 (1.5)
Ever used Modern contraceptive	63 (33.7%)	41 (27.3%)	104 (30.9%)

3.3. Type of Contraceptive Used

The majority of the participants were using injectable contraceptives (30/104) 28.8%, and other short-acting contraceptives like condom use 20.2% (21/104), and (18/104) 17.3% had ever used long-acting reversible contraceptives (IUD and subdermal implants combined). Details of contraception use are shown in Table 3.

3.4. Factors Associated with Contraceptive Use among Adolescents

The older girls aPR 1.31, 95% CI (1.06 - 1.55) **, those who were married aPR 1.67, 95% CI (1.09 - 2.58) ** and educated up to primary level aPR 1.79, 95% CI (1.14 - 2.83) ** were more likely to use modern contraceptives. The adolescent from the urban settings with aPR, 95% CI 0.67, 95% CI (0.49 - 0.92) ** and those from moderate economic status with aPR 0.72, 95% CI (0.51 - 1.02) * were generally less likely to ever use modern contraceptives. Adolescents with peers who

Table 3. Prevalence of contraceptive ever use among adolescents.

Type of contraception Used N = 104		
Male condom	21	20.2%
Oral contraceptive pill	27	26.0%
Depo-Provera	30	28.8%
Subdermal implants	14	13.5%
Intrauterine Device	4	3.8%
Others	8	7.7%

had ever gotten pregnant were generally more likely to ever use modern contraceptives CPR 1.57, 95% CI (1.04 - 2.38) **. Details of the other factors associated with ever use of modern contraceptives after multivariate analysis are shown in Table 4. In the district specific analysis, adolescents with moderate aPR 0.35 95%CI (0.17-0.68) ** or high socioeconomic status aPR 0.62, 95%CI (0.28-1.37) were less likely to use modern contraceptives in the urban setting. The level of significance in all adolescents were significant in the district specific analysis.

4. Discussion

The study aimed to determine the factors associated with the ever use of modern contraceptives among adolescents in Uganda. The data suggests that the older adolescents, those who are knowledgeable about contraceptives, puberty, and those married were more likely to ever use modern contraceptives. In addition, those who had attained primary education and those who had the freedom to the club were more likely to use modern contraceptives. Adolescents from the rural areas who had discussed sex with parents while those in urban settings those from poor households and knowledgeable about contraception and puberty were likely to use modern contraceptives.

The study shows that three in ten adolescents had ever used a modern contraceptive. The majority had used short-acting contraceptives like condoms pills and injectables. The results of this study are comparable to modern contraceptives ever used among adolescents 15 - 19 years in Ghana (35%) [18] and the Demographic Republic of Congo (28.9%) [19]. A lower prevalence (9.5%) of contraceptive ever use among adolescents in Uganda has been reported after a secondary analysis of 2016 UDHS data [20]. This study looked at the utilization of all adolescents irrespective of their previous sexual experience which explains the main differences. The unmet need for contraception among adolescents is much higher than among other women of reproductive age in general [21]. The low prevalence of ever use of modern contraceptives in this population highlights the underlying cause of adolescent pregnancy.

The study found adolescents who were knowledgeable about modern contraceptives were more likely to ever use them. It has been previously found that curriculum-based sex and HIV education programs when given to young people

Table 4. Univariate and multivariate Poisson regression model.

Characteristic	All girls	
	CPR (95% CI)	Adjusted PR (95% CI)
Age	**1.40 (1.19 - 1.66)*** **	**1.31 (1.06 - 1.55)** **
Marital status		
Single – not in a relationship	1	1
Single – in a relationship	1.29 (0.82 - 2.01)	1.19 (0.78 - 1.82)
Married	2.33 (1.54 - 3.53)***	1.67 (1.09 - 2.58)**
The highest level of education attained		
O-level	1	
None	1.29 (0.74 - 2.24)	1.50 (0.90 - 2.51)
Primary	1.76 (1.07 - 2.87)**	1.79 (1.14 - 2.83)**
Attended school at beginning of the year		
No	1	
Yes	0.45 (0.32 - 0.64)***	
Social-economic status		
Poor	1	1
Moderate	0.68 (0.47 - 0.98)**	0.72 (0.51 - 1.02)*
Rich	0.77 (0.49 - 1.21)	0.75 (0.50 - 1.12)
Discussed sex with a parent		
No	1	1
Yes	1.37 (0.99 - 1.90)*	1.31 (0.96 - 1.78)*
A friend who got pregnant		
No	1	
Yes	1.57 (1.04 - 2.38)**	
Freedom to club and dance		
No	1	1
Yes	1.90 (1.39 - 2.59)***	1.84 (1.37 - 2.47)***
Knowledge of pregnancy prevention	1.20 (1.05 - 1.38)**	1.16 (1.02 - 1.32)**
Knowledge of avoiding STIs	1.05 (0.95 - 1.16)	
Knowledge of Puberty	1.08 (0.99 - 1.18)**	
Knowledge of personal attributes	1.04 (0.94 - 1.14)	
Knowledge of contraception	1.21 (1.07 - 1.36)**	1.13 (0.99 - 1.29)*
Accuracy of SRH information	1.06 (0.95 - 1.18)	
District		
Rural/Kamuli	1	1
Urban/Wakiso	0.81 (0.58 - 1.13)	0.67 (0.49 - 0.92)**

***P < 0.001, **P < 0.05, *P < 0.1, CPR-Crude prevalence ratios, PR-Prevalence ratio, attending school at the beginning of the year was dropped from the multivariable model because of the missing data (13%).

promote contraceptive use [22]. A study in Uganda found very low knowledge of contraceptives and yet the main source of information was the media [23]. Media is not a reliable means of delivery of SRH information because it may not be accurate or be misrepresented [24]. Knowledge empowers adolescents to make effective choices on the prevention of pregnancy and sexually transmitted infections. Delivery of SRH information to adolescents should be taken as a priority to reduce adolescent pregnancy in Uganda.

The study found that adolescents with primary education were more likely to ever use modern contraceptives compared to those who attained secondary education. This effect was more evident in adolescents from the rural setting. This is contrary to a previous study from Ghana among sexually active unmarried adolescents which showed that attaining secondary education promoted the use of modern contraceptives [18]. Previous studies, in addition, have indicated that older women and those with high education are more likely to use modern contraceptives [25] [26]. The possible explanation in this setting is that high school dropouts in the rural areas due to poverty expose them to more sexual activity and therefore need to use contraceptives. The adolescents who have stayed longer in school are likely to differ sexual activity which explains why the adolescents who had secondary education had less sexual activity and low contraceptive ever use.

Married, older adolescents were more likely to ever use modern contraceptives. Older adolescents are more likely to be exposed to receive information on contraceptives from the health facility as reported previously in a study done in the Democratic Republic of Congo [19]. Married adolescents are likely to be exposed to regular sexual activity as compared to the unmarried and these are also socially acceptable to access modern contraceptives compared to their counterparts.

In this study, adolescents from rural areas were more likely to ever use modern contraceptives. The desire to prevent pregnancy could be influenced by the high rates of teenage pregnancy in rural areas. The finding is contrary to what has been previously shown that adolescents in rural areas are less likely to use contraceptives compared to their urban counterparts [26]. Adolescents in rural areas have been at higher risk of teenage pregnancy [3]. Low socioeconomic status has been independently linked to adolescent pregnancy [27] [28]. It's likely that as an intervention to prevent pregnancy and consequences of adolescent pregnancy are evident in the rural and poor communities, which motivates them to use contraceptives.

The unlikely findings in this study were that contraceptives are ever used more likely in the urban poor adolescents. Previously it has been shown that the more educated and rich are more likely to use contraceptives [26]. The urban poor adolescents were found to be at a higher risk of adolescent pregnancy compared to the rural poor in Zambia [29]. The urban poor likely has greater temptations to raise economic status at any cost, including risky sexual behavior which predisposes them to pregnancy and therefore, the increased demand for

contraception.

Those who had ever discussed sex with their parent and had the freedom to go dancing and clubbing were more likely to ever-used modern contraceptives. Discussing sex with parents has been shown previously to be protective of adolescent pregnancy in Africa [3]. Parental supportiveness is associated with the use of modern contraceptives among secondary students in Scotland [30]. Parents discussing sexual reproductive health issues with the adolescent gives accurate information and empowers them to make good decisions.

5. Limitations

The main limitation of the study was that data on contraceptive ever use got from self-reports which could have brought bias. Data collected on the variables were self-reported which may have affected the data. Details of the contraceptives were captured in the questionnaire; however, data on being out of school at the beginning of the year had missing data and was not included in the analysis. Data was collected after the COVID 19 lock-down of schools in Uganda which may have affected the sexual exposure of the adolescents and possibly the use of contraception. In addition, the cross-sectional nature of the study data does not give a causal interpretation of the findings. However, the sample size was adequate and the data collection tools were validated. The data was collected from two districts in Uganda and is not representative of all adolescents in Uganda.

6. Interpretation

This study presents the results of an analysis of recent data on contraceptive ever use among adolescents in Uganda. This analysis allowed us to assess factors associated with contraceptive ever use among adolescents. Stratified analysis was conducted to determine whether the associated factors were affected by the residence of the adolescents, which revealed that older and married adolescents were more likely to ever use modern contraceptives. In the rural district, those who had discussed sex with their parents were more likely to use contraceptives. Vulnerable adolescents like the poor and less educated were more likely to use modern contraceptives. Empowering the girl child early with knowledge, especially with the parent as the primary source may be a good strategy for promoting contraceptive use among adolescents. The different stakeholders, including parents, health workers, and policymakers should consider using this evidence to guide decisions on the provision of SRH information regarding contraceptives in adolescents and preadolescents.

7. Generalizability

The results of the study are not generalizable to all adolescents in Uganda. It's representative of adolescents in the selected rural and urban settings.

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Ethics Approval and Consent to Participate

The study was approved by the Makerere University School of Public Health Research and Ethics Committee (HDREC 768) and the Uganda National Council of Science and Technology (SS 5236). All study participants provided informed consent and assent before participating in the study.

Availability of Data and Materials

All data generated or analyzed during this study are included in this published article.

Authors' Contributions

All the authors contributed to the conception and conduction of the study. FN drafted the first manuscript and all authors contributed and approved the final draft.

Competing Interests

The authors declare no competing interests.

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List of Abbreviations

SRH: Sexual Reproductive Health
STI: Sexually transmitted infections
VHT: Village Health teams
aPR: Adjusted Prevalence Ratio
CPR: Crude Prevalence Ratio

Annex 1: Quantitative Study Instrument

Survey Questionnaire

Sexual and Reproductive Health Information

Makerere University

Section 1: Identification Particulars

001 QUESTIONNAIRE ID No. |___|___|___|___|___|___|

002 INTERVIEWER NAME: _____

003 DISTRICT: _____

004 NAME OF VILLAGE: _____

005 NAME OF SUB COUNTY:_____

006 Rural = 1 Urban = 2 Other (specify) _____

007 DATE OF INTERVIEW: ___/____ / 2020

ASK: Please confirm that you are between 13 and 19 years

IF THE RESPONDENT DOES NOT FIT THE CRITERIA… *Tell them you cannot interview them, thank them, and end the interview.*

008 **Interview Result:** *Result codes*: Completed = 1; Partially Completed = 2; Refused = 3; Other = 4

009 **DECIDE CATEGORY**

Ever been or currently pregnant: 1

Never been pregnant: 2

010 INTERVIEW CHECKED BY SUPERVISOR:

SUPERVISOR SIGNATURE _____CODE |___|___| Date ___/____ / 2020

Section 2: Background Characteristics

First, I have some questions about yourself

No.	Questions and Filters			Skip to
	Time Interview started	|__|__|:|__|__| AM/PM		
Q101	How old were you at your last birthday? **[ESTIMATE IF NECESSARY]**	Age in completed years	|__|__|	
Q102	What is your marital status? **[CIRCLE ONE ONLY]**	Single, not in a relationship	1	
		Single but in a relationship	2	
		Married (or living with partner)	3	
		Separated	4	
		Widow	5	
		Other (Specify) _____	96	
Q103	Have you ever attended school? **[CIRCLE ONE ONLY]**	YES	1	
		NO	2	→Q111
Q104	IF YES, what is the highest education grade /level/form you have completed? **[CIRCLE ONE ONLY]**	None	1	
		Primary	2	
		O-Level	3	
		A-Level	4	
		Diploma/Technical/vocational Cert.	5	
		University/college Degree	6	
		Other (Specify_____)	96	

Continued

Q105	If in school, what class are you currently?	_____		
Q106	Were you attending school at the beginning of this year?	Yes No	1 2	
Q107	Which school do you attend? **(Ask everyone)**	Girls only Mixed school	1 2	
Q108	Type of school? **(Ask everyone)**	Day school Boarding school Day and Boarding school	1 2 3	
Q109	Have you ever missed school due to lack of school fees? **(Ask everyone)**	Yes No	1 2	
Q110	How is your academic performance at school? **(Ask everyone)**	Very good Fair Poor	1 2 3	
Q111	What is your religion? **[CIRCLE ONE ONLY]**	Catholic Anglican/Protestant Pentecostal/Saved Muslim Traditional religion None/No religion Other (specify): _____	1 2 3 4 5 6 96	
Q112	Tribe	Muganda Musoga Others (specify): _____	1 2 96	
Q113	Are both biological parents alive?	Both parents alive Both parents died Only mother alive Only father alive Don't know DWA (Don't want to answer)	1 2 3 4 98 97	 →Q116 →Q115 →Q116 →Q116
Q114	Highest level of education completed by the father	None Primary O'Level A'Level Technical/vocational Cert. University/college Diploma University/college Degree Don't know Other (Specify_____)	1 2 3 4 5 6 7 98 96	

Continued

Q115	Highest level of education completed by the mother	None Primary O'Level A'Level Technical/vocational Cert. University/college Diploma University/college Degree Don't know Other (Specify_____)	1 2 3 4 5 6 7 96 98	
Q116	Do you have any form of disability	Yes No	1 2	→Q118
Q117	If yes, which form of disability **[MULTIPLE RESPONSE]**	Physical disability Visually impaired Has hearing/speech disability Has mental/learning disability Has multiple disabilities Others (Specify)_____	1 2 3 4 5 96	
Q118	What is your relationship to the head of the household	I am the head of the household Wife Daughter Sister Niece Step-child Grand Daughter Others (specify) _____	1 2 3 4 5 6 7 96	

Section 3: Family Environment

Now, am going to ask you questions about your family and yourself?

No.	Questions and Filters			Skip to
Q201	Are your parents separated/divorced?	Yes No N/A (no parents/one dead)	1 2 3	
Q202	How are the parenting styles of your parents/guardians? **[choose the most dominant style in the home if different styles]**	• Disciplinarian/strict • Permissive or liberal • Uninvolved • Authoritative/commanding Others Specify_____)	1 2 3 4 96	
Q203	Has your parent/guardian ever been to prison	Yes No Don't know	1 2 96	
Q204	Do your parents drink alcohol? (more than occasional drinking)	Yes No Don't know	1 2 96	

Continued

Q205	Have you ever been physically abused by parents/guardian?	Yes No	1 2	
Q206	Have you ever been so hurt by your parent/guardian that you wanted to do something about it?	Yes No	1 2	
Q207	Have your parents/guardian/anyone else ever abused you sexually? **[Includes inappropriate touches]**	Yes No	1 2	
Q207b	If yes, who was it (relationship)?			
Q208	Has any of your parents/guardian had any mental illness (e.g: Visited mental clinic/Hosp or on medication)	Yes No	1 2	
Q209	Have you ever talked about sex with your parents/Guardian?	Yes No	1 2	
Q210	How do you feel about how protective your parents/guardians are of you?	Very protective Somehow protective Not protective at all	1 2 3	
Q211	Have you ever been pregnant?	Yes No	1 2	→Q214
Q212	If yes, how many times?			
Q213	If yes, how old were you the first time?			
Q214	Do you have a friend who has ever got pregnant?	Yes No	1 2	
Q215	Have you ever been tested for HIV?	Yes No	1 2	
Q216	Have you ever used family planning/contraceptives?	Yes No	1 2	→Q218
Q217	If yes, which method (s)? **[Can have multiple answers]**	Condom Pills Other_____	1 2 3	
Q218	Do you have friends who drink alcohol/smoke/drugs?	Yes No	1 2	
Q219	Have you ever taken alcohol?	Yes No	1 2	
Q220	Have you ever smoked cigarettes?	Yes No	1 2	
Q221	Have you ever attempted to take drugs?	Yes No	1 2	
Q222	Are you free to go to clubs/dances?	Yes No	1 2	

Continued

Q223	Have you ever been so sad that you wanted to end your life?	Yes No	1 2
Q224	Do you feel safe at home?	Yes No	1 2
Q225	What age did you start menstruation?		
Q226	Have you ever missed school because of menstruation?	Yes No	1 2
Q227	What do you use during menstruation?	Pads Cloth Cotton Other(specify)_____	1 2 3 4
Q228	Who talked to you about menstruation?	Parent Peers School Other	1 2 3 4
Q229	What age did your breasts **start** developing?		

Section 4: Status of the Household Wealth

INSTRUCTION: Now am going to ask you questions about social economics status of the household

			Yes	No
Q301	Does your household have the following? **[MULTIPLE RESPONSE]**	Electricity Telephone/mobile phone Television Radio	1 1 1 1	2 2 2 2
Q302	Main material of the floor	Earth/mud Dung Cement Ceramic tiles Carpet Wood planks Others (specify)_____	1 2 3 4 5 6 96	
Q303	Main material of the roof of your household	Grass thatch/straw Iron sheets Clay tiles Papyrus Cement/slab Others (specify) _____	1 2 3 4 5 96	
Q304	Main material of the walls	No walls Brick with cement Cement blocks Wood planks Stone Mud/Sand Others (specify)	1 2 3 4 5 6 96	

Continued

Q305	Is there a fence around your house at home?	Yes No	1 2	
Q306	Tell me about houses around your home. How close are the houses around your home?	Independent house with ample space Many houses connected to each other (Mizigo) Crowded neighborhood (slums)	1 2 3	
Q307	Do any members of your household own the following? **[MULTIPLE RESPONSE] (PROMPT)**	A bicycle A car/truck A motorcycle Cattle Goats/sheep Ducks/chicken Turkeys Oxen Hoe Plough Agricultural land Others (Specify) _____	Yes 1 1 1 1 1 1 1 1 1 1 1	No 2 2 2 2 2 2 2 2 2 2 2
Q308	How many people live in your household?			
Q309	How many people aged 10 - 19 live in your household			
Q310	Do you do any work to get money?	Yes No	1 2	
Q311	If yes to Q310, which work?			

Section 5: Sexual Reproduction Health Information

INSTRUCTION:
I am going to ask you a few questions in relation to SRH information

No.	Questions and Filters			Skip to
Q401	Have you received any information about sexual reproductive health in the last 3 months?	Yes No	1 2	→403
Q402	If yes, which components of SRH information have you received? **[DO NOT PROMPT]**	Pregnancy prevention Knowledge on STIs Knowledge on HIV Knowledge of use of contraceptives/family planning Knowledge on Pubertal development including menstruation	1 2 3 4 5	

Continued

Q403	Where do you get Sexual Reproductive Health information? **[MULTIPLE RESPONSE]** [**DO NOT PROMPT]**	Dispensary/Health center	1	
		Hospital	2	
		Community outlets	3	
		Pharmacy	4	
		School	5	
		Church/Mosque	6	
		Peers	7	
		Parents	8	
		Family members	9	
		Others (specify)_____	96	
Q404	What is your preferred source of SRH information? **[MULTIPLE RESPONSE]** **[DO NOT PROMPT]**	Parents	1	
		School	2	
		Peers	3	
		Health facilities	4	
		Social media	5	
		Others (specify) _____	96	
Q405	Have you ever had sexual intercourse?	Yes	1	
		No	2	→Q411
		Don't remember	8	→Q411
Q406	If yes, how old were you the first time you had sex?			
Q407	If yes, How old was the person? **[can estimate]**			
Q408	If yes, what was your relationship with the person?	Boyfriend	1	
		Other	2	
Q409	If yes, did you consent or not?	Yes	1	
		No	2	
		Don't remember	8	
Q410	If yes, did you use a condom?	Yes	1	
		No	2	
		Don't remember	8	
Q410b	If yes, how many people have you had sex with?			
Now I would like to talk about ways or means of preventing pregnancy. Answer True, false or I don't know				
Q411	Abstaining from sexual intercourse	True	1	
		False	2	
		Don't know	8	
Q411	Using Traditional herbs can prevent pregnancy	True	1	
		False	2	
		Don't know	8	
Q412	Using condoms for every act of sexual intercourse	True	1	
		False	2	
		Don't know	8	
Q413	Having sexual intercourse only during safe period	True	1	
		False	2	
		Don't know	8	

Continued

Q414	Are there days in the monthly period when a girl might never get pregnant when she has sex? (safe days)	Yes No	1 2
Q415	Use of any modern method of contraceptives can prevent pregnancy	True False Don't know	1 2 8
Q416	Avoiding sex can help prevent you from getting pregnant	True False Don't know	1 2 8
	Knowledge on ways of avoiding STIs/HIV: Answer True, false or I don't know **One can avoid STIs/HIV by:**		
Q417	Abstaining from sex completely	True False Don't know	1 2 8
Q418	Being faithful to one partner	True False Don't know	1 2 8
Q419	Avoiding casual sex	True False Don't know	1 2 8
Q420	Using condom for every act of sexual intercourse	True False Don't know	1 2 8
Q421	Not sharing of toilets	True False Don't know	1 2 8
Q422	Not sharing of eating plates or utensils	True False Don't know	1 2 8
Q423	HIV is known as Human Immunodeficiency Virus	True False Don't know	1 2 8
Q424	HIV develops into AIDS	True False Don't know	1 2 8
Q425	HIV is present in semen, blood, vaginal secretions and breast milk	True False Don't know	1 2 8
Q426	Gonorrhoea is a sexually transmitted infection	True False Don't know	1 2 8
	Knowledge relating to puberty: Answer True, false or I don't know		
Q427	Presence of breasts means a girl is old enough to deliver a baby	True False Don't know	1 2 8

Continued

Q428	Puberty is the beginning sign that a girl is ready for sex	True False Don't know	1 2 8
Q429	Puberty starts in girls earlier than boys	True False Don't know	1 2 8
Q430	Girls aged 10 - 14 years who experience menstruation cannot become pregnant because they are too young	True False Don't know	1 2 8
Q431	Attraction towards opposite sex is normal at puberty	True False Don't know	1 2 8
Q432	It is possible for a male adolescent to impregnate girl	True False Don't know	1 2 8
Q433	Adolescent who don't have sex occasionally are sexually unhealthy	True False Don't know	1 2 8
Q434	Boys not having sex at all or having sex few times can become sick	True False Don't know	1 2 8
Q435	Girls not having sex at all or having sex few times can become sick	True False Don't know	1 2 8
	Knowledge on personal attitudes towards sexuality and reproduction and peer influences		
Q436	Sex before marriage is acceptable	True False Don't know	1 2 8
Q437	For a woman, having multiple sex partners is an indication of her attractiveness	True False Don't know	1 2 8
Q438	A female who remains a virgin during her adolescence is old-fashioned	True False Don't know	1 2 8
Q439	Having a baby at an early age is a sign of maturity	True False Don't know	1 2 8
Q440	Abstaining from sex is difficult during adolescence	True False Don't know	1 2 8
Q441	Most of my friends believe in waiting for marriage to have sex	True False Don't know	1 2 8

Continued

Q442	Most of my friends do not believe in using contraception	True False Don't know	1 2 8	
Q443	Most of friends do not believe in using condoms	True False Don't know	1 2 8	
Q444	How many of your friends have had pregnancies during adolescence?	Many (about 10+) Some (5 < 10) Few (<5) None	1 2 3 8	
	Knowledge on contraceptive use: Answer True, false or I don't know			
Q445	Using a condom during sexual intercourse is a wrong practice for adolescents	True False Don't know	1 2 8	
Q446	The use of contraceptives causes sterility in women	True False Don't know	1 2 8	
Q447	Family planning services can prevent an unwanted pregnancy	True False Don't know	1 2 8	
Q448	I would be too embarrassed to buy or find condoms	True False Don't know	1 2 8	
Q449	Are you able to access condoms when you need them?	Yes No	1 2	
Q450	It is the female's responsibility to protect herself during sexual intercourse	True False Don't know	1 2 8	
	Now I would like to ask you if own or have access to the following?			
Q451	Do you own a mobile phone?	Yes No	1 2	→Q453
Q452	Do you have access to a mobile phone?	Have access to a phone No access to a phone	1 2	→Q454
Q453	If she owns/ access to a phone, what type of phone?	Smart phone Not smart phone	1 2	
Q454	Have you seen pornographic materials before?	Yes No	1 2	→Q501
Q455	If yes, what was/is the source? **[MULTIPLE RESPONSE]**	Smart phone Movies Internet Others (specify)_____		

Section 6: Accuracy of Sexual Reproductive Information

INSTRUCTION: I now want to ask you very sensitive questions on sex and other sex-related matters. Please remember that your name will not be recorded anywhere in this questionnaire and the information you give will be kept confidential.

No.	Questions and Filters ONLY ANSWER "YES" OR "NO"			Skip to
	Sex and Reproduction			
Q501	A woman/girl can get pregnant the very first time the man and woman have sexual intercourse	True False	1 2	
Q502	A person does not keep growing after the first time he/she has had sex	True False	1 2	
Q503	Masturbation does not cause severe damage to health	True False	1 2	
Q504	A woman is most likely to get pregnant if she has sex half way between her periods	True False	1 2	
	Condoms			
Q506	Condoms are an effective way of preventing pregnancy	True False	1 2	
Q507	The same condom cannot be used more than once	True False	1 2	
Q508	Condoms cannot slip off a man and disappear inside the woman's body	True False	1 2	
	Sexually transmitted infections and HIV			
Q509	A person can have a Sexually transmitted infection without showing any symptoms	True False	1 2	
Q510	Most people do not get cured of their HIV/AIDS	True False	1 2	
Q511	A person with HIV/AIDS does not always look thin and unhealthy in some way	True False	1 2	
Q512	People can take a simple test to find out whether they have HIV/AIDs	True False	1 2	
Q513	Signs and symptoms of sexually transmitted infections in a woman or man can be discharged from the penis/vagina, pain during urination and ulcers/sores in the genital area	True False	1 2	
Q514	Condoms are an effective way of protecting against sexually transmitted infections including HIV/AIDS	True False	1 2	

ANY ADDITIONAL COMMENTS

_____
_____
_____
_____
_____
_____

Time Interview ended |__|__|:|__|__| AM/PM

THANK YOU VERY MUCH FOR YOUR COOPERATION