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Fear and Misconceptions toward Infertility Impact Contraceptives Uptake among Teenagers at Higher Risk of Unwanted Pregnancy

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Abstract

Objective: This study intended to investigate the level of knowledge, attitude and behaviors towards contraceptive use among school going adolescents. **Methods:** Authors surveyed 405 female adolescent students between December, 2020 and February, 2021 in four public schools in Kitwe District, Zambia. Using a modified, previously validated questionnaire, they measured knowledge, attitudes and practices (KAP) regarding modern contraceptives and explored associated socio-demographic factors. Statistical package for social sciences (SPSS) was used for statistical analysis where the significant level was set at p-value < 0.05. **Results:** Over half of respondents showed good knowledge (53.6%) and a positive attitude (57.3%), yet only 21.7% had ever used family-planning services while academic grade (χ^2 = 15.745, p = 0.001), medical care services seeking behaviors (χ^2 = 12.868, p = 0.04) and awareness of service locations (χ^2 = 26.415, p = 0.001) predicted KAP scores. **Conclusion:** The study concludes that misconceptions—especially fear of infertility, and limited youth-friendly services contribute to persistently low contraceptive uptake. Empirical studies in the future can refine causal inferences that are limited in the current study while extensive educational programs could minimize fear and misconceptions about sexuality and sexual health practices among adolescents.

Keywords

Contraceptive/Family Planning, School Going Adolescents/Teenage, Attitude, Knowledge, Practice, Unintended/Unwanted Pregnancy, Zambia

1. Introduction

Modern fertility control method not only has been proved to prevent unintended

pregnancies, but also is more effective than the non-conventional traditional methods (like withdrawal, rhythm and calendar methods) due to their low failure rates and minimal side effects [1]. Considering the continuous rise in unintended pregnancies among adolescents related to case of sexual assault and unprotected sexual intercourse [1], the mounting number of sexually active adolescents wants to delay, limit or totally avoid pregnancy [2]. Consequently, there has been a notable increase in the use of pills, injectable, implants and barrier methods utilization in the subgroup. Adolescence is a period of life following the onset of puberty during which a young person develops from childhood into adulthood. During adolescence, new and different problems related to onset of sexual activity, emotional control, behavior and decision making typically emerge [3]. Scholarly works asset that adolescents become sexually active at about 12 years old, during which most teenage pregnancies occur. Notably, babies born from adolescents account for about 11% live births and 14% maternal loses globally [1] [3]. While 7.3 million adolescent girls in developing countries become pregnant every year, many cases (about 14 million) of unintended pregnancies occur in Sub-Sahara Africa [4]. It is important to note that 95% of teenage pregnancy (becoming pregnant usually within the age 13 - 19 years before one reaches the age of legal adulthood which varies across countries), occurs in the same region, and is the leading cause of pregnancy related complications, such as deaths and abortions [5].

Consequently, Zambia is one of the countries in the Sub-Sahara region with the firth, highest adolescent birth rate prevalence. The Zambian National Demographic and Health Survey (ZDHS) of 29 countries in the sub-Sahara region, Zambia has a highest prevalence of 29% adolescent pregnancy and early motherhood (nearly 45% adolescent birth rate) [6] as the result of engaging in unsafe sex before the age of 18 [7]. Considering the rising number of in-school girls dropping out due to unintended pregnancies and child marriage [8], the government of Zambia launched maternal and child health initiative to integrate reproductive health services into primary health care and has established youth friendly health services (YFHS) in most of the health facilities so as to increase awareness of available health services especially to the adolescents [9]. With the initiative, there is tremendous improvements on debunking adolescent fertility rate, though, unintended teenage pregnancies are still mounting [9]. Despite the efforts to reduce teenage pregnancy by the government, the prevalence rate in Zambia is one of the highest in the world, and for the past seven years, the trajectory has been soaring. The recent 2018/2019 ZDHS report shows that teenage pregnancy has increased by 0.5% among adolescents aged 15 - 19 years as compared to 2013/2014 survey. An overall, at the time of the survey, 29% teenage pregnancy reported, 24% reported to have had a live birth, 5% were already pregnant with the first child, and 6% had begun childbearing at the age of 15, while child bearing increased up to 53% among adolescents in secondary school [10].

In Zambia as the rest of the world data has been showing a minimum utilization of modern contraceptive methods among adolescents despite high prevalence rate

of unintended pregnancy, maternal and perinatal mortalities and morbidities [11]. For instance, utilization of modern contraceptives in Zambia among adolescent girls stands at 10.2% which is below the minimum standard [9]. Again, data show that adolescent awareness of available sexual reproductive health services (SRHS) is low in the subgroup. To reduce the number of unintended pregnancies, in 2011, World Health Organization (WHO) came up with guidelines to prevent early pregnancy and poor reproductive health outcomes for the adolescents in mostly affected countries [12]. One of the essential stipulations in the guideline is utilization of emergency contraceptives (EC) provided that they can prevent unintended pregnancies if used on time and correctly. Established evidences asset that utilization of contraceptives among adolescents is minimum. Inadequate knowledge about how to use, when and where to access contraceptives, fear of side effects like sterility and some misconceptions amongst the associated factors contributes to low contraceptives uptake [13].

With the view that, having knowledge about contraceptives may not all the time translate into practice due to social and economic concerns such as conflicting ideas (attitude) and accessibility [14], Zambia, for example has had been intensifying adolescent sexual reproductive health education programs. The programs target those in basic secondary schools, and female adolescents without formal education with low social economic status. The program has strengthened provision of family planning information and promote contraceptive use and its accessibility by both in-school girls and those out of school to prevent unintended pregnancies [9]. Consistently, the country has made tremendous positive and significant progress in family planning provision. The contraceptive prevalence rate in the general population for modern family planning methods increased from 33% to 45% from 2007 to 2013 and to 49% in 2018 while the unmet need has reduced from 27% to 21% respectively. Although, despite the efforts to curb teenage pregnancies, the overall total fertility rate is still high (5.3%) is the subgroup [9].

On the other hand, as the obligation to equip adolescents with the right knowledge remain indispensable, the primary concern to increase modern contraceptives use could be exploring and understanding the level of knowledge currently possessed, and sort of behaviors and attitude towards modern contraceptives use as portrayed by the high-risk groups especially the girls at school. Putting in the Zambia context, the former statement rises the following questions: do the school girls possess adequate knowledge about modern contraceptives? Do they know how to use, when and where to access contraceptives? Or what is the current level of contraceptives utilization in this subgroup? And what factors contribute to the current state of contraceptives utilization among the school girls in Zambia? Finally, could it be possible that the level of contraceptives utilization among these adolescents echo their level of knowledge? Notably, the scholarly works could have helped to answer the posed questions, however, few to no robust evidence unveiling the paradigms of contraceptives use and teenage pregnancies among school girls in Zambia exist of which the current study intends to investigate.

2. Methods and Materials

Setting and Participants

A descriptive cross-sectional was conducted from December, 2020 to February, 2021 among adolescent girls aged between 15 - 19 years residing and schooling in Kitwe district on the Copper belt Province of Zambia. Kitwe is among the 10 districts and the second largest city in Zambia, located in the central part of the province endowed with vast natural resources, thus hectic economic activities. It is currently the most populated district accounting for 24 percent of the province population, and the second most populated district in Zambia. Most of its inhabitants are young, with slightly 66 percent of the population below the age of 25 years. The district has 28 secondary schools; 5 are private based secondary schools, and 23 state owned secondary schools of which 2 are for boy's only, 2 for girls only, and 19 are co-education secondary schools [9]. The study recruited students from state owned school owing to the fact that some private schools do not accommodate adolescents who fall pregnant while schooling. Students were recruited from four co-education secondary schools of Chimwemwe, Twatasha, Ipusukilo and Chamboli following a simple random method using a rotary technique.

Sample size and sampling procedure

We conservatively used Cochran's formula [15] to estimate a 337 number of participants. The sample size was then adjusted to 405 (20% attrition rate) participants based on the previous related studies [16]. Students from grade 9, 11 and 12 were enrolled from each identified schools as follows: Ipusukilo and Chimwemwe each comprised 102 participants, while Twatasha and Chamboli had 101 and 100 respectively. At the time of data collection, students in grade 10 were absent due to covid-19 pandemic that led to a lockdown in the country which led to a delay in marking and release of grade 9 examinations results, this was a stream that should have proceeded to grade 10. With the assistance from school heads/managers and heads of departments 33 to 34 students were obtained from each grade using class lists and registers at every session as students were divided into smaller groups to enable them observe social distancing. Data from the participants were collected during their afternoon free session. Though, prior to data collection, notices were written to parents and legal guardians through the school heads/managers from the selected schools informing them about the study a week before the meeting. Considerably, the study recruited school going adolescent girls aged between 15 - 19 years residing in Kitwe district of Zambia, Zambian citizens by birth or by law, and the adolescent assented themselves willingly or through their parents/legal guardian to participate in the study. Participants with special needs such as deaf and dumb, and those not assented were excluded from the study.

Measurement

The current study adapted a validated questionnaire to assess knowledge, attitude and practices on family planning services among adolescents in secondary schools. The assessment tool was developed by author Dangat, C.M. and B. Njau

[16]. The questionnaire has four sections with internal reliability coefficient of 0.71. The questionnaire was modified by incorporating the feedbacks from supervisor and experts to meet the present study objectives before being used for data collection. Minor additions and modification were done to it as authorized by the author so that it fits the study population in Zambia. The original questionnaire consisted 38 items in four parts: Part 1 consisting demographic characteristics such as age, name of school, marital status, religious denomination, grade/class of student and where they usually seek medical care from, and place of family planning (FP). The section comprises 7 items in total.

Part 2 contains 9 items that assess knowledge on contraception/family planning, with 5 specific items measuring the level of knowledge assigned one point for the correct answer (five common contraceptives). The level of knowledge is sought on the types of contraception that the adolescents is aware of. Also, two questions in the section explore about when certain methods can be used and how some methods work, and the rest require the participant to mention the types of contraceptives and the ones they think could be the most suitable for adolescent. We added one item to this part (item number 10) so that the participants would mention the type of contraceptive that they would prefer (most suitable) as youngsters. The outcome variable of interest with regards to knowledge was defined as the ability of an adolescent to mention at least more than one contraceptive method [17]. To determine dimension (that is good or poor/bad), knowledge was then categorized into poor knowledge if the mean score is less than the overall mean knowledge score (unable to mention any modern contraceptive) and good knowledge if mean score is equal or greater than the overall mean knowledge score (cut-off point = 2.55; Cronbach's $\alpha = 0.832$).

Part 3 **c**onsists questions exploring attitude towards the use of contraceptives/family planning, with 9 items as well. The section measures the opinions of adolescents concerning the use of contraception set in positive and negative statements. Each item on this part is measured on a Likert scale with larger numbers such as 4 and 5 indicating a positive attitude. There are five levels representing strongly disagree = 1, disagree = 2, neutral (not sure/do not know) = 3, agree = 4 and strongly agree = 5. The cut-off point of 25 below or equal/above the mean score was established to determine dimension of negative or positive attitude respectively (Cronbach's $\alpha = 0.768$). The final part (part 4) consists questions exploring the actual practice/use of contraceptives. The section comprises 13 items assessing those who ever sought contraceptive services, where they accessed the service from, what type of contraception was preferred, how often it was accessed and if the participants could recommend friends to use contraceptives. The 6 items that were added to this part intended to assess the distance from where contraceptives can be accessed such as health facility, attitude of health care provider when offering the service, access to information education on contraceptives and privacy, waiting time, tradition and religious beliefs (Cronbach's $\alpha = 0.785$).

Data analyses

Preliminary normality test was conducted on dependent variables to determine parametric statistics analysis. Descriptive analysis for categorical variables included frequencies and percentages—continuous data presented as the mean, median and standard deviation (SD). Chi-squared analysis, one-way ANOVA test, and multivariate regression analysis were conducted to determine association, mean score differences, and the correlations between study variables respectively. We report associations using F-values (ß) at 95% confidence intervals. The statistical significance for all tests set at $p < 0.05$ (two-sided). The SPSS package version 25.0 performed all these tests.

Ethical consideration

The Institutional Review Board of Central South University approved this study (No. E-2020121), and the approval for data collection were sought and granted by the respective authorities such as the University of Zambia Biomedical Research and Ethics committee in Lusaka Zambia (UNZABREC), the National Research Health Association (NRHA), the Ministry of General Education (MOGE) Kitwe District Board Secretary (DEBS), and the school managers. Also, for ethical purposes, disseminated consent forms with parents and legal guardians signature were obtained by authors prior to data collection. The seventh revised declaration of Helsinki guided all protocol and safety of the study participants [18]. Adapted tools for assessment were used following formal permission letter from the developers.

3. Results

Socio-demographic characteristics of participants

A total of 405 students from junior and senior secondary schools were enrolled in the study. The mean age was 16.84 (±1.24) years and almost equal number of students from the four schools (24.7% and 25.2%). Majority of the students were single 369 (91.1%) and 7.4% (30) of students are in a relationship (courtship). A significant number of the student are affiliated to the catholic religion (28.9%), Pentecostal (24.7%), other faiths accounted for 17.8% followed by Seventh Day Adventist (16.3%). Equally number of students were recruited from three grades (grade 9, 11 and 12) and no student participated from grade 10. Majority of the student seek health from hospital 267 (65.9%) followed by health Centre 125 (30.9%). Furthermore, 66.2% knew a place where family planning services are provided. **Table 1** shows the characteristics of the study participants.

Level of knowledge on contraceptive use among participants

Among the five most common contraceptives, pills (69.4%) were the most widely known among the students followed by condom (64.4%). 51.1% of the participants also mentioned injectable. The least known or mentioned contraceptive was the natural or calendar method (8.8%) followed by implants (12.3%). The results are shown in **Figure 1**.

With regards to the most suitable contraceptive for young people, majority (86.4%) mentioned condom followed by natural/Calendar method (37.3%) as the

most appropriate method of contraceptive. 14.3% of the students mentioned pills, 6.2% indicated injectable and the least appropriate was implants (1.7%). The results are shown in Figure 2.

Further analysis of the knowledge items showed that many of the students (45.2%) believed the most appropriate age to start FP was within the age range of

Table 1. Socio-demographic characteristics of participants (n = 405).

Variable	Frequency	Percentage (%)
Age	**16.84 ± 1.24**	
School of attendance		
Chamboli Secondary School	100	24.7
Ipusukilo Secondary School	102	25.2
Chimwemwe Secondary School	102	25.2
Twatasha Secondary School	101	24.9
Marital status		
Single	369	91.1
Married	6	1.5
In a relationship	30	7.4
Religion		
Roman Catholic	117	28.9
Seventh Day Adventist	66	16.3
Jehovah's Witness	50	12.3
Pentecostal	100	24.7
Others	72	17.8
Academic class		
Grade 9	135	33.3
Grade 11	135	33.3
Grade 12	135	33.3
Medical care facility		
Hospital	267	65.9
Health Centre	125	30.9
Dispensary	2	0.5
Pharmacy	8	2
Others	3	0.7
Know place for FP services		
Yes	268	66.2
No	137	33.8

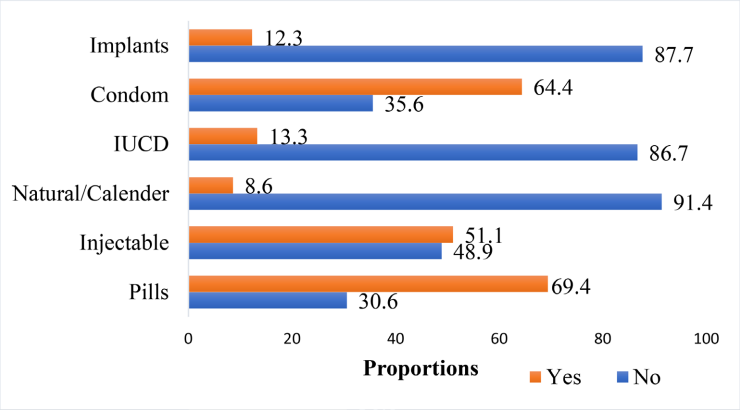

Figure 1. Level of knowledge on contraceptive use among participants.

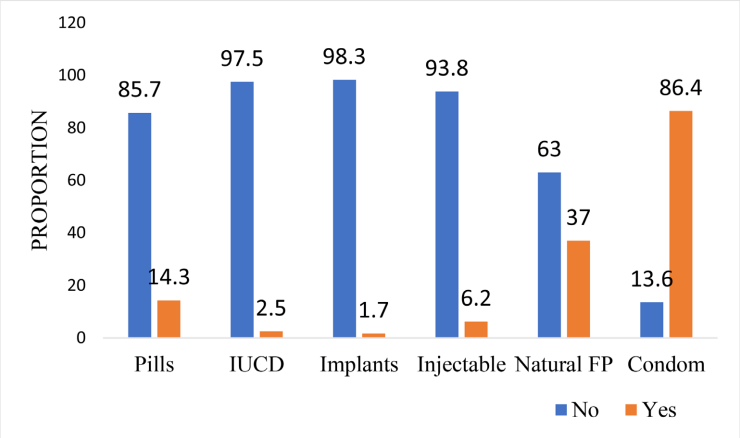

Figure 2. The most suitable contraceptive for young people.

16 - 24 years. However, a significant number of the students indicated don't know (33.1%). Also, majority (62.7%) believed natural FP is not appropriate for adolescents. 72.6% of the students are aware that condom can prevent HIV/AIDS and pregnancy and 57% knew where to get pills after an unprotected sexual intercourse. Majority (52.3%) believed early use of FP can lead to infertility and 40.5% did not agree that periodic abstinence or sexual intercourse avoidance on days when pregnancy is most likely to occur is appropriate method of FP to prevent pregnancy among adolescence. Source of information about family planning service was mainly from the health facility (44%), television (14.8%) and school (14.3%). The least source of information was from newspapers (3.2%) and magazines (4%). The results are shown in Table 2.

The mean knowledge score was 2.55 ± 1.31. To determine the knowledge level of the students on family planning the mean knowledge score of five questions was used (five common contraceptive methods). Knowledge was categorized into poor knowledge if the mean score is less than the overall mean knowledge score and good knowledge if mean score is equal or greater than the overall mean knowledge score. More than half of the students (53.6%) of the student had good knowledge on FP.

Table 2. Distribution of Knowledge of Contraceptive Methods (n = 405).

Questions	Frequency	Percentage
Age appropriate for adolescence to start FP		
10 - 14 years	20	4.9
15 - 19 years	68	16.8
16 - 24 years	183	45.2
I don't know	134	33.1
Natural FP as a method appropriate for adolescents		
Yes	150	37
No	254	62.7
I don't know	1	0.2
Know where to obtain a pill soon after unprotected sex		
Yes	231	57
No	174	43
Condom can prevent HIV/AIDS and pregnancy		
Yes	294	72.6
No	73	18
I don't know	38	9.4
Early use of FP methods could lead into infertility		
Yes	212	52.3
No	83	20.5
I don't know	110	27.2
Avoiding sexual intercourse during ovulation		
Yes	145	35.8
No	164	40.5
I don't know	96	23.7
Source of the information about FP services from		
Radio	33	8.1
Newspaper	13	3.2
Television	60	14.8
Magazine	16	4
Health facility	178	44
Pharmacy	25	6.2
School	58	14.3
Others	22	5.4

Factors associated with knowledge on contraceptives

Chi square analysis revealed signification association between knowledge and three socio demographic factors. Academic class ($X^2 = 15.745$, $p = 0.001$), knowing

a place to seek for medical care services (X^2 = 12.868, p = 0.04) and knowing a place providing FP services (X^2 = 26.415, p = 0.001) were significantly associated with knowledge. The results are shown in Table 3.

Table 3. Socio-demographic factors associated with knowledge on contraceptive (n = 405).

Variable	Poor Knowledge n (%)	Good Knowledge n (%)	X^2	*p*
School of attendance			7.774	0.051
Chamboli Secondary	36 (36.0)	64 (64.0)		
Ipusukilo Secondary	56 (54.9)	46 (45.1)		
Chimwemwe Secondary	46 (45.1)	56 (54.9)		
Twatasha Secondary	50 (49.5)	51 (50.5)		
Marital status			4.336	0.103
Single	177 (48.0)	192 (52.0)		
Married	1 (16.7)	5 (83.3)		
In a relationship	10 (33.3)	20 (66.7)		
Religion			5.535	0.237
Roman Catholic	52 (44.4)	65 (55.6)		
Seventh Day Adventist	26 (39.4)	40 (60.6)		
Jehovah's Witness	27 (54.0)	23 (46.0)		
Pentecostal	43 (43.0)	57 (57.0)		
Others	40 (55.6)	32 (44.4)		
Academic class			15.745	***0.001******
Grade 9	57 (42.2)	78 (57.8)		
Grade 11	50 (37.0)	85 (63.0)		
Grade 12	81 (60.0)	54 (40.0)		
Place to seek for medical care			12.868	***0.04****
Hospital	114 (42.7)	153 (57.3)		
Health center	63 (50.4)	62 (49.6)		
Dispensary	1 (50.0)	1 (50.0)		
Pharmacy	8 (100.0)	0 (0.0)		
Others	2 (66.7)	1 (33.3)		
Know place providing FP services			26.415	***0.001******
Yes	100 (37.3)	168 (62.7)		
No	88 (64.2)	49 (35.8)		

Note: **fisher's exact test used and ***p < 0.001.

Attitude towards contraceptive use among participants

The summed score for the outcome variable attitude was tested for normality using histogram and Q-Q plot which is a requirement for any parametric statistics analysis. The analysis showed a normal distribution of the data and no outlier was reported. The mean attitude score was 28 ± 7.16. Frequency analysis of the items on attitude showed many students (57.3%) agreed (aggregate of strongly agree and agree) that elderly people in the community must encourage adolescents on the use of FP services. 45.9% of the students however rejected (aggregate of strongly disagree and disagree) that parents should encourage adolescents on the use of FP services. Many students (51.6%) also believed that use of FP by adolescents can promote promiscuity and 50.1% of the students rejected the statement that "it is advisable that FP methods are used by unmarried adolescents". However, many students (48.4%) believed that religious leaders should not encourage adolescents on the use of FP services. The results are shown in Table 4.

Table 4. Attitude towards contraceptives/family planning (n = 405).

Item	SD/D	Neutral	SA/A
Elderly people in the community must encourage adolescents on the use of FP services.	133 (32.8)	40 (9.9)	232 (57.3)
Parents should encourage adolescents on the use of FP services.	186 (45.9)	35 (8.6)	184 (45.4)
Teachers must teach and encourage adolescents on the use of FP services.	115 (28.4)	20 (4.9)	270 (66.7)
Religious leaders to encourage adolescents on the use of FP services.	196 (48.4)	70 (17.3)	139 (34.3)
Peers to encourage each other on the use of FP services	112 (27.7)	33 (8.1)	260 (64.2)
Health care providers must encourage adolescents on the use of FP services.	90 (22.2)	28 (6.9)	287 (70.9)
It is advisable that FP methods are used by unmarried adolescents.	203 (50.1)	40 (9.9)	162 (40.0)
It is a taboo for an adolescent to talk about FP planning services with elders	226 (55.8)	43 (10.6)	136 (33.6)
Use of FP by adolescents can promote promiscuity	121 (29.9)	75 (18.5)	209 (51.6)

Note: SD/D = strongly disagree/disagree and SA/A = strong agree/agree (aggregate).

Factors associated with Attitude towards family planning

To determine the mean difference in the mean attitude score among participants, one-way ANOVA and independence samples t-test was conducted. The analysis showed statistically significant difference in the mean attitude score across four socio-demographic variables: marital status ($F = 5.580$, $p = 0.004$), school of attendance ($F = 9.058$, $p = 0.001$) and academic class ($F = 5.717$, $p = 0.004$). On marital status there was significant difference between students who

are in a relationship and single (p = 0.009) and students who are married (p = 0.026). With regards to school of attendance, there was significant difference in the mean attitude score between students from Twatasha Secondary school and Chamboli Secondary school (p = 0.001); Ipusukilo Secondary school (p = 0.045) and Chimwemwe Secondary school (p = 0.007). On academic class or year of study, there was significant mean difference in the attitude score between student in grade 11 and 12 (p = 0.003).

Independence samples t-test also showed statistically significant difference in the mean attitude score across students who know a place for FP services and those that did not [t (403) = 3.550, p = 0.001]. Students who knew a place for FP services had higher mean score compared to those who did not. The results are shown in Table 5.

Table 5. Factors associated with attitude score towards contraceptive/FP among participants (n = 405).

Variable	n (%)	Mean (SD)	Statistics value	*p*
Religion			0.192*	0.942
Roman Catholic	117 (28.9)	27.95 (6.93)		
Seventh Day Adventist	66 (16.3)	28.53 (7.46)		
Jehovah's Witness	50 (12.3)	28.34 (7.42)		
Pentecostal	100 (24.7)	27.63 (7.01)		
Others	72 (17.8)	27.86 (7.43)		
Marital status			5.580*	***0.004***
Single	369 (91.1)	27.77 (7.13)		
Married	6 (1.5)	23.50 (9.31)		
In a relationship	30 (7.4)	31.73 (5.89)		
School of attendance			9.058*	***0.001****
Chamboli Secondary	100 (24.7)	30.36 (6.07)		
Ipusukilo Secondary	102 (25.2)	27.86 (6.61)		
Chimwemwe Secondary	102 (25.2)	28.48 (7.16)		
Twatasha Secondary	101 (24.9)	25.31 (7.86)		
Academic class			5.717*	***0.004***
Grade 9	135 (33.3)	28.27 (7.00)		
Grade 11	135 (33.3)	29.30 (7.03)		
Grade 12	135 (33.3)	26.42 (7.21)		
Medical care facility			1.347*	0.252
Hospital	267 (65.9)	28.52 (7.38)		

Continued

Health centre	125 (30.9)	27.18 (6.62)		
Dispensary	2 (0.5)	23.00 (7.07)		
Pharmacy	8 (2)	25.13 (8.25)		
Others	3 (0.7)	27.00 (1.00)		
Know a place for FP			3.55^	***0.001****
Yes	268 (66.2)	28.89 (6.82)		
No	137 (33.8)	26.26 (7.52)		

Note: *One-way ANOVA (F-value), ^Independent t-test, **p < 0.001.

Multivariate regression analysis of factors associated with attitude towards FP

Factors associated with attitude towards FP among students were determined using the attitude scale. Multivariate regression analysis was conducted using forced entry (Enter) method and the correlation was 0.313. The value of the R^2 was only 0.098 and adjusted r^2 was 0.077 for the variation in the model. Also, the F-value 4.776 was significant (p < 0.001).

Three variables were significantly associated with attitude as shown in Table 6. Students from Twatasha secondary school were significantly and negatively associated with attitude towards FP (Beta = −0.214, p = 0.001) with reference to

Table 6. Factors associated with attitude towards FP among students (n = 405).

Variables	B	SE	Beta	t	Sig.	95.0% CI	
						LCI	UCI
(Constant)	23.362	6.253		3.736	0.001	11.069	35.655
Age	0.145	0.319	0.025	0.454	0.65	−0.483	0.773
Chamboli	Ref						
Ipusukilo	−1.245	1.047	−0.076	−1.189	0.235	−3.304	0.814
Chimwemwe	−0.899	1.145	−0.055	−0.786	0.433	−3.15	1.351
Twatasha	−3.538	1.082	−0.214	−3.271	***0.001***	−5.664	−1.411
Married	Ref						
Single	4.225	2.929	0.168	1.442	0.15	−1.535	9.984
In a Relationship	6.876	3.174	0.252	2.167	***0.031***	0.636	13.115
Grade 9	Ref						
Grade 11	0.41	1.025	0.027	0.401	0.689	−1.604	2.425
Grade 12	−0.874	1.094	−0.058	−0.8	0.424	−3.024	1.276
Knowledge of place of FP	Ref						
Yes							
No	−1.746	0.779	−0.115	−2.242	***0.026***	−3.277	−0.215

student from Chamboli secondary school. Furthermore, students who are in a relationship were significantly and positively associated with attitude (Beta = 0.252, p = 0.031) compared to married students. Also students who did not know of a place for FP were significant and negatively associated with attitude (Beta = −0.115, p = 0.026). There was no significant association between attitude and age (p = 0.65) and academic class. The results are shown in Table 6.

Practice related to contraceptive use among participants

A total of eighty-eight (21.7%) students admitted ever attending family planning services in a life time. Out of this number 88.6% agreed to been welcomed by the nurse during FP service utilization and 86.4% also agreed that privacy was accorded to them at the facility. 72.7% of the students disagreed that there is any tradition practice that hinders FP. The results are shown in Table 7.

Majority (46.6%) of the students get their FP services mainly from hospital and health centers respectively (Figure 3). 86.4% of the students mentioned that the waiting time to get attended to by service providers was within 2hours and over

Table 7. Practice related to contraceptives/FP (n = 88).

Question	Yes	No
Have ever attended family planning services in life time	88 (21.7)	317 (78.3)
Was welcomed by the health care worker or service provider	78 (88.6)	10 (11.4)
The infrastructure at nearest health facility allows for privacy	76 (86.4)	12 (13.6)
Received information education and communication on contraception from the health care provider	73 (83.0)	15 (17.0)
Any tradition/cultural practices that hinders using family planning/contraceptives	21 (23.9)	67 (76.1)
Any religious beliefs that hinder you from using contraceptives	24 (27.3)	64 (72.7)
Can afford to pay for family planning services or buy contraceptives whenever you need it where it is not provided for free	60 (68.2)	28 (31.8)
Would recommend friends to use family planning/contraception	76 (86.4)	12 (13.6)

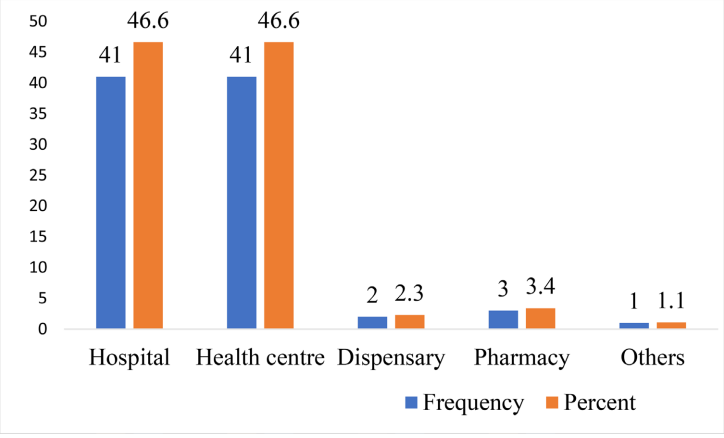

Figure 3. Access points to FP service (n = 88).

2 hours accounted for 13.6%. With regards to distance to the health facility, majority (58%) of the students mentioned < 5 kilometers, 37.5% mentioned 5 - 10 kilometers and 3.4% indicated over 12 kilometers.

On how often students seek for family planning services, many (36.4%) indicated monthly, 26.1% mentioned only when they want to engage in sex and 22.7% mentioned yearly. The least time students seek for FP services was weekly followed by twice weekly (8%). The results are shown in Figure 4.

Furthermore, the most frequent contraceptive sought by students was injectable (22.7%) followed by oral contraceptive (20.5%) and male condom (20.5%). Female condom also accounted 21.6% while the least used contraceptive was the loop (4.5%) (Figure 5).

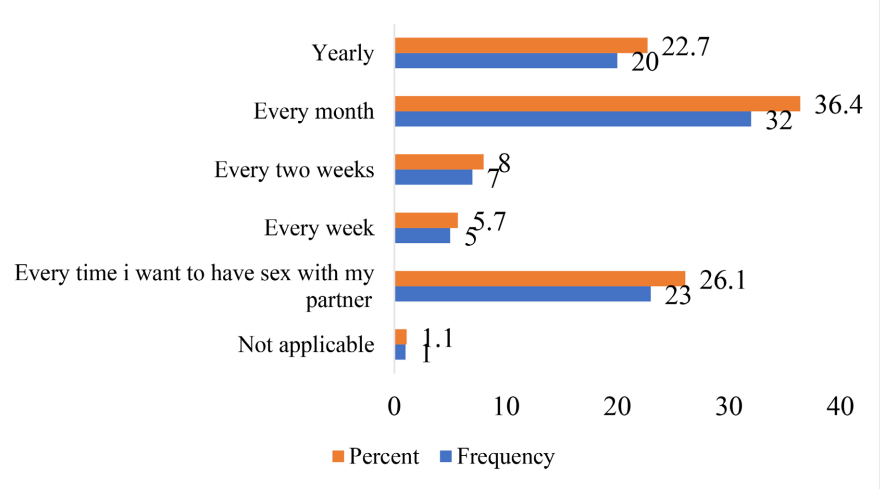

Figure 4. How often students seek contraception services.

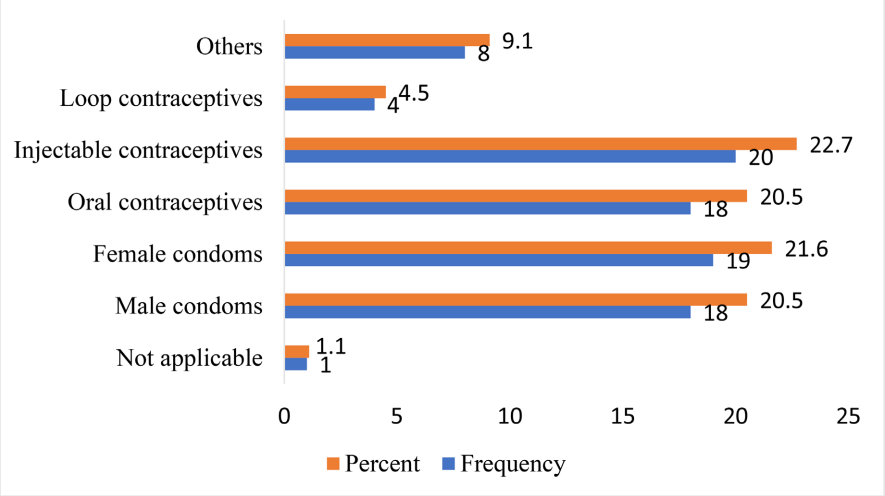

Figure 5. Type of contraception method participants seek most often.

4. Discussion

Given that, knowledge on modern contraceptive methods was disproportion to

its utilization among respondents while their attitude varies statistically based on demographic variances across and within groups—we can confidently deduce that the hypotheses postulated in this study were relatively supported. In the study, a total of 405 students from junior and senior secondary schools were enrolled. The mean (SD) age was 16.84 (1.24) years and almost equal number of students from the four schools (24.7% and 25.2%). Majority of the students were single 369 (91.1%) and 7.4% (30) of students are in a relationship (courtship). Equally number of students were recruited from three grades (grade 9, 11 and 12) and no student participated from grade 10. Variance were homogenous across variables except for marital status $F(1, 405) = 5.580$, $p = 0.004$, school of attendance $F(1, 405) = 9.058$, $p = 0.001$ and academic level $F(1, 405) = 5.717$, $p = 0.004$. Majority of the student seek health from hospital 267 (65.9%) followed by health Centre 125 (30.9%). Furthermore, 66.2% knew a place where family planning services are provided. The socio-demographic attributes and other associated factors presented in this study resembles those presented elsewhere [19] [20].

Knowledge towards Contraceptive Use among Participants

With regards to the level of knowledge, this study found that more than half of the participants had knowledge of at least one Contraceptive. This observation concurs with the study conducted in Lusaka province of Zambia among adolescents from three (3) Secondary Schools in Chongwe district which also revealed that most of the girls had good knowledge about contraception [21]. Although the knowledge level in this study was good, it is worth to note that more than half of these participants had knowledge which was less than a study conducted in Hai District, Northern Tanzania among Secondary School adolescents (67.4%) [16], less than a study in Ghana (87.7%) [22], less than the study conducted in Chongwe district of Zambia (67%) [21], less than a study in Oyo State, South West of Nigeria (58.1%) [23], also the study from Dar es Salaam Tanzania (97%) [24], and less than the study from Ghana (88.9%) [25]. These studies revealed that majority of the participants knew at least one contraceptive method. In other studies, similar findings were documented of good knowledge exhibited by adolescent participants.

The sources of information in this study were from the Health facility, Television and School. This observation concurs with the results from another study in Ghana which observed that Health workers, Media and School were main sources of information [26]. This study found that among the most common contraceptives, pills was the most widely known, followed by condoms and injectable, the least mentioned was natural/calendar method. There was a significant association between the level of knowledge and the levels of education (academic class, the higher the grade the better the knowledge), knowing a place to seek for medical care and knowing a place that provide contraceptives/FP services. This probably may be due the fact that, older adolescents may have more experience and are more likely to be exposed to information on contraceptive/FP than the younger counterpart. Similar findings have been documented by other studies [27] [28].

With regards to the most suitable contraceptive method for young people, this

survey found that majority of the participants mentioned condoms followed by natural/calendar method and the least mentioned was implants. The favor of the condom as the most suitable contraceptive against other methods could be due to the reason that, most of the programs at the time of HIV pandemic peak focused on HIV prevention and revolved around consistent use of condoms if one could not abstain from sex, be faithful to one partner or has multiple sexual partners [29]. Messages to promote condom use flooded all media platforms hence broadening awareness of condom use. In Zambia, condom use has been advocated for as ideal for prevention of both unintended pregnancy and STIs for young people [23] [29]. It's also readily available for free in health centers and even in schools and evidence from this study showed that, majority of the students were aware that condom can prevent pregnancy and HIV/AIDS [17]. Although in this study many students indicated the most appropriate age to start using contraceptive/Family Planning was within the age range of 16 - 24 years, however, a significant number of the students indicated they did not know. This probably could be due to laws and policies mandating parental consent for minors especially girls to obtain SRHS including contraceptives methods posing barriers to information accessibility about the adolescents' awareness of their SRH rights.

In this study, more than half of the participants believed early use of contraceptives/FP can lead to infertility. Similar findings were documented in a study that was conducted in Uganda among adolescents that revealed that the most common concern was fear of infertility. A similar study among Mozambican adolescents also reported fear and misconceptions [25]. Furthermore, similar findings on misconception about contraceptives/FP have been reported from other studies [13] [16]. These misconceptions are potential barriers to contraceptive/FP service utilization and may lead adolescents to avoid use of the available service and predispose themselves to the risk of unintended pregnancies. In this survey, more than one third of the participants also did not agree that periodic abstinence or sexual intercourse avoidance on days when pregnancy is most likely to occur is appropriate method of FP to prevent pregnancy among adolescents.

Attitude towards contraceptive use among participants

In this study, frequency analysis of the items on attitude showed that more than half of participants agreed (aggregate of strongly agree and agree) that elderly people in the community must encourage adolescents on the use of contraceptives/FP services. This concurs with a study in which participant who were staying with both parents were found to be associated with contraceptive use [30]. In this study, more than a quota (1/4) of the participants however rejected (aggregate of strongly disagree and disagree) that parents should encourage adolescents on the use of FP services. Studies in Boston and East South of Nigeria revealed that families and parents were not involved in provision early sex education but rather adolescents received information from media and peers [31] [32]. Similarly, another study in Kenya found that parents and adults had stringent conceptions about contraception's side effects such as infertility, malformation and sexual libertinism among

null gravida adolescents and therefore disapproved their use [33]. And many participants also believed that religious leaders should not encourage adolescents on the use of FP services. The probable explanation to these findings is that, Zambia was declared a Christian nation hence it is Christian value-loaded, as a result sexuality education of adolescents is suppressed especially among girls and boys in schools [21]. Furthermore, research and experiences from non-governmental organizations (NGOs) show that in Zambia especially in rural parts of the country, discussing sexual health and sexuality with parents/guardians are regarded as a taboo yet in rural areas, there is inadequate access to youth friendly SRH services [21].

In this survey, more than half of the participants also believed that use of Contraceptives/FP by adolescents can promote promiscuity. These finding concurs with another study that was conducted in Tanzania among Secondary School going adolescents [16], and also a study that was conducted in Ghana [22]. Similar findings were recorded by other studies in Nigeria's Niger Delta Region [34], and studies from Ethiopia, Nigeria and Tanzania [35]. Consequently, half of the participants rejected the statement that "it is advisable that contraceptives/FP methods are used by unmarried adolescents". This is because, social norms around sexual activity varies across different context, however, sex before marriage is often frowned upon and this results in a reluctance to allow unmarried adolescent to use contraceptives methods and this makes it difficult to obtain consent from parents/guardians [21]. Another study in Croatia and Bosnia and Herzegovina found that shame was the main factor why adolescents could not seek information about sexual health and contraception [36]. Besides, in some communities, proving fertility soon after marriage is considered to be very important.

Health worker Attitude towards contraceptive use among participants

Out of the total of eighty-eight (88) participants who admitted ever attending family planning services in a life time in this study, more than half of them agreed to been welcomed by the health care provider during FP service utilization and also agreed that privacy was accorded to them at the facility. However, health worker negative attitude towards providing contraceptives to adolescents, lack of confidentiality, failure to separate their personal beliefs and social-cultural/norms from work and other health system barriers have been documented from some studies conducted among health care providers and Nurse-Midwives in South Africa, in Zambia and Kenya, in Ghana [26] [37] [38], and also a study conducted in Botswana among health care providers regarding contraceptive [39] [40]. A study conducted in Uganda revealed that having multiple sexual partners, frequent sex and irregular contraceptive use increased the likelihood of teenage pregnancy [40]. Therefore, improving information on sexual and reproductive health, improving access to and information about contraceptive use among teenage girls can help reduce unintended pregnancies. Another study revealed similar findings of a challenging access to various SRHS including contraceptive were in-school adolescents faced difficulties which included social stigma, attitude of service pro-

vider and fear of teachers and anticipated negative responses from parents. Any discussion with elders about the SRHS was considered a taboo [39].

Practice towards contraceptive use among participants

A study conducted in Zambia among 3 Secondary Schools in Chongwe district revealed that most of the girls had good knowledge about contraception and were actually using them mostly to prevent unintended pregnancies as this would enable them finish their secondary school education [21]. However, this study found that, less than one quota (1/4) of the participants admitted ever attending family planning services in a life time, reflecting a very low uptake of contraceptives by adolescents. Similarly, a recent study that was conducted among adolescents in Zambia over a period 1996-2014 revealed low contraceptive use which ranged from 7.6% in 1996 to 10.9% in 2013/14 reflecting a change of 3.3% over a period of 18 years [41]. Another study in Cook Islands revealed that half (50%) of the adolescent participants were not using any form of contraceptive when they became pregnant while the other half was using oral contraceptives but doing so inconsistently [42]. Similar findings were recorded in another study that was conducted in South Africa Mpumalanga Province where 20/33 adolescents mothers aged 15-19 never used any contraceptive and did not know about the contraceptive services that were available in the clinic prior to falling pregnant [43]. Another study found that, despite 97% of the respondents knowing at least one contraceptive method, only 40% used any of the methods [24], another study in Ethiopia found that out of the 67% that had knowledge of FP only 21.5% had ever used contraceptive [44], another study in Ghana found that 87.7% females and 82% males had knowledge, the utilization was very accounting for only 17.9% females and 6% males [22].

Concerning how often participants seek for contraceptive/FP services, this survey found that, less than half (1/2) of the participants indicated monthly, less than one third (1/3) mentioned only when they want to engage in sex and less than one quota (1/4) mentioned yearly. The least time participants seek for FP services was weekly followed by twice weekly respectively. Similar finding of non to inconsistent use of contraceptive/FP among adolescents have been reported by other studies. From a study in Cook Island, 50% of the adolescent mothers were not using contraceptives while 50% were using them inconsistently [42]. A study in South Africa reported 60.6% of adolescents never used contraceptive when they became pregnant [43], while studies in Ghana reported only 22.9% of adolescents used contraceptive/FP consistently [17], and 18% [30] respectively. However, Zambia reported even a much lower percentage of contraceptive use among adolescents of 7.6% and 10.9% from 1996 to 2013/14 [41].

With regards to the most frequent contraceptives sought by participant, injectable was first (22.7%) followed by female condom 21.6%, oral contraceptive and male condom also accounted (20.5%) respectively while the least used contraceptive was the loop (4.5%). Most of the participants were in favor of injectable method. One study found that adolescents preferred this method as it was con-

venient and their parents wouldn't know about it lest they are scolded [21]. This concurs with another study that was conducted in Ghana where the preferred contraceptive method was injectable [22]. A study in Nigeria found condom as most frequent contraceptive sought [23].

Factors associated with knowledge, attitude and Practice of contraceptive use

There several factors that can affect knowledge acquisition of contraceptive among adolescents either in a positive or negative way. In this study social demographic characteristics such as academic class, knowing a place to seek for medical care and knowing a place providing FP services were significantly associated with knowledge. This concurs with a study in Ghana showed that female adolescents who were aware of availability of a youth Conner in a nearby hospital and a youth friendly Centre exhibited higher knowledge than their counterparts who did not know these places [39]. Another similar study revealed that more than half of the teen respondents (61%) who were in lower grades (grades 5, 8, 9 and 10) and not aware of available place providing contraceptive services experienced pregnancy as a consequence while those who were in higher grades (11 - 12) had knowledge about contraceptive [43].

Concerning attitude, this study found that, on marital status, students who were in a relationship were significantly and positively associated with attitude compared to the married ones. The probable reason could be that those who were not married feared the implication of unintended pregnancy before marriage and also were more focused on completing their secondary school education. Similar findings in Chongwe Lusaka Zambia revealed that adolescents had a positive attitude towards contraceptive use and believed it would help them complete their secondary school education [21]. On school of attendance, Students from Twatasha secondary school were significantly and negatively associated with attitude towards FP with reference to student from Chamboli secondary school. This difference could due the individual differences in the implementation of CBSE. A study showed that, there has been gaps and variation in CBSE in Zambia, some teachers choose when, what and who to teach sexuality education while others avoid this component of the school curricular completely [45]. Also students who did not know of a place for FP were significantly and negatively associated with attitude. Negative or poor attitude can affect accurate knowledge acquisition. A study that was conducted in Brazil revealed that despite the knowledge and use of contraceptives being diffuse and having the support of public policies, adolescents especially who had already been pregnant did not use knowledge adequately as a result contraceptives were not properly used. When asked about the types of contraceptives and how to use them, adolescents incorrectly cited abortion and abortive drugs as contraceptives which led to poor preventive attitude and consequently non-use of pregnancy measures [46].

In this study, Contraceptive use was significantly associated with age, level of education, and marital status. Older adolescent girls and those with higher levels

of education were significantly more likely to use contraception compared to younger ones and those with lower levels of education. These findings are in agreement with this, studies conducted in Burkina Faso, Ethiopia, and Nigeria showed that younger adolescents had a lower prevalence for modern contraceptive use [47]. Another study in Ghana found that female adolescent contraceptive use was determined by age, education level, knowledge of ovulatory cycle, work status, marital status and the visit of health facility [27].

Limitations of the study

Although simple random sampling was used to select the schools and participant, there was information bias due to Hawthorne effect. This was due to the increased class sessions in order to meet the standard of social distancing as a requirement by MOGE standards during convid-19 pandemic which made data collection last longer.

The use of the cross-sectional design could not determine the causal effect relationship among variables but only described the association among variables.

5. Conclusion

Low contraceptive uptake continues to exist among school going adolescents suggesting unmet need for contraceptives. There is lack of awareness of the SRH rights among participants. There is lack of community involvement especially parents and guardians in educating the adolescents about sexuality and sexual health. Furthermore, there are gaps in information accessibility in schools CBSE including use of contraceptives to create awareness aimed at addressing fears and misconceptions related to infertility. There are poor youth friendly health services (YFHS) to offer peer to peer counselling focusing on contraceptive use for those who are sexually active in relationships, those who are married and emphasize abstinence for adolescents who are single. For adolescents to use contraceptives correctly and consistently, they need to be provided with accurate comprehensive sexuality education and information in a friendly and non-judgmental environment. Positive provider attitude underpins the adolescent friendly clinic concept and is a key to enhancing contraceptive use among teenagers.

Recommendations

Empirical studies in the future can refine causal inferences that are limited in the current study while offered extensive educational programs could minimize fear and misconceptions about sexuality and sexual health practices among adolescents. Also, there is need to strengthen youth friendly health services (YFHS) to offer peer to peer counselling focusing on contraceptive use for those who are sexually active and in sexual relationships, those who are married and emphasize abstinence for adolescents who are single.

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Authors' Contributions

The final manuscript was read and approved by all authors. Vivian Chisekula conceived and designed the study. Godrian Luttaay prepared, curated and proof-read the manuscript.

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Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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