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Factors Associated with Utilization of Long-Acting Reversible Contraceptive Methods among Women Attending Family Planning Clinic at Kampala International University Teaching Hospital, Western Uganda

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ABSTRACT

Background: Long-acting reversible contraceptive methods (LARC) are highly effective and proven means of preventing unintended pregnancy and reducing maternal mortality. Social and economic characteristics are some of the key determinants of utilization of family planning. However, studies examining the factors associated with utilization of LARC are limited in Bushenyi district, Uganda. This study therefore, assessed the factors associated with utilization of LARC among women attending family planning clinic at Kampala International University Teaching Hospital.

Methods: A cross-sectional descriptive study design was used for this study. The data was collected using a structured questionnaire in an exit interview of clients that had come to Kampala International University Teaching Hospital for family planning services after obtaining consent. Collected data was entered and analyzed in the computer using IBM SPSS version 25. Chi-squared analysis was done to determine the factors associated with LARC utilization. Results were presented in tables and charts for descriptive analysis.

Results: A total of 272 women were included in this study of which, 67.6% (n=184) were aged 26 to 35 years, and the overall mean (\pm SD) age was 27.5 (\pm 4.5) years. 74.3. % (n=202) were married and 69.9% (n=190) were rural dwellers. A few of the participants (20.2%, n=55) were currently using LARC. Of the 55 participants who were using LARC methods, majority 34 (61.8%) were using implants while the rest 21 (38.2%) were using IUCD. Significant factors were; woman's age of \leq 25 years ($X^2=72.43$; $P<0.001$), urban residence ($X^2=16.69$; $P<0.001$), being married ($X^2=25.19$; $P<0.001$), business occupation ($X^2=99.22$; $P<0.001$), Catholic religion ($X^2=61.38$; $P<0.001$), mother's age at first delivery of 18-24 years ($X^2=24.61$; $P<0.001$), reproductive intention of spacing ($X^2=50.81$; $P<0.001$), never wanted the last pregnancy ($X^2=14.72$; $P<0.001$), Hospital as the source of FP information ($X^2=66.82$; $P<0.001$), partner influence on FP ($X^2=16.69$; $P<0.001$), FP counselling during ANC ($X^2=42.01$; $P<0.001$), receiving contraceptives from hospital ($X^2=151.61$; $P<0.001$) and receiving contraceptive services from the doctor ($X^2=226.13$; $P<0.001$).

Conclusion and Recommendations: LARC use was low and was associated with younger maternal age, urban residence, being married, business occupation, mother's age at first delivery, desire for child spacing, partner influence on FP, FP counselling during ANC. Therefore, FP education about the benefits of LARC should be enhanced by health providers and media.

ARTICLE HISTORY

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List of Abbreviations

IUCD	Intrauterine contraceptive device	MMR	Maternal Mortality Ratio
KIU-TH	Kampala International University Teaching Hospital	UBOS	Uganda bureau of statistics
LACM	Long-acting contraceptive methods	UDHS	Uganda Demographic and Health Survey
		WHO	World health organization

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Background

Family planning allows people to attain their desired number of children and determine the spacing of pregnancies. It is achieved through use of modern contraceptive methods and the treatment of infertility [1]. Modern contraceptive methods are divided into three: - Long acting reversible contraceptive methods (LARC) like IUCD & Implants; permanent contraceptive methods (tubal ligation & vasectomy) and short-term contraceptives methods (Oral pill, inject-able, male& female condoms, foam tablet &cervical cap [2]. Because of their long-lasting protection and reversibility, the reversible long-term contraceptives are effective contraceptive methods appropriate for women wishing to limit child bearing, as well as spacing births, thus potentially playing an enormous role in reducing maternal mortality [3].

Globally, 214 million women of reproductive age in developing countries who want to avoid pregnancy are not using a modern contraceptive method [4]. This unmet need for contraception is too high and variation in different regions is observed [1]. This inequity is fueled by both a growing population, and a shortage of family planning services. In Africa, 24.2% of women of reproductive age have an unmet need for modern contraception. In Asia, and Latin America and the Caribbean – regions with relatively high contraceptive prevalence – the levels of unmet need for family planning are 10.2 % and 10.7%, respectively [5].

Unintended pregnancy remains an alarming global public health problem with its subsequent socioeconomic impact on individuals, families, and the society [6]. Though there is a considerable variation in the prevalence of unintended pregnancy across regions, the global burden is very high (44% in 2014) and responsible for 27% of maternal deaths [7, 8]. Different cross-sectional studies around the globe noted that there has been a high prevalence of unintended pregnancy for example, 69% in Malawi, 27% in Canada and 44% in Botswana highlighting the need for effective contraceptive utilization [8-10]. The 2016 Uganda Demographic and Health Survey (UDHS) report showed that there was 28% and 32% of unmet need for family planning among married and unmarried sexually active women respectively [11]. Evidence suggests that women who have more than 4 children are at increased risk of maternal mortality [12]. By reducing rates of unintended pregnancies, family planning also reduces the need for unsafe abortion [13].

The Uganda ministry of health and private partners campaigns for the use of long acting however, the contraceptive method mix is dominated by short term methods like pills and Injectables [14]. There are no studies that have examined the factors contributing to long-acting contraception methods utilization in the study area. The present study was intended to contribute to bridging information gap and subsequently the coverage of long-acting reversible contraceptive method utilization in the local setting.

Aim

This study intended to identify the level of utilization of long-acting reversible contraceptive methods and associated factors among women attending Family planning clinic at Kampala International University Teaching Hospital.

Objectives

1. To describe the proportion of women utilizing LARCMs among women attending family planning clinic at Kampala International university teaching hospital.
2. To identify the factors associated with the utilization of LARCMs among women attending family planning clinic at Kampala International university teaching hospital which will include, socioeconomic and demographic factors, individual factors and health system related factors.

Research Questions

1. What is the proportion of women utilizing LARCMs among women attending family planning clinic at Kampala International university teaching hospital?
2. What are the factors associated with the utilization of LARCMs among women attending family planning clinic at Kampala International university teaching hospital?

Justification of The Study

Although the uptake of LARCM Bushenyi district is not known, studies in other Ugandan hospitals have shown low utilization. For instance, a study in Mbarara Regional Referral hospital showed that only 23% of women attending antenatal were using LARCM at the time [15]. Moreover, various reports show that short-acting reversible methods like Depo-Provera and oral pills are the most preferred contraceptives methods. Repeated health facility attendance of clients on short term FP methods poses a challenge to the already strained health care providers as well as increasing the risk of contraceptive failure.

Uganda's unmet need for FP services is still high estimated at around 24% in 2015, moreover, the annual population growth rate is 3.2% and the country has one of the highest total fertility rates (6.2 children per woman) in the world [11]. This need could be met adequately by LACMs which are effective for users over time.

In a previous study in Uganda, only 3.2% of respondents were using either an intrauterine device or a hormonal implant [16]. Although this could be due to lack of access to the methods [17], some studies suggest that women in resource-limited settings may simply prefer short-acting methods over LARCM methods [15]. The factors driving such preference have not been well studied. Therefore, a better understanding of such factors could facilitate the design of future interventions to increase the uptake of LARCM methods in Bushenyi district and the country at large.

Study Scope

Geographical Scope

The study took place at KIU-TH located in western part of Uganda, Bushenyi District Ishaka municipality 00032'19"S, 30008'40"E, its 326.6kilometers from Kampala and this study area is along Mbarara-Kasese road, it is found approximately 62 kilometers west of Mbarara town.

The district borders with the districts of Sheema in the East, Mitooma in to the South, Rubirizi to the North West, Rukungiri to the west and Buhweju to the North East. Children who qualify will be recruited, the children who are involved will be coming from nearby areas to KIU-TH such as Rubirizi (West), Sheema (East), Mitooma (South) and neighboring districts.

of long-acting contraceptive methods among women attending Family planning clinic at Kampala International university teaching hospital.

Content Scope

The study was to determine factors associated with utilization

Time Scope

The study took place from January 2022 to March 2022

Conceptual Framework of Factors Associated with Utilization of LARCMs

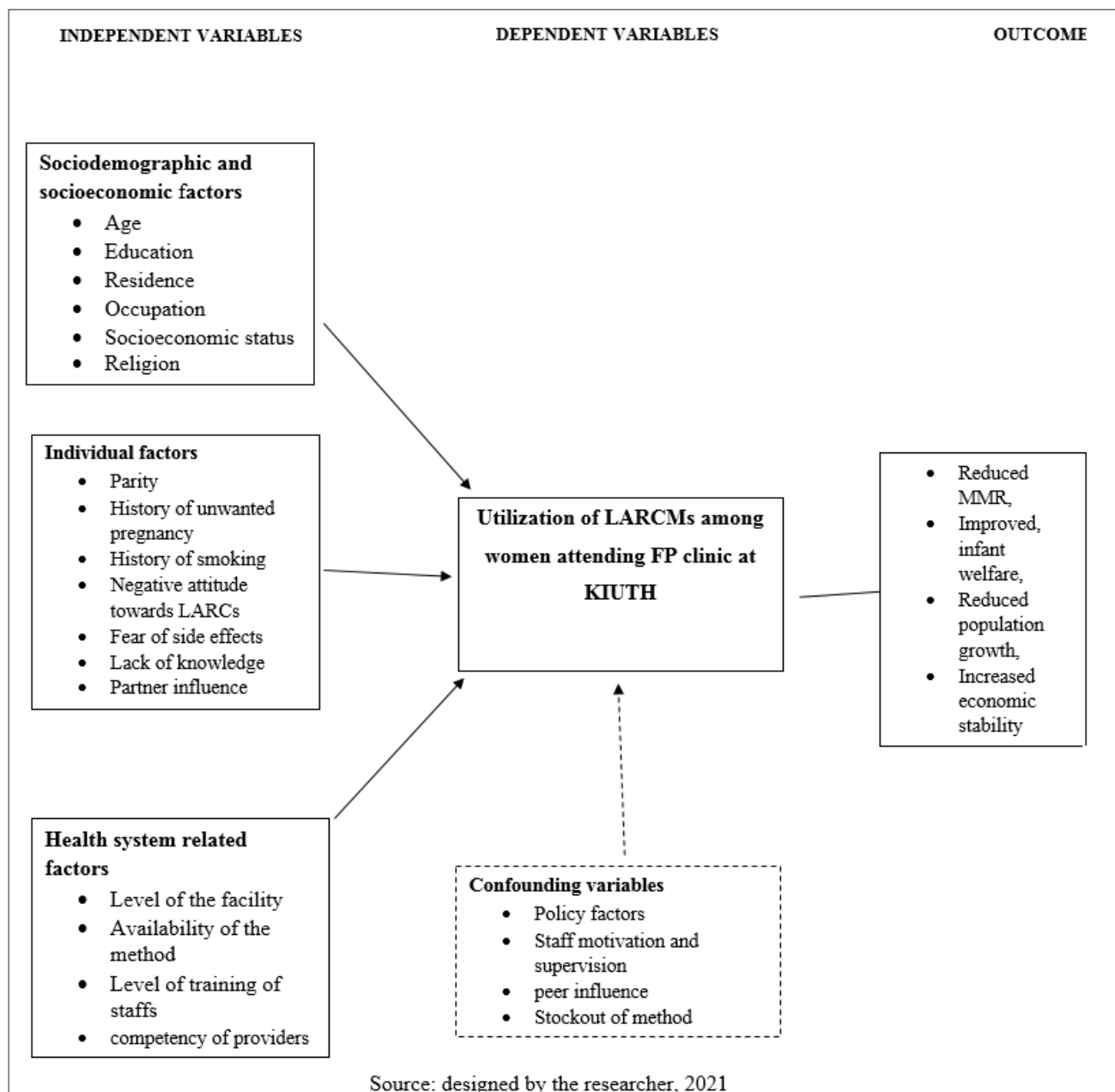


Figure 1: Conceptual Frame Work for The Utilization of Long-Acting Contraception

Literature

Overview

Even though Contraceptive use has increased worldwide over the last decade, more than 350 million couples worldwide have limited or no access to effective and affordable family planning services, especially to long acting contraceptive methods [18]. Yet, Africa like many other regions of the developing world continues to have a high unmet need for family planning [2]. Among those who are using contraception, most are using short-acting methods, such as oral contraceptives and inject-able [19]. Like other sub-Saharan countries, Uganda has low long acting reversible Contraceptive method prevalence rate (4.1%) with highly dependent on short-term family planning methods and high unmet need (28%) [11].

Factors Associated with Use of Long-Acting Reversible Contraceptive Methods

A number of factors could contribute to the lack of availability and access to long-acting contraceptive methods. Evidences from other countries and within Uganda showed that many factors could act as barriers to choose long acting contraceptive methods [20].

A cross sectional hospital-based survey conducted to assess factors associated with utilization of long acting and permanent contraceptive methods among married women in Mbarara district showed that, the majority of the married women were not using long acting reversible contraceptive methods [15]. The same study shows that, mothers who had high knowledge were 8 times more likely to use long-acting contraceptive methods as compared with those who had low knowledge, mothers who had two or more pregnancies were 3 times more likely to use long-acting contraceptive methods as compared with those who had one pregnancy & more than half (53.6%) of married women had negative attitude towards practicing of LARCMs.

The study conducted in 2011, in Northern Ethiopia revealed that women who attained primary and secondary plus level of education have about 2 times more likely to use contraception than women who have no formal education [21].

Religion has been reported to influence contraception use. For instance, a study in Nigeria among Hausa and Muslim community reported a very low contraceptive use [22]. In Jordan, nearly 40% of Muslim men do not believe in practicing contraception and more than half believe that family size should be left up to God [23]. In countries that are predominantly Catholic (for example Brazil), the Catholic church is at the forefront of influencing government policies particularly in the area of limiting FP services available and discouraging fertility limiting behaviors [24]. Nevertheless, the influence of religion has stiffened the transmission of adequate and accessible information via radios and televisions as well as in schools [18].

With regards to residence, noted that contraceptive prevalence is higher among women in the urban areas. This evidence is

supported by studies in Uganda and elsewhere [25-27]. This is because FP clinics are in most cases located in urban areas; this affects accessibility of the services among the rural women. In affirming to the variation in FP use by rural-urban residence, the 2016 UDHS noted that the use of FP is more than twice as high in urban areas when compared to the rural [28]. It is therefore not a surprise that contraceptive use is lower in the northern region of Uganda which is predominantly rural when compared to the central region which is mainly urban. Likewise, a higher contraceptive use among educated women would not be surprising [14]. This is because educated women are more likely to be located in the urban areas than in the rural. In a study regarding contextual influences on modern contraceptive use among women in six Sub-Saharan African countries, noted that secondary or higher educational attainment was more likely to be associated with use of modern contraceptives [29].

Attitude and side effects have been reported to contribute to method choice of contraception. A study conducted in Mekelle town Ethiopia showed that, 26.8% of women agreed that implant can result in irregular bleeding and cause severe pain during insertion and removal while 19.6% agreed that IUCD prevents them from doing normal activities and 34.4% agreed that undergoing an operation for female sterilization was dangerous [30].

A study in Tanzania reported that 43.1% of the respondents were not using long acting contraception methods because they could not get them in the nearby health facility unless they walk a long distance, in some instances up to 18 kilometers. Another 12.6% reported absence of all contraceptives or the ones they preferred in facilities. About 4.8% mentioned lower-level service providers' incompetence [31].

A study among East African countries about contraception utilization found that more than 82% of women who were using contraception had discussed family planning with someone, but only 48.3% had discussed contraception with their partners indicating an importance of having information about the service [32].

Pertaining to marital status, the argument is that married people highly depend on their spouses for approval of modern contraceptive use. In the contrary, the non-married women do not usually seek approval from any one in matters concerning contraceptive use. Thus, husband's non-approval was cited as the major reason for non-use of modern contraceptive among the married women [31]. Thus, the low utilization of modern contraceptive services among married women in many developing countries would not be surprising. On the same note, women in male headed households are regarded to have reduced chances of using modern contraceptive use when compared to their counterparts in female headed households [33].

Methods and Materials

Study Design: A cross-sectional descriptive study design was used.

Study Area: Kampala international University Teaching Hospital is located in Ishaka town which is a municipality in Bushenyi district. The population of Bushenyi Ishaka municipality 41,219. it is found approximately 62 kilometers west of Mbarara town. Ishaka has a population of 16,646 where females are 8,840 [16]. KIU-TH has a bed capacity of 700, providing both outpatient and inpatient services.

Study Population

The study included women attending family planning clinic during the study period.

Inclusion Criteria

- Women who are aged 15-49 years
- Willing to participate

Exclusion Criteria

- Not willing to participate in the survey
- Below 15 years and or above 49 years

Sample Size Determination

This will be determined by using Kish's formula [34] which states that,

$$N = \frac{Z^2(p(1-p))}{\epsilon^2}$$

Where;

N = the required sample size

p= Proportion of women using LARCMs (23%) as per a study in Mbarara regional referral hospital (Tibaijuka et al., 2017).

ϵ = margin of error on p (set at 5%)

z= standard normal deviate corresponding to 95% confidence level (=1.96)

$$N = \frac{1.96^2(0.23(1-0.23))}{0.05^2} = 272$$

Sampling Technique

The study used consecutive sampling where each woman that came and agreed to participate was enrolled.

Data Collection Methods

The data was collected using a structured questionnaire in an exit interview of clients that came to Kampala international university teaching hospital for family planning services. Participants were requested to provide written, informed consent before data is

collected. The questionnaire was designed to obtain information on the socio-demographic characteristics of contraceptive users, as well as ascertain their reproductive history, utilization of modern contraceptive family planning and factors affecting LARC methods. The questionnaire was prepared in English and was translated into Lunyankole during data collection for those who did not understand English well.

Data Processing and Analysis

Collected data was entered in the computer and analyzed using IBM SPSS version 25. Categorical variables were presented in a table of frequencies for descriptive statistics. A Chi-square test was computed to test for the factors influencing utilization of LARCMs. The point for statistical implication was a p-values of <0.05.

Quality Control

The questionnaire for data collection was pre-tested to ensure that questions are clear and allow gathering of information needed for the study. The questions that show ambiguity during pre-testing were revisited and modified as required.

Ethical Considerations

Ethical approval was sought from Kampala international university western campus Faculty of clinical medicine in form of introduction letter after approval of the proposal. A written and verbal consent was sought from the respondents before they participate in the study.

Study Limitations

Reported nature of the data collection approach could have been affected by desirability bias hence distorting the results.

Recall bias was not a major problem since the majority of questions inquired about basic healthcare information and personal opinions. However, it is possible that recall bias affected some variables such as age at first delivery and history of ANC.

The findings of this study may not be generalizable to community members who do not attend health facilities.

Results

Socio-Demographic Characteristics of Study Participants

A total of 272 women of reproductive age were included in this study with a response rate of 100%. Of these, 67.6% (n=184) participants were aged 26 to 35 years, and the overall mean [\pm SD] age of participants was 27.5 (\pm 4.5) years. 74.3% (n=202) participants were married and 69.9% (n=190) were rural dwellers. 20.6% (n=56) participants had never attended formal education. (Table 1).

Table 1: Socio-Demographic Characteristics of Study Participants

Characteristics	Frequency (N=272)	Percent
Age (years)		
≤25	68	25.0
26-35	184	67.6
>35	20	7.4
Residence		
Urban	82	30.1
Rural	190	69.9
Marital status		
Married	202	74.3
Single	32	11.8
Divorced	27	9.9
Widow	11	4.0
Education level		
Non	56	20.6
Primary	120	44.1
Secondary	42	15.4
Tertiary	54	19.9
Occupation		
Peasant farmer	132	48.5
Business	91	33.5
Employed	33	12.1
Student	16	5.9
Religion		
Catholic	106	39.0
Protestant	54	19.9
Muslim	33	12.1
Others (Pentecostal, SDA)	79	29.0

Reproductive Characteristics of Study Participants

Table 2 below shows reproductive characteristics of the participants. 159 (58.5%) participants had a history of 2-4 pregnancies with 154 (56.6%) being multiparous mothers. A significant number (28.3%, n=77) had their first pregnancy below 18 years. Majority of the participants had no history of abortion (89.3%, n=243) and wanted their last pregnancy (70.2%, n=191).

Table 2: Reproductive Characteristics of Study Participants

Characteristics	Frequency	Percent
Gravidity		
0	15	5.5
1	48	17.6
2-4	159	58.5
≥5	50	18.4
Parity		
0 (Nullipara)	20	7.4
1 (Primipara)	58	21.3
2-4 (Multipara)	154	56.6
≥5 (Grand multipara)	40	14.7
History of abortion		
Yes	29	10.7
No	243	89.3
History of child death		
Yes	6	2.2
No	266	97.8
Mother's age at first pregnancy		
<18 years	77	28.3
18-24	114	41.9
≥25	81	29.8
Reproductive intention		
Want to have a child soon	54	19.9
Want to space	108	39.7
Want to limit	82	30.1
Undecided	28	10.3
Wanted status of the last pregnancy		
Yes	191	70.2
No	81	29.8

Prevalence of Long-Acting Reversible Contraceptive Methods (LARCM)

Figure 2 below shows that only a few of the participants (20.2%, n=55) were currently using long-acting reversible contraceptives compared to the majority (79.8%, n=217) who were using short term modern contraceptive methods.

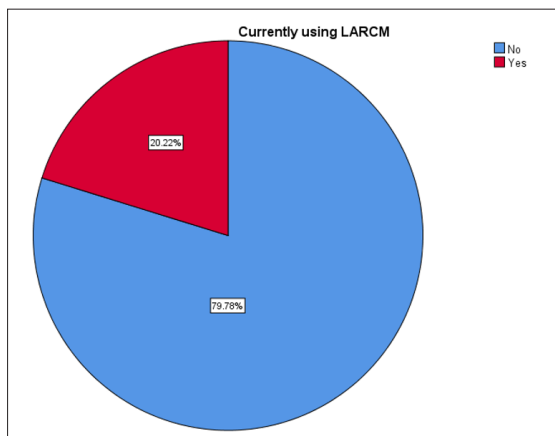


Figure 2: Prevalence of Long-Acting Reversible Contraceptive Methods (LARCM)

Current LARC Method Used

Of the 55 participants who were using LARC methods, majority 34 (61.8%) were using implants while the rest 21 (38.2%) were using IUCD. Figure 3.

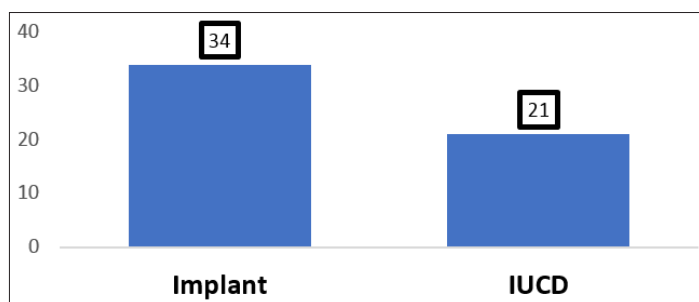


Figure 3: Current LARC Method Used

Factors Associated with LARCM Utilization

Sociodemographic Factors Associated with LARCM Utilization

Table 4 below shows Chi-squared analysis of sociodemographic factors associated with LARCM use. Factors which were found to be significant were; woman’s age of ≤ 25 years ($X^2=72.43$; $P<0.001$), urban residence ($X^2=16.69$; $P<0.001$), being married ($X^2=25.19$; $P<0.001$), business occupation ($X^2=99.22$; $P<0.001$) and Catholic religion ($X^2=61.38$; $P<0.001$).

Table 3: Sociodemographic Factors Associated with LARCM Utilization

Variables	Currently using LARCM		Chi square (X^2)	P-value
Age (years)			72.43	<0.001
≤ 25	30 (13.8%)	38 (69.1%)		
26-35	167 (77.0%)	17 (30.9%)		
>35	20 (9.2%)	0 (0.0%)		
Residence			16.69	<0.001
Urban	53 (24.4%)	29 (52.7%)		
Rural	164 (75.6%)	26 (47.3%)		
Marital status			25.19	<0.001
Married	164 (75.6%)	38 (69.1%)		
Single	16 (7.4%)	16 (29.1%)		
Divorced	26 (12.0%)	1 (1.8%)		
Widow	11 (5.1%)	0 (0.0%)		
Education level			5.65	0.130
Non	48 (22.1%)	8 (14.5%)		
Primary	88 (40.6%)	32 (58.2%)		
Secondary	36 (16.6%)	6 (10.9%)		
Tertiary	45 (20.7%)	9 (16.4%)		
Occupation			99.22	<0.001
Peasant farmer	131(60.4%)	1 (1.8%)		
Business	58 (26.7%)	33 (60.0%)		
Employed	27 (12.4%)	6 (10.9%)		
Student	1 (0.5%)	15 (27.3%)		
Religion			61.38	<0.001
Catholic	64 (29.5%)	42 (76.4%)		
Protestant	53 (24.4%)	1 (1.8%)		
Muslim	21 (9.7%)	12 (21.8%)		
Others (Pentecostal, SDA)	79 (36.4%)	0 (0.0%)		

Individual Factors Associated with LARCM Utilization

Factors which were found to be significant are; mother’s age at first delivery of 18-24 years ($X^2=24.61$; $P<0.001$), reproductive intention of spacing ($X^2=50.81$; $P<0.001$), never wanted the last pregnancy ($X^2=14.72$; $P<0.001$), Hospital as the source of FP information ($X^2=66.82$; $P<0.001$), partner influence on FP ($X^2=16.69$; $P<0.001$), FP counselling during ANC ($X^2=42.01$; $P<0.001$), receiving contraceptives from hospital ($X^2=151.61$; $P<0.001$) and receiving contraceptive services from the doctor ($X^2=226.13$; $P<0.001$). Table 5.

Table 4: Individual Factors Associated with LARCM Utilization

Variables	Currently using LARCM		Chi-square (X ²)	P-value
	No	Yes		
Gravidity			3.07	0.071
0	5 (2.3%)	10 (18.2%)		
1	29 (13.4%)	19 (34.5%)		
2-4	139 (64.1%)	20 (36.4%)		
>5	44 (20.3%)	6 (10.9%)		
Parity			3.82	0.060
0 (Nullipara)	10 (4.6%)	10 (18.2%)		
1 (Primipara)	33 (15.2%)	25 (45.5%)		
2-4 (Multipara)	140 (64.5%)	14 (25.5%)		
>5 (Grand multipara)	34 (15.7%)	6 (10.9%)		
History of abortion			2.35	0.125
Yes	20 (9.2%)	9 (16.4%)		
No	197 (90.8%)	46 (83.6%)		
History of child death				
Yes	6 (2.8%)	0 (0.0%)		
No	211 (97.2%)	55 (100%)		
Mother's age at first delivery			24.61	<0.001
<18 years	76 (35.0%)	1 (1.8%)		
18-24	80 (36.9%)	34 (61.8%)		
>25	61 (28.1%)	20 (36.4%)		
Reproductive intention			50.81	<0.001
Want to have a child soon	28 (12.9%)	26 (47.3%)		
Want to space	81 (37.3%)	27 (49.1%)		
Want to limit	80 (36.9%)	2 (3.6%)		
Undecided	28 (12.9%)	0 (0.0%)		
Wanted status of the last pregnancy			14.72	<0.001
Yes	164 (75.6%)	27 (49.1%)		
No	53 (24.4%)	28 (50.9%)		
Knowledge about FP			2.33	0.127
Adequate	82 (37.8%)	27 (49.1%)		
Inadequate	135 (62.2%)	28 (50.9%)		
Source of FP information			66.82	<0.001
Neighbours and friends	11 (5.1%)	0 (0.0%)		
Health facility	45 (20.7%)	43 (78.2%)		
VHTs	11 (5.1%)	0 (0.0%)		
Media (TV/Radio)	150 (69.1%)	12 (21.8%)		
Experienced side effects			3.37	0.066
Yes	81 (37.3%)	28 (50.9%)		
No	136 (62.7%)	27 (49.1%)		
Partner influence on FP use			16.69	<0.001
Yes	53 (24.4%)	29 (52.7%)		
No	164 (75.6%)	26 (47.3%)		
Discuss FP with partner			3.61	0.065
Yes	137 (63.1%)	27 (49.1%)		
No	80 (36.9%)	28 (50.9%)		

FP counselling during ANC			42.01	<0.001
Yes	109 (50.2%)	54 (98.2%)		
No	108 (49.8%)	1 (1.8%)		
Sources of contraceptives			151.61	<0.001
Hospital	28 (12.9%)	54 (98.2%)		
Health Centre	54 (24.9%)	1 (1.8%)		
Private clinic	54 (24.9%)	0 (0.0%)		
Pharmacy	81 (37.3%)	0 (0.0%)		
Ever failed to get contraceptives			4.09	0.063
Yes	162 (74.7%)	29 (52.7%)		
No	55 (25.3%)	26 (47.3%)		
FP services provider			226.13	<0.001
Nurse	161 (74.2%)	0 (0.0%)		
Midwife	53 (24.4%)	5 (9.1%)		
Doctor	3 (1.4%)	50 (90.9%)		

Discussion

Utilization of Long-Acting Reversible Contraceptive Methods

In this study, the utilization of LARCM was low at 20.2%. This is comparable to the findings of a study in Mbarara university teaching Hospital which reported that LARC was used by 23% of the participants in their study [15]. The agreement in findings could be due to the fact that both studies were done in regional referral Hospitals could be likely to attract women of similar characteristics. However, it is higher than the Uganda national prevalence of 4.1% [11] and that of a study in Nepal which found 4.7% LARC utilization rate. The difference in prevalence of LARC utilization between this study and afore mentioned studies could have resulted from sample size difference where by the afore mentioned studies were national level studies with larger sample size while this study was done in one Hospital with a sample size of just 270 participants [35].

In this study, woman's age of ≤ 25 years, urban residence, being married, business occupation, Catholic religion, mother's age at first delivery of 18-24 years, reproductive intention of spacing, never wanted the last pregnancy, Hospital as the source of FP information, partner influence on FP, FP counselling during ANC, receiving contraceptives from hospital and receiving contraceptive services from the doctor were associated with LARCM utilization.

In this study, younger women were more likely to use LARCM compared to older women. Majority of women who were using LARCM in this study (69.1%) were aged ≤ 25 years. However, this finding contradicts the findings of the study in Nigeria and Kenya [22,24]. In both studies, LARCM utilization was higher in older women above 30 years. The low utilization of LARCM among older women in this study could be related to bad experience from previous FP methods.

In this study, participants who were urban dwellers were found to use LARCs more often than those who resided in rural setting. This finding is consistent with studies conducted in Cameroon, Uganda and Ghana in which women who utilized LARCM were urban residents [26,27,36]. In the Ugandan context, many urban

dwellers are wealthy people, relatively educated, and have easier access to media and information, which could lead to well-informed understanding of the available contraceptive methods and thus, the use of LARCM. However, a study conducted in Tanzania showed that women in rural setting were positive towards implants use [31]. Differences in patterns of LARCM use between this study and the Tanzanian study can be explained by differences in the study population and setting. Therefore, it would be of paramount importance for policy makers and health planners to focus on strategies that would increase access of LARCM to rural communities which will enhance their utilization.

Regarding marital status, women who were married were more likely to use LARCM compared to those women who are not currently married. This finding is consistent with the studies conducted in East African Countries of Burundi, Kenya, Rwanda, Tanzania and Uganda and Ethiopia [30,32]. However, it contradicts with the other studies conducted in sub-Saharan Africa [3,37]. Unlike unmarried women who may be comfortable using short acting methods like pills or condom, married women need a more reliable method for especially for child spacing which explains the higher prevalence of LARCM among married women in this study.

This study also found that participants who indicated doing business as their occupation were more likely to use LARCM than their counterparts who either had formal employment, were peasant farmers or students. This finding is consistent with studies set in Australia and Botswana in which business occupation was highly associated with LARCM utilization. Women in business may be highly motivated to utilize a very effective method of contraception since they are always busy in their businesses and may not want to pregnant frequently which can disrupt their business performance. This was also observed in a study conducted in Malawi in which women who were doing business were more likely to choose an IUCD or an implant than women who were peasant farmers. It would be good for health managers to work in creation of public awareness about the effectiveness of LARCs in preventing

unintended pregnancy so that other women like those informal employment can utilize them [6,8,9].

In this study, women who wanted to space their birth were more likely to use LARCM than those who wanted to have a child very soon. This finding is in agreement with the results of a study that took place in Canada, Botswana, Burkina Faso, Ethiopia, and Nigeria in which LARCM were mainly used by women who had children and did not wish to have any more soon [8,10,12]. One of the most important benefits of LARCM is their long duration of use once they are placed. For this reason, more women who want to space their children may tend to utilize LARCM which are long term, effective and reversible. As such, LARCM may be used as a replacement for surgical sterilization, and because of their ease of reversibility, they may help women to avoid post-sterilization regret.

In the present study, wanted 'status' of the last pregnancy was found to affect LARC use. 50.9% of women who utilized LARCs never wanted their last pregnancy. This is similar to studies done elsewhere which showed that women who never wanted their last pregnancy were more to use LARCM [15,17]. LARCM are highly effective in preventing unwanted pregnancy with great convenience, fewer side effects and less cost than short acting contraceptive methods [38].

In this study, the source of family planning information, FP counselling during ANC, and contraceptive provider were found to be significantly associated with utilization of LARCM. Clients advised by health care professionals were more likely to use LARCM than those who chose by themselves or by friends. Similarly, having had counselling during ANC increased the likelihood of LARCM utilization. The study findings further show that where the Doctor was the provider of the FP, there was a high chance (90.9%) that the woman would use LARCM. This finding is consistent with that of a study done in Cameroon which showed that professional training and experience of the provider was significantly associated with LARCM use [36]. Another study conducted in Eastern Ethiopia found that, discussions with health care providers about long acting contraceptive methods positively affected LARCM utilization [39]. Moreover, a Nigerian study showed that provider's lack of confidence and support for LARCM insertion had a negative effect on LARCM use [22]. Providers have a responsibility to clearly communicate and support their clients to choose the method which best fits their personal circumstance.

Furthermore, this study found the influence of the male partner to be associated with LARCM utilization. This finding is inconsistent with studies conducted in Kenya and Cameroon where partner influence did not play a role in LARCM use. Moreover, another study in Ghana showed that women who selected their contraceptive method alone were more likely to use LARCM as compared to those who decided jointly with their partners [18,24,27]. With increased call for male involvement in maternal and child health services, it is paramount that a woman seeks a partner's opinion if the desired contraceptive goal is to be achieved.

Unlike previous studies which no association between religion and LARCM use this study found that being Catholic has increased

chances (76.4%) of utilizing LARCM. The higher LARCM utilization among Catholics could have resulted from the fact that they were the majority in the study. A similar study on a larger population is recommended to explore the effect of religion on LARC use [30,31].

Conclusion and Recommendations

Conclusion

Urban residence, being married, business occupation, Catholic religion, mother's age at first delivery, desire for child spacing, never wanted the last pregnancy, Hospital as the source of FP information, partner influence on FP, FP counselling during ANC, and receiving contraceptive services from the doctor.

Recommendations

Family planning education about the benefits of LARCM should be done by health providers and media. Male involvement in the counselling and decision making about the advantage of using LARCM may improve the negative influence of partners on LARCM utilization. Future interventions should also be designed to reach women in rural areas.

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Dedication

I dedicate this beautiful work to all women who regularly attend family planning services in Uganda and finally my only Mother, Mrs. Oundo Consolata for supporting me morally and financially throughout this process.

Definition of Terms

Long-acting reversible contraceptive methods (LARCMs).

Modern contraceptive methods are used for more than a year once the method is provided. In this study, intra-uterine contraceptive devices (IUCDs) and implants were the only LARC methods included.

Short acting reversible contraceptive methods (SARCMs).

Modern contraceptive methods that are used for less than or equal to three months once the method is provided, such as oral contraceptive pills, injectables and condoms.

Knowledge of LARC. Women were considered to be knowledgeable if they were familiar with at least one of the LARCS (IUCD and/or implant).

Abortion: loss of a foetus/unborn baby either intentionally or unintentionally before 28 weeks of gestation

References

- [1] WHO (2017) Family planning/Contraception: Fact Sheet. WHO. <https://www.who.int/news-room/fact-sheets/detail/family-planning-contraception>.
- [2] WHO (2016) WHO | Family planning/Contraception. In Who. <https://apps.who.int/iris/bitstream/handle/10665/252267/9789241565400-eng.pdf>.
- [3] Hubacher D, Spector H, Monteith C, Chen PL, Hart C (2017) Long-acting reversible contraceptive acceptability and unintended pregnancy among women presenting for short-acting methods: a randomized patient preference trial. *American Journal of Obstetrics and Gynecology* 216: 101-109.
- [4] Guttmacher Institute (2017) Adding it up: Investing in Contraception and Maternal and Newborn Health. Guttmacher Institute. <https://www.guttmacher.org/fact-sheet/adding-it-up-contraception-mnh-2017>.
- [5] United Nation, D of E (2015) Trends in contraceptive use Worldwide 2015. In *Contraception*. <https://doi.org/10.1016/j.contraception.2012.08.029>.
- [6] Mazza D, Bateson D, Frearson M, Goldstone P, Kovacs G, et al. (2017) Current barriers and potential strategies to increase the use of long-acting reversible contraception (LARC) to reduce the rate of unintended pregnancies in Australia: An expert roundtable discussion. *Australian and New Zealand Journal of Obstetrics and Gynaecology* 57: 206-212.
- [7] Bearak J, Popinchalk A, Alkema L, Sedgh G (2018) Global, regional, and subregional trends in unintended pregnancy and its outcomes from 1990 to 2014: estimates from a Bayesian hierarchical model. *The Lancet Global Health* 6: e380-e389.
- [8] Mayondi GK, Wirth K, Morroni C, Moyo S, Ajibola G, et al. (2016) Unintended pregnancy, contraceptive use, and childbearing desires among HIV-infected and HIV-uninfected women in Botswana: A cross-sectional study. *BMC Public Health* 16: 44.
- [9] Haddad LB, Feldacker C, Jamieson DJ, Tweya H, Cwiak C, et al. (2015) Pregnancy prevention and condom use practices among HIV-infected women on antiretroviral therapy seeking family planning in Lilongwe, Malawi. *PLoS ONE* 10: e0121039.
- [10] Oulman E, Kim THM, Yunis K, Tamim H (2015) Prevalence and predictors of unintended pregnancy among women: an analysis of the Canadian Maternity Experiences Survey. *BMC Pregnancy and Childbirth* 15: 260.
- [11] UBOS (2017) Demographic and Health Survey. www.ubos.org.
- [12] Hounton S, Barros AJD, Amouzou A, Shiferaw S, Maiga A, et al. (2015) Patterns and trends of contraceptive use among sexually active adolescents in Burkina Faso, Ethiopia, and Nigeria: Evidence from cross-sectional studies. *Global Health Action* 8: 29737.
- [13] Mermelstein S, Plax K (2016) Contraception for Adolescents. In *Current Treatment Options in Pediatrics* 2: 171-183.
- [14] Asiiimwe JB, Ndugga P, Mushomi J (2014) Factors associated with modern contraceptive use among young and older women in Uganda; a comparative analysis 14: 926.
- [15] Tibaijuka L, Odongo R, Welikhe E, Mukisa W, Kugonza L, et al. (2017) Factors influencing use of long-acting versus short-acting contraceptive methods among reproductive-age women in a resource-limited setting. *BMC Women's Health* 17: 25.
- [16] UBOS and ICF (2011) Uganda Demographic and Health Survey, 2011, Uganda UBOS and Calverton Maryland. ICF International Inc 57-67.
- [17] Jacobstein R, Stanley H (2016) Contraceptive implants: providing better choice to meet growing family planning demand. *Global Health, Science and Practice* 1: 11-17.
- [18] Ajong AB, Njotang PN, Yakum MN, Essi MJ, Essiben F, et al. (2016) Determinants of unmet need for family planning among women in Urban Cameroon: A cross sectional survey in the Biyem-Assi Health District, Yaoundé. *BMC Women's Health* 16: 4.
- [19] Genet E, Abeje G, Ejigu T (2015) Determinants of unmet need for family planning among currently married women in Dangila town administration, Awi Zone, Amhara regional state; A cross sectional study. *Reproductive Health* 12: 42.
- [20] Damjanovic V, Jednak S, Mijatovic I (2015) Factors affecting the effectiveness and use of Moodle: students' perception. *Interactive Learning Environments* 23: 1-19.
- [21] Alemayehu M, Kalayu A, Desta A, Gebremichael H, Hagos T, et al. (2015) Rural women are more likely to use long acting contraceptive in Tigray region, Northern Ethiopia: A comparative community-based cross sectional study. *BMC Women's Health*. <https://doi.org/10.1186/s12905-015-0229-7>.
- [22] Blackstone S R, Iwelunmor J (2017) Determinants of contraceptive use among Nigerian couples: evidence from the 2016 Demographic and Health Survey. *Contraception and Reproductive Medicine* 17: 2-9.
- [23] Ahmed S, Li Q, Liu L, Tsui A O (2015) Maternal deaths averted by contraceptive use: An analysis of 172 countries. *The Lancet* 14: 111-125.

- [24] Jalang’OR, Thuita F, Barasa S O, Njoroge P (2017) Determinants of contraceptive use among postpartum women in a county hospital in rural Kenya. BMC Public Health. <https://doi.org/10.1186/s12889-017-4510-6>.
- [25] Costa CJ, Ferreira E, Bento F, Aparicio M (2016) Enterprise resource planning adoption and satisfaction determinants. Computers in Human Behavior 63: 659-671.
- [26] Sileo K M, Wanyenze R K, Lule H, Kiene S M (2015) Determinants of family planning service uptake and use of contraceptives among postpartum women in rural Uganda. International Journal of Public Health 60: 987-997.
- [27] Eliason S, Awoonor Williams J K, Eliason C, Novignon J, Nonvignon J, et al. (2016) Determinants of modern family planning use among women of reproductive age in the Nkwanta district of Ghana: a case-control study. Reproductive Health 11: 65.
- [28] UDHS (2017) Uganda Demographic and Health Survey Key Indicators Report 2016. In RoU. <https://doi.org/10.2307/2138118>.
- [29] Emina JBO, Chirwa T, Kandala NB (2014) Trend in the use of modern contraception in sub-Saharan Africa: Does women’s education matter? Contraception 90: 154-161.
- [30] Bogale B, Wondafrash M, Tilahun T, Girma E (2016) Married women’s decision making power on modern contraceptive use in urban and rural southern Ethiopia. BMC Public Health 19: 342.
- [31] Keogh SC, Urassa M, Kumogola Y, Kalongoji S, Kimaro D, et al. (2015) Postpartum Contraception in Northern Tanzania: Patterns of Use, Relationship to Antenatal Intentions, and Impact of Antenatal Counseling 46: 405-422.
- [32] Bakibinga P, Matanda DJ, Ayiko R, Rujumba J, Muiruri C, et al. (2016) Pregnancy history and current use of contraception among women of reproductive age in Burundi, Kenya, Rwanda, Tanzania and Uganda: Analysis of demographic and health survey data 6: e009991.
- [33] Cleland J, Harbison S, Shah IH (2014) Unmet Need for Contraception: Issues and Challenges 45: 105-122.
- [34] Rutterford C, Copas A, Eldridge S (2015) Methods for sample size determination in cluster randomized trials 44: 1051-1067.
- [35] Bhandari R, Pokhrel KN, Gabrielle N, Amatya A (2019) Long acting reversible contraception use and associated factors among married women of reproductive age in Nepal. PLoS ONE 14: e0214590.
- [36] Ajong AB, Njotang PN, Kenfack B, Essi MJ, Yakum MN, et al. (2018) Contraceptive method mix and preference: A focus on long acting reversible contraception in Urban Cameroon 13: e0202967.
- [37] Cleland JG, Ndugwa RP, Zulu EM (2017) Family planning in sub-Saharan Africa: progress or stagnation? Bulletin of the World Health Organization 89: 137-143.
- [38] Sedgh G, Ashford LS, Hussain R (2016) Unmet Need for Contraception in Developing Countries: Examining Women’s Reasons for Not Using a Method.
- [39] Alemayehu M, Lemma H, Abrha K, Adama Y, Fisseha G, et al. (2016) Family planning use and associated factors among pastoralist community of afar region, eastern Ethiopia 16: 39.