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To cite this article: Kizito Omona & Winnifred Namuli | (2020) Factors influencing utilization of intra-uterine device among postpartum mothers at Gombe Hospital, Butambala district, Uganda, Cogent Medicine, 7:1, 1846264, DOI: [10.1080/2331205X.2020.1846264](https://doi.org/10.1080/2331205X.2020.1846264)

To link to this article: <https://doi.org/10.1080/2331205X.2020.1846264>



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Published online: 17 Nov 2020.



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*Cogent Medicine* (2020), 7: 1846264



Received: 22 June 2020  
Accepted: 31 October 2020

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Reviewing editor:  
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## OBSTETRICS & GYNECOLOGY | RESEARCH ARTICLE

# Factors influencing utilization of intra-uterine device among postpartum mothers at Gombe Hospital, Butambala district, Uganda

Kizito Omona<sup>1\*</sup> and Winnifred Namuli<sup>1</sup>

**Abstract:** The most effective modern family planning method is long-acting reversible contraceptives (LARCs), including intra-uterine contraceptive devices (IUCD). It has multiple advantages over other reversible methods. Despite all known advantages of IUCD, its uptake is still low in Uganda. The purpose was to determine the factors influencing the utilization of intra-uterine contraceptive device among postpartum mothers. A facility-based cross-sectional analytical design was used. 202 Postpartum mothers were sampled and interviewed. Key informants interviews and FGDs were held. Out of 202 post-partum mothers, the prevalence of IUCD utilization was low at 16.3%. Knowledge level at was 55.9%. Education of mothers significantly influenced utilization ( $X^2_{(3)} = 28.22$ ,  $p = <0.001$ ) with primary education and secondary education being 10 times more likely (COR = 9.67, 95%CI (2.639--35.411)) and 6 times more likely (COR = 6.17, 95%CI (2.234--17.023)) to influence IUCD utilization, respectively. Occupation of mothers also influenced utilization ( $p < 0.000$ ). Most of the mothers were skilled laborers and yet they were less likely to utilize IUCD compared to non-skilled counterparts (COR = 0.19 95%CI: 0.082--0.431). Culture influenced utilization of IUCD ( $X^2_{(1)} = 18.22$ ,  $p = 0.007$ ). Healthcare providers should build the capacity of community health workers to promote effective community awareness about IUCD and its advantages. This will increase uptake.



Kizito Omona

### ABOUT THE AUTHOR

Dr Omona Kizito is a Medical Doctor and Lecturer in the Faculty of Health Sciences (FHS) of Uganda Martyrs' University, Kampala. He holds a PhD in Mgt [Healthcare Mgt], Master of Science in Health Services Mgt (MSc. HSM), Master of Science in Monitoring and Evaluation (MSc. M & E), Post Graduate Diploma in Project Planning and Mgt (PGD PPM), Post Graduate Certificate in Monitoring and Evaluation (PGC M & E), and Bachelor of Medicine and Bachelor of Surgery (MBChB). He is currently engaged in teaching Public Health and Health Services Management at Bachelors and Masters Level, Research Supervision in the said areas and level, community engagement, among others. His major Research areas are; Clinical Researches, Public Health and Maternal and Child health Researches, among others.

### PUBLIC INTEREST STATEMENT

The most effective modern family planning method is long acting reversible contraceptives (LARCs), which includes intra-uterine contraceptive devices (IUCD), among others. It has multiple advantages over other reversible methods. Most importantly, once in place, they do not require maintenance and their duration of action is long. IUCD has the following advantages; its contraceptive effect is quickly reversible following removal and has a longer duration of effectiveness of at least 12 years. Postpartum mothers require a range of effective contraceptive methods so as to avoid unintended pregnancies, within a short interval. Moreover, it is also said that the effectiveness, with correct and consistent use, of hormonal IUCD and copper IUCD is more than 99% for both. Therefore, it is important that IUCD is taken as priority family planning method to use in view of its advantages over other methods; its uptake is still low in Uganda.

**Subjects: Health & Society; Midwifery; Public Health Policy and Practice**

**Keywords: contraceptive utilization; post-partum mothers; intra-uterine contraceptive device (IUCD)**

## 1. Introduction

### 1.1. Background to the study

Unite for Sight (n.d.) argued that an estimated 830 women die of pregnancy-related causes each day, amounting to more than 300,000 deaths each year and that 99% of these deaths occur in low- and middle-income countries. However, access to family planning can greatly reduce these mortality rates. A study in 2012 found that contraceptive use caused a 44% reduction in maternal mortality in 2008 (Unite for Sight, n.d.). Similarly, according to United Nations Population Fund (UNFPA), approximately 808 women die every day from preventable causes related to pregnancy and childbirth, which is about one woman in every two minutes (United Nations Population Fund [UNFPA], 2020). Most of these deaths and injuries are entirely preventable.

Globally, the Total Fertility Rate (TFR) stands at 2.5 children per woman. Africa still has the highest fertility at 4.7 whereas Asia, Latin America and the Caribbean all have TFR of 2.2. Total fertility rate (TFR) of Oceania is 2.4 and for Europe, it is 1.6 while sub-Saharan Africa (SSA) has a TFR of five or more (United Nations [UN], 2015). In East Africa, the TFR remains high with 4.6 in Kenya and Rwanda, 5.4 for Tanzania, 6.2 for Uganda, and 6.4 for Burundi (Ministry of Health [MoH], 2014). The use of contraceptive methods has the potential to reduce TFR and help couples to decide freely and responsibly if, when and how many children to have (UN, 2015). It also improves health-related outcomes such as reduced maternal mortality and infant mortality (Bhutta et al., 2014), as well as school outcomes and economic outcomes, particularly for girls and women (Schultz & Joshi, 2013).

In Uganda in particular, the Total Fertility Rate (TFR) of 5.4 children per woman is attributed to low use of family planning services with a modern contraceptive prevalence of 35% (Uganda Bureau of Statistics [UBOS], 2016). It is accountable for the current estimated population of 34.6 million people and an unprecedented high population growth rate of 3% per annum as indicated in the national census report (UBOS, 2017). Certainly, uncontrolled births can destroy a nation's development aspirations and prevent its people from enjoying an improved standard of living (Michael, 2012).

According to the scholar (Michael, 2012), the Kahama district in the Shinyanga region had a Contraceptive Prevalence Rate (CPR) of 16%, which was far below the national average of 27%. Little was known on factors contributing to the low level of utilization of contraceptives that district, especially among women in stable marital relations. Promotion of contraception in countries with high birth rates is known to reduce poverty, hunger, and deter 32% of all maternal deaths and closely 10% of the childhood deaths (Tamrie et al., 2015).

The most effective modern family planning method consists of long-acting reversible contraceptives (LARCs) which include intra-uterine contraceptive devices (IUCD). This method has multiple advantages over other reversible methods. Most importantly, once in place, they do not require maintenance and their duration of action is long (Espey & Ogburn, 2011). Intra-uterine contraceptive has the following advantages; its contraceptive effect is quickly reversible following removal and has a longer duration of effectiveness of at least 12 years. It is completely good for breastfeeding post-partum women and safe for mothers where hormonal methods are contraindicated (ACCESS-FP J, 2008). The intra-uterine contraceptive device is a safe and highly effective contraceptive method (Getinet et al., 2014).

Postpartum women require a range of effective contraceptive methods so as to avoid unintended pregnancies, within a short interval, particularly the multi-year cost of the Copper T380A IUCD, as one of the most cost-effective contraceptive options (Kumar et al., 2014). Studies (Rutaremwya et al., 2015) have revealed that incidences of repeat pregnancy were reported among women who did not obtain IUCDs and instead opted for hormonal methods or used condom. This result, thus, recognizes the potential of IUCDs in preventing short pregnancy interval unlike the other contraceptives methods. Moreover, it is also said that the effectiveness, with correct and consistent use, of hormonal intra-uterine device and copper intra-uterine device is more than 99% for both. Similarly, their effectiveness, as commonly used, is still more than 99% (Unite for Sight, n.d). Therefore, it is important that IUCD is taken as a priority family planning method to use in view of its advantages over other methods.

Globally, the prevalence of Intra-uterine device (IUCD) is at 13.9%. The prevalence is at 17.5% in Asia, 11.9% in Europe, 6.5% in Latin America and the Caribbean, 4.7% in North America and 1.8% in Oceania. In Africa, it is at 4.6% and SSA accounts for 0.7%, Middle Africa at 0.2%, Northern Africa 19.8%, Southern Africa 1.2%, and West Africa at 0.5% (UN, 2013). However, studies are reporting a decrease or stagnation in the use of IUCDs in SSA (Darroch & Singh, 2013).

During the Family Planning (FP) 2012 London Summit, Uganda committed to achieving universal access to FP and increasing the modern contraceptive prevalence rate (mCPR), including IUCD, among married women to 50% by 2020 (MoH, 2014). This, therefore, calls for appropriate strategies that can trigger an update of Modern and Long Acting Reversible Contraceptives (MLARC) including IUCD among women.

In Uganda, contraceptive prevalence is dominated by injectable, male condoms, and other short-acting methods. The copper IUCD stands at 1.5% compared with 19% for injectable, 6% for implants, 1.9% for pills, among the married women while the majority (71.6%) account for lactation amenorrhea methods and other methods (Uganda Bureau of Statistics [UBOS] and ICF International Inc [ICF], 2017). A study in the Lubaga division, Kampala, found that IUCD use was at 1.8% and found to be the lowest among all other methods (Anguzu et al., 2014). Uganda still has one of the highest unmet needs at 28% for Family Planning in Sub-Saharan Africa (SSA) (MoH, 2016b).

Many postpartum women do not obtain contraception before their visit at 6–8 weeks, despite the big number of 41% attempting vaginal intercourse (McDonald & Brown, 2013). Postpartum women are among the groups that have the highest unmet need for FP (World Health Organization [WHO], 2013); yet highly effective Long Acting Reversible Contraceptives (LARC) like IUCD in the postpartum period has proven to prevent unintended and rapid repeat pregnancies (Teal, 2014). The high unmet need contributes to 43% of all unintended pregnancies in Uganda. There is, also, high discontinuation rate with 43% of the contraceptive users discontinuing with a year of debut mainly due to health concerns or fear of side effects or strong desire to return of fertility (MoH, 2016b). Contraceptive prevalence rate depends on education and counseling, access to information, family planning (FP) commodity security, availability of skilled staff, social and cultural factors (MoH, 2014). Patients and providers negative beliefs, male partner negative attitudes toward contraception and attitudes toward menstruation are among the many factors affecting the utilization of contraceptives, including IUCD (Unite for Sight, n.d).

Despite all the known advantages of IUCD, its uptake is still low in Uganda. Hence, conducting this study is helpful to assess the uptake, level of knowledge, socio-culture and health systems factors influencing utilization IUCD among postpartum women. Improving contraceptive use requires contextual understanding of the factors, but little is known about the contributing factors to the low IUCD utilization in Gombe hospital Butambala. Therefore, it's worthwhile to assess the demographic knowledge, socio-cultural, and health system related factors influencing utilization of IUCD among postpartum women attending services from Gombe Hospital.

### 1.2. Study area

The study was conducted in Gombe Hospital, Butambala district which is located 72 kilometers South of Kampala. The district is bordered by the districts of Mpigi, to the west Mityana to the north, and Masaka to the east. The district population was estimated to be 100,840 people with 50,082 males and 50,758 females with an annual growth rate of 1.3% and an average household size of 4.6. The hospital lies in the Gombe town council with a population of 15,553 with 7,583 Males and 7,970 females of which 3,142 are women of reproductive age (UBOS, 2017). See Figures 1 and 2 below for views of Gombe Hospital.

### 1.3. Broad aim

The study sought to determine factors that influence intra-uterine contraceptive device utilization among postpartum women attending service at Gombe Hospital.

### 1.4. Specific aims

The research had the following specific objectives;

- (1) To determine the prevalence of intra-uterine contraceptive device utilization among postpartum women attending services from Gombe Hospital.
- (2) To assess the level of knowledge on Intra-uterine contraceptive device among postpartum women attending services from Gombe Hospital.
- (3) To determine the socio-cultural factors that influence the utilization of intra-uterine contraceptive device among postpartum women attending services from Gombe Hospital.
- (4) To determine the Health-system-related factors that influence the utilization of intra-uterine contraceptive device among postpartum women attending services from Gombe hospital.

## 2. Methods

Gombe Hospital, in Gombe town council, Butambala district, is 72 kilometers South of Kampala city, the capital of Uganda (UBOS, 2017). The study was a cross-sectional analytical design, both qualitative and quantitative mixed methods. It targeted postpartum mothers (15–49 years of age) attending healthcare services between 4th July and 16 August 2018. Postpartum mothers, attending the

Figure 1. A section-view of Gombe Hospital.



**Figure 2. Uganda Muslim Supreme Council (UMSC) visits Gombe Hospital.**



postnatal clinic, who took or never took family planning (FP) before were included. Mothers who delivered from the facility but never came for postnatal care within the study period were excluded from the study. Health-care providers working in the Family Planning Department were also included.

A sample of 202 mothers was randomly selected by systematic random sampling techniques. This sample was calculated using the known statistical formula (Yamane, 1967 as cited in (Singh & Masuku, 2014)). Two (2) health-care providers working in the family planning department were purposively sampled for key informant interview. Two Focus Group Discussion (FGD) with mothers were held. Hence, Face-to-face interview, key informant interview and FGDs were used to collect data.

A number of quality controls were taken care of, including training of research assistants and pre-testing of the tools. Data were entered in Statistical Package for Social Sciences (SPSS) for analysis. Qualitative data analysis was done through thematic and verbatim analysis following the verbatim transcriptions from the interviews.

Ethical approval was sought from the relevant authority of the faculty of health sciences at Uganda Martyrs University, guaranteeing the Institutional Review Board (IRB) endorsement. Other ethical considerations governing research on human subjects were well adhered to.

### **3. Results**

#### **3.1. Socio-demographic characteristics**

Postpartum mothers aged between 20–24, 25–29, and 30–34 years were the majority among all the age categories with 42 (20.8%), 69 (34.1%), and 41(20.3%) respectively. About 161 (79.7%) of the postpartum mothers were married, 41 (20.3%) were not married and less than half 80 (39.6%) of the postpartum mothers completed secondary education followed by primary education accounting for 61 (30.2%). See Table 1 for other details.

#### **3.2. Prevalence of IUCD utilization among postpartum mothers**

Of the 202 postpartum (PP) mothers, 11 of them were old users of IUCD and 22 mothers were new users of the method.

**Table 1. Univariate analysis of socio-demographic characteristics of postpartum mothers at Gombe Hospital, Butambala district, Uganda, 2018**

Variables	Frequency (n = 202)	Percent (100%)
Age Categories	7	3.5
• 15–19	42	20.8
• 20–24	69	34.1
• 25–29	41	20.3
• 30–34	29	14.4
• 35–39	13	6.4
• 40–44	1	0.5
• 45–49		
Marital Status	161	79.7
• Married	41	20.3
• Not married		
Educational level	12	5.9
• No formal education	61	30.2
• Primary	80	39.6
• Secondary	49	24.3
• Tertiary		
Religion	55	27.2
• Catholic	47	23.3
• Anglican	74	36.6
• Muslim	26	12.9
• Others		
Occupation	67	33.2
• Skilled laborer	135	66.8
• Nonskilled laborer		
Family Planning Utilization (n = 202)	129	63.9
	22	10.9
• PP women who took at least a FP method	11	5.4
	40	19.8
• PP women who had IUCD inserted (New users)		
• PP women who had ever used IUCD (Old users)		
• PP mothers who never took any FP method		

PP = Postpartum, FP = Family Planning, IUCD = Intra-Uterine Contraceptive Device.

Prevalence was, thus, computed from the formula,  $n = \frac{old + new\ users\ of\ IUCD}{Total\ number\ of\ PP\ mothers} * 100\% = \frac{11 + 22}{202} * 100\% = 16.3\%$

Therefore, the prevalence of IUCD utilization was at 16.3% among postpartum mothers.

Two key informants were asked about the utilization of IUCD in Gombe hospital. The two key informants agreed that the utilization of IUCD still remains low, which conforms to the finding on prevalence. For example; the respondent key informants reported as below;

[...] Its utilization is not high because mothers believe it can cause bleeding, fibroids, cancer, can get out when in their periods, can travel to other parts of the body and can cause severe backache, [KI 1 14 August 2018].

[...] IUCD is still underutilized possibly because providers have not educated these mothers enough about it [...], [KI 2, 14 August 2018].

### 3.3. Knowledge on IUCD among postpartum mothers

Postpartum women were asked if they knew about IUCD and Yes/No responses were elicited. 147 (72.8%) of the respondents self-reported that they were knowledgeable. Other specific questions on IUCD were asked, in a Likert scale, to ascertain their level of knowledge and 49(33.3%) of those

**Table 2. Knowledge on IUCD among postpartum women at Gombe Hospital, Butambala district, Uganda, 2018**

Variable	Frequency (n = 202)	Percentage (%)
Mothers Knew about IUCD	147	72.8%
• Yes	55	27%
• No		
Self-rated/knowledge on IUCD (n = 147)	49	33.3%
• Good	65	44.2%
• Fairly good	33	22.4%
• Fair		
IUCD is long lasting (n = 147)	131	89.1%
• Agree	16	10.9%
• Disagree		
Time of IUCD insertion	12	8.2%
• During the postpartum period	5	3.4%
48 hrs after delivery	32	21.8%
• Immediately after removal of the placenta	98	66.7%
• Four weeks after delivery		
• At 6 weeks or after		
Conception possible after IUCD removal	109	74.1%
• Agree	38	25.9%
• Disagree		
Breastfeeding mothers can use IUCD	127	86.4%
• Agree	20	13.6%
• Disagree		
IUCD does not protect against STDs	132	89.8%
• Agree	15	10.2%
• Disagree		
IUCD is immediately reversible method	76	51.7%
• Agree	71	48.3%
• Disagree		
IUCD allows normal Menstrual periods	85	57.8%
• Agree	62	42.2%
• Dis agree		
Overall Level of knowledge	113	55.9 %
• Knowledgeable	89	44.1%
• Not knowledgeable		

who self-reported to be knowledgeable rated the method as good. 131(89.1%) agreed that IUCD is long lasting. Other details are shown in Table 2. Therefore, on overall, the level of knowledge was 55.9%

In a qualitative interview, key informants (KI) were asked to suggest how IUCD utilization can be improved. They suggested health education to mothers on IUCD and community sensitization as appropriate. Others measures include; training midwives on immediate IUCD insertion and awareness creation about the availability of the method. The respondents reported as;

[...] IUCD utilization can be improved if staffs on duty educate mothers about the benefits over hormonal contraceptives routinely [...]. The need to train midwives on immediate IUCD insertion and ensure all staff in the unit are competent in inserting IUCD to reduce waiting time and missed opportunities is important [KI 1, 14 August 2018].

This can be improved through sensitizing community and creating awareness on availability of the method [...]. [...] because some think they can access IUCD from Kampala health facilities [...]. [...] working with the existing structures like the VHTs to sensitize the communities [...], KI 2 14 August 2018].

### **3.4. Socio-cultural factors that influenced utilization of IUCD**

Bivariate logistic analysis and cross tabulation were done to determine the socio-cultural factors which influenced the utilization of IUCD among postpartum mothers. The results are shown in Table 3.

The study found that the education of mothers significantly influenced utilization of IUCD ( $\chi^2_{(3)} = 28.22, p = <0.001$ ) with primary education and secondary education being 10 times more likely (COR = 9.67, 95%CI (2.639–35.411)) and 6 times more likely (COR = 6.17, 95%CI (2.234–17.023)) to influence IUCD utilization in that respective order. Religion influenced utilization of IUCD ( $\chi^2_{(3)} = 11.64, p = 0.009$ ). It emerged that the Muslim mothers were 5.38 times more likely to use IUCD compared to the other religions (COR = 5.38, 95% CI (1.19–24.33)). Catholic and Anglican postpartum mothers were less likely to use IUCD compared to other religion (COR = 0.81, 95%CI (0.225–2.605), COR = 0.74, 95% CI (0.228–2.427) respectively. The occupation of the mothers also influenced utilization ( $p < 0.000$ ). Most of the IUCD users were skilled laborers and these skilled laborers (mothers) were less likely to utilize IUCD compared to non-skilled counterparts (COR = 0.19 95%CI: 0.082–0.431).

Most of the respondents, who utilized IUCD, 30(14.9%), belonged to the category whose culture allows the use of IUCD. Thus, culture influenced the utilization of IUCD ( $\chi^2_{(1)} = 18.22, p = 0.007^*$ ). Social interaction ( $\chi^2_{(1)} = 18.01, p < 0.001$ ), sources of information about IUCD ( $p = <0.001$ ) and recommending use of IUCD to others ( $p < 0.000$ ); all these influenced utilization as shown in Table 3 above. Postpartum mothers who received the information from their spouse were 4 times more likely to utilize IUCD compared to other sources (COR = 4, 95% CI (0.329–48.66)).

Two focus group discussions (FGD) were held with mothers. Most of the participants in the two FGDs mentioned that they can recommend IUCD for others due to its effectiveness, long-term action and its reversibility nature.

#### **3.4.1. Theme 1: Respondents can recommend the use of IUCD**

For examples, the mothers had these to say;

I would recommend one to use it because it works for a long period of time. It is a method that takes a long period of time with no repetitive side effects “Personally I did not get any problem”. I was told IUCD s don’t affect the effectiveness of ante retro viral therapy like some of the family planning methods [...] (FGD participant15 August 2018.)

**Table 3. Bivariate logistic analysis of socio-cultural factors influencing utilization of IUCD among postpartum women at Gombe Hospital, Butambala district, Uganda, 2018**

Variables	Utilization of IUCD		Total n = 202	Chi-square test $\chi^2$ (df)	COR 95%CI	p-value
	Yes (%)	No (%)				
Education level						
• No formal educ	5(2.5)	7(3.5)	12	$\chi^2_{(3)} = 28.22, p = <0.001^*$	0.70(0.193-2.535)	0.587
• Primary	3(1.5)	58(28.7)	61			
• Secondary	6(3.0)	74(36.6)	80			
• Tertiary	19(9.4)	30(14.9)	49			
Religion						
• Catholic	13(6.4)	42(20.8)	55	$\chi^2_{(3)} = 11.64$ $p = 0.009^*$	0.81(0.225-2.605)	0.729
• Anglican	12(5.9)	35(17.3)	47			
• Muslim	3(1.5)	71(35.1)	74			
• Others	5(2.5)	21(10.4)	26			
Occupation						
• Skilled laborer	23(11.4)	44(21.8)	67	$\chi^2_{(2)} = 17.84 p = 0.001^{**}$	0.19(0.082-0.431)	0.000^{**}
• Nonskilled laborer	10(5.0)	125(61.9)	135			
Your culture allow use of IUCD						
• Yes	30(14.9)	131(64.9)	161	$\chi^2_{(1)} = 18.22$ $p = 0.007^*$	0.11(0.015-0.838)	0.033^*
• No	3(1.5)	38(18.8)	41			
Socio-network						
• Yes	20(9.9)	99(49.0)	119	$\chi^2_{(1)} = 0.41 p = 0.522$	0.77(0.348-1.709)	0.523
• No	13(6.4)	70(34.7)	83			
Social interaction						
• Yes	25(12.4)	28(13.9)	53	$\chi^2_{(1)} = 18.01$ $p < 0.001^{**}$	0.05(0.017-0.123)	0.000^{**}
• No	8(4.0)	141(69.8)	149			

(Continued)

Table 3. (Continued)

Variables	Utilization of IUCD		Total n = 202	Chi-square test $\chi^2$ (df)	COR 95%CI	p-value
	Yes (%)	No (%)				
Myths about IUCD use • Yes • No	27(13.4) 6(3.0)	135(66.8) 34(16.8)	162 40	$\chi^2_{(1)} = 0.22$ p = 0.213	0.41(0.116-1.411) 1	0.156
Sources of myth • Relatives • Spouse • Friends • Others	6(3.0) 2(1.0) 22(10.9) 2(1.0)	55(27.2) 8(4.0) 105(52.0) 2(1.0)	61 10 127 4	$\chi^2_{(3)} = 5.908$ p = 0.086	9.17(1.086-77.40) 4.00(0.329-48.66) 4.12(0.541-31.36) 1	0.042* 0.277 0.172
Formal inform. about IUCD • Yes • No	30(14.9) 3(1.5)	119(58.9) 50(24.8)	149 53	$\chi^2_{(1)} = 28.2$ p < 0.001	0.00(0.000-0.002) 1	0.997
Source of first information • Healthcare • Friends • Radio • Others	12(5.9) 1(0.5) 10(5.0) 10(5.0)	82(40.6) 52(25.7) 10(5.0) 25(12.4)	94 53 20 35	Fisher's = 15.78 p = <0.001	6.20(1.765-21.756) 0.00(0.00) 0.00(0.00) 1	0.004** 1.000 0.998
Point of IUCD information • During ANC • During PNC visit • After delivery • Others	17 (8.4) 12(5.9) 3(1.5) 1(0.5)	31(15.3) 65(32.2) 39(19.3) 34(16.8)	48 77 42 35	Fisher's 8.13 p = 0.024	0.00(0.00) 0.00(0.00) 0.00(0.00) 1	1.000 1.000 1.000

(Continued)

**Table 3. (Continued)**

Variables	Utilization of IUCD		Total n = 202	Chi-square test $\chi^2$ (df)	COR 95%CI	p-value
	Yes (%)	No (%)				
Recommend IUCD to others	30(14.9) 3(1.5)	38(18.8) 131(64.9)	68 134	$\chi^2_{(2)} = 21.22$ $p < 0.000^{**}$	0.01(0.001-0.071) 1	0.000 <sup>**</sup>
<ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> </ul>						

p < 0.05\*, p < 0.001<sup>\*\*</sup>, Fisher's exact test was used for Cell values less than 5, info = Information, COR = Crude Odd Ratio.

[...] I recommend it ... it's a good method because when you removed it, you can immediately conceive. I used it for five years, removed it and immediately conceived (FGD participant 13 August 2018).

IUCD are more effective than other family planning method like the pills and moment you remove it you conceive immediately. It is not like other family planning methods where you wait until drug gets done from the body, (FGD participant 15 August 2018)

#### 3.4.2. Theme 2: Respondents cannot recommend the use of IUCD

On the other hand, some of the FGD participants could not recommend the method to others. The reasons for not recommending varied; ranging from the side effects, exposure to STIs and not easily accessible. Others could not recommend because of no prior experience of use and lack of knowledge about the method, discomfort of being with the IUCD, and bleeding, among others.

The mothers had these to say;

I can't encourage a person to use it because I have had a lot of bad things about it, [FGD participant 15th August 2018].

I can't recommend any use it because I have never used it, [FGD participant 15 August 2018].

It exposes a woman to STI s because it is difficult for a man to have only one sexual partner. [FGD participant 15th August 2018]

When the IUCD is inserted you have to feel the strings and it's not good experience as something foreign in your body, [FGD participant 15th August 2018]

#### 3.5. Health-system factors that influenced utilization of IUCD

Bivariate logistic analysis and cross tabulation were done to determine the health-system factors which influenced the utilization of IUCD among postpartum mothers. The results are shown in Table 4.

The study found that receiving counseling on IUCD influenced utilization of the method among postpartum mothers ( $X^2_{(1)} = 0.315, p = 0.001$ ) and that out of the 33 mothers who utilized IUCD, 28 (13.9%) had received counseling about the method. Availability of IUCD also influenced its utilization ( $p = 0.000$ ). Out of the 33 mothers who utilized the method, 27 (13.4%) attributed it to the availability of IUCD in the facility. Believing that health-care providers had adequate knowledge of IUCD influenced its utilization ( $p = 0.001$ ) as well as knowing that IUCD was free of charge ( $X^2_{(2)} = 6.053, p = 0.026$ ).

In a qualitative interview with Key Informants (KI), they reported that despite health workers being formally trained in schools, some of them have inadequate knowledge and skills on IUCD and its insertion. They had these to say;

I acknowledge the formal training conducted in schools, however it's insufficient hence resulting to incompetent health workers when it comes to issues of family planning especially IUCD. However, health workers are trained on job to improve their knowledge and skills though few are trained on it ...In case of staff rotation or transfer, the number of knowledgeable and skilled workers reduce hence affecting services delivery, [KI 1 on 14th 08.2018].

Majority of the staff though not all are knowledgeable because we had Implementing Partner (IP) trained us. It was an on-job training that helped health workers who had lost the

**Table 4. Bivariate logistic analysis of health-system factors influencing utilization of IUCD among postpartum women at Gombe Hospital, Butambala district, Uganda, 2018**

Health-system variables	Utilization of IUCD		Total (n = 202)	$\chi^2$ (df)	COR, 95%CI	p-value
	Yes (%)	No (%)				
Received counseling on IUCD • Yes • No	28(13.9) 5(2.5)	56(27.7) 113(55.9)	84 118	$\chi^2_{(1)} = 0.315$ $p = 0.001^{**}$	0.05(0.015–0.179) 1	0.000**
Time of counseling (n = 84) • Only Before • Before and after	49(58.3) 23(27.4)	12(14.3) 0(0.0)	61 23	$\chi^2_{(1)} = 1.005$ $p = 0.060$	0.00(0.00) 1	0.998
Availability of IUCDs • Yes • No • I don't know	27(13.4) 0(0.0) 4(2.0)	88(43.6) 3(1.5) 80(39.6)	115 3 84	Fisher's 14.15, $p = 0.000^{**}$	0.16(0.055–0.486) 0.00(0.00) 1	0.001** 0.999
Healthcare providers offering IUCD services had adequate knowledge on the method • Strongly agree • Agree • Uncertain • Disagree • Strongly Disagree	14(6.9) 12(5.9) 6(3.0) 0(0.0) 1(0.5)	19(9.4) 61(30.2) 74(36.6) 13(6.4) 2(1.0)	33 73 80 13 3	Fisher's 25.339 $p = 0.001^{**}$	0.60(0.049–7.283) 3.0(0.248–36.26) 7.10(0.546–92.40) 0.00(0.00) 1	0.688 0.388 0.134 0.999
Waiting time to get IUCD • <30 minutes • Not sure • >30 minutes	9(4.5) 3(1.5) 21(10.4)	62(30.7) 3(1.5) 104(51.5)	71 6 125	$\chi^2_{(2)} = 0.682$ $p = 0.89$	0.67(0.061–7.230) 0.00(0.00) 1	0.739 1.000

(Continued)

**Table 4. (Continued)**

Health-system variables	Utilization of IUCD		Total (n = 202)	$\chi^2$ (df)	COR, 95%CI	p-value
	Yes (%)	No (%)				
Is IUCD method free of charge? <ul style="list-style-type: none"> <li>• Yes</li> <li>• No</li> <li>• I don't know</li> </ul>	19(9.4) 7(3.5) 7(3.5)	84(41.6) 16(7.9) 69(34.2)	103 23 76	$\chi^2_{(2)} = 6.053$ $p = 0.026^*$	0.38(0.143–1.001) 0.24(0.070–0.847) 1	0.050 0.026*
Attitude of Family Planning service providers <ul style="list-style-type: none"> <li>• Positive</li> <li>• Negative</li> </ul>	29(14.6) 4(2.0)	147(72.8) 22(10.9)	176 26	$\chi^2_{(1)} = 0.01$ $p = 0.208$	0.42(0.095–1.886) 1	0.259

p < 0.05\*, p < 0.001\*\*, Fisher's exact test was used for Cell values less than 5.

skills ... ..No specific training has been done for on immediate insertion after normal delivery and caesarian section [KI 2 on 14 August 2018].

However, in focus group discussions, when participants were asked to make their judgment regarding the health-care providers' knowledge and skills on IUCD, their views were different. The result showed that some of the FGD participants made their judgment that the health-care providers are knowledgeable about the method. On the other hand, some of them said few individuals have the skills to insert it. They reported as follows:

[...] according to the person who taught me, she talked about the bad things, the benefits among them she mentioned that it was long term and being very effective. She told me they don't affect the effectiveness of ante retro viral therapy like some of the family planning methods. I therefore believe they are knowledgeable ... [FGD participant 15th August 2018].

[...] It is mostly likely some health care providers are not trained because the time I decided to use the IUCD, I was told to come back when the health care provider that could insert it were around, [FGD participant 15th August 2018].

The multivariable analysis found social interaction and counseling on IUCD significantly influenced the utilization of IUCD (see Table 5).

#### 4. Discussion

##### **6.1. Prevalence of IUCD utilization among postpartum mothers**

Findings revealed that the prevalence of IUCD was low at 16.3%. This is above the national prevalence of IUCD among women of the reproductive age group which is at 1.1% (UBOS, 2017). However, this prevalence is not specifically for postpartum women. Despite the fact that the prevalence of IUCD in this study is more than that of the national level, utilization of IUCD is low compared to other family planning methods. Key informants reported that much as IUCD were not highly used by postpartum women, there was a slight improvement in IUCD utilization. These findings are similar to the study undertaken by other scholars (Anguzu et al., 2014) where IUCD utilization was found to be the least family planning method used. Similarly, another study conducted in Ethiopia among postpartum women showed that IUCD was the least, standing at 5.2% (Tefera et al., 2017). This study's findings contradict those of another study conducted in Turkey (Deveer, 2013), which revealed that IUCDs are the most commonly used modern contraceptive method in which out of 681 of the participants, 22.5% were using IUCD.

##### **4.2. Knowledge on IUCD among postpartum mothers**

Overall, knowledge of women on IUCD was 55.9%. There is generally a knowledge gap about IUCD and specifically on immediate post-partum IUCD insertion which could be attributed to low awareness and utilization, which may arise from inadequate counseling. This is in line with the study undertaken by another scholar who found out that women's knowledge of IUCD was low (Twesigye et al., 2016). This study finding contradicts with a study conducted in Ethiopia by Ali (2016) whose findings revealed that half of the women 63.8% had good knowledge of IUCD while 36.2% had low or poor knowledge on IUCD (Ali, 2016).

##### **4.3. Socio-cultural factors that influence utilization of IUCD**

Study findings indicated that postpartum mothers who attained a primary level of education were 4.38 times more likely to use IUCD compared to those with a tertiary level of education. It possible that women who are not educated, take seriously, counseling, and information provided by health workers. This might be due to the fact that their source of formal information may be solely from the health service providers, hence, influencing positively their decision-making. This result concurs with that conducted in a private health facility in Nigeria which found that postpartum women with no formal education or an only primary level were more likely to select the IUCD compared to

**Table 5. Multivariate logistic regression**

Variable	Utilization of IUCD		AOR (95%CI)	p-value
	Yes	No		
Education	5(2.5)	7(3.5)	0.23(0.043–1.279)	0.094
• Noformal educ	3(1.5)	58(28.7)	4.38(0.965–19.89)	0.056
• Primary	6(3.0)	74(36.6)	3.05(0.873–10.622)	0.081
• Secondary	19(9.4)	30(14.9)	1	
• Tertiary				
Religion	13(6.4)	42(20.8)	0.67(0.115–3.828)	0.647
• Catholic	12(5.9)	35(17.3)	0.90(0.154–5.255)	0.906
• Anglican	3(1.5)	71(35.1)	5.74(0.728–45.23)	0.097
• Muslim	5(2.5)	21(10.4)	1	
• Others				
Occupation	21(11.4)	44(21.8)	0.28(0.042–1.880)	0.190
• Skilled laborer	10(5.0)	125(61.9)	1	
• Non-skilled laborer				
Your culture allow IUCD use	30(14.9)	131(64.9)	0.78(0.054–11.254)	0.854
• Yes	3(1.5)	38(18.8)	1	
• No				
Social interaction	20(9.9)	99(49.0)	1.047(0.35–3.128)	0.000**
• Yes	8(4.0)	141(69.8)	1	
• No				
Received counseling on IUCD	28(13.9)	56(27.7)	0.11(0.029–0.392)	0.001*
• Yes	5(2.5)	115(55.9)	1	
• No				
IUCD methods are available in this hospital	27(13.4)	88(43.6)	0.174(0.017–1.813)	0.144
• Yes	0(0.0)	3(1.5)	0.00(0.00–0.00)	
• No	4(2.0)	80(39.6)	1	
• I don't know				
Healthcare providers offering IUCD services have adequate knowledge on the method	14(6.9)	19(9.4)	0.60(0.006–62.509)	0.828
• Strongly agree	12(5.9)	61(30.2)	1.48(0.015–148.3)	0.869
• Agree	6(3.0)	74(36.6)	3.75	0.561
• Uncertain	0(0.0)	13(6.4)	(0.044–320.928)	
• Disagree	1(0.5)	2(1.0)	0.00(0.00–0.00)	
• Strongly Disagree			1	
Is IUCD method free of charge	19(9.4)	84(41.6)	1.37(0.328–5.678)	0.669
• Yes	7(3.5)	16(7.9)	0.60(0.097–3.759)	0.588
• No	7(3.5)	69(34.2)	1	
• I don't know				

p < 0.05\*, p < 0.001\*\*.

those who had tertiary level of education (Eluwa et al., 2016). Other studies gave similar results (Bwazi et al., 2014). This findings conducted in Malawi revealed that husbands are the main decision makers especially on reproduction; thus, approval or disapproval of services determines the use or non-use of services by women (Bwazi et al., 2014).

#### 4.4. Health-system factors that influence utilization of IUCD

This study revealed that counseling contributed to the utilization of IUCD and was statistically significant. Key informants reported that there was a slight improvement in IUCD uptake that had resulted from the intensified counseling. They also attribute the underutilization to the health-care providers who do not educate these mothers well. The study findings concur with those by Kumar et al. (2014) which revealed that many women who used IUCD reported that they had received counseling on the method from a qualified and dedicated counselor from a health facility prior to uptake. In one study, it was found that receiving health information after delivery (AOR = 3.57, 95% CI: 1.69, 7.53) was found to be statistically associated with postpartum care uptake (Kebede et al., 2019). Similarly, the study by Tefera et al. (2017), is also in support of this study finding. Their result revealed that mothers who were not counseled about IUCD were less likely to use the method compared to those who were counseled about the method. The finding reflects that provider's knowledge influences IUCD use. Finding is supported by another study conducted among Canadian women which recommended that providing education to health-care providers, women, and policy makers may overcome misperceptions about the use of IUCDs hence may help greater uptake (Hauck, 2015). Similar studies have been reported by other researchers elsewhere (Creanga et al., 2011). These are contrary to those studies by Jalang'o et al. (2017) where the majority of the women reported the major challenge was the frequent stock-outs at the facility (Jalang'o et al., 2017).

### 5. Conclusion

In summary, both prevalence and knowledge of IUCD among postpartum women were low. This was attributed to inadequate health education of mothers by the health workers and women's beliefs that they attributed IUCD to causing several complications like cancer, fibroids, and severe bleeding. Counseling and Social interaction were significant factors that influenced IUCD utilization, among others.

#### Acknowledgments

The authors would wish to acknowledge the technical support of the staff of the Faculty of Health Science– Uganda Martyrs University, in this study. We remain indebted to all our research participants who offered the information.

#### Funding

The authors received no direct funding for this research.

#### Competing interest

We declare not a conflict of interest, in what-so-ever way.

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#### Consent for publication

The authors of this manuscript do consent for publication with Cogent Medicine Journal under the provided terms and conditions.

#### Citation information

Cite this article as: Factors influencing utilization of intra-uterine device among postpartum mothers at Gombe Hospital, Butambala district, Uganda, Kizito Omona & Winnifred Namuli, *Cogent Medicine* (2020), 7: 1846264.

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