

# Correlates of knowledge of family planning among people living in fishing communities of Lake Victoria, Uganda

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# Abstract

**Background** Knowledge of family planning (FP) is a key determinant of contraceptive use which ultimately plays a role in attainment of good health and in conduct of clinical research. People living in fishing communities (FCs) have limited access to health services including FP and are targeted for future clinical research but their knowledge of FP and its correlates are scantily known. We determined correlates of knowledge of FP among people living in FCs of L. Victoria in Uganda to inform future FP education programs in FCs.

**Methods** We conducted a comparative cross-sectional survey among participants aged 15-49 years from Kigungu and Nsazi. Participants were asked if they were aware of any FP method. All those who responded in the affirmative were further asked to mention what FP methods they had heard of or knew. Those who reported knowledge of at least one FP method were asked a series of questions about FP methods and their side effects. Knowledge was categorized into good or poor knowledge based on their mean total score. Poor knowledge constituted a score below the mean while good knowledge constituted a score of more than or equal to the mean total score. To further explore attitudes and perceptions of FP, ten in-depth interviews and four focus group discussions were conducted.

**Results** Of the 1,410 screened participants, 94.5% were aware of at least one FP method. Pills and injectable hormonal methods were the most commonly known methods. Slightly over a third (38%) had good knowledge of FP. Correlates of knowledge of FP were; being female (aOR: 1.92 95% CI: 1.39-2.67), residing in Kigungu (aOR: 4.01 95% CI: 2.77-5.81), being married (aOR: 1.59 95% CI: 1.11-2.28) and currently being in a sexual relationship (aOR: 1.75 95% CI: 1.18-2.60). There were concerns about safety and effectiveness of some modern FP methods. Misconceptions on effects of FP like sterility, cancers and foetal abnormalities were common.

**Conclusion** FP awareness among people living in FCs of L. Victoria in Uganda is high. However, good knowledge about specific methods tends to be low. Correlates of knowledge of FP include gender, residence, marital status and sexual engagement.

## Background

Family planning (FP) is a public health intervention which is essential in control of population growth among other things[1]. Despite this, Uganda is among the forty most populous countries in the world and among the top ten in Africa as per the 2014 United Nations estimates[2]. With a total fertility rate of 5.4 births per woman of reproductive age[3], the total population of Uganda is likely to double in a few years. Due to lack of adequate knowledge of family planning, some Ugandan women start bearing children at an early age and continue giving birth until late ages leading to a high fertility rate[4]. This poses challenges for safe motherhood and child survival as well as other development programmes aimed at improving the quality of life of the population at large.

Contraception helps families achieve their desired number of children and is instrumental in child spacing[5]. However, the number of children a couple may have and their child spacing interval tend to be influenced by their knowledge and eventual use of contraception[6,7]. Due to their lack of knowledge of contraception and other reproductive services, teenage pregnancies in Uganda are on the rise exposing teenagers to pregnancy-related health risks such as unsafe abortions, high infant and maternal mortality rates[8]. Teenagers have also been reported to have high HIV infection rates leading to increase in mother to child transmission of HIV[9,10]. To reduce the spread of HIV/AIDS among all reproductive women, there is need for integration of HIV prevention within contraceptive services for African women [11]. Integration of FP and other health services offers women who may be stigmatized the opportunity to access many services in one location. This has been observed in Madagascar to increase FP uptake while reducing associated stigma [12]. Integration however, can only be maximized if the users have adequate knowledge of the services.

To ensure good health and wellbeing for people with or without HIV especially in subpopulations with high HIV infection rates, a good contraceptive prevalence rate is required [6]. We note however, that the contraceptive prevalence rate of Uganda is one of the lowest in sub-Saharan Africa[13]. It is only slightly higher than that of Tanzania and is much lower than that of other East African countries like Rwanda and Kenya[14,15]. We are also cognisant of the fact that there are social, structural and economic barriers in FP service coverage that still exist in Uganda and other East African countries which tend to be worse in some sub-populations[16].

Knowledge of FP is one of the social factors that has been associated with contraceptive use in different settings[17,18]. It has been observed that knowledge of FP varies across regions in Uganda and it is unknown for some sub-populations[19]. To improve the contraceptive prevalence rate and achieve Uganda's reproductive health targets, all the gaps that may hinder universal access of FP such as poor, inaccurate and inadequate knowledge ought to be bridged.

People living in fishing communities (FCs) in Uganda make a great contribution to food security, foreign exchange & local government revenue and they contribute close to 30% of the country's gross domestic product[20]. Nevertheless, due to the geographical locations of FCs, the residents have limited reproductive health and other social services and the FCs are densely populated [21–23]. Moreover, these FCs, are predominantly occupied with people of low levels of education, have a large presence of commercial sex workers, high rates of transactional sex (i.e. sex for money, fish, or other goods) and elevated levels of alcohol consumption[24–26]. The knowledge people living in FCs in Uganda have of FP and its correlates are scantily known yet their contraceptive use has been reported to be low[27,28]. Because of their life styles, there remains a need to improve their fertility support services in order to increase their contraceptive use. In 2011 a project called HoPE-LVB, was implemented by Pathfinder International and local partners among Ugandan Lake Victoria FCs using a Population, Health and Environment approach[29]. The project recommended that FP initiatives in rural sub-Saharan Africa should operate in more context-specific ways to reduce inequities. It might be worthwhile to ensure good and adequate knowledge of FP among people in FCs if use is to be optimized as has been reported by

some studies[30–32]. This study established knowledge of FP and its correlates among people living in FCs of Lake Victoria in Uganda. It also explored attitudes, perceptions and reasons that influence contraceptive method preferences with the aim of informing future FP education programs for these communities

## Methods

### Study population and setting

The study targeted a community wide resident population from Kigungu (mainland) and Nsazi (island) FCs. These two communities were selected from the 8 FCs of the Fisher Folk Community Cohort (FFC) of the Uganda Virus Research Institute-International AIDS vaccine Initiative at Entebbe[33]. They were purposively selected because they were the largest among the 8 communities of the FFC but also because they are among the large communities of the Lake Victoria basin.

Kigungu is a landing site along the shores of Lake Victoria, approximately 45 minutes from Entebbe, which is a major town where the international airport is located. It is a rural community with a population of approximately 30,000 people. Many residents live in non-permanent housing structures made of wood. Kigungu has one government health centre III facility and a few private clinics where people access medical services. Health centre III services include a maternity ward and outpatient services, including free HIV counselling and testing. They also offer male condoms, pills and Injextaplan<sup>®</sup>/ Depo-Provera<sup>®</sup> for FP. Community based non-governmental organizations provide sporadic HIV prevention and FP outreach services. They offer some medical services that include information dissemination, treatment of minor illnesses, condom distribution, pills, Depo-Provera<sup>®</sup>, implant and IUD insertions. They make referrals to healthcare facilities for more comprehensive services. Less frequently, mobile HIV counselling and testing, reproductive health services and male circumcision services are offered in the community during health facility outreaches from non-governmental organizations. Most of the characteristics of Kigungu described are similar to the context of other mainland FCs in Uganda, including its rural setting and distance from health care services[23,34], its highly mobile population[35–37], and the presence of alcohol establishments and commercial sex workers [38] with an average number of 7 children per woman/household[21].

Nsazi Island lies on 7 square miles of land and is one of the Islands on Lake Victoria with a total population that oscillates between 5000-8000 due to fish seasonality. There is a lot of business and trade for the men and transactions are often done in cash, spending on alcohol selling and commercial sex which is common[21,33]. Other common occupations include food vending, bar waiting and commercial sex in a less-formal manner as restaurant maids or assistants in brothels. A few residents are involved in livestock rearing and farming at a subsistence level. Given the remoteness of this fishing community, access to health services is limited to a government health Centre II and private clinics usually manned by unqualified personnel.

## **Study design**

We conducted a comparative cross-sectional survey between February and November 2017 in the two study villages.

### **Selection of participants in the cross-sectional survey**

The sample size for the study was obtained using a household list with 1786 households that had been previously generated during mapping and census of the FCs[33]. A total of 1452 eligible households were selected from this list which constituted the sampling frame. It is from the 1452 households that we got individuals who were interviewed for baseline knowledge assessment. Either the man or woman in the eligible household was a potential participant. If both the woman and man were eligible, they would agree on who should be interviewed. Participants aged 15 to 49 years, willing to participate and who were resident in these communities for at least 6 months at the time the study were eligible to participate. Those who were not willing to consent for the study or those who were not available for the study duration were excluded. A total of 1410 participants were assessed for knowledge of FP.

### **Methods of data collection.**

#### **Cross-sectional survey**

Prior to commencement of the study, the study team were trained on the study and how to use the data collection tools. Pretesting of the questionnaires was conducted to check the suitability of various aspects of the questionnaires such as the translation, skip actions and clarifying questions. Modifications were done prior to the actual data collection. The study was then presented to community leaders and thereafter to other members in both communities by the research team. Participants were invited to study clinics based in their communities where more study information was provided and study procedures conducted. Written informed consent was obtained from each participant prior to conducting any study related procedures. Data were collected by a well-trained and experienced team of 5 interviewers. Data were collected on social demographic characteristics, FP methods and other reproductive health aspects using anonymized semi-structured questionnaires. Participants were asked if they had heard of or knew any FP method. Those who knew of at least one FP method were then asked to list, unprompted, which methods they knew. Those who reported knowledge of at least one FP method were asked a series of questions about those FP methods that they knew and their side effects. They were also asked to mention any sources of family planning information that they knew. Participants were asked what they perceived as the ideal number of children for a couple and the ideal birth spacing interval.

#### **Measures**

Our outcome of interest was good knowledge of FP. All participants who responded in the affirmative when they were asked if they were aware of any FP method were reported as being aware of FP. Knowledge level was assessed through a series of questions on different FP methods and their side

effects. The following methods constituted questions on knowledge assessment; pills, injectable hormonal methods, implants, emergency contraceptive pills, intra-uterine device, vasectomy, tubal ligation, condoms, spermicides, diaphragm, withdraw, breast feeding (lactation amenorrhea), calendar, moon beads, periodic abstinence, foam/jelly, herbs and dermal patch. Knowledge level was categorized into good or poor knowledge based on the mean total score. Poor knowledge constituted a score below the mean while good knowledge constituted a score of more than or equal to the mean total score. The perceived ideal number of children was recorded as  $\leq 4$  for those who said their ideal number was 4 or fewer children or  $> 4$  for those who said their ideal number was more than 4 children. The perceived ideal birth spacing interval was recorded as  $< 2$  for those who said their ideal birth spacing interval was fewer than 2 years or  $\geq 2$  for those who said their ideal birth spacing interval was 2 or more years.

### **Qualitative data collection**

We explored general FP understanding, attitudes and perceptions of FP and preferred FP methods through ten in-depth interviews (IDIs) and four focus group discussions (FGDs) which were stratified by age and sex. The interviews and discussions were conducted using study guides. The study guides included semi-structured, open and close-ended questions aimed at getting information about participants' knowledge of FP, sociocultural beliefs and practices, perceptions of and attitudes to FP use. Reasons that influenced preference, and choices for methods were elicited. The FGDs and IDIs were conducted until saturation was reached by experienced facilitators in either English or Luganda. Saturation was determined when participants in the FGD or an IDI participant had no further questions to ask and opinions or comments to make when all topics on the study guides had been addressed. Two research assistants who were fluent in both English and Luganda took detailed notes during discussions and interviews. The discussions and interviews were also audio recorded. Data were transcribed verbatim in English. The discussions and interviews were conducted in a private environment while transcripts did not bear participant names so as to maintain confidentiality. Final transcripts were stored securely on password-protected laptops and external drives.

### **Selection of participants in the qualitative component**

FGD and IDI participants were selected based on their professions, perceived knowledge of the subject matter by community members and their roles in the study communities. Purposive sampling was used to recruit as varied a sample as possible in order to gather a wide range of responses. The FGDs were conducted in different age categories and gender (there was one female and one male FGD of those aged 15-17 years, one FGD of males aged 25-49 years and one FGD of females aged 25-49 years). The FGDs included 8-11 participants per session. The IDIs included local leaders, health, religious or youth representatives who were recommended by community gate keepers who were political, social and cultural heads in these communities. To identify participants, we worked in collaboration with a resident community mobilizer and the Beach Management Unit (BMU) at the landing site. The BMU is an elected organized group of local leaders at any fishing community that represents the interests of the community.

### **Data management and analysis**

With regard to quantitative data, data generated from questionnaires were coded and edited before entry into Microsoft Access. Data were reviewed for completeness and accuracy before analysis was done.

Data were double entered in Microsoft Access, cleaned, and exported to STATA 15.0 (StataCorp, College Station, TX, USA) for analysis. We resolved discrepancies by checking the source documents for clarification. We obtained frequencies and percentages of demographic data stratified by village of residence. We used logistic regression to determine factors associated with good knowledge of FP. At unadjusted analysis, factors for which the association attained statistical significance on log likelihood ratio test (LRT) of  $p < 0.10$  were selected for the multivariable logistic regression model. Factors were retained in the final multivariable logistic regression model if their inclusion did not make the fit of the model significantly worse at the 5% level on a likelihood ratio test (LRT). Models were adjusted to eliminate potential confounders in reference from findings of other FP studies[17,30,39,40].

With regard to qualitative data, the primary author read all transcripts and field notes. She listed key statements, ideas, opinions and attitudes expressed which were reflecting the original domains of the interview guide. This helped to identify emerging themes from the data. A preliminary set of sub-themes based on repetitive patterns were identified. A coding framework or schedule was developed based on priori themes in the interview guide. The coding was discussed and verified by the first, second and last author. Data from each transcript were coded by the first author and was further examined by the second and last author who discussed in detail areas of consensus and disagreements. Data were analysed using a thematic approach[41], with support of NVivo-12 qualitative software.

## Results

### Socio-demographic profile of participants in the survey

A total of 1,410 individuals participated in the study, majority (1143; 81%) of whom were from Kigungu (Table 1). More than two thirds (911; 65%) of the participants were aged 15-29 years. Slightly more than a third (514; 36%) were engaging in fishing or a fishing related activity. Most (590; 42%) of them were Catholics while half (706; 50%) of them had attained only up to primary level of education with very few (106; 8 %) in both villages reaching the tertiary education level. Most (1,043; 74%) of the participants had stayed in the community for more than twelve months. Majority (1,157; 82%) of the participants reported being in a sexual relationship even though just over a half (810; 58%) of the participants were married. In both villages, those who reported having multiple sexual partners in the past 12 months were fewer (534; 38%) than those who reported not having multiple sexual partners (876; 62%) in the past 12 months. Nearly all participants said the ideal number of children for a couple was four or fewer children (1134; 80%) and the ideal spacing interval was 2 or more years (136; 97%).

**Table 1: Socio-demographic profile of participants in the cross sectional survey stratified by village**



<b>Characteristic</b>	<b>Total (N=1410) n (col %)</b>	<b>Kigungu (n=1143) n (col %)</b>	<b>Nsazi (n=267) n(col%)</b>	<b>Chi- Square P-value</b>
Mean Age(SD)	27.5(7.2)	27.1(7.1)	29.1(7.4)	<0.001
Median Age(IQR)	26(22-32)	25(21-32)	28(23-34)	<0.001
<b>Age group (Years)</b>				<b>0.011</b>
15-29	911(65)	759(66)	152(57)	
30-39	397(28)	308(27)	89(33)	
40+	102(7)	76(7)	26(10)	
<b>Tribe</b>				<b>0.111</b>
Muganda	631(45)	512(45)	119(44)	
Munyankole	129(9)	114(10)	15(6)	
Musoga	96(7)	71(6)	25(9)	
Mukiga	31(2)	24(2)	7(3)	
Munyarwanda	123(9)	103(9)	20(8)	
Other▲	400(28)	319(28)	81(30)	
<b>Occupation</b>				<b>&lt;0.001</b>
Farming	33(2)	28(2)	5(2)	
Fishing/Fishing related	514(36)	380(33)	134(50)	
Trade/business	275(20)	234(20)	41(15)	
House wife	124(9)	92(8)	32(12)	
Otherβ	464(33)	409(36)	55(21)	
<b>Religion</b>				<b>0.001</b>
Catholic	590(42)	478(42)	112(42)	
Protestant/Anglican	339(24)	265(23)	74(27)	
Muslim	238(17)	182(16)	56(21)	
Other*	243(17)	218(19)	25(9)	
<b>Highest Education level</b>				<b>0.001</b>
No formal education	82(6)	70(6)	12(6)	
Primary level	706(50)	554(48)	152(57)	
Secondary level	516(37)	419(37)	97(36)	
Tertiary level	106(8)	100(9)	6(2)	
<b>Sex</b>				<b>0.057</b>

Characteristic	Total (N=1410) n (col %)	Kigungu (n=1143) n (col %)	Nsazi (n=267) n(col%)	Chi-Square P-value
Male	697(49)	579(51)	118(44)	
Female	713(51)	564(49)	149(56)	
<b>Marital status</b>				<0.001
Single/ Never Married	343(15.7)	301(26.3)	42(15.7)	
Not married	810(57.5)	652(57.0)	158(59.2)	
Divorced/Separated/Widowed	257(18.2)	190(16.6)	67(25.1)	
<b>Duration of stay</b>				<0.001
Months	367(26)	266(23)	101(38)	
Years	1043(74)	877(77)	166(62)	
<b>Are you currently in a sexual relationship?</b>				0.008
Yes	1157(82)	923(81)	234(88)	
No	253(18)	220(19)	33(12)	
<b>Having multiple sexual partners in past 12 months</b>				0.026
No(< 2 partners)	876(62)	726(64)	150(56)	
Yes( $\geq$ 2 partners)	534(38)	417(36)	117(44)	
<b>Ideal Number of children for a couple</b>				0.007
Said $\leq$ 4 Children	1134(80)	935(82)	199(75)	
Said >4 Children	276(20)	208(18)	68(25)	
<b>Ideal birth spacing interval</b>				0.284
Said < 2 years	48(3)	41(4)	7(3)	
Said $\geq$ 2 years	1362(97)	1102(96)	260(97)	

▲ (Mugisu, Itesot, Non-Ugandan), β (Sex worker, Teacher, Security personnel and others), \* (Pentecostal/ Born again, Traditional African, No religion)

### Knowledge of family planning methods

Almost all (1,333; 94.5%) the participants were aware or knew at least one FP method (Table 2). Pills (1027; 77%), injectable hormonal methods (1004; 75%), implants (776; 58%) condoms (607; 52%) and IUDs (636; 48%) were the most commonly known methods in both villages. Knowledge of specific methods tended to be slightly higher among participants in Kigungu than those in Nsazi. Knowledge of permanent methods (vasectomy and bilateral tubal ligation) was low in both villages and it ranged between 3.2% and 9.6%. Knowledge of natural or traditional methods (periodic abstinence, calendar,

breast-feeding rhythm/withdrawal, moon beads) was also low in both villages ranging between 0.4% and 13.8%. Some methods such as emergency pills and spermicides were not known in Nsazi.

**Table 2: Knowledge of family planning methods**

Methods	Number (N=1410)	Kigungu (N=1143)	Nsazi(N=267)
Knowledge of any FP method	1,333 (94.5%)	1086 (95%)	247 (92.5%)
<b>Knowledge of specific methods*</b>	<b>Number (N=1333)</b>	<b>Number (N=1086)</b>	<b>Number (N=247)</b>
	<b>(n, %)</b>	<b>(n, %)</b>	<b>(n, %)</b>
Pills	1027(77.0)	843 (77.6)	184(74.5)
Injectable hormonal methods	1004(75.3)	812 (74.8)	192(77.7)
Implants	776(58.2)	621(57.1)	155(62.8)
Condoms	697(52.3)	623(57.4)	74(30)
IUD	636(47.7)	503(46.3)	133(53.8)
Rhythm	155(11.6)	150(13.8)	5(2)
Vasectomy	112(8.4)	104(9.6)	8(3.2)
Tubal Ligation	97(7.3)	89(8.2)	8(3.2)
Periodic Abstinence	78(5.9)	74(6.8)	4(1.6)
Calendar	54(4.1)	52(4.8)	2(0.8)
Breast feeding/LAM	40(3.0)	39(3.6)	1(0.4)
Emergency Pill	34(2.6)	34(3.1)	0(0)
Spermicide	31(2.3)	31(2.9)	0(0)
Herbs	28(2.1)	24(2.2)	4(1.6)
Moon beads	22(1.7)	18(1.7)	4(1.6)
Diaphragm	5(0.4)	4(0.4)	1(0.4)
Foam	3(0.2)	3(0.3)	0(0)
other	1(0.1)	1(0.1)	0(0)
<b>*Knowledge of each method was assessed independently out of 100%</b>			

### Family planning knowledge classification

When participants who knew at least one FP method were further assessed on knowledge of FP methods and their side effects, their mean total score was 11 (17%). Of the 1,333 participants who knew at least one FP method, slightly above a third (502; 38%) had good knowledge on FP methods and their side effects. Majority (205; 83%) of the participants in Nsazi had poor knowledge (Figure 1).

### Correlates of knowledge of FP in FCs

At unadjusted analysis, statistically significant correlates of good knowledge of FP included; sex, type of employment, level of education, village of residence, marital status, duration of stay in the village and currently being in a sexual relationship. After adjustment, factors that remained statistically significantly associated with good knowledge of FP were sex, village of residence, marital status and currently being in a sexual relationship. Good knowledge of FP was significantly higher among females than males (aOR: 1.92 95% CI: 1.39-2.67). It was also significantly higher among residents of Kigungu than Nsazi (aOR: 4.01 95% CI: 2.77-5.81), among those who were married compared to those who were single (Never

married) (aOR: 1.59 95% CI: 1.11-2.28) and among those currently in a sexual relationship compared to those who were not (aOR: 1.75 95% CI: 1.18-2.60).

**Table 3: Correlates of Knowledge of Family planning in fishing communities of L. Victoria, Uganda**

Characteristic	Total (N=1333) n (col %)	Good knowledge (N=502) n (col %)	uOR 95%CI p- value	aOR 95%CI	P- value
<b>Age group (Years)</b>					
15-29	861(64.6)	329(65.5)	Ref		
30-39	380(28.5)	145(28.9)	0.99(0.79-1.28)	1.04(0.79-1.39)	0.766
40+	92(6.9)	28(5.6)	0.71(0.44-1.13)	0.83(0.50-1.38)	0.467
<b>Sex</b>					
Male	633(47.5)	198(39.4)	Ref		
Female	700(52.5)	304(60.6)	1.69(1.35-2.11)	1.92(1.39-2.67)	<0.001
<b>Tribe</b>					
Muganda	603(45.2)	229(45.6)	Ref		
Munyankole	121(9.1)	46(9.2)	1.0(0.67-1.50)		
Musoga	91(7.0)	42(8.4)	1.40(0.89-2.18)		
Mukiga	29(2.2)	13(2.6)	1.33(0.64-2.81)		
Munyarwanda	116(8.7)	38(7.6)	0.80(0.52-1.21)		
Other▲	373(28.0)	134(26.7)	0.92(0.70-1.20)		
<b>Occupation</b>					
Farming	34(2.6)	12(2.4)	Ref		
Fishing/Fishing related	471(35.3)	147(29.3)	0.83(0.40-1.73)	1.06(0.49-2.30)	0.875
Trade/business	435(32.6)	179(35.7)	1.28(0.62-2.66)	1.09(0.50-2.35)	0.83
House wife	123(9.2)	45(9.0)	1.06(0.48-2.34)	0.64(0.27-1.50)	0.306
Otherβ	270(20.3)	119(23.7)	1.44(0.69-3.04)	1.28(0.58-2.79)	0.542
<b>Highest Education level</b>					
No formal education	80(6.0)	27(5.4)	Ref		
Primary level	652(48.9)	231(46.0)	1.08(0.66-1.76)	1.20(0.72-2.00)	0.488
Secondary level	498(37.4)	210(41.8)	1.43(0.87-2.35)	1.63(0.96-2.77)	0.071
Tertiary level	103(7.7)	34(6.8)	0.97(0.52-1.80)	1.12(0.57-2.22)	0.725
<b>Religion</b>					
Catholic	560(42.0)	202(40.2)	Ref		
Protestant/Anglican	324(24.3)	126(25.1)	1.13(0.85-1.50)		
Muslim	217(16.3)	89(17.7)	1.23(0.89-1.70)		
Other*	232(17.4)	85(16.9)	1.02(0.75-1.41)		
<b>Residence</b>					
Nsazi	267(20)	42(8.4)	Ref		<0.001
Kigungu	1143(85.7)	460(91.6)	3.89(2.52-5.11)	4.01(2.77-5.81)	
<b>Marital status</b>					
Single(Never Married)	311(23.0)	92(18.3)	Ref		

Characteristic	Total (N=1333) n (col %)	Good knowledge (N=502) n (col %)	uOR 95%CI  p- value	aOR 95%CI	P- value
Married	777(58.3)	327(65.1)	1.73(1.30-2.29)	1.59(1.11-2.28)	<0.001
Divorced/Separated/Widowed	245(18.4)	83(16.5)	1.22(0.85-1.75)	1.37(0.90-2.08)	0.141
<b>Duration of stay</b>					0.009
< 12 Months	343(25.7)	109(21.7)	Ref		
≥ 12 Months	990(74.3)	393(78.3)	1.41(1.09(1.83)	1.27(0.96-1.68)	0.096
<b>Are you currently in a sexual relationship?</b>					<0.001
No	1105(82.9)	60(11.9)	Ref		
Yes	228(17.1)	442(88.1)	1.87(1.36-2.57)	1.75(1.18-2.60)	0.005
<b>Having multiple sexual partners in past 12 months</b>					0.062
No(< 2 partners)	834(62.6)	330(65.7)	Ref		
Yes(≥ 2 partners)	499(37.4)	172(34.3)	0.80(0.64-1.01)	1.00(0.76-1.32)	0.98
<b>Ideal number of children</b>					0.436
Said ≤4 Children	1077(80.8)	411(81.9)	Ref		
Said >4 Children	256(19.2)	91(18.1)	0.89(0.67-1.19)		

▲ (Mugisu, Itesot, Non-Ugandan), β (Sex worker, Teacher, Security personnel and others), \* (Pentecostal/ Born again, Traditional African, No religion) (uOR: Unadjusted odds ratio, aOR: Adjusted odds ratio; CI: Confidence Interval)

### Sources of family planning information

When participants were asked to mention the sources of FP information that they knew existed in their village, nearly all (1212; 91.1%) indicated governmental hospitals, more than half (870; 65.3%) mentioned private hospitals or clinics while less than a third (336; 25.2%) mentioned non-governmental organizations (NGOs). Only a few in both villages mentioned Traditional Birth Attendants (TBAs) as sources of FP information. Kigungu (44; 4.1%), Nsazi (3; 1.2%) respectively (Table 4). Other sources included; pharmacy or drug shops, family planning clinics, drug or medicine vendors, ordinary retail shops and friends among others.

**Table 4: Sources of family planning information known\***

Source	Total (N=1333) (n, %)	Kigungu (N=1086) (n, %)	Nsazi (N=247) (n, %)
Government hospital	1215(91.1)	1009(92.9)	206(83.4)
Private hospital/clinic	870(65.3)	727(66.9)	143(57.9)
Non-governmental Organizations(NGOs)	336(25.2)	301(27.7)	35(14.2)
Pharmacy/drug shop	140(10.5)	131(12.1)	9(3.6)
Family planning clinics	131(9.8)	115(10.6)	16(6.5)
Drug/Medicine vendors	54(4.1)	53(4.9)	1(0.4)
Ordinary shop	48(3.6)	39(8.3)	9(3.6)
Traditional Birth Attendants(TBAs)	47(3.5)	44(4.1)	3(1.2)
Others	32(2.4)	32(2.9)	0(0)
<b>*Each source was assessed independently out of 100%</b>			

### Findings from the qualitative aspect of the study

Each FGD comprised of 8-11 members. IDIs were conducted with significant members of the community including; a community advisory board member, religious leader, political/ local council leader, commercial sex worker, TBA, Village Health Team member (VHT) and some other recognized community leaders. The FGDs and IDIs comprised of 47 participants (Table 5). FGDs lasted between 65-103 minutes while the IDIs lasted between 37-75 minutes. We identified four themes relevant to knowledge of FP which included: 1) General community understanding and awareness of FP, 2) Beliefs and Attitudes towards FP, 3) Known sources of information on FP with their related challenges and 4) perceived reasons for or choices of preferred methods.

**Table 5: Description of FGD and IDI participants**

	FGD Description	Number in Group	Duration in Minutes	Fishing Community
1.	Females	11	90	Nsazi
	Aged 25-49 years			
2.	Males	8	103	Kigungu
	Aged 25-49years			
3.	Females	9	65	Kigungu
	Aged 15-17years			
4.	Males	9	85	Nsazi
	Aged 15-17years			
	IDI Description			
1.	Community Advisory Board Member		37	Kigungu
2.	Religious leader		56	Kigungu
3.	Political/Local Council leader		61	Nsazi
4.	Medical Personnel		70	Kigungu
5.	Representative from High risk group(Fisherman)		63	Nsazi
6.	Traditional Birth Attendant		45	Nsazi
7.	Female Peer leader aged 25 years		72	Kigungu
8.	Female Sex worker aged 17 years		50	Nsazi
9.	Male Peer leader aged 27 years		75	Kigungu
10.	Male Youth leader aged 19 years		55	Nsazi

## General community understanding and awareness of FP

The first theme which emerged revealed that the community members generally understood the concept of FP and that they were all aware of at least one FP method. The Methods that were mentioned included pills, injectable methods such as Depo-Provera<sup>®</sup> or injectaplan<sup>®</sup>, condoms, implants, intra-uterine device, vasectomy, bilateral tubal ligation, withdrawal, calendar method, breast feeding and abstinence. Although the awareness of FP methods was high, participants didn't seem to know much about how and for how long most methods work. While some appreciated that FP was for both limiting the number of births and allowing a good spacing interval between births, there were others who thought FP may affect future fertility or even induce permanent sterility. A respondent in an in-depth interview said, "*The understanding of family planning in this community is that it is used to completely stop one from getting children and yet it should really be for spacing births. Majority think that when you use family planning you stop giving birth because your eggs get damaged.*"(Female, 48 years)

Like what was observed in the survey, most of the community members were mostly aware of modern FP methods like pills, injectable hormonal methods, implants, intra-uterine devices and condoms. There were participants who knew about both modern and natural or traditional methods of FP. They however mentioned the complexity of using the natural or traditional methods which they said were not reliable.



Many of the participants knew that condoms can prevent both pregnancy and sexually transmitted infections (STIs) and commented that condoms were popular. They however said that using condoms consistently was difficult especially for the men who think that condoms reduce sexual satisfaction. A few thought that condoms are the only FP method for men. There are others who said condoms were difficult to use in a married setting resulting in mistrust and misunderstandings in the home. Some expressed concerns about limited knowledge on condom use among the youth saying that the youth may be stigmatised and shy away from getting the required FP knowledge before engaging in sexual activities.

Some participants didn't know about the female condom and the few who knew about it neither knew how it works nor where it can be accessed if one wanted to use it.

Some of the knowledge community members had about FP was inaccurate. Although many have heard about injectable methods for females, there are those who said that they heard that men too have injectable hormonal methods of FP. Some said that vasectomy can make a man fail to get an erection or release sexual fluids.

Like the female condom, some modern FP methods were either not known or not mentioned at all by the focus group or interview participants such as the diaphragm, spermicides, dermal patch and others. Some participants mentioned ineffective methods such as use of herbs and remains of an umbilical cord to prevent conception. One IDI participant who is a TBA said, *"...I also know some herbs that one can use if they don't want to use those other family planning methods I have listed"*. (Female, 48 years) The use of herbs was attributed to low levels of education by some participants who doubted their effectiveness. The use of remains of an umbilical cord was cited by some as a medically unproven FP method.

## **Beliefs and Attitudes towards FP**

It was noted that people had divergent beliefs and attitudes towards FP. Although some were supportive of FP, negative and incorrect beliefs still exist concerning effects of FP on women's reproductive health and health in general. We observed that some participants believed that FP can lead to sterility, cancer of the uterus, abnormal uterine masses and foetal abnormalities or disability. A participant from a focus group of males aged 16-17 years said, *"people fear to use a coil [IUD] because they think it can cause cancer or lead to barrenness"*. Because the menstrual cycle changes in some women who are using FP, some participants believe that women who miss their periods, a side effect to some methods of FP, end up getting uterine masses.

Side effects of some FP methods were pointed out such as weight gain or loss, menstrual irregularities or excessive prolonged bleeding, loss of sexual desire and reduced vaginal secretions. Some said that prolonged bleeding, loss of sexual desire and reduced vaginal secretions interfere with sexual activities which later result into family disputes. A participant in a focus group of males aged 15-17 years said, *"Family planning is a long term issue which requires one to decide on what to do during the long periods of 'no sex' depending on the methods of choice used; some family planning methods make women lose*

*their sexual desire. Some men cannot do without sex for a long time and that creates problems in the family.*" There are still some who report that some FP methods cause congenital abnormalities or abnormal features in those children born to mothers using FP. Some do not trust information on FP because they think health workers promote FP for monetary gains.

Most of the participants think that FP should be used by women and youth. They attribute this to the shift in gender roles where women in FCs bear the burden of fending for the homes and children. The youth are thought to have very little information on FP and yet they are reported to be mobile and promiscuous. A participant in an in-depth interview said, *"The men here tend to have many women. So if you get many children, you as the woman will suffer because you will bear the burden of feeding them, treating them and taking them to school. Our husbands these days neglect their roles of being heads of families. The women do everything. Because women are left to do everything, they end up engaging in other sexual relationships to get money."* (Female, 40 years)

Another participant said, *"Women are the ones who should use family planning because women these days have responsibilities like looking for food to feed the children, taking the children for treatment when they fall sick, buying clothes and paying school fees"*. (Female, 17 years) Others said that because of their vulnerability FP should be a woman's responsibility.

There are some community members who believed that FP was for educated people and yet they thought there were few educated people in FCs.

Men's awareness of FP was thought to be low compared to that of the women and some report shame in attending FP sessions. One participant in an in-depth interview said, *"It is only a small number of men who have attended family planning sensitisation meetings. The men feel ashamed to go with their wives to family planning sessions, they know it is a 'woman's thing'. Because of this, most of the men do not know much about family planning issues."* (Male, 45 years)

It was observed that both men's attitudes and their work schedules may hinder them from attending sensitization meetings. Health education campaigns to improve beliefs and attitudes of men towards FP are needed[42].

### **Known sources of information on FP and related challenges**

Community members get information on FP from various sources, some of which are formal and trusted while others are informal and doubted. The formal sources of information on FP include; health facilities (both governmental and non-governmental), private clinics and media (print, audio and visual). Some of the informal sources include places of worship (churches and mosques), peers, schools, health outreach sessions and village meetings. Regarding sensitization by health workers, the issue of language barrier was one that was mentioned as a challenge to awareness. Because FCs attract job-seekers from across Uganda, there are those who are disadvantaged when they go to health centres where the staff only know English and the village's local language.

A new trend of using social media as a source of FP knowledge was cited although it was thought to be limited to those with smart phones and computers with internet. One participant from a focus group of males aged 15-17 years said, *"...only updated youth get information about family planning from social media. The reason is not many people are educated enough to use social media or afford it but a few are there"*.

Traditional "Aunties" were also known to provide information on FP even though they were thought to lack formal training. In the Ugandan context, a traditional "Auntie" is a woman (usually advanced in age) who counsels other women on family issues and is entrusted by community members to do so based on her past experience.

VHTs were noted to be another source of information, especially to those who are unable to access health centres due to long distances or stigma. These VHTs, however, were often reported as insufficient sources of FP information. They refer those who require information on long term or permanent methods to big health centres.

### **Perceived reasons for preferred methods.**

In these communities, different factors were reported to inform FP method choice. Some members said that some health facilities or clinics sell specific FP methods and attendees get these methods if they can afford them. A participant from a focus group of female participants aged 15-17 years said, *"If you go to the government health centres, it's assumed that the medicines or services are free, but at times the health workers demand for some money before the services are provided. So if you have no money, you are denied the service"*.

Others attributed choice of methods to their availability, known side effects of the methods, health worker skills and behaviour, invasiveness of the methods and preference of spouse. A participant from a focus group of female participants aged 15-17 years said, *"Some preferred family planning methods are not readily available at the health centres, and usually the health centres stock methods known to be demanded by most clients, who use the services. A client may want a tubal ligation but health centres cannot do it. They end up referring the client who may not even go where they are referred because they don't have money for transport."*

## **Discussion**

This study assessed correlates of knowledge of FP among people living in FCs of L. Victoria in Uganda. In this study, we note that in both villages, most of the residents were aged 15-29 years and that most of them had attained only up to primary education level. These being fishing communities, many were engaged in fishing or fishing related activities. We also found that many of them were engaged in sexual relationships. This demographic profile is similar with those from previous studies conducted in the same population[21,27,34]. Knowledge of family planning becomes very crucial in a population that is characterized as young with low literacy levels and high sexual activity.

Just like it has been observed elsewhere in the country and in the East African region, we found that nearly all the participants were aware of the concept of FP and that they knew at least one FP method[19,43–45]. As countries aim to achieve good health for all, there are global and national efforts to improve knowledge of FP in order to optimise its use. Uganda through the Ministry of Health has supported many sexual and reproductive health campaigns across the country which explains the high awareness of FP[46]. There are also other initiatives that have committed to improvement of FP uptake through creating awareness of FP benefits across the country which also contribute to the high levels of awareness on FP in the FCs[47].

Despite a high awareness of FP, good knowledge of FP was variable and tended to be low. It is crucial for such a population to know how FP methods work, what their actual adverse effects are and to what extent these adverse effects impact health. Misconceptions on effects of FP like inducement of sterility, cancers and foetal abnormalities were common. Accurate and adequate knowledge on the adverse effects of FP can dispel myths and misconceptions about FP and improve its uptake[4,48]. Use of simple reading materials with information on various FP methods, could help people in FCs to easily make an informed choice when they decide to use FP.

Because of the high infection rates of HIV and other STIs in these communities[49–51], condom use is important for more than just FP. While the male condom was among FP methods that were popularly known, participants only had scanty knowledge about the female condom. Findings also showed that participants lacked knowledge on how the female condom works. To some, it was a new method that they first heard about in the group discussions. If women in FCs are equipped with knowledge on how to use the female condoms and other female specific FP methods, they would be more empowered to manage and control their fertility. Accurate knowledge on the female condom and other female specific FP methods will enable them leverage their choices and actions.

There are misconceptions regarding effectiveness of FP methods that were observed in our study. Some participants think that herbs and remains of an umbilical cord are effective FP methods. This is contrary to what has been found in another study on FP knowledge in Uganda[30]. A systematic review evaluating contraceptive education interventions showed that a range of educational interventions can increase knowledge[52]. People in these FCs may require continuous FP training to equip them with additional knowledge and help dispel some of these misconceptions.

In our study, we observed that participants residing in Kigungu were more likely to have good knowledge of FP compared to those residing in Nsazi. This could be explained by the fact that Kigungu and other mainland communities can easily access health services including FP education services from the general population which may be difficult for participants on Island communities. The mainland communities also tend to have better health services as compared to Island communities.

Being married and current sexual engagement were associated with good knowledge of FP. It is presumed that married people get access to FP information when they go for antenatal care during pregnancy and child birth. It is also likely that those engaging in sexual activity seek for FP information because they

want to prevent unintended pregnancies which might explain these findings. Therefore, since most of the participants were found to be engaging in sexual relationships, it may be worthwhile to improve knowledge of FP for everyone including those who are single or never married.

Although some scholars have noted that literacy may impact knowledge of FP in more literate populations[39,53], our findings didn't really show that education level was a correlate of knowledge of FP. Nevertheless, majority of the participants have a low education status which has been evidenced from other studies in the same population[25,54]. It might be worthwhile to design FP sensitization materials that are easy to understand by the majority. We envisage that visual aids may be useful in enhancing understanding.

We observed that the female gender was statistically significantly associated with good knowledge of FP. Qualitative data also revealed that men in FCs tend to have no interest in FP issues and their knowledge about FP is low perhaps indicating that FP programs are experiencing challenges with targeting men. This is similar to what was observed in another study that explored contraceptive knowledge, perceptions and concerns among men in Uganda[30]. It could also be explained by the fact that females get more sensitization on FP when they go for antenatal care visits during pregnancy.

In another study by Tilahun et.al., it was shown that some men tend to dominate when it comes to deciding on family matters and yet they are reluctant to get information about FP[55]. The lifestyle of most men in FCs is such that majority have multiple sexual partners and have ready access to money from fish sells. They establish homes when they move from one fishing community to another in search for fish. Also culturally, African men tend to desire to have many children as has been observed in our study and in other studies on FP[5] because many children are associated with prestige, masculinity and respect in society[4]. All these make them prone to engaging in sexual relations which sometimes result into unwanted pregnancies. Having good knowledge about FP and knowing when and how to use it is very crucial for all men including those in FCs hence making men an important target group for education campaigns on FP[42].

There is a belief that FP is only for the educated which is contrary to what has been reported in other studies on FP where FP is known to be for all regardless of one's education status[30,56]. If some people in FCs believe that FP is only for the educated, this might hinder their use of FP which highlights an important gap in FP messaging that could be filled by a more robust FP education program for this population[52]. On the other hand, the effects of FP such as excessive bleeding, menstrual irregularities, loss of sexual desire and weight changes were reported like in other studies[17,32,52] however, the participants had no knowledge of how these can be managed. It is possible that uptake could be improved when people are equipped with knowledge of possible FP effects and how they are managed.

Our study showed that residents of FCs get FP information from various sources which include but are not limited to trained health workers, VHT members, social media, TBAs, posters, school, places of worship, radios including community radios, Television and Traditional aunties (Sengas). Although some of the sources may be authentic with reliable information, some of these sources are very unreliable as

has been proven by other studies. The quality and accuracy of information from VHTs, TBAs and traditional aunties is questionable because these are not formally trained to disseminate health information[52].

FCs in Uganda are characterised by their limited health care and other social services[27,50,51,57,58]. Both Nsazi and Kigungu have one government health facility at health centre II/III level which provide reliable FP information. They have few health workers and even the few were reported not to be skilled enough to provide information on surgical FP methods because they do not offer these services. The non-governmental health facilities or research organizations tend to offer reliable information but haphazardly because of their fixed work schedules. Unlike governmental health facilities that operate for longer hours and almost on a daily basis, the non-governmental facilities operate only on week days for a specified duration which makes it difficult for community members to access health services at any time. Because of a limited number of health facilities in these communities, there is an urgent need for capacity building in form of reproductive health infrastructure and human resource. Government's continued guidance and support in ensuring a sizeable skilled force in these remotely located settings will be invaluable as the country aims at attainment of SDGs particularly in the FCs.

VHT members and TBAs have been used to bridge the gap in delivery of health services to remote settings, The World Health Organization (WHO) states that VHTs should be the members of the communities where they work, should be selected by the communities, should be answerable to the communities for their activities, should be supported by the health system but not necessarily a part of its organization and have shorter training than professional health workers.

In Uganda, a VHT member is a permanent resident of a particular community, assigned by government/non-government organization who provides promotive, preventive, limited curative care, rehabilitative, palliative and referral services in relation to maternal, neonatal, child and adolescent health, FP, nutrition, communicable and non-communicable diseases to his/her community and is held accountable for the non-performance of these services[59].

VHTs are a powerful health work force that promote and extend the reach of health services to the people in Uganda and other countries. They are cost effective and constitute a critical mass of health work force, hence they have the potential to contribute more in addressing complex reproductive health issues like FP in FCs. TBAs on the other hand, are locally based and mostly old women who deliver mothers outside a formal health care setting. These are usually not formally trained but their expertise is built on experiences and what they have been trained to do by older TBAs. It is important, to recognise that VHTs and TBAs are existing sources of FP knowledge in the hard to reach FCs and that they should be empowered with adequate and accurate knowledge. Since TBAs get in contact with women at delivery, they can educate the pregnant women on spacing of next child or contraception needs. Because of the prevailing inadequate human resource in terms of number and expertise in these communities, VHTs and TBAs can be considered as FP provision partners of less complex methods. Mainstreaming them in

formal health systems may be beneficial to the FCs that have limited health care services. Quality assurance mechanisms for these bodies however, will be needed for better outcomes.

## **Strengths and limitations**

Due to financial constraints, the study was conducted in two FCs selected for their size and location, suggesting that our data might not be fully generalizable to other communities on the lake or elsewhere. We observed a difference in knowledge across the two communities which could have been attributed to the few participants recruited from the island community. To gain greater insight into knowledge of FP, we employed both quantitative and qualitative methods.

## **Conclusion**

From this study, we conclude that FP awareness in FCs is high with a wide range of methods known. However, good knowledge about specific methods is variable and tends to be low. Some of the fisher folk still believe in ineffective methods that are not scientifically proven FP methods. Misconceptions about effectiveness of some methods and side effects still exist. The ideal family size is generally less than 4 children while the ideal birth spacing interval is generally more than 2 years. The correlates of FP knowledge were found to be female gender, residence, sexual engagement and marital status. To improve knowledge of FP in FCs, continuous comprehensive education on FP methods and their effects is needed.

## **Abbreviations**

AIDS: Acquired Immunodeficiency Syndrome; BMU: Beach Management; CI: Confidence Interval; CSWs: Commercial Sex Workers; FP: Family Planning; FCs: Fishing Communities; FGD: Focus Group Discussion; HIV: Human Immunodeficiency Virus; IAVI: International AIDS Vaccine Initiative; IDI: In-depth interview; NGO: Non-Governmental Organization; STIs: Sexually Transmitted Infections; TBA: Traditional Birth Attendant; US: United States; VHTs: Village Health Team members; WHO: World Health Organization.

## **Declarations**

### **Ethics approval and consent to participate**

The study was approved by the Uganda Virus Research Institute- Research Ethics Committee (UVRI-REC, FWA number 00001354) and the Uganda National Council for Science and Technology (UNCST, FWA number 00001293). Permission to conduct the study, focus group discussions and in-depth interviews was also obtained from the local political leaders. Written consent was obtained from each participant prior to conducting any study procedures. Since all participants were aged 16 years and above, there was no written informed consent for participation in the study that was obtained from parents or guardians as is required where participants are children (under 16 years old). All participants were offered refreshments

and reimbursed 5,000 Uganda shillings (approximately USD2) for transport, as is standard practice in similar research activities in Uganda.

### **Consent for publication**

Not applicable.

### **Availability of data and Materials**

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request. A full data set containing the data supporting the study findings in this article can also be obtained from the Program Data Manager, by email to: [tnakaweesa@iavi.or.ug](mailto:tnakaweesa@iavi.or.ug) or [information@iavi.or.ug](mailto:information@iavi.or.ug).

### **Competing interests**

The authors declare having no competing interests.

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### **Author contributions**

AN: Lead and corresponding author was the Principal Investigator; contributed to application for funding, design of the study, made administrative arrangements for the study, data management, wrote the initial draft, carried out statistical analysis and contributed to interpretation of the data. BK: Contributed to study coordination, reviewed the manuscript drafts and interpretation of the data. FM and SN: Contributed to study coordination, data collection, reviewed the manuscript drafts. GO: Contributed to data collection, reviewed the manuscript drafts. TN and JSK: Contributed to data management, interpretation of the data and reviewed the manuscript drafts. JN: Reviewed the manuscript drafts. OK: Contributed to statistical analysis, reviewed the manuscript drafts and interpreted the data. RKW and JPG: Contributed to supervision of the study activities, interpretation of the data and review of the manuscript drafts. JM, KC and MAP: Contributed to interpretation of the data and review of the manuscript drafts. All authors read and approved the final manuscript.

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