Sex differences in family planning knowledge, attitudes, and use in Uganda

Afra Nuwasiima (anuwasiima@livinggoods.org)  
Global Health Economics  https://orcid.org/0000-0003-3931-7737

Agnes Watsemba  
Living Goods

Allan Eyapu  
Living Goods

Peter Kaddu  
Living Goods

Justin Loiseau  
Living Goods

---

Research

**Keywords:** Family planning, sex, knowledge, attitudes, use, community health, Living Goods, Uganda

**DOI:** https://doi.org/10.21203/rs.3.rs-46945/v1

**License:** This work is licensed under a Creative Commons Attribution 4.0 International License. Read Full License
Abstract

Background

Literature is satiated with studies focusing on knowledge, attitude, and practices of family planning (FP) among the female population, conversely, the gaps in sex-disaggregated data on FP continue to exist. This study sought to report sex differences existing in FP knowledge, attitude, and use in Uganda.

Methods

This study uses data from a household survey that covered 16 districts in Uganda. Multi-stage cluster randomized sampling was employed for participant selection. Bivariate analysis for categorical data was conducted. Multilevel logistic regression model was applied to model the effects of socio-demographic characteristics on the uptake and unmet need of FP services.

Results

Data from 4,352 respondents in the ratios of 70% female and 30% of males were analyzed. The mean age was 28.7 SD (8.5) and was not significantly different between males and females. More male respondents had secondary or higher level of education (44%) than females (36%). Low percent (16%) of females reported having no child compared to 38% in males. Knowledge of at least one modern FP method was high, but small significant differences were revealed between males (96%) and females (98%). Significant differences were further seen in specific FP methods. A small proportion agreed that community health workers (CHWs) were always available to offer FP services and no sex variations were observed. The proportion of married females using a modern FP method was 39% compared to 45% for married males. Condom use as a dual protection method potentially overstated FP use among males by 16%. Significant differences were revealed in total unmet need between males (19%) and females (24%). Males, young adults, the more educated and those in marriage or active relationship were more likely to use modern FP services.

Conclusions

Our study found significant sex differences in knowledge, attitudes and use of FP services. Initiatives to create demand for FP services for both males and females should study sex differences in FP knowledge, attitudes, and methods choice. Findings also revealed low involvement of CHWs in delivery of FP services to both males and females. More research is needed on how CHWs can be leveraged to reach both males and females with appropriate FP services and follow up to improve uptake and retention

Background
Use of family planning (FP) by women and men can improve the health, economic, and social domains of their lives (1). As such, FP continues to be a key focus of the global agenda for improving maternal, sexual and reproductive health. According to the Uganda Demographic and Health Survey (UDHS) report 2016, some knowledge of FP methods is nearly universal in Uganda, with 99% of both women and men having heard of at least one method of FP (2). However, the use of modern FP and any form of FP among married women in Uganda stood at only 35% and 39% respectively. FP use among sexually active unmarried women was slightly higher with 51% using any FP method and 47% using a modern method, and the total unmet need for FP among the sexually active women of reproductive age stood at 28% among currently married women, and 32% among the sexually active unmarried women.

In the FP Costed Implementation Plan 2015–2020 (3), the Uganda Ministry of Health (MoH) acknowledged that several innovative FP service delivery models have been successfully implemented by Non-Governmental Organizations (NGOs) in Uganda in an effort to remove access barriers for FP. For instance, community-based distribution of certain FP commodities has been successful at expanding access, and task shifting of injectable FP to Village Health Teams (VHTs)/Community Health Workers (CHWs). In 2018, Living Goods also piloted the implementation of comprehensive FP services at the community level through trained and supported CHWs in two districts of Wakiso and Mpigi in Uganda. The FP services mainly comprised of counselling, and provision of condoms, DMPA-SC (commonly known by the brand Sayana Press® or simply Sayana) and oral FP and as well as referral for long-term methods. The unpublished program results suggested that that by working through CHWs, it is possible to address the binding constraints to the uptake and utilization of FP including social opposition, misinformation and fear of side effects, among others. Furthermore, the pilot demonstrated that using the Living Goods CHW model, the coverage of FP services can be significantly expanded and yet at a low cost. These unpublished results are supported by the findings on the randomized controlled trial study (4) that found out that leveraging on supported and equipped CHWs to provide lifesaving primary health care in children and women significantly reduced under-five mortality by 27% at a lower cost of approximately $68 per life year saved.

Men's knowledge, attitudes, and behaviors around FP impact uptake and unmet need because men are not only women's partners, but individuals with distinct reproductive histories and desires of their own. A 2020 Tanzania study (5) found that knowledge of FP services was a crucial factor in influencing use of modern FP among men and suggested that targeting of men with FP awareness programs would improve use of FP among men. The UDHS 2016 findings (2) shown that 12% of married women were refused to use FP by their partners while 44% made the decision jointly with their husbands. The literature on the role and attitude of men in decision making is mixed. A study in Uganda revealed that men were greatly interested in modern FP use, albeit they possessed little knowledge about it (6) while a related study in Tanzania showed that men expressed little interest in FP use, and yet were considered by women as key decision makers in their use of FP services (7). Another study conducted in Uganda using a nationally representative data revealed that the use of FP was significantly higher among men that had discussions with a health worker, desired for less children, belonged to a higher wealth index and highly educated (8), and these factors are similar to factors that affects FP among women. Existence of such
commonalities in barriers and drivers to FP providing opportunities for reaching out both sexes with similar campaigns. Male inclusion in FP has been encouraged by various international and national initiatives including providing incentives for men who escort their partners for FP services. However, gaps in data continue as FP data in programs and reports is rarely disaggregated by sex if men are included at all (9). Where data on utilization of FP services was reported among men, the use was paradoxically found to be higher (5), however, another recent research revealed higher fertility desires among men than women (10).

Whereas there is paucity of literature on men’s statistics; collection, analysis, and reporting of sex disaggregated data is critical to fully understand the specific needs of men and women. This study sought to explore sex variations existing in the knowledge, attitudes and use of FP services in selected districts of Uganda.

Methods

Study Design

This was a cross-sectional baseline evaluation. The study focuses on the results from the quantitative household survey. Data collection was conducted in August 2019.

The Study setting

Data collection was undertaken in sixteen (16) districts of Uganda. The study did not seek to be nationally representative as selection of study districts took into consideration Living Goods Uganda’s current catchment area for the FP intervention. Figure 1 shows a map of Uganda with survey districts marked Yes with a blue color.

Figure 1: Map showing the survey districts in Uganda

Study Population

Participants in the household (HH) baseline survey comprised of women and men in the reproductive age of 15 to 49 years.

Sample size

The Cochran (1963) formula for two independent samples with dichotomous outcome was used to determine the sample size (n). To achieve a maximum sample size, a proportion of 0.5 per sample group was used. A sample of 4,380 respondents was derived with a statistical power of 90%, a precision level of 5%, design effect is 1.5, and a 95% confidence level. The sample was distributed equally among sampled districts and villages.

Household sample selection
The selection of the households for the survey utilized a four-stage sampling approach. The first stage involved a purposive selection of districts for the survey and the second stage involved a random selection of sub-counties per district (2 to 6 sub-counties per district). The third stage involved random selection of four (4) villages within each subcounty using the computer-based Random Draw Method. The fourth and last stage involved systematic random sampling of households to be interviewed. To ensure all eligible households had an equal chance of participating in the survey, the survey team worked with local leaders to conduct a household listing of households with persons in the age range of 15–49 years (male and female). The desired ratio was of 3 females to 1 male leading to a total of 16 females and 7 males per cluster/village. The sample size was not adjusted for non-response and consequently household replacement was assumed to be feasible where a HH refused to participate or was not available at the time of interview. For the latter non-response, replacement was done after making three (3) call-backs to the household. For each HH selected, only one (1) person was needed for an interview. Therefore, simple random sampling using the raffle/lottery method without replacement was used to select a respondent from all eligible members of the desired sex in the household. The sex of the respondent was predetermined before arriving at the household.

Data Collection Methods

The quantitative household survey data collection was done through face-to-face interviews using a structured questionnaire. The questionnaire was programmed using the Open Data Kit (ODK) software and uploaded on electronic devices (smartphones).

Quality Assurance

Before the study was started, the data quality assurance protocol was developed and this included constituting a strong and dynamic team with experience on conducting similar assignments, recruiting and training experienced research assistants and field supervisors to handle data collection. The ODK data collection tool was also designed with controls to limit data entry errors. Field supervisors did spot checks on 5% of the respondents to validate the information collected by the interviewers and feedback was analyzed to improve the process. In addition, the Lead Consultant organized routine internal meetings among the consultants to review progress on implementation, as well as maintaining external communication with the client regarding the accomplishment of key milestones.

Data Analysis

Descriptive analysis using proportions was conducted to show the distribution of FP knowledge, attitudes and use of FP. Bivariate analysis using Pearson's Chi-square and Fisher's exact tests for categorical data was done. Additionally, multilevel logistic regression model (11) was used to model the effects of socio-demographic characteristics on the uptake and unmet need for family planning services. The sex of the respondent was included in the model as a fixed factor to model sex differences. To model the associations of respondents within the different districts, sub counties and villages, the study considered a four-level analysis model with three high level cluster variables (random effects equations) i.e. district, sub-county and village treated as random effects factors to account for within cluster correlations (intra-
cluster correlation). This assumes that observations nested in a cluster share common characteristics in terms of access to community services and this may have an effect of uptake of family planning services. All quantitative analysis was done in STATA version 15 software and statistical significance was considered at 5%.

**Ethical Considerations**

The study received ethical clearance from Mildmay Uganda Research and Ethics Committee (MUREC) and Uganda National Council for Science and Technology (UNCST). All members of the survey team were trained on protection of human subjects. In the field, all members of the survey team obtained written informed consent, upheld the principles of voluntary participation, confidentiality, anonymity, and respect of privacy of respondents and the obligation to not do any harm. Identifiers such as names of respondents were not tagged on interview recorded on the smartphones further improving the privacy and confidentiality of survey data.

**Results**

The quantitative study achieved a response rate of 99% by reaching 4,352 respondents out of the targeted 4,380 respondents. The study managed to achieve the ratios of 70% female and 30% male representation in the quantitative survey. All 4,352 respondents had complete data on socio-demographic characteristics and main outcomes hence no missing data handling approaches were used.

**Socio-demographic characteristics of respondents**

Table 1 shows the distribution of the socio-demographic characteristics of the study participants disaggregated by sex. The distribution of respondents by sex was significantly different for age group, education level, marital status, main source of income and the number of children. Although there were observed significant differences in age groups for males and females starting at the age 30, the overall mean age of respondents was 28.7 SD (8.5) and was not significantly different between males and females. Overall 39% of the respondents had not achieved at least a primary leaving certificate with a higher proportion of females (41%) than males (35%). Overall, a smaller proportion of respondents were not married (27%) and this was significantly different by sex with more males (44%) compared to females (21%). A significantly lower percent of females (16%) compared to 38% in males reported having no child.
Table 1
Socio-demographic characteristics of respondents by sex

| Characteristic                        | Distribution                      | Overall (N = 4,352) | Females (N = 3,061) | Males (N = 1,291) | P value |
|---------------------------------------|-----------------------------------|---------------------|---------------------|-------------------|---------|
| Mean Age (SD)                         |                                   | 28.7 (8.5)          | 28.7 (8.5)          | 28.5 (8.5)        | 0.915   |
| Age group (%)                         |                                   |                     |                     |                   |         |
| 15–19                                 |                                   | 14.2                | 13.9                | 14.9              | 0.000*  |
| 20–24                                 |                                   | 24.6                | 24.7                | 24.4              |         |
| 25–29                                 |                                   | 19.2                | 19.4                | 18.7              |         |
| 30–34                                 |                                   | 14.7                | 15.3                | 13.3              |         |
| 35–39                                 |                                   | 12.8                | 13.7                | 10.6              |         |
| 40–44                                 |                                   | 10.8                | 9.7                 | 13.5              |         |
| 45–49                                 |                                   | 3.6                 | 3.3                 | 4.5               |         |
| Highest education level attained (%)  |                                   |                     |                     |                   |         |
| None/ no education                    |                                   | 5.6                 | 6.5                 | 3.5               | 0.000*  |
| Primary incomplete                    |                                   | 33.7                | 34.8                | 31.1              |         |
| Completed primary                     |                                   | 21.9                | 22.1                | 21.4              |         |
| Secondary or higher                   |                                   | 38.8                | 36.6                | 44.1              |         |
| Religious affiliation (%)             |                                   |                     |                     |                   |         |
| Muslim                                |                                   | 18.7                | 18.2                | 20.1              | 0.208   |
| Roman Catholic                        |                                   | 36.7                | 36.5                | 37.1              |         |
| Protestant                            |                                   | 31.9                | 32.5                | 30.5              |         |
| Born again/Pentecostal                |                                   | 10.2                | 10.5                | 9.2               |         |
| None/Others                           |                                   | 2.6                 | 2.3                 | 3.1               |         |
| Marital status (%)                    |                                   |                     |                     |                   |         |
| Single                                |                                   | 14.2                | 10.9                | 22.0              | 0.000*  |
| In a relationship                     |                                   | 12.8                | 10.5                | 18.2              |         |
| Married / cohabiting                  |                                   | 64.3                | 68.3                | 4.9               |         |
### Characteristic

| Distribution |
|--------------|
| Overall     | Females | Males | P value |
| N = 4,352   | N = 3,061 | N = 1,291 |
| Separated / divorced | 7.1     | 8.0    | 4.7     |
| Widowed     | 1.6     | 2.2    | 0.2     |

### Residence of respondent (%)

| Urban       | 29.1    | 28.7   | 29.8    | 0.593   |
| Trading Center | 12.7    | 12.5   | 13.2    |         |
| Rural       | 58.7    | 58.2   | 57.0    |         |

### Main source of household income

| Crop farming/Cattle keeping | 47.1 | 46.4 | 48.9 | 0.007* |
| Fishing                  | 1.8  | 1.7  | 2.1  |        |
| Salary/Wage              | 14.0 | 14.1 | 13.7 |        |
| Business                 | 28.1 | 29.5 | 24.6 |        |
| Boda-Boda / Other transport | 4.4  | 4.3  | 4.6  |        |
| None                     | 0.5  | 0.5  | 0.7  |        |
| Others                   | 4.1  | 3.6  | 5.3  |        |

### Number of children (%)

| 0 | 22.9 | 16.4 | 38.3 | 0.000* |
| 1 | 15.6 | 16.5 | 13.3 |        |
| 2 | 14.2 | 16.0 | 9.9  |        |
| 3 | 11.7 | 13.0 | 8.5  |        |
| 4 | 9.8  | 10.7 | 7.7  |        |
| 5+ | 25.7 | 27.2 | 22.1 |        |

* Implies statistically significant results at 5% level of significance

### Knowledge, attitudes, and perceptions about FP services

#### Knowledge of FP services
Table 2 shows results of the respondent’s knowledge of FP services. The findings revealed that overall 97% of the respondents had heard of at least one modern FP method and there was a small, but significant difference between males (96%) and females (98%). There were also significant differences in knowledge of specific FP methods by sex. Among female respondents, high levels of knowledge were in injectables, pills, implants and IUDs whereas in males, high levels of knowledge were observed in male condoms, injectables, pills and implants respectively. Overall, the study observed higher levels of knowledge in hormonal birth control FP methods than non-hormonal (“natural”) methods.

Table 2
Knowledge of different FP services by sex of respondent

| Measure                                      | Distribution (%) | P value |
|----------------------------------------------|------------------|---------|
|                                              | Overall  | Female | Male   |         |
| Ever heard of any family planning method     | 97.4      | 97.8   | 96.4   | 0.006* |
| Ever heard of any modern family planning method | 97.2      | 97.6   | 96.2   | 0.012* |
| Aware of all modern FP methods              | 0.97      | 1.08   | 0.70   | 0.240  |
| Knowledge of FP specific methods            |          |        |        |         |
| Pills                                        | 74.8      | 79.2   | 64.4   | 0.000* |
| Injectables                                  | 83.6      | 89.5   | 69.5   | 0.000* |
| Emergency FP pills                           | 9.2       | 9.8    | 7.7    | 0.024* |
| Male condoms                                 | 60.3      | 53.3   | 77.1   | 0.000* |
| Female condoms                               | 14.2      | 14.5   | 13.7   | 0.429  |
| IUD                                          | 53.9      | 60.6   | 38.0   | 0.000* |
| Implants                                     | 66.0      | 73.0   | 49.3   | 0.000* |
| Male sterilization                           | 11.7      | 9.9    | 16.0   | 0.000* |
| Female sterilization                         | 13.5      | 14.7   | 10.7   | 0.000* |
| Breastfeeding                                | 6.4       | 7.9    | 2.7    | 0.000* |
| Withdraw                                     | 15.0      | 14.0   | 17.2   | 0.008* |
| Periodic abstinence                          | 16.6      | 18.1   | 13.0   | 0.000* |

* Implies statistically significant results at 5% level of significance

Respondent perceptions, beliefs, and self-efficacy about FP services
Table 3 shows the respondent’s perceptions on the availability, affordability, self-efficacy and beliefs about the FP services disaggregated by sex. The results are explained in the following sub-sections.

**Perceived availability of FP services among sexually active respondents**

Overall, more than half of the respondents (69%) perceived modern FP as always available in the community whenever they were needed, and this was higher among FP users (74%) compared to the non-users (66%). Among the FP users, there were no significant differences between males and females, however, among the FP non-users, there was a higher proportion of females (68%) than males (62%) that perceived modern FP methods to be available in the community.

**Perceived affordability of FP Services**

The results in Table 3 further suggest that overall slightly over a half of the respondents (53%) perceived modern FP methods to be affordable within their communities and this was higher among the FP users than the non-users. Among the FP users and non-users, there were no observed significant differences between males and females.

**Perceived quality of FP services**

The study results also revealed that overall almost three quarters (73%) of the respondents perceived public health facilities to be providing high quality FP services, and this was largely higher among the FP users than the non-users. Among the users, males (81%) had a higher perception than females (76%), however, among the non-users, females had a higher perception (68%) than males (61%).
| Perception/Attitude | FP Users (%) | FP Non-Users (%) |  |
|--------------------|--------------|-----------------|---|
|                    | Female | Male | Total | P value | Female | Male | Total | P value |
| Perceived availability of FP services in the community | | | | | | | | |
| • Agree that modern FP are always available in my community when I need them | 75.2 | 71.6 | 74.0 | 0.097 | 68.0 | 61.8 | 66.3 | 0.006* |
| Community perception of quality of FP services | | | | | | | | |
| • Agree that FP services provided in public health facilities are of high quality | 83.4 | 75.9 | 81.0 | 0.000* | 68.5 | 60.9 | 66.5 | 0.001* |
| Beliefs about FP services | | | | | | | | |
| • Believe that using modern FP can result into infertility | 28.2 | 37.5 | 31.2 | 0.000* | 40.3 | 41.9 | 40.8 | 0.506 |
| • Believe that using IUDs can result in cancer | 36.0 | 38.0 | 36.6 | 0.402 | 46.1 | 47.1 | 46.4 | 0.656 |
| • Believe that using Sayana Press reduces sexual pleasure | 13.5 | 8.4 | 11.9 | 0.001* | 11.6 | 8.9 | 10.9 | 0.070 |
| Self-efficacy about FP services | | | | | | | | |
| • I am embarrassed to get/ask about FP from a health facility | 8.3 | 8.0 | 8.2 | 0.811 | 13.5 | 15.0 | 13.9 | 0.374 |
| • I would be embarrassed if people found out that I am using FP | 7.8 | 7.2 | 7.6 | 0.636 | 11.5 | 13.1 | 11.9 | 0.294 |
| • It is ok for a woman/girl to suggest to her male partner that they use a condom or another method to avoid pregnancy | 91.4 | 90.3 | 91.1 | 0.430 | 85.1 | 82.5 | 84.4 | 0.135 |

* Implies statistically significant results at 5% level of significance
| Perception/Attitude                                                                 | FP Users (%) | FP Non-Users (%) |
|------------------------------------------------------------------------------------|--------------|------------------|
|                                                                                   | Female   | Male   | Total | P value | Female | Male   | Total | P value |
| **Female**                                                                        | 29.4     | 13.5   | 24.4  | 0.000*  | 38.0   | 23.9   | 34.3  | 0.000*  |
| **Male**                                                                          | 13.5     | 13.5   | 13.5  | 0.950   | 13.4   | 17.3   | 14.4  | 0.109   |
| • My partner would be annoyed with me if they discovered I was asking for condoms, pills or other FP methods |           |        |       |         |        |        |       |         |
| • My friends would laugh at me/ tease me if they found out that I was asking for condoms, pills or other FP services | 10.4     | 10.5   | 10.5  | 0.950   | 13.4   | 17.3   | 14.4  | 0.109   |

* Implies statistically significant results at 5% level of significance

Beliefs about FP services

Beliefs about FP were assessed by interrogating perceptions about the side-effects of FP considering; beliefs about modern FP and infertility, cancer and the effects of FP use on sexual pleasure. Table 3 shows that among the FP users, males (37%) significantly agreed that modern FP can result into infertility than females (28%). For specific methods, overall 42% of the respondents agreed that the use IUDs can result in cancer, and this was larger in FP non-users (46%) compared to the FP users (37%). There were no significant sex differences. Overall, also, 11% of the respondents agreed that using Sayana Press reduces sexual pleasure with minimal differences between the FP users and FP non-users. Among the FP users, more females agreed to that using Sayana Press reduces sexual pleasure than the males.

Perceived role of CHWs in FP service delivery

Living Goods Uganda supports CHWs through training, digital empowerment, supportive supervision, and equipping with essential life-saving commodities to deliver data driven services door-to-door. The study sought to the establish the sex-disaggregated perception on the involvement of CHWs in FP services provision in communities. The results are presented in Fig. 2. Overall, there was perceived low involvement and quality of CHWs in FP services. Approximately only 3 in 10 of the respondents agreed that CHWs were available in the community to offer FP services and agreed that FP services provided were of high quality. There were no significant sex differences observed. At the time of the survey, Living Goods supported CHWs were yet to start provision of FP services in the survey communities.

Figure 2: Perceived role of CHWs in FP service delivery

Decision-making regarding FP use

Decision-making regarding FP use is a critical factor in the adoption of FP services. The results presented in Fig. 3 suggested that a significant larger proportion of females (53%) make their own decision to take on FP compared to males (33%). More males reported that the decision to use FP was joint compared to
females. Even though half of the women reported taking the decision to use FP themselves, majority of them indicated that their male partners were aware of the FP use.

**Use of FP services**

Utilization of FP services was assessed by looking at the proportion of sexually active respondents, not currently pregnant that reported using the different FP services. Table 4 shows the proportion of respondents that reported the use of FP methods. The use of modern FP stood at 38.7% overall and this was significantly higher among the males (45%) than the females (36%). The main method of FP that respondents were using at the time of the survey included the injectable-Depo (31%), male condoms (20%), withdrawal (19%), and Sayana Press (6%). All the mentioned FP methods above were significantly different between the males and females. More males reported use of male condoms (46%) compared to 9% reported by female respondents. Overall the use of the permanent FP methods was higher (6%) than long term methods (3%). For permanent use, there were significant differences between males and females, however, no significant differences were observed among the long-term methods. Surprisingly, more females reported use of withdrawal traditional FP method than was reported among males.
Table 4  
Proportion of respondents reporting use of FP methods.

| FP methods use                           | Distribution (%) | P value |
|------------------------------------------|------------------|---------|
|                                           | Overall | Females | Males   |         |
| *Currently using any FP method*          | 50.3    | 48.6    | 54.7    | 0.001*  |
| *Currently using a modern FP method*     | 38.7    | 36.0    | 45.3    | 0.000*  |

**Main FP method used**

**Short-term**

| Method                  | Overall | Females | Males   | P value |
|-------------------------|---------|---------|---------|---------|
| Pills                   | 4.5     | 4.7     | 4.1     | 0.558   |
| Injectable (Depo)       | 31.1    | 36.5    | 19.1    | 0.000*  |
| Injectable (Sayana Press)| 5.9     | 7.7     | 2.0     | 0.000*  |
| Emergency FP            | 0.7     | 1.0     | 0.0     | 0.013*  |
| Male condoms            | 20.3    | 8.6     | 45.7    | 0.000*  |
| Female condoms          | 0.1     | 0.1     | 0.0     | 1.000   |

**Long-term**

| Method     | Overall | Females | Males | P value |
|------------|---------|---------|-------|---------|
| IUD        | 2.6     | 2.9     | 1.9   | 0.196   |
| Implants   | 0.2     | 0.1     | 0.5   | 0.095   |

**Permanent**

| Method                  | Overall | Females | Males | P value |
|-------------------------|---------|---------|-------|---------|
| Male sterilization      | 1.6     | 2.0     | 0.7   | 0.029*  |
| Female sterilization    | 4.0     | 4.8     | 2.0   | 0.004*  |

**Natural**

| Method                  | Overall | Females | Males | P value |
|-------------------------|---------|---------|-------|---------|
| Lactational Amenorrhea  | 5.5     | 5.2     | 6.1   | 0.393   |
| Periodic abstinence     | 4.1     | 4.0     | 4.3   | 0.785   |
| Withdrawal              | 18.8    | 21.7    | 12.4  | 0.000*  |
| Others                  | 0.7     | 0.5     | 1.2   | 0.134   |

* Implies statistically significant results at 5% level of significance

Figure 4 shows the use of modern FP methods among women by marital status and sex. The findings indicated that the proportion of married/cohabiting females using modern FP was 39% lower than 45% reported by males. Modern FP use was highest for both males and females that were in relationship but married or cohabiting and lowest for both males and females that were single or separated.
Condom use as a dual protection method

Figure 5 shows that half of the male, and a third of the female respondents that reported condom use as the current method of FP used also used it as a prevention measure to STI/HIV infection. The study did not establish which protection was primary making it to hard attribute, however, based on the results suggested that there was a 16% potential differentiated effect that condoms had on FP use in favor of males. Adjusting the reported modern FP use by 16% suggested that modern FP use among married males was 38.2% compared to 39.2% among married females. This reveals no large sex differences in modern FP use.

Figure 5: Respondents that used condoms as an FP method and protection against STIs/HIV infection

Unmet need for FP

Unmet need mostly defined for women refers to the proportion of women of reproductive age that are married or sexually active, want to limit or space their births but are not using any FP method. The results on unmet need are shown in Fig. 6. Total unmet need was significantly different between the males (27%) and females (30%). More males (18%) reported unmet need for spacing than females (14%) whereas more females (16%) reported more unmet need for limiting than males (9%). Overall, unmet need was lowest among those in union for both males and females compared to those not in union.

Effect of socio-demographic characteristics on modern FP use and unmet need for FP

Table 7 shows findings from the adjusted multilevel logistic regression to assess the effect of socio-demographic characteristics on modern FP use and unmet need. The findings indicated than females were 35% less likely to use FP compared to males (Adjusted odds ratio (AOR) = 0.65, P = 0.000). Respondents aged 40–44 and 45–49 were 36% and 69% less likely to use modern FP compared to those aged 15–19. No significant differences were observed for other age groups in comparison to the 15–19 age group. For education level, those that completed primary were 43% more likely to use modern FP (AOR = 1.43, P = 0.041) compared to those with no education while those that achieved secondary or higher were 45% more likely to use modern FP compared to those with no education (AOR = 1.45, P = 0.030). After adjusting for sex and other socio-demographic characteristics, those in a relationship were approximately two times (AOR = 2.48, P = 0.000) more likely to use FP compared to those in no/ single relationships. The married respondents were also 88% more likely to use modern FP compared to those in no relationship. No significant differences were revealed for religion, place of residence, source of income and number of children.

The results on the effect of socio-demographic characteristics on unmet need for FP are also presented in Table 7. Similar to what was observed for FP use, female respondents were 80% more likely to have unmet need compared to the males (AOR = 1.80, P = 0.000). The results also revealed that the respondents aged 35–49 years were more likely to have unmet need for FP compared to those aged 15–
19 years. Additionally, the findings suggest that unmet need was significantly decreasing with increasing education. For example, respondents that completed primary were 41% less likely to have unmet need compared to those with no education (AOR = 0.59, P = 0.002) while respondents with a secondary and above were 45% less likely to have unmet need compared to those with no education (AOR = 0.55, P = 0.000). The married respondents and those in relationship were 68% and 70% respectively less likely to have unmet need compared to those in no relationship. Additionally, the results revealed that the respondents with at least one child were less likely to have unmet need compared to those with no child. In line with what was observed for modern FP use, no significant differences were revealed for religion, place of residence and source of income.
Table 7
Multilevel multiple logistic regression model findings on modern FP use and unmet need

| Characteristic                  | Modern FP use |          | Unmet need |          |
|--------------------------------|--------------|----------|------------|----------|
|                                | AOR (95% CI) | P value  | AOR (95% CI)| P value  |
| **Sex of respondent:** Ref = Male |              |          |            |          |
| Female                         | 0.65 (0.55,0.76) | 0.000*   | 1.80 (1.50,2.16) | 0.000*   |
| **Age of respondent:** Ref = 15–19 |              |          |            |          |
| 20–24                          | 0.98 (0.75,1.29) | 0.908    | 1.16 (0.87,1.54) | 0.317    |
| 25–29                          | 1.12 (0.83,1.51) | 0.469    | 1.10 (0.78,1.52) | 0.602    |
| 30–34                          | 1.01 (0.72,1.42) | 0.960    | 1.32 (0.91,1.92) | 0.138    |
| 35–39                          | 0.88 (0.61,1.27) | 0.504    | 1.63 (1.10,2.42) | 0.014*   |
| 40–44                          | 0.64 (0.44,0.95) | 0.028*   | 2.97 (1.97,4.48) | 0.000*   |
| 45–49                          | 0.39 (0.23,0.66) | 0.000*   | 6.36 (3.84,10.53) | 0.000*   |
| **Highest education level:** Ref = None/no education |              |          |            |          |
| Primary incomplete             | 1.21 (0.87,1.69) | 0.253    | 0.68 (0.50,0.93) | 0.016*   |
| Completed primary              | 1.43 (1.01,2.03) | 0.041*   | 0.59 (0.43,0.83) | 0.002*   |
| Secondary or higher            | 1.45 (1.04,2.04) | 0.030*   | 0.55 (0.40,0.76) | 0.000*   |
| **Religion:** Ref = Muslim     |              |          |            |          |
| Roman Catholic                 | 1.01 (0.82,1.24) | 0.894    | 1.10 (0.88,1.37) | 0.407    |
| Protestant                     | 0.90 (0.73,1.11) | 0.345    | 1.18 (0.94,1.48) | 0.143    |
| Born again/Pentecostal         | 0.79 (0.60,1.05) | 0.108    | 1.09 (0.81,1.47) | 0.575    |
| None/Others                    | 0.80 (0.38,1.66) | 0.545    | 2.07 (0.98,4.38) | 0.056    |
| **Marital status:** Ref = Single |              |          |            |          |
| In a relationship              | 2.48 (1.85,3.32) | 0.000*   | 0.32 (0.24,0.44) | 0.000*   |
| Married / cohabiting           | 1.88 (1.39,2.54) | 0.000*   | 0.30 (0.22,0.40) | 0.000*   |
| Separated / divorced           | 0.85 (0.57,1.27) | 0.434    | 1.04 (0.72,1.50) | 0.836    |
| Widowed                        | 0.64 (0.30,1.37) | 0.250    | 1.39 (0.73,2.64) | 0.316    |

* Implies statistically significant results at 5% level of significance
| Characteristic                                      | Modern FP use | Unmet need | P value |
|---------------------------------------------------|---------------|------------|---------|
|                                                   | AOR (95% CI)  | P value    | AOR (95% CI) | P value |
| Residence: Ref = Urban                            |               |            |         |
| Trading Center                                    | 0.92(0.70,1.20) | 0.519      | 1.10(0.84,1.45) | 0.495  |
| Rural                                            | 1.06(0.87,1.30) | 0.552      | 0.93(0.76,1.14) | 0.498  |
| Household main source of income: Ref = Crop farming/Cattle keeping |          |            |         |
| Fishing                                           | 0.90(0.52,1.56) | 0.711      | 0.72(0.40,1.30) | 0.271  |
| Salary/Wage                                       | 1.05(0.83,1.31) | 0.690      | 0.96(0.75,1.23) | 0.750  |
| Business                                          | 0.99(0.83,1.18) | 0.918      | 0.83(0.69,1.01) | 0.062  |
| Boda Boda/ Other transport                        | 1.13(0.79,1.60) | 0.501      | 0.70(0.45,1.07) | 0.103  |
| None                                              | 2.54(0.95,6.80) | 0.062      | 0.59(0.20,1.70) | 0.328  |
| Others                                            | 0.95(0.66,1.37) | 0.791      | 1.13(0.77,1.65) | 0.533  |
| Number of children: Ref = No child                |               |            |         |
| 1                                                 | 0.84(0.64,1.12) | 0.237      | 0.11(0.08,0.16) | 0.000* |
| 2                                                 | 1.30(0.95,1.78) | 0.098      | 0.24(0.18,0.34) | 0.000* |
| 3                                                 | 1.31(0.93,1.84) | 0.119      | 0.25(0.18,0.36) | 0.000* |
| 4                                                 | 1.33(0.91,1.92) | 0.137      | 0.30(0.20,0.43) | 0.000* |
| 5+                                                | 1.23(0.86,1.86) | 0.252      | 0.37(0.26,0.53) | 0.000* |

* Implies statistically significant results at 5% level of significance

**Discussion**

Literature is replete with studies focusing on knowledge, attitude and use of FP services among the female population, conversely, the disaggregation of results by males and females has been less of a focus and not emphasized in reporting (9). This paper's findings add to a growing body of literature on FP, in particular, male involvement, and use of FP services. The results from study revealed significant sex differences in the knowledge, attitudes, and use of FP services in selected districts in Uganda.

The finding that knowledge of FP was equally high for both males and females, despite the small differences is an indication that males and females have been equally targeted and engaged with information on FP in Uganda. It is not surprising that men were more aware of condoms as an FP method than any other method while women were more aware of the longer-term FP methods. It may be argued...
that whereas men may be more focused on the dual protection they can get from condoms, women are usually more concerned about prevention of unplanned pregnancy and this explains why men may be more informed more about condom use. These findings contradict those found in Mwanza region Tanzania (7), Mpigi district Uganda(6), Mbeya region Tanzania (12) and Nigeria (13) which all found that men had little knowledge on the subject.

Whereas females had more knowledge on FP and its availability within their communities, their attitudes and fears about the possible side effects were significantly different from those of males. The study found out that more males were worried that modern FP methods can result in infertility while females were on the other hand more concerned about reduced sexual pleasure or their partners being angry if they found out. Whenever such fears exist, it becomes difficult for people to embrace FP methods. The mismatch in fears between men and women related to FP may also affect couples’ communication on FP matters and result in lower uptake of FP and or discontinuation. The negative effect of fear of side effects on FP uptake have been reported by previous research studies (6, 7, 14–17).

Findings revealed that half of the males used condom use for dual protection compared to a third of the females resulting in 16% differentiated effect as a potential overestimation utilization among males. Whereas almost half of the males in this study commonly reported condoms as their FP method of use, other studies have associated condom use with HIV prevention and protection efforts (18) or casual sexual relationships rather than as a FP method (19). Future research should establish the primary use of condoms whenever they are reported as the FP method to avoid overstating it’s use as a FP method. While our study revealed that the use of permanent methods was higher than long term methods, this does not appear to be a knowledge problem as knowledge of long-term methods was very high. Further investigation into this may be needed. The findings further suggested that the use of short-term modern FP methods accounted for more than three quarters of the total modern FP methods in this study and recent studies associated short term methods use with high odds of discontinuation and switching affecting uptake and retention of clients on FP (2, 17). Our study findings from the regression model suggested that males, the young adults, the highly educated and those in marriage or active relationship were more likely to use modern FP services. These findings are consistent with other research studies that reported high FP among the educated (8), and the married (20). Contrary to a recent study, our study finding revealed no significant variations in uptake of modern FP among respondents with no child and those with increasing number of children (8, 21). Although findings revealed no significant differences, there is substantial evidence that increasing number of children was associated with increased FP use. Respondents with two or three children were approximately 30% more likely to use modern FP compared to those with no child.

Our study findings revealed that the total unmet need for FP among the marrieds was higher in females (24.5%) than males (18.9%), and in the same group, more females reported high unmet need for limiting whereas males reported high unmet need for spacing. These findings speak to the fertility desires of both males and females, but also to who experiences the highest burden of having a pregnancy. Compared to the 2016 UDHS, there is a 4% reduction in unmet need among the married females and this may
indicative of the effect of increased funding and programmatic efforts around FP in Uganda in the past 3 years. Study findings from the logistic regression model suggested that the female respondents, those aged 35–49 years in reference to those aged 15–19 years, no/lower education level were associated with high probability of unmet need. The factors associated with high FP use were associated with lower unmet need and this is deemed to be consistent.

Results from a recent randomized controlled trial study found that where CHWs were active in provision of low-cost health products and basic child health services to low income families, there were improved health outcomes among the community members like reduced morbidity and mortality (4). Our study findings revealed low involvement of CHWs in delivery of family planning services. Learning from findings on the RCT study (4), we think that there is a potential opportunity for research on how CHWs can be leveraged to provide FP services and follow up of clients.

Our findings are not indicative of the national picture and should not be decisively used to generalize the entire country’s situation since they are largely biased to a few selected districts where Living Goods Uganda has presence. Albeit, the findings provide important sex-disaggregated insights in the knowledge, attitudes, beliefs and use of FP and are thus important for improving programing of future FP interventions.

**Conclusions**

Our study found significant sex differences in knowledge, attitudes and use of FP services. Initiatives to create demand for FP services for both sexes should study sex differences in FP knowledge, attitudes, and methods choice. The study findings also revealed low involvement of CHWs in delivery of FP services to both males and females. More research is needed on how CHWs can be leveraged to reach both males and females with appropriate FP services and follow up to improve uptake and retention.

**Abbreviations**

AOR Adjusted Odds Ratio

CHW(s) Community Health Worker(s)

CI Confidence Interval

FGDs Focus Group Discussion

FP Family Planning

HH Household

IUDs Intra-Uterine Device
Declarations

Ethics approval and consent to participate

The study received institutional ethics review approval from a recognized local review board. All study participants provided informed consent before participation on the study.

Consent for publication

Not Applicable

Availability of data and materials

Data and study tools are available upon requested from corresponding author.

Competing interests

There are no competing interests to report

Funding

The funding for the evaluation was drawn from the large project funding that was received from the John Templeton Foundation, Grant ID 61137. The funders had no role in the conceptualization and writing of this manuscript.

Authors contributions
AW and AN conceived the study. AN conducted the data analysis. AW and AN wrote the first draft. AE, PK, JL reviewed the draft manuscript. All authors reviewed and approved the final manuscript.

Acknowledgements

The authors for this study would like to acknowledge the Socio-Economic Data Centre Ltd Uganda consultants led by Professor Narathius Asingwire that designed the evaluation protocol, acquired ethical clearance, and conducted data collection from which this study draws the data. The consultants however have no role in the manuscript writing for this paper.

References

1. ADDING IT UP. Investing in Contraception and Maternal and Newborn Health, 2017. Guttmacher Institute. 2017. https://www.guttmacher.org/fact-sheet/adding-it-up-contraception-mnh-2017.

2. UBOS ICF. Uganda Demographic and Health Survey 2016: Key indicators report. Kampala, Uganda. 2017. https://dhsprogram.com/pubs/pdf/FR333/FR333.pdf.

3. Ministry of Health Uganda. “Uganda Family Planning Costed Implementation Plan, 2015–2020.” (2014).

4. Björkman Nyqvist B, Guariso M, Svensson A, Yanagizawa-Drott J. D. Reducing child mortality in the last mile: experimental evidence on community health promoters in Uganda. American Economic Journal: Applied Economics. 2019 Jul;11(3):155–92. https://www.aeaweb.org/articles?id=10.1257/app.20170201.

5. Msovela J, Tengia–Kessy A, Rumisha SF, Simba DO, Urassa DP, Msamanga G. Male partner approval on the use of modern contraceptive methods: factors determining usage among couples in Kibaha district, Tanzania. Contraception and Reproductive Medicine. 2020 Dec;5:1–7. https://link.springer.com/content/pdf/10.1186/s40834-020-00107-8.pdf.

6. Kaida K, Kipp A, Hessel W, Konde-Lule P. J. Male participation in family planning: results from a qualitative study in Mpigi District, Uganda. J Biosoc Sci. 2005 May;37(3):269–86.

7. Mosha I, Ruben R, Kakoko D. Family planning decisions, perceptions and gender dynamics among couples in Mwanza, Tanzania: a qualitative study. BMC public health 2013 Dec;13(1):1–3. https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-13-523.

8. 10.1186/1471-2458-14-286
   Kabagenyi A, Ndugga P, Wandera SO, Kwagala B. Modern contraceptive use among sexually active men in Uganda: does discussion with a health worker matter?. BMC Public Health. 2014 Dec 1;14(1):286. https://link.springer.com/article/10.1186/1471-2458-14-286.

9. The importance of gender in family planning and reproductive health data [Internet]
The importance of gender in family planning and reproductive health data [Internet]. 2017. https://www.measureevaluation.org/resources/publications/fs-17-205b/at_download/document.

10.10.10/s12978-016-0272-3
Matovu JK, Makumbi F, Wanyenze RK, Serwadda D. Determinants of fertility desire among married or cohabiting individuals in Rakai, Uganda: a cross-sectional study. Reproductive health. 2017 Dec 1;14(1):2. Available from: https://link.springer.com/article/10.1186/s12978-016-0272-3.

11. Khan K, Shaw HR. E. Multilevel logistic regression analysis applied to binary contraceptive prevalence data. Journal of Data Science. 2011;9:93–110. https://pdfs.semanticscholar.org/5ea3/daee4516d68ef0b3653d25aa5ec00e9d3f1a.pdf.

12. Mwageni EA, Ankomah A, Powell RA. Attitudes of men towards family planning in Mbeya region, Tanzania: a rural-urban comparison of qualitative data. Journal of biosocial science. 1998 Jul;30(3):381 – 92. *Journal of biosocial science* 30, no. 3 (1998): 381–392.

13. Blanc AK. The effect of power in sexual relationships on sexual and reproductive health: an examination of the evidence. Studies in family planning. 2001 Sep;32(3):189–213.

14. Campbell M, Sahin-Hodoglugil NN, Potts M. Barriers to fertility regulation: a review of the literature. Studies in family planning. 2006 Jun;37(2):87–98. http://www.populationmedia.org/wp-content/uploads/2009/03/campbell-barriers-to-fertility-regulation1.pdf.

15. Castle S. Factors influencing young Malians' reluctance to use hormonal contraceptives. Studies in family planning. 2003 Sep;34(3):186–99.

16. Hall MA, Stephenson RB, Juvekar S. Social and logistical barriers to the use of reversible contraception among women in a rural Indian village. Journal of health, population, and nutrition. 2008 Jun;26(2):241. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2740665/.

17. 10.1186/s40834-019-0092-2
Nuwasiima A, Nuwamanya E, Babigumira JU, Nalwanga R, Asiimwe FT, Babigumira JB. Acceptability and utilization of family planning benefits cards by youth in slums in Kampala, Uganda. Contraception and reproductive medicine. 2019 Dec 1;4(1):10. https://link.springer.com/article/10.1186/s40834-019-0092-2.

18. Green EC, Halperin DT, Nantulya V, Hogle JA. Uganda's HIV prevention success: the role of sexual behavior change and the national response. AIDS and Behavior. 2006 Jul 1;10(4):335 – 46. https://link.springer.com/article/10.1007/s10461-006-9073-y.

19. Maharaj P, Cleland J. Risk perception and condom use among married or cohabiting couples in KwaZulu-Natal, South Africa. International family planning perspectives. 2005 Mar 1:24 – 9. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.618.6549&rep=rep1&type=pdf.

20. 10.1186/1471-2458-14-926
Asiimwe JB, Ndugga P, Mushomi J, Ntozi JP. Factors associated with modern contraceptive use among young and older women in Uganda; a comparative analysis. BMC public health. 2014 Dec 1;14(1):926. https://link.springer.com/article/10.1186/1471-2458-14-926.

21. 10.1186/1742-4755-11-13
Mohammed A, Woldeyohannes D, Feleke A, Megabiaw B. Determinants of modern contraceptive utilization among married women of reproductive age group in North Shoa Zone, Amhara Region, Ethiopia. Reproductive health. 2014 Dec 1;11(1):13. https://link.springer.com/article/10.1186/1742-4755-11-13.

**Figures**

**Figure 1**

Map showing the survey districts in Uganda
Figure 2

Perceived role of CHWs in FP service delivery

Figure 3

Decision making in FP uptake
Figure 4

Modern FP use by Marital status and Sex

Figure 5

Respondents that used condoms as an FP method and protection against STIs/HIV infection
|                | Overall | Single | In a relationship | Married/cohabiting | Separated |
|----------------|---------|--------|-------------------|--------------------|-----------|
| **Total**      |         |        |                   |                    |           |
| Males          | 26.7    | 54.4   | 24.8              | 18.9               | 37.1      |
| Females        | 30.4    | 52.4   | 29.9              | 24.5               | 50        |
| Overall        | 29.2    | 53.3   | 27.7              | 23.1               | 47.6      |
| **Limiting**   |         |        |                   |                    |           |
| Males          | 8.9     | 10.9   | 12.2              |                    | 24.1      |
| Females        | 16      | 13.5   | 8                 | 13                 | 40.4      |
| Overall        | 13.9    | 7.7    | 5                 | 12.8               | 37.4      |
| **Spacing**    |         |        |                   |                    |           |
| Males          | 17.8    | 53.3   | 23.9              | 6.7                | 13        |
| Females        | 14.4    | 38.9   | 21.9              | 11.5               | 9.6       |
| Overall        | 15.3    | 45.6   | 22.7              | 10.3               | 10.2      |

**Figure 6**

Proportion of unmet need for FP by sex and marital status