DYNAMICS IN THE FAMILY STRUCTURE AND MODERN CONTRACEPTIVE USE IN UGANDA

Abstract

Use of modern family planning methods in Uganda was still low at about 30% (2020), the lowest in the East African region despite the government efforts to reduce the high fertility levels to around the ideal number of children (4.4); by increasing access of family planning services in Uganda. Basing on factual views that family dynamics is changing due to changing environments and modernization, this study was undertaken to determine the influence of family structure variable (factors) associated with the uptake of modern contraception methods among women of reproductive age in Uganda. The cross-sectional study utilized the secondary data from the Uganda Demographic and Health Survey (UDHS), 2016. The survey data was downloaded from the Demographic Health Survey program website after permission was sought/granted, accordingly. The survey data was collected from a representative sample of 20,910 women of reproductive age group (15–49 years) -drawn from all the 15 sub regions in Uganda (table 1); of which a total of 19,088 eligible women were interviewed but the interviews were completed with 18,506 women representing 98% response rate.

Data analyses were performed in STATA statistical software version 15.0 - where univariable, bivariable, and multivariable analyses were conducted after weighting the dataset accordingly. Weighting was done so as to allow the study generalize the results/findings to the entire target study population in the country.

Prevalence of family planning by use of modern contraceptive methods was found to be 26.6%. The multivariable analysis showed a significantly higher odds of current use of modern contraception methods among: women who had 4 children and over (aOR = 2.248, 95% CI: 1.936–2.61); women in age group 25–34 years (aOR = 2.09, 95% CI: 1.40–3.12); women who had attained a higher level of education (aOR = 3.153, 95% CI: 2.482–4.005); women who lived in households with highest wealth index (aOR = 2.348, 95% CI: 1.972–2.795); working women in professional/clerical categories (aOR 1.687, 95% CI 1.452-1.96); Anglican women (aOR = 3.139, 95% CI: 1.042–9.457); and lower odds for women who lived in the Eastern, Northern and western regions of Uganda (aOR = 0.737, 95% CI: 0.645–0.841). In the family structure settings: married women (aOR 1.961, 95% CI 1.649-2.331), or widowed/separated (aOR 1.927, 95% CI 1.588-2.338) also exhibited somewhat significant likelihoods in use of modern contraception. Women who had a cowife were less likely to use modern family planning methods (0.0197).

In conclusion, the study suggests improving women's education attainment, economic empowerment of women, stepping up measures stopping early marriages/motherhood and expanding awareness on the ideal number of children; might very much help increase the use of modern contraception in the population.

Introduction

Contraceptive use remains an important component in the reduction of fertility, maternal, infant and child mortality (Canning & Schultz, 2012). Globally, Total Fertility Rate (TFR) has reduced drastically from 5 children per woman in the 1950s to 2.6. This decline is in part due to economic growth, social and cultural forces such as increased access to education by women (UNFPA, 2011), and improved reproductive healthcare which includes the use of modern contraceptive methods to prevent unwanted birth also attributed to this decline especially in the developing world (Bongaarts, 1997). The use of contraceptives gives couples the ability to space child births, thus improving infant and child survival, allowing couples to fulfil their fertility desires (Saha & van Soest, 2013). Furthermore, contraceptive use prevents unintended pregnancies which may lead to unsafe abortions that usually have negative health consequences for women such as maternal deaths (Stover & Ross, 2010). The social and economic gains as a result of contraceptive use include; the empowerment of women by allowing them "to engage fully in socioeconomic development and providing them with reproductive choices" (Mbizvo & Phillips, 2014, p.1).

Reducing the number of unplanned pregnancies can be achieved through better birth spacing, as children born less than two years before or after the birth of their siblings have been found to have a higher rate of mortality during their first five years of life [1]. In addition, it will lower the number of infants born at extremely high mortality risk because their mothers died during or soon after delivery. Uganda has one of the fastest-growing populations in the sub-Saharan Africa (SSA) region at a rate of 3.2% per annum [2]. It has a persistently high fertility rate of 5.4 children born per woman which is higher than the total wanted fertility rate of 4.4 [3]. The use of family planning (FP) among women increased from 23% in 2000 to 39% in 2016, however, the increase was most pronounced for the use of modern methods which rose from 18% in 2001 to about 26% in 2016 [3]. The Total Fertility rate in Uganda declined from 7.1 children per woman in 1991 to 5.8 children per woman in 2014 [4].

Family planning services are voluntary but access to the wide range of contraceptive methods for women to choose from may enhance their health prospects and have comprehensive benefits for the societies' social and economic development. There are a number of benefits to investing in family planning including reduced maternal and neonatal mortality through decline in abortions and pregnancies [10]. For this reason, numerous scholars have pointed out that promoting voluntary access to a wide variety of contraceptive methods for women is an important component of countries' strategies to advance social and economic development [11, 12]. This is well articulated in the Sustainable Development Goals (SDG) 3, target 3.7 calls on countries "by 2030, to ensure universal access to sexual and reproductive health-care services, including for FP, information and education, and the integration of reproductive health into national strategies and programs"; with specifically 3.7.1 which calls for universal access to FP services to ensure healthy lives and well-being [13]. Despite the government efforts to reduce high fertility levels and increase uptake of FP services in Uganda, the prevalence rate was only 30% in 2020 among married women which was the lowest in the East African region

[14]. The known factors contributing to the low use of family planning methods are multi-factorial and include; limited accessibility to contraceptives, long distance to the health facility, few qualified health experts, fear of side effects, limited male involvement, religion or cultural beliefs, polygamous marriage, and lack of awareness [15–20]. Monitoring factors influencing the uptake of FP services is important to target scarce public resources to those with more need and enhance the progress towards achieving the global targets. Family Planning is central to gender equality and women's empowerment and is a key driver of all 17 Sustainable Development Goals. Family planning saves lives, improves maternal and child health outcomes, and lifts families out of poverty by helping women have fewer children and freeing them to participate in the labor force [21]. Furthermore, family planning remains the low-cost, high-dividend investment option for addressing Uganda's high Total Fertility Rate (TFR), high school drop-out rates as a result of teenage pregnancy, and high Maternal Mortality Ratio (MMR), as well as improving the health and welfare of women and girls including families [21]. Similarly, the 2020 Demographic Dividend Report demonstrates that investing in family planning will accelerate fertility decline; coupled with mortality decline, the ratio of working-age adults would significantly increase relative to young dependents, thus propelling Uganda towards a middle-income country [22]. Likewise, the 2020 Uganda National Population Policy, however, proposed a move away from the erstwhile population–responsive policy thrust to a population–influencing type of policy. This policy initiative is designed to outline a package of policy actions which will drive: rapid fertility decline; infant and child mortality decline; massive investments in education of both boys and girls; and investments in appropriate skills development (human capital), as the prerequisites to harnessing of the demographic dividend, with the overall policy goal of attaining a high quality of life for the people of Uganda by managing the population growth rate for social transformation (Uganda NPP, 2020). Thus far, a recent study that has been published in Uganda only focused on factors associated with modern contraceptives among female adolescents [23]. Therefore, this study was undertaken to examine the influence of family structure on the prevalence and factors associated with the current family planning uptake among women of reproductive age in Uganda using the 2016 Uganda Demographic and Health Survey data.

Problem statement and study justification

Uganda's population has increased eightfold over the last 70 years from a population of 4.9 million in 1948 to an estimated 47 million in 2025 (Uganda Bureau of Statistics projection, 2023).

Uganda has a high rate of population growth at 3.0% per annum, caused mainly by the high fertility (5.4 children per woman) and migration. The high fertility rate is due to: low contraceptive use at 39%, low status of women, low levels of education, negative cultural practices; high teenage pregnancy rate of 25% and the mindset to have many children due to the perception that some will die and family structure/systems. Migration is caused by involuntary movement of refugees (1.4 million) due to insecurity and disease outbreaks in the region, (UNHCR, 2018) as well as a high number of foreign workers. The effects of the issue at hand are: unfavorable population

age structure (48% below 15 years and 78% below 30 years, high child dependency ratio of 103.3, low life expectancy of 63.3years, high poverty levels of 21.4%, low capital formation characterized by low average years of schooling 4.7, low literacy rate at 72%, unskilled laborforce at 67%, high pressure on social services and natural resources – as 98% of households use wood fuel and severe malnutrition at 7.3%). As such, Uganda still strives to achieve its goal of sustainable rate of population growth which will lead to favourable population age structure, reduced dependency ratio, and increased life expectancy among others, to achieve demographic dividend.

Only 39% of women of childbearing ages use contraceptives in Uganda (UDHS, 2016), despite the efforts made to increase contraceptive use in Uganda through Non-Governmental Organisations and the Ministry of Health, the level of unmet need for contraceptives remains high at 27% (UDHS, 2016).

According to the International Conference of Population Development Program of Action (ICPD, 1994), reproductive health is about allowing people the opportunity to decide, and the ability to reproduce when and how often; while being responsible by leading safer and fulfilling sex lives. Furthermore, according to the ICPD, men and women should both be knowledgeable of, and have access to approved methods of birth control while exercising their agency in choosing their methods of contraception (1994).

One aspect of demographics that has not been paid much attention to in the literature is the influence of family structure on contraceptive use. Owing to modernization, family patterns in sub-Saharan Africa are slowly being altered (Ekane, 2013). A changing face of family structure in sub-Saharan Africa sees a divergence from the traditional nuclear family to the prevalence of single parenthood particularly female-headed households (Bigombe & Khadiagala, 2003). Single parent households come about through divorce, premarital fertility and widowhood (Clark & Hamplova, 2013). Changes being noticed currently are that of a movement from larger families to smaller family sizes due to increased urbanization and the provision of contraceptives and the education of women (Ekane, 2013). Modernization has created opportunities for women to realize that they have control over their reproduction which should be considered as another factor in the reduction of family size (Bigombe & Khadiagala, 2003).

Family structure is likely to have an effect on contraceptive use, as it is within this social setting of the family where reproductive decisions occur; for example decisions on family size (Veleti, 2001). The purpose of the research is to examine the likelihood that a woman would use modern contraception given different dimensions of family structure. Literature research of the studies in Africa shows little evidence of such a study in Uganda.

Study objectives

The general objective of the study was to examine the relationship between family structure and modern contraceptive use in Uganda. Specifically the study sought to: 1). examine the effects of socio-economic and demographic factors on modern contraceptive use among women in Uganda. 2). measure the levels and

patterns of modern contraceptive use among women in Uganda, 3). examine the association between different dimensions of family structure and modern contraceptive use among women in Uganda.

Hypotheses

The hypotheses were included in order to understand the link between family structure variables and modern contraceptive use among the women in Uganda, to ascertain the actual effect of family structure on contraceptive use and to determine whether differentials in modern contraceptive use in Uganda were due to family structure or rather due to socio-economic factors as proposed by the following hypotheses to be tested:

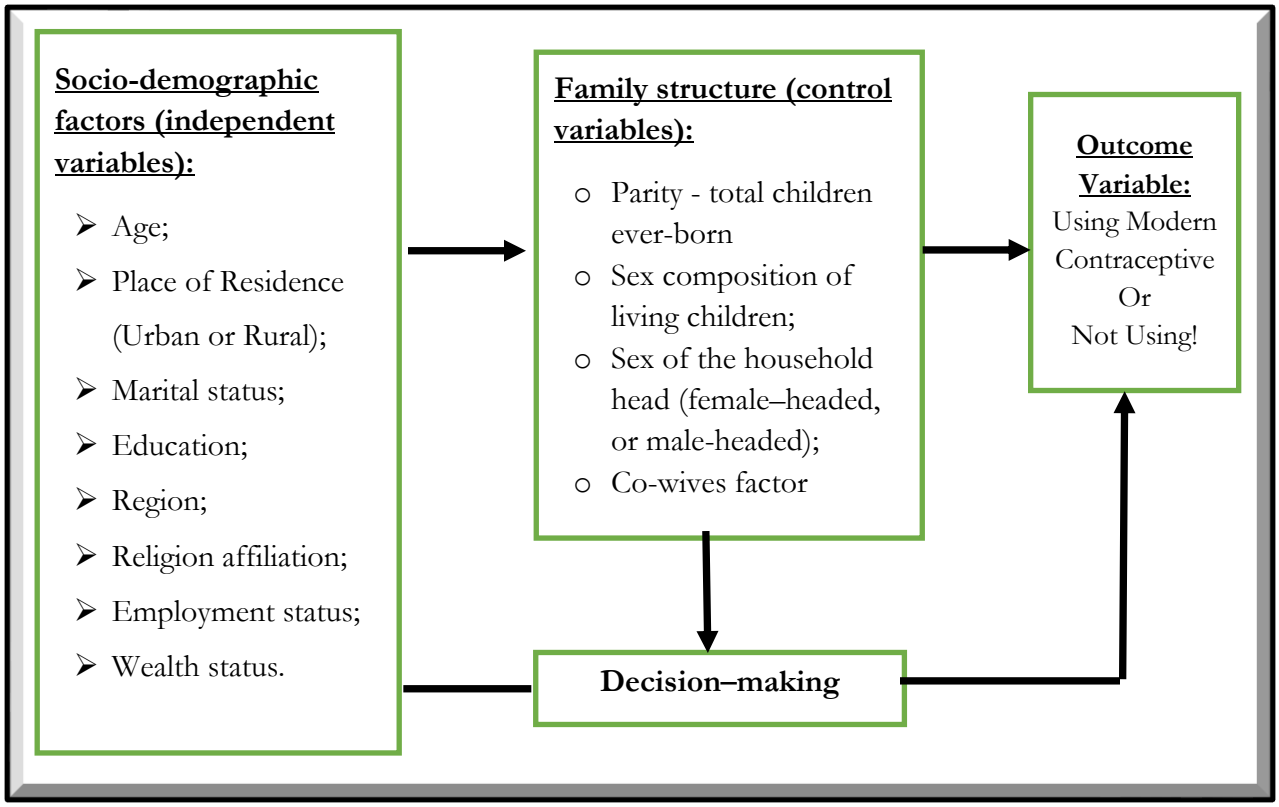
H_0: There is unlikely relationship between total children ever-born and modern contraceptive use.

H_a: There is unlikely relationship between the sex composition of children and modern contraceptive use.

H_β: There is unlikely relationship between the sex of the household head and modern contraceptive use.

Conceptual framework

Figure 1: conceptual framework adapted from rational choice theory (Browning et al., 2000)



The study had anticipated that socio-demographic factors indicated above may affect contraceptive use directly but may also provide a favourable environment (intermediate factors), in which family structure variables that act as control variables, may assist or hinder the use of modern contraceptives.

Study methods and materials

Study population and sample size

Target population

The study targeted the population of all women of reproductive age (15-49 years) living in Uganda at the time of the survey (2015) and interviewed.

Sample size

A nationally representative sample of 20,880 households were selected for the study. From these households, a total of 19,088 eligible women in the reproductive age group were interviewed using a structured questionnaire [UDHS, 2015]. However, interviews were completed with 18,506 women, yielding an overall response rate of 98%. All women aged 15-49 years who were either permanent residents of the selected households or visitors who stayed in the household the night before survey were interviewed. The table 1 below shows sample size allocation clustered by the 15 sub regions of Uganda.

Table1: sample size allocation of clusters and households by region and type of residence

Region	Number of clusters allocated			Number of households		
	Urban	Rural	Total	Urban	Rural	Total
Kampala city	45	0	45	1,350	0	1,350
Buganda central – not island	20	36	56	600	1,080	1,680
Buganda north – not island	12	33	45	360	990	1,350
Buganda south central – island	2	10	12	60	300	360
Buganda north central – island	2	12	14	60	360	420
Busoga – not island	7	31	38	210	930	1,140
Busoga – island	0	21	21	0	630	630
Bukedi	6	35	41	180	1,050	1,230
Bugisu	7	34	41	210	1,020	1,230
Teso	4	36	40	120	1,080	1,200
Karamoja	4	30	34	120	900	1,020

Region	Number of clusters allocated			Number of households		
	Urban	**Rural**	**Total**	**Urban**	**Rural**	**Total**
Lango	5	39	44	150	1,170	1,320
Acholi	8	32	40	240	960	1,200
West Nile	5	40	45	150	1200	1,350
Bunyoro	8	36	44	240	1,080	1,320
Tooro	9	39	48	270	1,170	1,440
Ankole	12	37	49	360	1,110	1,470
Kigezi	6	34	40	180	1,020	1,200
Uganda (total)	**162**	**535**	**697**	**4,860**	**16,050**	**20,910**

Main variables used in the study, descriptions and measurements: -

The outcome variable;

Current contraceptive use

The outcome variable - current use of modern contraceptives: Information on contraceptive use is obtained from a question in the survey schedule that asks whether a respondent is currently using any method of contraception with the following question, for instance: "Are you doing something or using any method to delay or avoid getting pregnant?" To obtain the specific method a follow-up question is asked "Which method are you using?" The variable is determined using the variable "current contraceptive use method" which has options of ("not using", pill, IUD, injections, condom, female sterilization, male sterilization, norplant and female condom, periodic abstinence, withdrawal and other). This variable will be recoded to create a binary outcome indicating whether a woman was using a modern contraceptive method or not using any contraceptive at the time of the survey. "1" to indicate "using modern contraception" which include all modern methods of contraception (pill, IUD, injections, condom, female sterilization, male sterilization, norplant and female condom), and "0" to indicate "not using contraception" which include not using a contraceptive method and all traditional methods of contraception.

The control variables

Family structure variables: -

Total children ever born (parity)

Family size is a continuous variable describing the number of living children that a woman has at the time of the survey.

Type of household head

Type of household is a categorical variable that describes the type of household in which a woman resides, whether male-headed or female-headed.

Sex composition of children

Sex composition is a categorical variable that describes the sex composition of a woman's living children. It will be grouped into three categories; respondents who had only boys, respondents who had only girls and respondents who had a combination of boys and girls.

Co-wife factor

This is a categorical variable and seek to describe the setup of marital union in which a female aged (15-49) resided at time of survey; whether a co-wife existed or not). Categorical; 1=no co-wife (normal union), 2=one co-wife, 3=2-3 co-wives, 4=4-5 co-wives, 5=6 and over and 6= don't know

3.5.3 The Independent variables

Each independent variable will be selected based on its association with contraceptive use in previous contraceptive use studies.

Age;

Age, in this case, is considered a categorical variable describing the respondents age in single years, but in groups, which range from 15 to 49 years. This variable will be categorized into the following age groups: 15-24 years, 25-34, 35-44 and 45-49.

Marital status;

Marriage is a categorical variable describing self-reported marital status of respondents that has options; (never married, married, living together, widowed, divorced and not living together). The variable will be categorized into "never married", married and living together are combined to form "Currently married"; while Widowed, Divorced and Not living together are combined to form "Formerly married".

Place of residence;

Place of residence is a categorical variable describing the type of residence, either urban or rural.

Education attainment;

Education is a categorical variable describing the self-reported educational attainment of women into four categories – (No education; Primary education; Secondary education; and Higher education).

Region;

Region is a categorical variable that described the region of the country in which respondents resided, as follows: Northern region, Eastern region, Central region, Western region and which were sub divided into 15 sub regions at time of survey as (South-Central, North-Central, Kampala, Busoga, Bukedi, Bugisu, Teso, Karamoja, Lango, Acholi, West-Nile, Bunyoro, Tooro, Kigezi, and Ankole).

Employment status;

Employment status is a categorical variable that describes the respondent's occupation. The options include; not working, professional, technical, managerial, clerical, sales, agric-self-employed, household and domestic services, skilled manual and unskilled manual, for which a dummy variable would be created, for those women who were either "working" or "not working".

Wealth status

Wealth status is created from the wealth index variable which is a reflection of a household's socio-economic status. It is a proxy measure of long-term standard of living. It is based on a series of factors such as "household's ownership of consumer goods; dwelling characteristics; type of drinking water source; toilet facilities and other characteristics related to a household's socioeconomic status" (UDHS, 2016). Wealth status is a categorical variable describing the wealth category of the household to which the respondent resided; given as: Poorest, Poorer, Middle, Richer, Richest, and now recoded into three categories of: Poor, Middle and Rich.

Religion affiliation

Religion is a categorical variable that describes respondent's self-reported religion, which has options of: Catholic, Anglican, Muslim, Jehovah, Seventh Day Advent/Baptist, Christian, and No religion/Other. This will be re-categorized into four categories as follows: Catholics, Muslim, Anglicans, Other Christians (which comprised of Jehovah, Seventh day Adventists/Baptists and other Christians). This grouping considered appropriate since Catholics and Muslims are distinctly known not to be in favour of the use of contraception (Hayford & Morgan, 2008; Palamuleni, 2014).

The demographic and socio-economic variables described above are considered for this study as these factors have been reported to affect contraceptive use in Africa in a variety of studies. Furthermore, the choice of independent variables to be considered in the regression models as control factors is based on the theoretical relevance of the predictors in Sub-Saharan Africa. Based on the conceptual framework of the determinants of contraceptive use, these factors are chosen to examine if they affect contraceptive use in Uganda.

Data source, management and analysis

Data source and management

Upon securing data access rights, the survey dataset was downloadable from the Demographic & Health Surveys Program website. (http://dhsprogram.com/-) and recoded accordingly in stata software, as per the descriptions and measurements of the dependent variables, control variables and independent variables provided above). Data weighting was performed in order to come up with the reasonable representative of the target population in this study, so as to be able to generalize the findings to represent the whole country situations.

Data analysis

Analyses of the dataset were done at three levels, namely: the univariate, bivariate and multivariate levels, in order to address the objectives of the study: Univariate analysis of descriptive statistics were performed in order to summarize/describe the background characteristics of respondents using percentage distribution and contingency table and it addressed the first objective, and at univariate level, frequencies and proportions were determined; while the Bivariate analyses were performed after applying weight to the dataset, to analyze and compare two variables so as to measure the relationship between them, and to also identify variables to include in the regression analysis, the results of which could better represent the general situation in the country. This was done to answer the study objective number two. At the bivariable level, analyses were by cross-tabulation using the Pearson Chi-Square (x^2) test for categorical variables, and also taking into account the Pearson's designed-based F-value statistic; although the Pearson's Chi-square test was preferred for reporting results as it is assumed more appropriate to analyze such a dataset with a binary outcome and independent categorical variables. Meanwhile multivariate analysis, a more complex analysis technique, was used to understand the relationship between two or more variables. It was conducted in order to answer the 3rd objective of this study. The associations between the outcome and independent variables were measured using the odds ratio (OR), and all the statistical tests were performed at 5% level of significance for which 95% confidence interval (CI) were computed. All variables that showed a significant association of $p<0.05$ at the bivariable level were further analyzed at the multivariable level using the binary logistic regression model shown below. The choice of that logistic regression analysis model was because the data set is normally distributed, with a binary outcome. The data was analyzed using STATA software.

The overall study objective was addressed using the appropriate binary logistic regression analysis as the dependent variable (modern contraceptive use) is dichotomous. Below was the suitable multivariate logistic regression model for this study:

$$\text{logit}(p(x)) = \log\left(\frac{p(x)}{(1-p(x))}\right) = \alpha + \beta_1 x_1 + \beta_2 x_2 \ldots \beta_i x_i$$

Where: $\left(\frac{p(x)}{(1-p(x))}\right)$ is the probability that the dependent variable event (modern contraceptive use) will occur; and α = constant; βi = coefficients, xi = independent variables (Burns & Burns, 2008).

Three models were fitted to establish the association between family structure and current modern contraceptive use. The models were guided by the conceptual framework used in this study. The probability of modern contraceptive use were expressed as odds ratios; and reported from the analysis at 5% level of significance. Categories were viewed as significant if the odds ratios is less than 0.05, at 95% confidence level. Below were the models performed in the regression analysis.

The first model examined the independent association between socio-demographic variables and modern contraceptive use as the conceptual framework suggested these have a direct effect on modern contraceptive use.

The second model looked at the gross association of family structure on modern contraceptive use; whereas the multivariate regression, at 5% level of significance, was performed to identify critical variables included in the third model, which examined the net effect of family structure on modern contraceptive use, controlling for socio-economic and demographic factors.

4. Results of the study

4.1 Characteristics of study population

Table 4.1: Frequency and percentage distribution of the study population (15-49 years) by family structures and socio-demographic of the study population (women of childbearing age), (N=18,506)

Table 4.1: distribution of the characteristics of the study population;

Characteristics of the study population by family structure and socio-demographic variables		
	Frequency	**Percent**
Family structure variables		
(total number of children ever born)		
Ideal number of children: 4.4		
No children	4,761	25.73
1-3 children	6,589	35.60
4-6 children	4,289	23.18
7-10 children	2,563	13.85
11 and above	304	1.64
Total	**18,506**	**100.00**
(sex of the household head)		
male-headed	12,351	66.74
female-headed	6,155	33.26
Total	**18,506**	**100.00**
(sex composition of the children)		
male	7,103	51.68
female	6,642	48.32
Total	**13,745**	**100.00**
(number of co-wives)		

Characteristics of the study population by family structure and socio-demographic variables		
	Frequency	**Percent**
No co-wife	8,099	71.17
one co-wife	2,209	19.41
2-3 co-wives	630	5.54
4-5 co-wives	33	0.29
6 and above	8	0.07
Don't know	400	3.52
Total	**11,379**	**100.00**
Socio-demographic variables;		
(age in 5-year groups)		
15-24	8,058	43.54
25-34	5,614	30.34
35-44	3,650	19.72
45-49	1,184	6.40
Total	**18,506**	**100.00**
(type of place of residence)		
urban	4,379	23.66
rural	14,127	76.34
Total	**18,506**	**100.00**
(current marital status)		
Never married	4,738	25.60
Married	11,379	61.49
Widowed	523	2.83
Divorced/Separated	1,866	10.08
Total	**18,506**	**100.00**
(educational attainment)		
No education	2,071	11.19
Primary	10,893	58.86
Secondary	4,213	22.77
Higher	1,329	7.18
Total	**18,506**	**100.00**
(region)		
Central	4,325	23.37

Characteristics of the study population by family structure and socio-demographic variables		
	Frequency	**Percent**
Eastern	5,039	27.23
Northern	4,368	23.60
Western	4,774	25.80
Total	**18,506**	**100.00**
(employment or working status)		
Not working	4,077	22.07
Professional/Clerical/sales	2,968	16.07
Agriculture/domestic	7,580	41.04
Services/Skilled	3,176	17.20
Unskilled	669	3.62
Total	**18,470**	**100.00**
(religion)		
No religion	25	0.14
Anglican	5,799	31.47
Catholic	7,552	40.81
Muslim	2,166	11.70
Other Christians	2,964	16.02
Total	**18,506**	**100.00**
(wealth index status)		
Poorest	3,884	20.99
Poorer	3,640	19.67
Middle	3,485	18.83
Richer	3,454	18.66
Richest	4,043	21.85
Total	**18,506**	**100.00**

Of the total of 18,506 samples of women of reproductive age (15–49 years) interviewed/included in the dataset: 23.1% were adolescents (15–19 years) and 76.3% lived in rural areas (Table 1 above). More than half (58.9%) attained a primary level of education, 31.4% were married, and 40.8% were affiliated with the Catholic religion. Further analysis revealed that the majority of women (73.9%) were currently working at the time of the interview and most of them (21.8%) lived in households with the highest wealth index. The Baganda tribe represented the highest proportion of ethnic groupings (13.2%) and only a handful of women (15.5%) used government clinics/pharmacies as the main source for family planning methods.

4.1.2 **Weighted characteristics/distribution of modern contraceptive use among women of reproductive age (15-49) by family structure and socio-demographic characteristics**

In this study we weighted the dataset against the target population by applying per 100,000 scale by performing the following Stata operations: {**. gen wt=v005/100000; . svyset [pw=wt],psu(v001) strata(v023) singleunit(center)}.** Weighting the data is thought of as an important thing to perform in the generalization of the results to the entire target population of the country. The results are tabulated below;

Table 4.1.2 – Weighted distribution of modern contraceptive use among women of reproductive age (15-49) by family structure and socio-demographic characteristics, (UDHS, 2016)

Weighted characteristics of the respondents	Frequency	Percent
Family structure variables		
(total number of children ever born)		
No children	47,853	26.58
1-3 children	64,566	35.87
4-6 children	40,463	22.48
7-10 children	24,018	13.34
11 and above	3,118	1.73
Total	**180,018**	**100.00**
(sex of the household head)		
male-headed	118,578	65.87
female-headed	61,440	34.13
Total	**180,018**	**100.00**
(Sex composition of the children)		
male	68,104	51.53
female	64,061	48.47
Total	**132,165**	**100.00**
(number of co-wives)		
No co-wife	79,676	74.33
one co-wife	21,641	20.19
2-3 co-wives	5,544	5.17
4-5 co-wives	269	0.25
6 and above	59	0.05
Total	**107,189**	**100.00**
Socio-demographic variables;		
(age in 10-year groups)		
15-24	79,640	44.24
25-34	53,718	29.84
35-44	34,819	19.34
45-49	11,841	6.58
Total	**180,018**	**100.00**
(type of place of residence)		
urban	47,241	26.24
rural	132,777	73.76
Total	**180,018**	**100.00**

Weighted characteristics of the respondents	Frequency	Percent
(current marital status)		
Never married	47,829	26.57
Married	107,189	59.54
Widowed	5,220	2.90
Divorced/Separated	19,780	10.99
Total	**180,018**	**100.00**
(educational attainment)		
No education	17,426	9.68
Primary	103,791	57.66
Secondary	44,930	24.96
Higher	13,871	7.71
Total	**180,018**	**100.00**
(region)		
Central	51,375	28.54
Eastern	48,231	26.79
Northern	35,335	19.63
Western	45,077	25.04
Total	**180,018**	**100.00**
(employment or working status/occupation)		
Not working	41,151	22.90
Professional/Clerical/sales	30,508	16.98
Agriculture/domestic	73,089	40.67
Services/Skilled	29,141	16.22
Unskilled	5,811	3.23
Total	**180,018**	**100.00**
(religion)		
No religion	226	0.13
Anglican	56,345	31.30
Catholic	71,223	39.56
Muslim	23,089	12.83
Other Christians	29,135	16.18
Total	**180,018**	**100.00**
(wealth index status)		
Poorest	32,207	17.89
Poorer	33,428	18.57
Middle	33,930	18.85
Richer	35,662	19.81
Richest	44,791	24.88
Total	**180,018**	**100.00**

4.3. **Level of current use of modern contraceptive methods among sampled women of reproductive ages (15-49 years)**

Table 4.3.1: modern contraceptive prevalence among the sampled women of reproductive age (15-49 years), UDHS 2016

Dependent Variable	Frequency	Percent
Modern contraceptive use		
Currently using	4,914	26.6
Currently not using	13,592	73.4
Total	**18,506**	**100**

Source: Author's report, UDHS dataset 2016

4.3.2: Pattern of current use of contraceptive use among the sampled women of ages (15-49 years), UDHS 2016

Variable	Frequency	Percent
Modern contraceptive use		
Currently using modern fp methods	4,914	26.6
Currently using traditional fp methods	504	2.7
Currently not using any fp methods	13,088	73.4
Total	**18,506**	**100**

Source: Author's report, UDHS dataset 2016

4.4. Bivariate analysis of weighted family structure and socio-demographic variables and prevalence of current use of modern contraception in Uganda, (UDHS 2016)

	Current use of modern contraception: Weighted Frequency (%)				
Variable	**Yes, using**	**Not using**	**Pearson: Uncorrected chi2-value**	**Pearson: Design-based F-value**	**P-value**
Family structure variables					
(total children ever born)			4094.393**	675.757**	**0.000**
No children	8,467 (8.35)	39,000 (50.14)			
1-3 children	44,000 (43.01)	21,000 (26.64)			
4-6 children	31,000 (30.7)	9,315 (11.86)			
7-10 children	16,000 (16.06)	7,726 (9.84)			
11 and above	1,914 (1.89)	1,204 (1.53)			
(sex of the household head)			13.722**	10.123**	**0.0015**
male-headed	68,000 (67.02)	51,000 (64.39)			

	Current use of modern contraception: Weighted Frequency (%)				
Variable	**Yes, using**	**Not using**	**Pearson: Uncorrected chi2-value**	**Pearson: Design-based F-value**	**P-value**
female-headed	33,000 (32.98)	28,000 (35.61)			
(Sex composition of children)			0.191	0.149	**0.6998**
Male	48,000 (51.65)	20,000 (51.24)			
Female	45,000 (48.35)	19,000 (48.76)			
(number of co-wives)			16.395*	3.018*	**0.0197**
No co-wife	56,000 (75.04)	24,000 (72.76)			
one co-wife	15,000 (19.85)	6,956 (20.96)			
2-3 co-wives	3,645 (4.93)	1,898 (5.72)			
4-5 co-wives	113 (0.15)	156 (0.470)			
6 and above	29 (0.040)	30 (0.089)			
Socio-demographic variables;					
(age in 10-year groups)			2232.244**	524.956**	**0.000**
15-24	30,000 (29.45)	50,000 (63.35)			
25-34	41,000 (40.05)	13,000 (16.66)			
35-44	24,000 (23.97)	11,000 (13.37)			
45-49	6,634 (6.54)	5,207 (6.63)			
(type of place of residence)			91.077**	28.847**	**0.000**
urban	29,000 (62.26)	18,000 (37.74)			
rural	72,000 (54.26)	61,000 (45.74)			
(current marital status)			3185.412**	721.283**	**0.000**
Never married	11,000 (10.37)	37,000 (47.49)			
Married	74,000 (72.93)	33,000 (42.25)			
Widowed	2,905 (2.86)	2,315 (2.95)			
Divorced/Separated	14,000 (13.93)	5,748 (7.32)			
(educational attainment)			177.396**	31.647**	**0.000**
No education	8,394 (8.274)	9,032 (11.50)			
Primary	57,000 (56.29)	47,000 (56.29)			
Secondary	26,000 (25.77)	19,000 (23.91)			
Higher	9,800 (9.66)	4,071 (5.18)			
(region)			337.804**	41.701**	**0.000**
Central	33,000 (32.58)	18,000 (23.32)			
Eastern	28,000 (27.11)	21,000 (26.38)			
Northern	16,000 (15.5)	20,000 (24.96)			
Western	25,000 (24.81)	20,000 (25.34)			
(employment or working status)			924.579**	131.805**	**0.000**
Not working	16,000 (15.41)	26,000 (32.6)			
Professional/Clerical/sales	22,000 (21.6)	8,611 (10.99)			
Agriculture/domestic	42,000 (41.45)	31,000 (39.67)			

	Current use of modern contraception: Weighted Frequency (%)				
Variable	**Yes, using**	**Not using**	**Pearson: Uncorrected chi2-value**	**Pearson: Design-based F-value**	**P-value**
Services/Skilled	18,000 (17.89)	11,000 (14.05)			
Unskilled	3,710 (3.66)	2,102 (2.68)			
(religion)			35.899**	3.709**	**0.0076**
No religion	88 (0.087)	138 (0.18)			
Anglican	33,000 (32.67)	23,000 (29.53)			
Catholic	39,000 (38.17)	32,000 (41.37)			
Muslim	14,000 (13.33)	9,565 (12.18)			
Other Christians	16,000 (15.74)	13,000 (16.76)			
(wealth index status)			315.709**	44.079**	**0.000**
Poorest	14,000 (14.00)	18,000 (22.92)			
Poorer	18,000 (17.83)	15,000 (19.52)			
Middle	19,000 (18.97)	15,000 (18.7)			
Richer	22,000 (21.39)	14,000 (17.76)			
Richest	28,000 (27.81)	17,000 (21.1)			
Level of significance: p<0.05, 95% Confidence Interval (CI); **-highly significant; *-significant					

Bivariate analyses reveled that, the total number of children ever-born vis-à-vis the ideal number (4.4) of children (0.000); having a co-wife (0.0197); and the sex of the household head (0.0015) were, respectively, found to be a highly significant and very significant family structure variables in determining current use of modern contraception in Uganda. The sex composition of living children (0.6998) were not significant on current use of modern contraception. Meanwhile the wealth index (0.000); religion (0.008); woman's employment/working status (0.000) educational attainment (0.000); type of place of residence and the region the woman resided at time of survey (0.000); the woman's current marital status (0.000); and the woman's age (0.000) were highly significant socio-demographic factors on current use of modern contraction in Uganda.

4.5 Determinants of modern contraceptive use of women of reproductive age 15-49 years;

The study uses three models to examine the association between different dimensions of family structure on modern contraceptive use

Table 4.5.1: Logistic Regression results from the Stata output – displaying adjusted odds ratios and confidence intervals of contraceptive use by family structure and socio-demographic characteristics of women of reproductive age (15-49 years), UDHS 2016

Logistic regression

Mean dependent var	0.687	SD dependent var	0.464
Pseudo r-squared	0.098	Number of obs	13358
Chi-square	1633.802	Prob > chi2	0.000
Akaike crit. (AIC)	15037.857	Bayesian crit. (BIC)	15270.353
Log likelihood = -7487.9283 ;		***** p<.01 ; ** p<.05 ; * p<.1**	

v361F (current use of modern family planning methods)	**Odds ratio**	**st.err.**	**t-value**	**p-value**	**95% Confidence Interval**		**Sig.**
type of place of residence - urban[a]	1	.	.	.	.	.	
rural	.855	.054	-2.49	.013	.756	.967	**
RECODE of v013 (age group – 15-24 years[a])	1	.	.	.	.	.	
25-34	1.286	.074	4.39	0	1.15	1.439	***
35-44	.792	.059	-3.11	.002	.683	.917	***
45-49	.454	.043	-8.29	0	.376	.547	***
RECODE of v501 (marriage status – never married[a])	1	.	.	.	.	.	
Married	1.961	.173	7.62	0	1.649	2.331	***
Widowed	1.249	.162	1.72	.086	.969	1.61	*
Divorced/Separated	1.927	.19	6.64	0	1.588	2.338	***
RECODE of v149 (education - no education[a])	1	.	.	.	.	.	
Primary	2.222	.128	13.88	0	1.985	2.487	***
Secondary	2.911	.23	13.55	0	2.494	3.397	***
Higher	3.153	.385	9.41	0	2.482	4.005	***
RECODE of v190 (wealth status - poorest[a])	1	.	.	.	.	.	
Poorer	1.532	.091	7.20	0	1.364	1.72	***
Middle	1.764	.114	8.75	0	1.554	2.004	***
Richer	2.197	.154	11.23	0	1.915	2.521	***
Richest	2.348	.209	9.59	0	1.972	2.795	***
RECODE of v717 (working status/ occupation – (not working[a])	1	.	.	.	.	.	
Professional/Clericals	1.687	.129	6.83	0	1.452	1.96	***
Agriculture/domestic	1.254	.075	3.79	0	1.115	1.41	***
Services/Skilled	1.504	.106	5.79	0	1.31	1.727	***
Unskilled	1.478	.172	3.37	.001	1.177	1.856	***
RECODE of v101 (region – Central[a])	1	.	.	.	.	.	

v361F (current use of modern family planning methods)	Odds ratio	st.err.	t-value	p-value	95% Confidence Interval		Sig.
Eastern	.737	.05	-4.51	0	.645	.841	***
Northern	.524	.038	-8.99	0	.455	.603	***
Western	.691	.046	-5.53	0	.606	.788	***
RECODE of v130 (religion – No religion[a])	1	.	.	.	.	.	
Anglican	3.139	1.766	2.03	.042	1.042	9.457	**
Catholic	2.632	1.48	1.72	.085	.874	7.922	*
Muslim	2.235	1.262	1.42	.154	.739	6.761	
Other Christians	2.428	1.369	1.57	.116	.804	7.33	
RECODE of v201 (parity – total # of children ever-born – no child[a])	1	.	.	.	.	.	
4-6 children	2.068	.122	12.35	0.000	1.843	2.32	***
7-10 children	2.248	.171	10.64	0.000	1.936	2.61	***
11 and above	1.772	.254	3.99	0.000	1.338	2.346	***
sex of the household head – (male headed[a])	1	.	.	.	.	.	
female	.958	.048	-0.85	.397	.868	1.058	
sex composition of children – (male[a])	1	.	.	.	.	.	
female	1.011	.04	0.28	.783	.935	1.093	
Constant	.117	.067	-3.72	0	.038	.362	***

Note1: _cons estimates baseline odds.
Note2: v501F omitted because of collinearity
Note3: [a] ~ reference category (RC)
aOR – adjusted odds ratio
Level of significance p<0.05, 95% Confidence Interval (CI); ***-highly significant; **-significant

The odds ratio analysis (table above) revealed a significantly higher odds of current use of modern family planning methods among; women who had 7-10 children (OR = 2.248, 95% CI: 1.936–2.61); women in age group 25–34 years (OR = 2.09, 95% CI: 1.40–3.12); women who had attained a higher level of education (OR = 3.153, 95% CI: 2.482–4.005); women who lived in households with highest wealth index (OR = 2.348, 95% CI: 1.972–2.795); working women in professional/clerical categories (OR 1.687, 95% CI 1.452-1.96); Anglican women (OR = 3.139, 95% CI: 1.042–9.457); while women living in the eastern, northern and western regions of Uganda with (OR = 0.737, 95% CI: 0.645–0.841; oR 0.524, 95% CI 0.455-0.603 and OR 95% CI 0.606-0.788 respectively) had lower odds of using modern fp methods. Working women (OR 1.687, 95% CI 1.452-1.96), and widowed/separated (OR 1.927, 95% CI 1.588-2.338) were more likely users of modern contraception methods.

From the above table 4.5.1 of results of the Stata output of the multivariate logistic regression analysis - showing the relationships between current use of modern family planning methods (outcome variable) and the independent variables, we can deduce as follows;

Women who lived in rural areas were less likely to use modern family planning methods as compared to women who lived in urban [aOR=0.855] [95% CI, 0.756 - 0.967].

Women aged 25-34 had increased odds of using modern family planning methods as compared to their less than 25 and above 34 counterparts [aOR=1.286], increase in age reduced the odds of using modern family planning methods [aOR=0.792 and 0.454] for women aged 35-44 and 45-49 respectively.

Married women were more likely to use modern family planning methods as compared to their never married counterparts [aOR=1.961] [95% CI, 1.649-2.331]. Also, the Divorced/Separated were more likely to use modern family planning methods as compared to the never-married [95% CI, 1.588-2.338]. Widowhood was statistically insignificantly related to the use of modern family planning method [p=0.086] at 95% confidence level.

Education increased odds of using modern family planning methods. Women with at least primary education or higher were more likely to use modern family planning methods as compared to their counterparts with no education [aOR=2.338, 2.911 and 3.153] with a [95% CI, 1.985-2.487, 2.494-3.397 and 2.482-4.005] for primary, secondary and higher education respectively.

The use of modern family planning methods increased with an increase in wealth status of the respondents. Women who belonged to at least poorer wealth status were more likely to use modern family planning methods as compared to the women who belonged to the poorest wealth status [aORs=1.532, 1.764, 2.197 and 2.348] with a [95% CI, 1.364-1.72, 1.554-2.004, 1.915-2.521 and 1.972-2.795] for poorer, middle, richer and richest respectively.

Respondents who were employed were more likely to use modern family planning methods with professional/clerical occupations having the highest odds, followed by skilled/services occupations, unskilled occupations and agriculture/domestic occupations as compared to being with no employment [aOR=1.687, 1.504, 1.478 and 1.254] with a [95% CI, 1.452-1.96; 1.31-1.727; 1.177-1.856 and 1.115-1.41] respectively.

Region of residence also varied significantly with the use of modern family planning methods whereby living in eastern, northern and western regions of Uganda reducing/reduced the odds or likelihood of using modern methods of family planning [aOR=0.737, 0.524 & .691] with a [95% CI, 0.645-0.841; 0.455-0.603 and 0.606-0.788] for respondents who lived in eastern, northern and western regions respectively, as compared with those living in central region (RC).

Women who belonged to Anglican religion were three times more likely to use modern family planning methods as compared to the respondents who were not affiliated to any religion [AOR=3.139 with a 95% CI, 1.042-9.457]. Catholic, Muslim and other Christian affiliations were not statistically significant at 95% confidence interval.

Within the family structure settings, having four (4) or more total children ever-born increased the odds of using modern family planning methods as compared to having less than four (<4) total children ever-born. Respondents who had 4-6, 7-10, and 11 or more total children ever born were more likely to use modern methods of family planning as compared to respondents with 1-3 children ever born [aOR=2.068, 2.248, and 1.772] with a [95% CI, 1.843-2.32; 1.936-2.61, and 1.338-2.346] respectively.

The other independent family structure variables "sex of the household head" and "sex composition of the living child/children" were not statistically significant with the use of modern family planning methods at 95% confidence level.

The overall model shows a good fit of data with the Pearson Chi-Square test of p = 0.000 and the model is said to fit well when the p-value is more than 0.05.

4.5.2 The independent effects of family structure variables on modern contraceptive use in Uganda, UDHS 2016;

Table 4.5.2: Logistic Regression Analysis showing odds ratios, 95% confidence interval and associated p-values of family structure variables and modern contraceptive use (UDHS, 2016)

Logistic regression			
Log likelihood	-6240.2085		
Mean dependent var	0.699	SD dependent var	0.459
Pseudo r-squared	0.0113	Number of obs	10,314
Chi-square	142.107	Prob > chi2	0.000
Akaike crit. (AIC)	12500.417	Bayesian crit. (BIC)	12572.830
Level of significance p<0.05, CI 95% Confidence Interval			

v361F (modern contraceptive use)	**Odds ratio**	**p-value**	**[95% Confidence Interval]**		**Sig.**
RECODE of v201 (no kid[a]; or 1-3 kids)	1	.	.	.	
4-6 children	2.068	.000	1.843	2.32	***
7-10 children	2.248	.000	1.936	2.61	***
11 and above	1.772	.000	1.338	2.346	***
RECODE of v505 **(no co-wife[a])**	1	.	.	.	
one co-wife	.82	0	.737	.913	***
2-3 co-wives	.702	0	.588	.839	***
4-5 co-wives	.208	0	.1	.435	***
6 and above	.522	.399	.116	2.359	
sex of the household head (male-	1	.	.	.	

v361F (modern contraceptive use)	Odds ratio	p-value	[95% Confidence Interval]		Sig.
headed[a])					
female	.916	.113	.822	1.021	
sex composition of children (male[a])	1	.	.	.	
female	.992	.855	.911	1.08	
Constant	2.182	0	2.018	2.36	***
Note: [a] ~ reference category (RC),		**p*** p<.01, ** <.05, * p<.1**			

The odds ratio analysis (table 4.5.2 above) revealed a significantly higher odds of current use of modern family planning methods among; women who had 7-10 children (OR = 2.248, 95% CI: 1.936–2.61); women in age group 25–34 years (OR = 2.09, 95% CI: 1.40–3.12); women who had attained a higher level of education (OR = 3.153, 95% CI: 2.482–4.005); women who lived in households with highest wealth index (OR = 2.348, 95% CI: 1.972–2.795); working women in professional/clerical categories (OR 1.687, 95% CI 1.452-1.96); Anglican women (OR = 3.139, 95% CI: 1.042–9.457); and women living in the eastern region of Uganda (OR = 0.737, 95% CI: 0.645–0.841) and married women who had cos (OR 1.961, 95% CI 1.649-2.331), or widowed/separated (OR 1.927 p5% CI 1.588-2.338).

Women who had 4-6 children were 1.6 times more likely to use modern contraception than women with 1-3 kids or those without; while those who had 11 children and over, were 0.7 times less likely to use modern contraception. Meanwhile the women who had a co-wife were 0.8 times less likely to use modern contraception compared to those without a co-wife. Women with 2-3 co-wives were 0.7 times less lily to use modern contraceptive methods of fp compared to those without; while women with 4-6 co-wives were 0.2 times less likely to use modern contraceptive fp methods.

Family structure variables, though some aspects were found highly significant in influencing the use of modern contraception, but it accounted for only 1.13 percent in explaining current use of modern contraception in Uganda.

4.6. Hypothesis Testing

Hypothesis 1: The relationship between total children ever-born (parity) and modern contraceptive use

Results from data analysis supports the perception that, parity (total number of children ever-born) has a significant influence on the use of modern contraception among Ugandan women aged 15-49, as the likelihood of using modern contraception increased as the total number of children also increased. So, we reject the null hypothesis that there is unlikely relationship between modern contraceptive uses among Ugandan women aged 15-49 and conclude that the alternative hypothesis is true at 95% confidence level.

Hypothesis 2: The relationship between sex composition of children and modern contraceptive use

According to the results, the sex of the child was statistically insignificant in influencing the decision whether to use modern contraceptive fp methods or not. So, we do not have enough evidence to reject the null hypothesis of unlikely relationship between the sex of children and modern contraceptive use, and conclude that, the alternative is false; at 95% confidence level.

Hypothesis 3: The relationship between the sex of the household head and modern contraceptive use

The sex of household head was not statistically significant (for weighted dataset) in influencing the decision to use or not to modern contraceptive fp methods. Therefore we do not have enough evidence to reject the null hypothesis of unlikely relationship between the sex of the household head and modern contraceptive use, and conclude that, the alternative is false; at 95% confidence level.

5. Discussions of key results

With reference to the objectives of the study, we present the discussion of the results in this section, including making comparison of our results with the findings from other (related) studies elsewhere.

The overall aim of this study was to examine the influence of family structure variables on modern contraception use among Ugandan women aged 15-49. The specific objectives were: to examine the effects of socio-demographic factors on modern contraceptive use; measure the levels and patterns of modern contraceptive use and examine the association between the different dimensions of family structure variables and modern contraceptive use among Ugandan women aged 15-49. Our data analysis estimated a 29% prevalence rate in the country. Therefore, Uganda had the lowest fp prevalence rate as compared to the rates in neighboring countries like Kenya (45.5%), Rwanda (51.6%), and Tanzania (34.4%) [26]. The difference in the FP prevalence rates could be due to the low level of education among women, having three or more children, living in rural areas, husband's disagreement on/or disapproval of modern contraceptive use, perceived side effects, infant mortality; negative traditional practices, knowledge gaps on contraceptive, fears, rumors, misconceptions about specific methods, distance/access, and unavailability and poor quality of services [27]. A recent study on contraceptive use further pointed out cultural beliefs, financial constraints to access contraceptives, and limited sources of family planning information like television and newspapers [23]. Low prevalence of family planning use could negatively affect Uganda's progress in achieving sustainable development goal three (SDG3) target 3.7 that aims to ensuring a universal access to sexual and reproductive healthcare services, including family planning by 2030; if more interventions not put in place [28].

Our study found a significantly higher odds of FP use among women who had 4 children and above at the time of survey, suggesting or rather confirming the narrative about the ideal (average) number of children at 4.4.

We found that women that had a co-wife and 02 co-wives or more were less likely users of modern methods of fp. More engagement is required to establish this scenario, however, it is widely understood that having two or more women usually give a man an option when one wife maybe undergoing unfavorable conditions. Our study revealed that, women in age group 25-34 were more likely to use modern fp methods; while as women in the age group 35–44 and 45-49 years were less likely to use modern contraception methods. This makes sense in that, older women could have probably attained, or nearly attained their ideal number of children! Previous analysis of the UDHS, 2011 and the even the Uganda FP costed implementation plan 2015–2020 revealed disparities in the use of family planning by: age, marital status, education, socio-economic status, rural-urban geographic location and the region [29]. Our finding (using weighted data) do not concur with other studies that found the use of FP increases with older age [30, 31]. Some study argued that older women are more exposed to information concerning childbearing and the dangers of high parities so they have appreciated the importance of the uptake of family planning methods.

Woman's educational achievements were found in some studies to be very significant factors in the use of FP methods [31, 32]. Our study also found the education of women alone as one significant driver of the FP uptake as it also determines the kind of employment/occupation of the woman. Unlike women with no formal education, this study revealed that women with at least primary, secondary or higher education are more likely users of modern FP methods. This is not a surprising outcome since higher education attainment increases female decision-making powers and awareness of the benefits of good family planning practices [33]. Education exposes women to reproductive health information and empowers them to make appropriate judgments, in addition to creating a sort of platform or an opportunity to discuss it with their spouses. This affirms the relevance of education in matters concerning the use of modern FP methods in Uganda and in enhancing the reproductive health outcomes such as a reduced maternal and infants/child moralities, etc.

Our study (using weighted data), found even women living in households with poorer wealth index having high odds of using modern fp methods; while as the women living in households with the highest wealth index had significantly very higher odds of using modern FP methods. This finding concurs with a study conducted in Ethiopia [34] but, contradicts another study conducted in Uganda which had found (or claimed) that, wealth was not associated with FP use [35]. This phenomenon can be explained by current women's empowerment through education and media awareness, with the poorest less likely to be well informed about modern FP methods, which can be attributed to a lack of access to both print and news media due to lack of ownership of television, mobile phones, or buying newspapers that limits getting the FP information [36, 37, 38]. The poorest women in terms of wealth index are mostly found in the rural areas compared to urban and may also have problems accessing healthcare due to long distances to the health facility, lack of transport money or means, and limited access to FP as a result of out-of-pocket expenditures to purchase FP methods at a time of need [39].

This study found that region the woman lived was highly associated with the uptake of modern fp methods among women of reproductive age. Specifically, women in the eastern, northern and western regions were found less likely users of modern FP methods as compared to those located in the central region of Uganda. This finding agrees with other studies that have also shown regional geographical differences having influence on the uptake of modern fp contraception methods [39, 40, 41]. This is possible considering that some of the variables that influence higher uptake such as woman's education level, living in an urban areas, the working status/occupation, wealth index, access to information and intentions to having fewer quality children or rather the ideal number of children are more noticeable in the central region than in the three other regions of Uganda. Furthermore, some regions systematically fail to benefit from wider improvements in health experienced by the general population because such groupings are geographically or linguistically remote or benefit selectively from national and international investments [42]. Knowledge is a strong predictor of current use of modern family planning contraception methods as was corroborated by Olugbenga et al (2011) in their study carried out in South-Western Nigeria [43]. They noted, such a pattern should be expected considering that much enlightenment that is ongoing on the use of modern FP methods in that country.
It is however worth noting that some modern family planning methods were unpopular among respondents because they were not readily available and relatively more expensive than other methods. These included male sterilization (vasectomy), vaginal rings, female sterilization (tubal ligation), lactational amenorrhea, and intrauterine device (IUD) levonorgestrel.

Implications of findings

It appears that, broadening of the uptake of modern FP methods brings significant health and other benefits, examples, if you continuously offer a wide range of non-health benefits that encompass expanded education opportunities, empowerment opportunities for women through wealth creation initiatives, plus increasing information access for a more sustainable population growth and economic development of Uganda - could propel the country in its quest to realize the dream of middle income and attaining demographic dividend by year 2040.

Strengths of the study

Use of a nationally representative samples of women of reproductive age drawn up from the entire country sides of Uganda is one main strength of this study. Since it was a population-based study, the health facility factors that could influence current use of modern FP methods were not included in the survey.
Therefore, one major limitation of the study could be that the dataset are cross-sectional and by that we are unable to establish if there were some existence of certain state of relationship (temporalities) between participants' exposure to some of the independent variables (i.e. program exposure) and the outcome at the time of survey.

Limitations of the study

People's intentions to use different contraceptive methods maybe influenced by a number of factors. These factors include the perceived gains from using the contraceptives, the manner in which the side effects of contraception may affect them on a daily basis and how the use of particular methods may affect the state of their relationship with their spouse. So, in the same way that those factors may hinder intentions of use, they may also hinder the reporting of actual use. The survey was a population-based study, and so health facility factors could have had influence on current use of modern FP methods which were not included in the survey. Therefore, another major limitation of the study could be that the dataset are cross-sectional and by that we are unable to precisely establish and say if there were or not some existence of certain state of relationship (temporalities) between participants' exposure to some of the independent variables (i.e. program exposure) and the outcome at the time of survey. Cross-sectional data often gives only a snapshot of the situation, hence measuring contraceptive use at different points in time could create different results, although this study is capable of adequately determining associations between family structure and contraceptive use using this cross-sectional data, but I also think that the causal conclusions on the relationship between the two might not be made due to the nature of cross-sectional data.

Conclusion

The study shows the prevalence of current use of modern FP methods in Uganda was somewhat far below the desired level, and in comparison with countries in the region, and that presents a remarkable challenge to achieving the SDG goal 3, target 3.7 by 2030; and by extension impacting negatively on realization of the middle income status and the aspiration to attain demographic dividend by year 2040.

Recommendation

The study suggests that making wider improvement in/more efforts on women's education attainment aligned with favorable employment policies for women, economic empowerment programs for especially the rural women, and expanding awareness about the ideal number of children - could greatly help increase modern contraceptive use in the population;

Aware that teenage pregnancies and early motherhood contributes significantly to high fertility rates in the country, therefore, policymakers should ensure there are stronger policies in place and local byelaws to help keep girls in schools long enough so as to delay marriages or stop early pregnancies to reduce fertility rates. Increasing information access could help promote the use of modern FP methods among young women especially teenagers since this revealed that young woman (15-24) were the fewer users of modern FP methods compared to the older women, and also it can alter the negative dynamics within the family structure identified as significant in our study. Besides it could also encourage the parents, especially those in rural areas understand the importance of controlling unintended pregnancies.

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