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Demand for Family Planning among Poor Women in Uganda: Further Analysis of the Demographic and Health Surveys

Allen Kabagenyi
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HEALTH
SURVEYS



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Demand for Family Planning among Poor Women in Uganda:

Further Analysis of the Demographic and Health Surveys

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August 2019

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Additional information about the 2016 UDHS or other UDHS surveys may be obtained from the Directorate of Population and Social Statistics, Uganda Bureau of Statistics, Colville Street, P.O. Box 7186, Kampala, Uganda; telephone +256-414-706000; email: ubos@ubos.org; Internet: www.ubos.org.

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ABBREVIATIONS AND ACRONYMS

AOR	adjusted odds ratios
CI	confidence interval
DHS	Demographic and Health Survey
OR	odds ratio
USAID	United States Agency for International Development

ABSTRACT

Background: Family planning is one of the major cost-effective interventions to improve maternal health, reduce maternal and child mortality, and prevent unplanned pregnancies, yet its use remains low in sub-Saharan Africa, especially among the poor. In Uganda, little is known about the factors influencing the demand for family planning among the poor. This study examines the determinants of demand for family planning among poor women in a limited-resource setting.

Methods: The study is based on data from the 2006, 2011, and 2016 Uganda Demographic and Health Surveys (UDHS). Multilevel binary logistic regressions were used to examine the influence of different demographic, behavioral, and socioeconomic factors on poor women's demand for family planning.

Results: Our findings showed demand for family planning was 56% in 2006, 60% in 2011, and 65% in 2016 among women in the poorest and poorer household health quintiles who were married or in union. In all three surveys, women age 25-39 had higher odds of demand for family planning compared with women age 15-24. Women with no education had lower odds of demand for family planning compared with those with secondary education. Also, in the 2011 UDHS, women who had heard about family planning on the radio had higher odds of demand for family planning compared with those who had not, and in the 2006 survey women who had discussed family planning at a health facility had higher odds of demand for family planning compared with women who had not done so.

Conclusions: Demand for family planning is influenced by a woman's age, educational attainment, religion, exposure to family planning messages on the radio, and discussion on family planning at a health facility. This study underscores the need for increased family planning counseling by health workers and more discussion about family planning at the health facility. The findings further suggest the need to provide increased adequate family planning services and information for the poor, uneducated, and rural women to meet the demand for family planning.

Key words: DHS, demand for family planning, poor women, Uganda

1 INTRODUCTION

Family planning is one of the major cost-effective interventions to reduce maternal and child mortality, yet its use remains low in sub-Saharan Africa (Ahmed et al. 2012; Stover and Ross 2010). The use of effective modern contraceptive methods has been linked to prevention of unplanned pregnancy and abortions, and reduction of repeat pregnancies, which are a great risk to the health of the mother (Tsui et al. 2010; Stover and Ross 2010). Globally, over 200 million women have an unmet need for family planning—that is, they would like to either space or limit their births, but are not using any method of contraception to achieve their fertility desires (WHO 2012; WHO 2018).

United Nations Sustainable Development Goal 3 (SDG 3) stipulates the need for joint efforts to ensure healthy lives and promote well-being for all people at all ages. In sub-Saharan Africa, unmet need for family planning has remained continually high and corresponding contraceptive prevalence is low (Cleland et al. 2014). It is evident that many women who wish to use contraceptive methods meet hindrances linked to access, misconceptions, and availability of the different methods (Bongaarts and Bruce 1995; Bradley et al. 2012). Moreover, the United Nations global goals further highlight the need for inclusive growth for all with an ambitious goal of “leaving no one behind” by supporting the neglected/ignored population subgroups (United Nations 2015).

The poor are classified among the vulnerable, excluded, and marginalized/discriminated population groups (Prata et al. 2017). Furthermore, reducing unmet need has a significant effect on maternal and child health outcomes and helps women fulfill their fertility intentions (Bradley et al. 2012; Casterline and Sinding 2000). There is no doubt that investment in family planning would yield great benefits and save costs related to maternal health care (Frost et al. 2014). In many countries, the low level of use of modern contraception translates into high fertility levels, as in Uganda, which is one of the countries in the region with the highest fertility rates, at 5.4 children per woman (Cleland et al. 2010; Schivone and Blumenthal 2016). While the benefits of using contraception are known, given the nearly universal knowledge of family planning among women and men, prevalence of any contraceptive method use remains low in Uganda at only 35% among married women (Uganda Bureau of Statistics (UBOS) and ICF 2017).

A review of the vulnerable groups depicts the poor being left behind, yet they are in great need of family planning services (Adebowale et al. 2014; Ross 2015). The poor have the lowest contraceptive prevalence among all population groups, especially in low-income countries. Findings on differential effects of household wealth status on modern contraceptive use and fertility among women in Malawi, for example, showed that the prevalence of ever use of modern contraceptives was significantly higher among women in the richest wealth quintile compared with the poorest, and the pattern was similar for current contraceptive users (Adebowale et al. 2014). Similarly, over the years the Demographic and Health Surveys (DHS) have shown inequalities in the use of family planning methods between women in poor and rich households.

Notably, in the most recent DHS survey in Uganda, the total fertility rate (TFR) was highest in the lowest wealth quintile, at 7.1, and lowest in the highest wealth quintile, at 3.8. This is consistent with contraceptive prevalence being lowest in the poorest wealth quintile, at 25%, and highest in the richest quintile, at 49% (Uganda Bureau of Statistics (UBOS) and ICF 2017). Unmet need for family planning is highest in the

poorest wealth quintile, at 39%, and lowest in the richest wealth quintile, at 23%. Important to note is that the percentage of the demand for family planning satisfied by contraceptive use is much lower in the poorest wealth quintile, at 50%, compared with the richest wealth quintile, at 72% (Uganda Bureau of Statistics (UBOS) and ICF 2017).

Research among rural women of reproductive age has shown that many factors significantly influence the uptake of modern family planning methods, including marital status, religion, cost of services, and proximity to care. Additionally, fear of side effects, husband's disapproval, and desire for more children are reasons for nonuse of family planning (Kabagenyi et al. 2014; Kabagenyi et al. 2016; Link 2011; Oliwole et al. 2013). Husbands are considered key decision-makers regarding women's health seeking and uptake of family planning (Kabagenyi et al. 2014). Some studies have found that unmet need for family planning was more likely among women who had discussed family planning with their partners and whose partners disapproved of family planning (Letamo and Navaneetham 2015).

Demand for family planning is considered to include women currently using modern contraception and women with unmet need for spacing and limiting births. Most of the studies done in the area of family planning focus on contraceptive use, the contraceptive methods used, and socioeconomic and demographic determinants of contraceptive use (Andi et al. 2014; Kabagenyi et al. 2014). Studies of demand for family planning tend to focus on demand by method (Ewerling et al. 2018) and in the postpartum period (Rutaremwa et al. 2015; Barber 2007). However, little research has been done on the factors that determine demand for family planning by wealth quintile, specifically among poor women.

Intermediate factors that could help to explain demand for family planning are related to exposure to family planning messages, availability of health facilities, and preference factors including education, cost of services, transportation and proximity to a facility, discussion of family planning with partners and with health workers, employment status, and others (Andi et al. 2014; Ewerling et al. 2018; Rutaremwa et al. 2015; Kabagenyi et al. 2014). In a systematic review of how user fees influence contraceptive use in low- and middle-income countries, findings suggested that a price increase in family planning commodities affected contraceptive use among the poor (Korachais et al. 2016). In India, in a study among women who were not using family planning, a majority mentioned fear of side effects as a reason for nonuse (New et al. 2017; Raj and McDougal 2017). Demand for family planning remains an intricate issue, as different population groups seem to have barriers to accessing modern contraceptive methods, particularly poor women from rural areas and underserved communities.

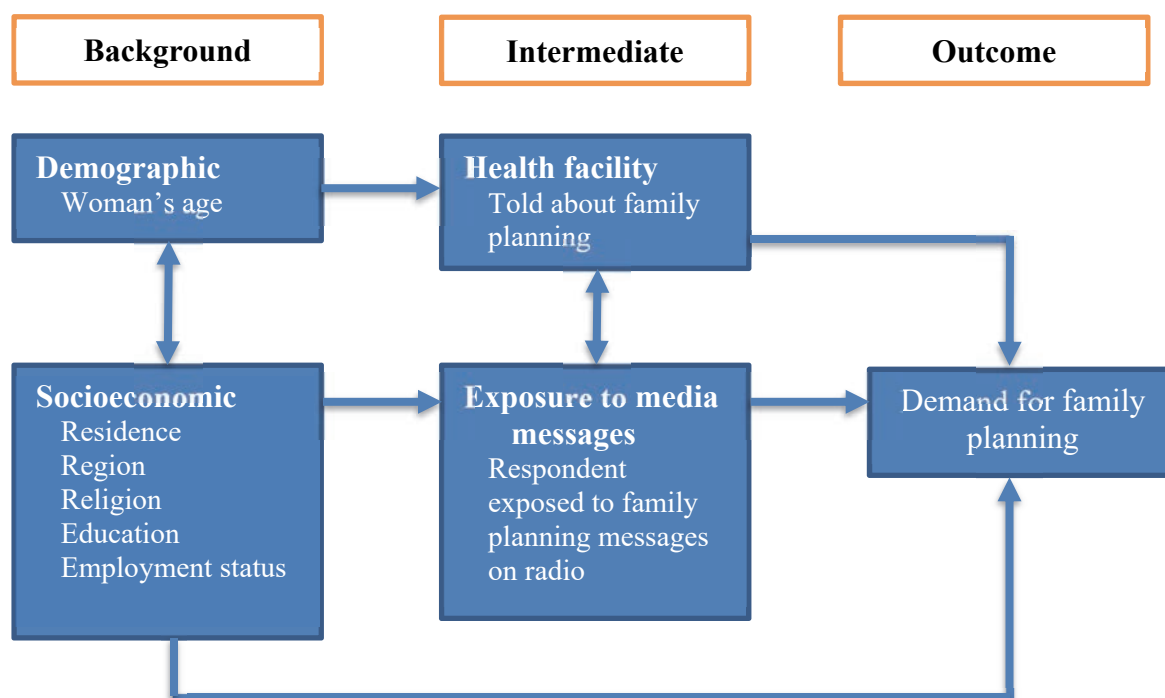
In Uganda, the Ministry of Health is making efforts to provide high-impact interventions meant to achieve better health outcomes through investment in an improved maternal, newborn, child, and adolescent reproductive health plan. The need to empower the population to demand and have access to family planning commodities is pertinent not only in Uganda overall, but also among many vulnerable groups within the country. There is limited evidence to show the contribution of factors influencing the demand for family planning among poor households. Most of the existing studies have separated the key concepts including the socioeconomic and demographic, and examined them independently as factors influencing unmet need or modern contraceptive use among different population groups (Andi et al. 2014; Kabagenyi et al. 2014; Barber 2007; Ewerling 2018; Letamo et al. 2015; New et al. 2017). This study therefore seeks to examine the factors influencing demand for family planning among poor women in a resource-limited setting.

1.1 Conceptual Framework for Demand for Family Planning

The conceptual framework guiding this study is based on Anderson’s behavior model of accessing health service utilization, as illustrated in Figure 1 (Anderson 1995). Anderson’s model provides an explanation of the possible interaction and factors that have an impact on an individual’s access to health services. Three major themes and key characteristics were suggested by Anderson relating to predisposing characteristics including age, education attainment, residence, religion, marital status, and wealth that work through enabling variables, including access, individual preferences, media exposure, and personal practices, to determine use of health services. The subsequent client satisfaction or perceived health status is a result of the interactions within the given variables.

Similarly, in this study we propose that the background characteristics including the demographic and socioeconomic factors work through the intermediate variables, including health facility associated variables (Rutaremwana et al. 2015; Andi et al. 2014; Sedgh et al. 2014), the individual preferences, and exposure to family planning messages to influence a woman’s demand for family planning (Choi et al. 2015).

Figure 1 Conceptual framework of demand for family planning



In our framework, we propose that a woman’s current age and level of education would have an influence on her need or preference for using contraception. Educated women would be more likely to prefer fewer children, to discuss family planning with a health care provider at a health facility, and to have access to health services compared with uneducated women with a preference for more than four children and living in a rural area.

2 METHODS

2.1 Data Source

This research article is based on the Uganda Demographic and Health Surveys (UDHS) conducted in 2006, 2011, and 2016. The purpose of this study is to examine the predictors of demand for family planning over the period from the 2006 to 2016 surveys. The data are publicly available on The DHS Program website (dhsprogram.com). These surveys, which are conducted every 5 years, provide a wealth of information on the country's socioeconomic, demographic, maternal, household, and reproductive health indicators, including use of family planning. These surveys were carried out by the National Statistical Office, Uganda Bureau of Statistics, in collaboration with ICF International. During data collection, informed consent was sought from all respondents. Details on the sample selection procedures for the respective data are described in the main survey reports (Uganda Bureau of Statistics (UBOS) and ICF 2017).

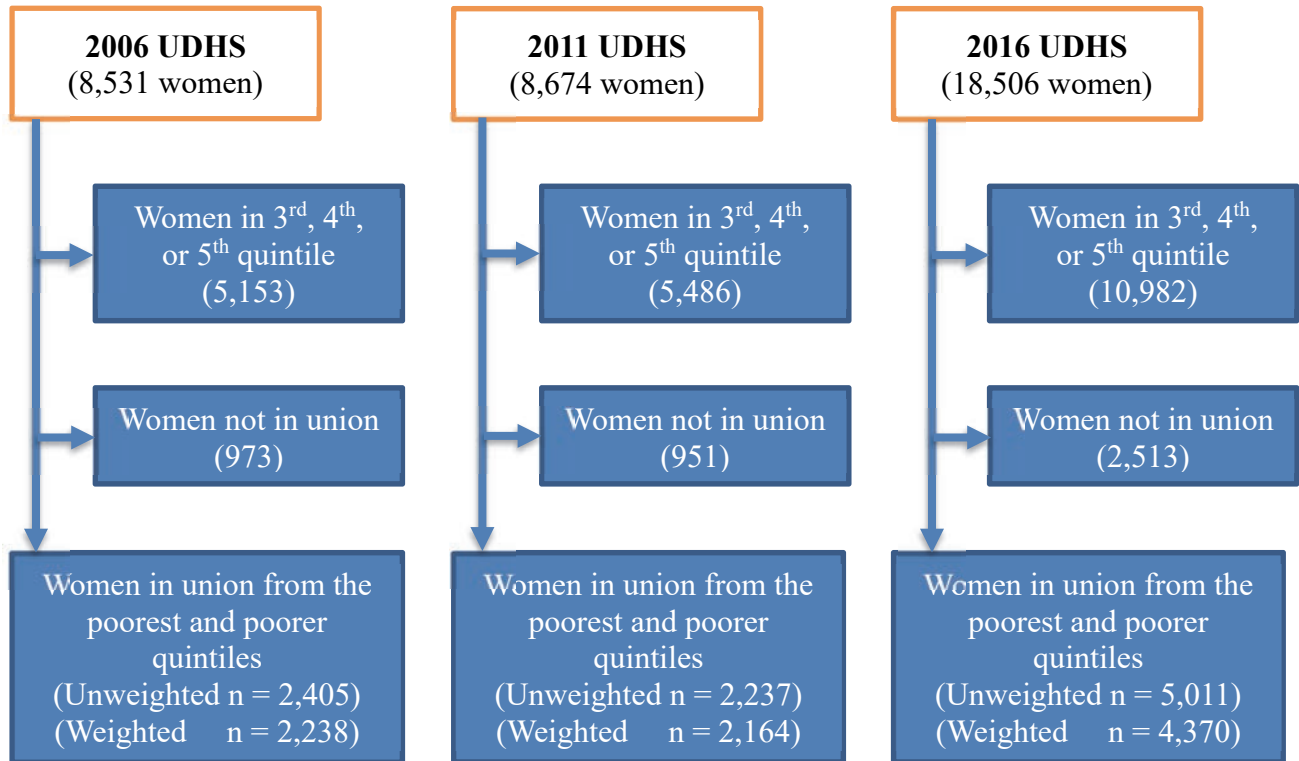
2.2 Sampling

The surveys were carried out using two-stage cluster sampling to generate representative samples of women age 15-49. For all the surveys, the first stage involved the selection of clusters, followed by the second stage, which included the selection of households in each cluster. During this process, stratification by urban and rural areas was taken into consideration and the samples were drawn in accordance.

2.3 Study Sample

The weighted samples selected for the analyses were a total of 2,238 in 2006, 2,164 in 2011, and 4,370 in 2016 (Uganda Bureau of Statistics (UBOS) and ICF 2017). The study sample included only women age 15-49 who were living in households that were classified in the lowest (poorest) and second-lowest (poorer) household wealth quintiles. Details of the sample size selection are presented in Figure 2.

Figure 2 Derivation of weighted sample for the study period 2006-2016 adopted in the analysis of demand for family planning in Uganda



2.4 Variables

The outcome variable of interest was demand for family planning. Demand for family planning included women in the sample who had an unmet need for family planning and women who were currently using any method of contraception. The definition for demand for family planning was adopted from the conventional terms and description used in family planning research (WHO 2012; WHO 2018; Ewerling et al. 2018), and specifically from the description of demand used in the 2016 UDHS report. This demand variable generated herein is restricted to women in a union.

This variable (demand) was coded as a binary outcome, with 1 for women with an unmet need for spacing and limiting births as well as women currently using any contraceptive method, while 0 was for any other outcome. The list of the modern methods recorded in the data included condom (both male and female), lactational amenorrhea method (LAM), IUD, pill, sterilization (both male and female), injection, diaphragm, implant, or foam/jelly (Uganda Bureau of Statistics (UBOS) and ICF 2017).

The independent variables used in the analysis were place of residence (rural, urban), age of the respondents (15-24, 25-39, 40-49), employment status (not employed, seasonal/occasional, all year), education level (none, primary, secondary and above), heard of family planning messages on radio (yes, no), discussed family planning at the health facility (yes, no), and religion (Catholic, Anglican, Moslem, Other including Orthodox, Seventh Day Adventist, and Pentecostal religions). Region was categorized as central, western, southern, and northern to suit the traditional major classification of regions in Uganda, and was included in the descriptive and bivariate analyses.

2.5 Data Analysis

Descriptive analyses were done for all the selected explanatory variables including demand for family planning, and socioeconomic, demographic, and behavioral characteristics. This was followed by unadjusted logistic regression for the respective variables. Analysis at the bivariate level examined associations between demand for family planning and the explanatory variables. Finally, adjusted logistic regression models were used at the multivariate level to predict the log-odds of demand for family planning among poor women in Uganda while controlling for the selected background characteristics. The estimated odds ratios for the respective explanatory (independent) variables were based on the 95% confidence intervals and presented in the respective models. Lastly, pooled data analyses were done to examine the most important determinants of demand for family planning overall.

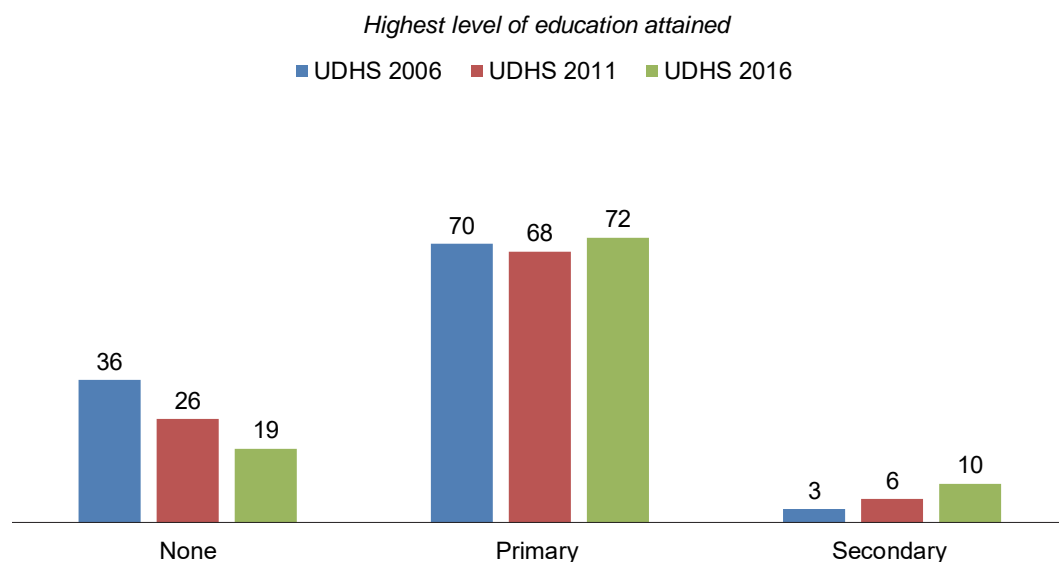
To account for the complexities in sample survey design, all data were weighted and the survey design was taken into consideration before conducting the statistical analysis. We used the *svy* command in STATA in regression analyses. Further, all variables were also checked for multicollinearity before inclusion in the final models for analysis. All the analyses were executed in STATA software version 15.

3 RESULTS

3.1 Descriptive Results

Table 1 presents selected background characteristics for women in union age 15-49 living in households classified in the lowest and second lowest wealth quintiles (poor women). Overall, 9 out of 10 women in all three surveys were residing in rural areas, at 98% in 2006 and in 2011, and 93% in 2016. Half of the women were age 25-39, at 50 % in 2006, 53% in 2011, and 50% in 2016.

Figure 3 Women’s educational level attained, UDHS 2006-2016



As Figure 3 and Table 1 show, the majority of poor women had attained primary education, and there is an observed increase over the survey years, from 68% in 2006 to 70% in 2011, with the highest percentage in 2016, at 72%.

Table 1 Percentage distribution of poor women by selected characteristics, UDHS 2006-2016

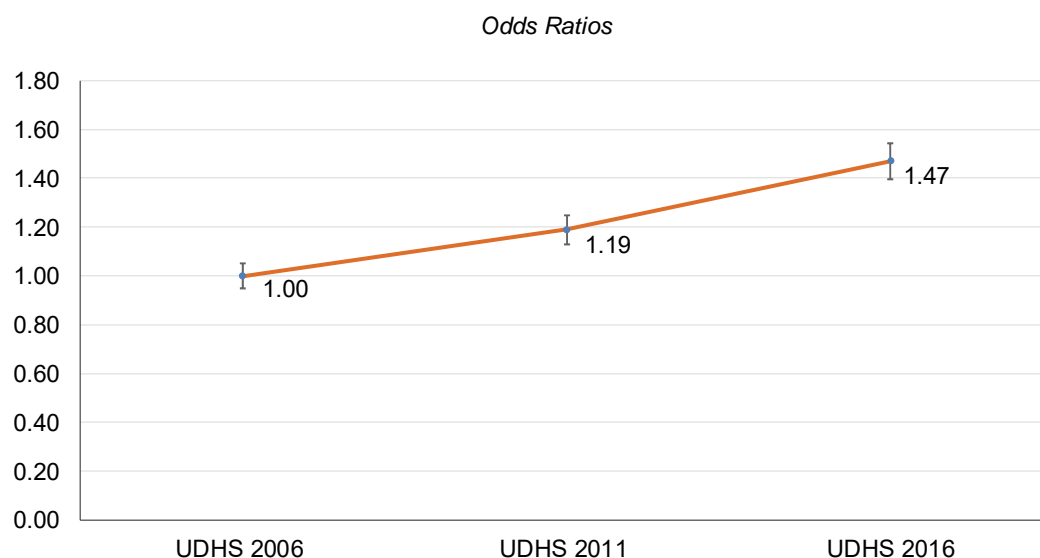
Background characteristics	2006		2011		2016	
	Frequency (n=2,239)		Frequency (n=2,164)		Frequency (n=4,370)	
Demand for family planning						
No	988	(44.1)	866	(40.0)	1,526	(34.9)
Yes	1,251	(55.9)	1,298	(60.0)	2,845	(65.1)
Place of residence						
Urban	50	(2.2)	34	(1.6)	303	(6.9)
Rural	2,189	(97.8)	2,129	(98.4)	4,067	(93.1)
Age						
15-24	718	(32.1)	674	(31.1)	1,491	(34.1)
25-39	1,141	(51.0)	1,149	(53.1)	2,182	(50.0)
40-49	380	(17.0)	341	(15.8)	697	(16.0)
Educational level attained						
None	798	(35.7)	561	(25.9)	813	(18.6)
Primary	1,365	(70.0)	1,473	(68.1)	3,131	(71.6)
Secondary and above	75	(3.4)	130	(6.0)	427	(9.8)
Religion						
Anglican	1,183	(52.9)	1,086	(50.2)	1,275	(29.2)
Catholic	695	(31.1)	593	(27.4)	2,063	(47.2)
Muslim	139	(6.2)	171	(7.9)	437	(10.0)
Other	220	(9.9)	315	(14.5)	597	(13.7)
Employment status						
Not employed	65	(2.9)	435	(20.1)	580	(13.3)
Seasonal/occasional	1,397	(62.6)	905	(41.8)	1,841	(42.1)
All year	771	(34.5)	824	(38.1)	1,949	(44.6)
Discussed family planning at health facility						
No	1,898	(84.8)	1,598	(74.1)	2,673	(61.2)
Yes	341	(15.2)	560	(25.9)	1,698	(38.9)
Heard of family planning on radio						
No	1,231	(55.0)	825	(38.2)	1,861	(42.6)
Yes	1,008	(45.0)	1,338	(61.9)	2,509	(57.4)
Region						
Central	165	(7.4)	201	(9.3)	346	(7.9)
Eastern	661	(29.5)	715	(33.1)	1,468	(33.6)
Northern	961	(42.9)	783	(36.2)	1,660	(38.0)
Western	453	(20.3)	464	(21.5)	896	(20.5)

Table 1 further shows that 53% of respondents in 2006 and 50% in 2011 were Anglicans compared with 31% in 2006 and 27% in 2011 for Catholics. In 2016, however, 47% of respondents were Catholics compared with 29% for Anglicans. In 2006, 63% of respondents were employed in seasonal or occasional activities versus 34% employed all year. In 2016, 45% were employed all year and 42% were employed on a seasonal or occasional basis.

Regarding family planning seeking behavior and practices, there was a twofold increase across the surveys among women who reported that they discussed family planning at the health facility, from 15% in 2006 to 26% in 2011, and 39% in 2016. Over the survey years, the proportion of poor women who said they heard of family planning on radio was 45% in 2006, 62% in 2011, and 57% in 2016.

Examination of the demand for family planning, the key variable in this analysis, shows a notable increase in the demand for family planning among poor women over the survey years, with an observed increase in the odds ratio from 1.2 in the 2011 UDHS to 1.5 in 2016, compared with the 2006 UDHS (Figure 4).

Figure 4 The odds for family planning demand among poor women age 15-49, UDHS 2006-2016



3.2 Association Between Demand for Family Planning and Selected Predictors Based on the Unadjusted Regression Models

Results of the bivariate analysis in Table 2 show a list of variables and their corresponding unadjusted odds ratios in relation to demand for family planning among poor women. The following two variables were found to have a significant likelihood of higher demand for family planning when considered independently ($OR > 1$) in all three surveys: being age 25-39 compared with age 15-24; and having attained primary education or more compared with no educational attainment.

Several other variables were found to be significant in two of the surveys: being employed all year compared with not employed (in 2011 and 2016); being Catholic compared with Anglican (in 2006 and 2011); having heard of family planning on radio compared with not having heard (in 2006 and 2011); and residence in the Eastern region compared with the Central region (in 2011 and 2016).

Table 2 Results of bivariate logistic regression analysis for demand for family planning among poor women, UDHS 2006-2016

Variables	2006		2011		2016	
	OR	CI	OR	CI	OR	CI
Place of residence						
Urban	1.0		1.0		1.0	
Rural	0.9	0.2-3.6	0.5**	0.3-0.9	1.4	0.9-2.2
Age						
15-24	1.0		1.0		1.0	
25-39	1.4**	1.2-1.7	1.9***	1.5-2.4	1.5***	1.3-1.8
40-49	0.9	0.7-1.2	1.2	0.9-1.6	1.1	0.9-1.4
Educational level attained						
None	1.0		1.0		1.0	
Primary	1.4**	1.1-1.7	1.7***	1.3-2.2	1.7***	1.4-2.1
Secondary and above	2.3**	1.3-3.9	2.0**	1.2-3.3	2.0***	1.5-2.7
Religion						
Anglican	1.0		1.0		1.0	
Catholic	1.4**	1.1-1.7	1.5***	1.2-2.0	0.9	0.7-1.0
Muslim	1.4	0.9-2.0	0.9	0.6-1.4	1.0	0.8-1.3
Other	1.1	0.8-1.6	1.4*	1.0-1.9	1.1	0.9-1.3
Employment status						
Not employed	1.0		1.0		1.0	
Seasonal/occasional	0.8	0.5-1.4	0.9	0.7-1.2	1.1	0.9-1.4
All year	1.1	0.6-1.8	1.4**	1.0-1.9	1.2**	1.0-1.5
Discussed family planning at health facility						
No	1.0		1.0		1.0	
Yes	1.8	1.4-2.4	1.2	0.8-1.5	1.0	0.9-1.2
Heard of family planning on radio						
No	1.0		1.0		1.0	
Yes	1.8***	0.9-1.4	1.5***	1.2-1.9	1.1	1.0-1.3
Region						
Central	1.0		1.0		1.0	
Eastern	0.7	0.5-1.1	1.4*	1.0-2.1	1.3*	1.0-1.8
Northern	0.6	0.4-0.8	0.8	0.6-1.2	0.9	0.7-1.2
Western	0.6	0.4-1.0	1.3	0.8-1.9	0.9	0.6-1.2

*p<0.10, **p<0.05, ***p<0.01

Table 2 shows that rural residence compared with urban residence was significant in explaining lower demand for family planning among poor women only in the 2011 survey. All variables found to be associated with demand for family planning were later tested for confounding and then examined using adjusted regression models. Region was excluded in the final adjusted regression models as it was affecting the overall results. This was only limited to the unadjusted results and there was some confounding with religion.

3.3 Predictors of Demand for Family Planning among Poor Women in Uganda

Table 3 presents the adjusted logistic regression of demand for family planning among poor women, controlling for selected predictor variables, based on data from the three UDHS surveys, 2006-2016. Three models were developed based on each of the three surveys. After controlling for possible confounding, six variables were found to be significant in association with demand for family planning: place of residence; age; religion; education; exposure to family planning messages on radio; and discussion of family planning at a health facility.

Table 3 Logistic regression models predicting the log-odds of demand for family planning among poor women controlling for selected variables (adjusted odds-ratios are presented), UDHS 2006-2016

Variable/category	2006		2011		2016		Pooled results	
	Odds ratio	95% CI	Odds ratio	95% CI	Odds ratio	95% CI	Odds ratio	95% CI
Residence								
Urban (Rc)	1.0		1.0		1.0		1.0	
Rural	0.9	[0.3-2.9]	0.5**	[0.3-0.9]	1.3	[0.9-2.0]	1.1	[0.8-1.6]
Age								
15-24 (Rc)	1.0		1.0		1.0		1.0	
25-39	1.5***	[1.2-1.9]	2.2***	[1.7- 2.7]	1.7***	[1.5-2.0]	1.8***	[1.6-2.0]
40-49	1.1	[0.8-1.5]	1.5**	[1.1-2.1]	1.4**	[1.1-1.7]	1.3***	[1.1-1.6]
Educational level attained								
Secondary + (Rc)	1.0		1.0		1.0		1.0	
None	0.5**	[0.3-0.8]	0.5**	[0.3-0.8]	0.4**	[0.3-0.6]	0.4***	[0.3-0.6]
Primary	0.6	[0.4-1.1]	0.8	[0.5-1.3]	0.8	[0.6-1.1]	0.8	[0.6-1.0]
Religion								
Anglican (Rc)	1.0		1.0		1.0		1.0	
Catholic	1.3**	[1.0-1.6]	1.4**	[1.1-1.8]	0.0	[0.7-1.1]	1.1*	[1.0-1.3]
Muslim	1.3	[0.9-1.9]	1.0	[0.6-1.5]	1.1	[0.8-1.4]	1.1	[0.9-1.4]
Other	1.0	[0.7-1.5]	1.3	[0.9-1.8]	1.1	[0.9-1.4]	1.2**	[1.0-1.4]
Employment								
Not employed (Rc)	1.0		1.0		1.0		1.0	
Seasonal/occasional	0.8	[0.5-1.4]	0.9	[0.7-1.2]	1.0	[0.8-1.3]	0.9	[0.8-1.1]
All year	1.0	[0.6-1.7]	1.2	[0.9-1.7]	1.1	[0.9-1.3]	1.1*	[1.0-1.3]
Heard of family planning on radio								
No (Rc)	1.0		1.0		1.0		1.0	
Yes	1.0	[0.8-1.2]	1.4**	[1.1-1.7]	1.1	[0.9-1.2]	1.1**	[1.0-1.2]
Told of family planning at health facility								
No (Rc)	1.0		1.0		1.0		1.0	
Yes	1.7***	[1.3- 2.3]	1.1	[0.8-1.5]	1.0	[0.9-1.2]	1.2**	[1.0-1.3]

*p<0.10, **p<0.05, ***p<0.01

Two factors were consistent in their association with demand for family planning in all three surveys: no educational attainment (compared with secondary or more); and age 25-39 (compared with age 15-24). Women age 25-39 were twice as likely to have demand for family planning compared with women age 15-24. Similarly, in two surveys, 2011 and 2016, women age 40-49 had higher odds of demand for family planning (AOR=1.5, 95% CI=1.1-2.1 in 2011; AOR=1.4, 95% CI=1.1-1.7 in 2016) compared with women age 15-24.

Women with no education had significantly lower odds of demand for family planning (AOR=0.5, 95% CI=0.3-0.8 in 2006; AOR=0.5, 95% CI=0.3-0.8 in 2011; and AOR=0.4, 95% CI=0.3-0.6 in 2016), compared with women with secondary education. There were also significantly increased odds of demand for family planning among Catholic women in 2006 (AOR=1.3, 95% CI=1.0-1.6) and 2011 AOR=1.4, 95% CI=1.1-1.8) compared with Anglican women.

Some factors were significant only in one of the surveys. In the 2011 survey, rural women had lower odds of demand for family planning (AOR=0.5, 95% CI=0.3-0.9) compared with urban women. Also in the 2011 survey, women who had heard of family planning on radio had higher odds of demand for family planning (AOR=0.4, 95% CI=1.1-1.7) compared with women who did not. In the 2006 survey, women who were told about family planning at a health facility had almost twice the odds of demand for family planning compared with women did not received any information (AOR=1.7, 95% CI=1.3-2.3).

Overall, results from the pooled data showed that among poor women in the sample age, education, religion, employment status, having heard about family planning on radio and having been told of family planning at a health facility were key predictors for demand for family planning. Specifically, there were higher odds of demand for family planning among women age 25 and older compared with age 15-24, Catholic women and women in the Other category compared with Anglican women, women employed all year compared with those not employed, women who had heard of family planning on radio compared with those who had not, and women who were told of family planning at the health facility compared with those who were not. Women with no education had lower odds of demand for family planning compared with women with at least a secondary education.

4 DISCUSSION

This study of demand for family planning among poor women in Uganda shows an apparent increase in demand for family planning from 2006 to 2016. Women's education level attained and women's age were key factors influencing the demand for family planning in almost all of the surveys. These findings are pertinent as they provide evidence for understanding the dynamics of contraceptive use and designing policy and program interventions for poor women in limited-resource settings (Raaj and McDougal 2017, Casterline and Sinding 2006; Kabagenyi et al. 2016). Specifically for Uganda, this is a good entry point for the Ministry of Health and Education, whose strategic plan is to have cost-effective targeted interventions for the hard-to-reach populations (Choi et al. 2015; Fabic et al. 2015).

Meeting all of the demand for family planning in Uganda would increase the country's contraceptive prevalence from 39% to 67% (Uganda Bureau of Statistics [UBOS] and ICF 2017). Increased use of family planning has accrued benefits, as it would help mothers to space or limit births, avoid unplanned pregnancies, and reduce neonatal and maternal morbidity and mortality due to pregnancy-related complications (Uganda Bureau of Statistics [UBOS] and ICF 2017).; Tsui et al. 2010; Stover and Ross 2010).

Elsewhere, women's level of education attained has been found to have an influence on uptake of modern contraceptive use generally, with a number of research studies demonstrating this linkage (Darroch et al. 2013; Ogunleye et al. 2016; Rutaremwa et al. 2015). Given the benefits of education, it is likely that women who are highly educated would be more likely to demand or wish to have contraceptives compared with women who are not educated (Andi et al. 2014; Darroch et al. 2013).

This study is one of the few to show the demand for family planning among poor rural women. Related studies, however, have extensively presented the demand satisfied (Ewerling et al. 2018; Fabic et al. 2015), but with little evidence for those whose demand for family planning has not been satisfied. Sedgh et al. (2014) presented some of the reasons for nonuse among women with an unmet need for family planning, but was not conclusive.

Our study found that in the 2011 survey, poor women who had heard family planning messages on radio had higher odds of demand for family planning compared with those who had not, while this factor was not significant in 2016. It is probable that over the 5 years between surveys more information has been disseminated, demystifying the misconceptions and perceived fears associated with use of contraception.

Women who discussed family planning at the health facility were more likely to have demand for family planning compared to those who had not, but only in the 2006 survey. It is probable that in the years since 2006 this population group has been exposed to or been informed about the side effects and other related fears about contraceptives, and therefore were better able to make decisions to either use or not use family planning, regardless of discussion with health providers (Campbell et al. 2006; Kabagenyi et al. 2016; Oliwole et al. 2013). This could also mean that in 2006 discussion with a health worker was more effective, while in the recent surveys it made no difference. Perhaps the quality of the discussion decreased and interventions could be made to create increased demand for family planning and reduce unmet need. The increased demand for family planning could also relate to the fact that such women are aware of the side

effects and benefits, have used contraceptives before and found the side effects bearable, and therefore are ready to continue receiving family planning services.

Religion was found to have an impact on women's use of contraceptives. Catholics in particular are known to promote only traditional methods of family planning, including safe days and withdrawal. In our study we found that Catholic women had higher odds of demand for family planning in the 2006 and 2011 surveys. In Ghana, religious affiliation was associated with increased use of family planning (Doctor, Phillips, and Sakeah 2009), while in Nigeria, religion was a great influence on men's opinion regarding family planning decisions (Ijadunola et al. 2010).

4.1 Study Limitations

The analysis in this study is based on cross-sectional individual data, and therefore cannot establish causality or measure the effects of certain interventions on the demand for family planning. In addition, it is limited to self-reported information from respondents, which is characteristic of cross-sectional studies. As a result, there could be respondent bias typical of cross-sectional studies whose data is generated from self-reported information. Despite these possible limitations, this study used the most appropriate statistical analytical rigor in the selection and analysis of the data. The procedures used in the data collection are rigorous as demonstrated in the survey design and sample selection procedures, ensuring quality data. Therefore, the findings of this study can be generalized among the poor women in union in Uganda.

4.2 Conclusions

This study contributes to the discussion on provision of reproductive services to women in a resource-limited setting. The findings show that, in at least one UDHS survey conducted in 2006, 2011, and 2016, among women in the two poorest household wealth quintiles, demand for family planning was influenced by level of education attained, discussion of family planning at the health facility, exposure to family planning messages on radio, age of the woman, and religion.

The study underscores the need to provide customized messages to the general population to negate fears associated with use of family planning, especially among the poor, uneducated, and rural women age 25 and older. The messages should easily communicate with and provide meaning to the intended population. More family planning programs need to target uneducated poor women who mainly reside in rural areas. Increased counseling by health workers on family planning methods and other services to address the perceptions and attitudes of potential clients are much needed in order to increase demand for family planning. Targeted interventions for the older and younger women need to be scaled up to provide services, but most importantly to help women appreciate the risk of conceiving in their respective age groups. Further, there is need for the health ministries to generate strategies aimed at increasing and meeting the demand generated, especially in low-income countries.

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