



Original Research Article

Factors determining the age at first birth in Uganda

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**Alex Mugarura*,
Will Kaberuka
and
Ruth Atuhaire**

Makerere University Business
School, Uganda.

* Corresponding Author
Email: kaberukaw@gmail.com

The main objective of this study was to establish the socio-economic and demographic factors that determine age at first birth in Uganda. Data from the Uganda Demographic and Health Survey (2011) was used in this study. This survey was a follow up on the 1988/89, 1995, 200-01, and 2006 surveys, which covered the whole of Uganda. A Cox Proportional Hazard Model was used to establish the determinants of age at first birth. The study found that the average age at first birth in Uganda is 18.4 years. It was further established that age of respondent, education, religion, region, residence, and age at first sexual intercourse are the main determinants of age at first birth in Uganda. The study recommends the promotion of policies that aim at increasing women's age at first birth

Key words: Age at first birth, childbearing, fertility, first birth, linear model and proportion hazard model.

INTRODUCTION

Background to the study

In developed countries, delayed child bearing particularly the first child has attracted much attention in recent years. The thinking has been to delay the age at marriage so that the first childbirth occurs during twenties and early thirties.

Both the researchers and the general public have interest on the 'average' age of women when they have children, especially their first child. The first birth is a transition for women into motherhood. Mosammat et al. (2013) noted that age at first birth plays a significant role in the future life of each individual woman and has a direct relationship with fertility. The age at first birth has a bearing to the total number of births that the woman might have in her life, which impacts the size, composition, and future growth of the population (Mathews et al., 2009; Teachman et al., 1985).

Marriage is mostly defined as the onset of the socially acceptable time for sexual activity and childbearing by many societies in Africa. As such marriage is not only the most predominant context for childbearing but also one of the most important determinants of fertility (Bongaarts, 1983). Studies by Bongaarts (1983), Coale (1971), and Week (2007) indicated that women who marry early will have, on average; a longer period of exposure to getting pregnant, often leading to higher fertility. Historically,

societies with higher age at first marriage have experienced decreased fertility rates while in traditional populations in Asia and Africa where age at first marriage is lower, high levels of fertility has been observed (Bongaarts, 1983 and Week, 2007). The age at which women in developing countries like India have their first child has important consequences on the demographic character of the population (Rajaretnam, 1990).

Although fertility or children-ever born is considered as the dependent variable in most fertilities studies, fertility is actually the outcome of behaviors, decisions, and events that may span a period of childbearing in the life of a woman (Hirschman and Rindfuss, 1980). The timing of birth of the first child, measured by mother's age has strong effects on both individual and fertility levels as well as implications for women's role and social change in general (Bumpass et al., 1973; Rindfuss and Bumpass, 1979).

In South and Southeast Asia, it is not clear whether this region has experienced the largest decline in early marriages while the largest declines have been observed in the Middle East (Mensch et al., 2005). The pressing need to increase age at marriage among women within South Asia, especially in Bangladesh, India and Nepal has long been recognized. Of the 60 million women aged 20-24 who were married before the age of 18 years in the world, 50% of

them were in South Asia (UNICEF 2007).

In the effort to increase the age at first marriage, Uganda has tried to intervene by setting the consent age for a woman at 18 years and through emphasis on educating the girl child through a number of educational reforms instituted since 1990 (MoES, 2003)

According to CIA (2015), Uganda is among the first 10 countries with the highest population growth rate 3.2% and the highest in East Africa (Tanzania 2.8%, Rwanda 2.6%, and Kenya 2.1%). In spite of high population growth, Uganda has tried to reduce overall fertility by postponement of age at marriage and age at first birth. However, it is very common for women to have children before getting married (UBOS, 2011) and as such information on the factors that determine the age at first birth is quite scanty. Therefore this study sought to fill this information gap.

Literature review

Socio-economic determinants of age at first birth

Chandrasekhar (2010) indicated that women who have completed primary schooling and higher levels are less likely to marry early compared to those without any education. In a study by Kumar et al. (2006) on the gap between marriage and first birth (first birth interval), It is shown that women with higher educational status than their husbands had reported higher first birth interval. Education and literacy among women is said to be fundamental to changes in the reproductive behaviour. In a study by Cochrane (1979) it is indicated that in less developed countries, fertility tends to rise first with education level and there after decreases rapidly once a certain level of education is attained. This is because as the educational level increases, marriage tends to be postponed, increases the women's desire to have fewer children, increase the contraceptive prevalence and a high chance of working outside their homes all of which reduces the fertility levels of a woman (Cochrane, 1979). However, Cohen (1993) has shown that fertility is either curvilinear or negatively related with education in sub-Saharan Africa. In a study by Namkee et al. (1992) a substantial delay in timing of the first birth was observed among the women who are educated beyond primary level.

Religion has been found to have an impact on fertility (Rindfuss et al., 1983; Sarker, 2010 and Rabbi et al., 2013). Lucas (1980) argued that Moslems often have higher fertility than non-Moslems, and Catholics have a higher fertility than other Christians. The Catholic teaching about birth control is said to favor large families while Moslems are said to have large families because of early marriages. In a study by Chandrasekhar (2010) it is indicated that Moslem women are 1.14 times more likely to have their first birth at early age than the Hindu women while Christians and women of other religions are less likely to have their first birth at early age than the Hindu women.

Place of residence has been shown as one of the factors

influencing age at first birth among women (Rabbi et al., 2013). In a study by Kumar et al. (2006) on delayed first birth, significant differences of first birth interval were observed in rural, urban and coastal residences. The average duration of first birth interval was longer for coastal women compared with rural and urban women. Namkee et al. (1992) noticed a substantial delay in timing of the first birth among the women living in urban areas than those in rural areas. Also Chandrasekhar (2010) indicated that women who grew up in the countryside are more likely to marry early and have children earlier. Stolnitz (1983) and Bulatao (1984) indicated that fertility is higher for women residing in rural areas compared with those residing in urban areas. This is because it is assumed that urban women have better knowledge and access to modern contraception than women in rural areas (Cohen, 1993).

Rabbi et al. (2013) indicated that occupation is one of the factors influencing the age at first birth of Bangladeshi Women. However, a study by Kumar et al. (2006) on delayed first birth, it was found that occupation of woman or a husband had no significant relationship with delayed first birth in women.

Demographic determinants of age at first birth

Ngalinda (1999) on the proximate determinants of age at first birth in Tanzania, found that the mean age at first sexual intercourse was 16 years and that 3 out of 4 mothers start childbearing during their adolescence. The study concluded that early entrance into sexual relations means early entrance into childbearing and consequently high fertility. This is in line with Sarker's (2010) study which found out that in Bangladesh where fertility is high women engage in sexual activities before the age of 15 years.

Age of women has been identified as one of the demographic determinants of age at first birth (Sarker, 2010 and Rabbi et al., 2013). Chandrasekhar (2010) indicated that women aged 15-24 were more likely to have a child at first birth compared to those aged 35-49. Mathews et al. (2009) argue that the age of the mother, both younger and older, plays a critical role in a wide range of birth outcomes (e.g., birth weight, multiple births, and birth defects).

Age at marriage has long been regarded as one of the proximate determinants of fertility (Davis and Blake, 1956; Bongaarts, 1982 and Westoff, 1992) but the effect of age at marriage on fertility is not conclusive (van de Walle and Foster, 1990) and this has remained of concern to developing countries.

DATA AND METHODS

This study used data from the Uganda Demographic and Health Survey (2011). This survey was a follow up on the 1988/89, 1995, 2000-01, and 2006 surveys, which covered the whole of Uganda. A sample of 10,086 households was

selected from 404 Enumeration Areas (EAs). A two-stage sampling was employed. In the first stage, 404 Enumeration Areas were sampled from a list of clusters prepared by Uganda National Household Survey (UNHS) of 2010. The second stage involved updating the UNHS-2010 list in the 404 Enumeration Areas and then the sample of households selected purposively. All women aged 15-49 years who were either usual residents or visitors present in the sampled household on the night before the survey were interviewed. The cleaning and coding of the data collected was done so as to remain with variables of interest. The coded data was analyzed using STATA version 10.0.

The dependent variable is the age of a woman at first birth of child while the independent variables include; age of the respondent, residence, education level, religion, age at first sexual intercourse, occupation, and marital status.

Descriptive statistics were presented for the selected independent variables in form of a frequency distribution table. The proportional hazard model which is applied in analyses that seek to establish the determinants of risk of occurrence of an event was used for inferential purposes. The underlying assumption of the model is that there is a hazard (or risk) at each duration of the occurrence of an event for example birth, death etc. (Trussel et al., 1985). In this case the proportion hazard model was used because age at first birth measures the length of time (the duration) till the occurrence of the event. This accounts for women who have not yet experienced the event (age at first birth) resulting in right censoring of the data. The model is specified as

$$h_i(t, X, \beta) = h_0(t)e^{\beta X} \dots\dots\dots(1)$$

Where; i denotes an individual woman

X denotes a vector of independent variables

t denotes duration to first birth of a woman (or survival time)

β is a vector of parameters to be estimated.

Equation (1) is transformed into a linear model by taking the natural logarithm, as follows:

$$\ln h_i(t, X, \beta) = \alpha + \beta_1 X_{i1} + \beta_2 X_{i2} + \beta_3 X_{i3} + \dots\dots\dots + \beta_k X_{ik} \dots\dots\dots(2)$$

Where $\alpha = \ln(h_0(t))$ is a constant representing a log-baseline hazard. Subset k denotes a $1 \times k$ matrix for the covariates. β are called the risk score.

PRESENTATIONS AND DISCUSSION OF RESULTS

Descriptive statistics results

The results in Table 1 show that the majority of respondents were between 20-29 years of age and 79% of them live in rural areas. In as far as education is concerned, 77% are primary level and below. The results further show that 44% were Catholics while 87% were married, 77% of the respondents had sexual intercourse at the age of 18 years and below and lastly the 75% of the respondents

were currently working. In the addition to the above, the study results further show the mean age at first birth and mean age at first sex to be 18 and 22 years respectively

Inferential statistics

The results in Table 2 show that age of the respondents has a significant effect on the age at first birth. Women aged 21-29 years have reduced chance of having a first child (first birth) compared to women who are aged 15-20 years (Or=0.528, p=0.000). Also women aged 30-39 years have reduced chances of having a first child (First birth) compared to women who are aged 15-20 years (Or=0.39564, p=0.000). Women aged 40 years and above have reduced chances of having a child (first birth) compared to women who are aged 15-20 years (Or=0.33296, p=0.000). This means that the older the woman the lower the chances of having a child.

Education is also one of the factors that determine the age of a woman at first birth. Table 2, shows that a woman of primary level of education is 0.73 times less likely to have a child at an early age compared to a woman who has no education level (OR=0.7296, Pr=0.00). A woman of secondary and higher level of education has reduced chances of having a child at an early age compared to a woman with no level of education. These results are in line with the studies by Chandrasekhar (2010) and Kumar et al. (2006) and Cohen (1993).

Residence is found to have a significant effect on age at first birth. Table 2, indicates that women residing in rural areas are 1.73 times more likely to have their first child earlier than those residing in urban areas (OR=1.7333, Pr=0.000). This could be because women in the rural areas are not informed about the use of contraceptives and the effects of early child bearing. These results are in line with studies by Stolnitz (1983) and Bulatao (1984) which indicate that fertility is higher for women residing in rural areas compared with those residing in urban areas. Also, in the study by Chandrasekhar (2010), it was indicated that in India women who grew up in the countryside are more likely to marry early and have children earlier.

Mother's employment status shows significant impact on age at first birth. Table 2 shows that a woman who is not working is 1.27 times more likely to have the first child at an early age compared to the woman who is working (OR=1.266, Pr=0.000). This could be because the woman who is not working may not have money to have the basic requirements for delaying child bearing. These results are in line with the findings by Rabbi et al. (2013) which showed that occupation is one of the factors influencing the age at first birth of Bangladeshi women. However, in a study by Kumar et al. (2006) it was found that occupation of woman or a husband had no significant relationship with delayed first birth among women.

The study shows that an SDA woman is 1.8 times more likely to have a child at an early age compared to a catholic woman (OR=1.849, Pr=0.000). A Muslim woman is 1.67 times more likely to have children at an early age compared

Table 1. Percentage distribution of respondents by their characteristics

Age of respondent	Frequency	Percent
15-19	473	6
20-29	4304	55
30-39	2517	32
40-49	584	7
Total	7878	100
Residence		
Urban	1682	21
Rural	6196	79
Total	7878	100
Education level		
No education	1427	18
Primary	4687	59
Secondary	1445	18
Higher level	319	4
Total	7878	100
Religion		
Catholic	3447	44
Protestant	2209	28
Muslim	1086	14
Pentecostal	911	12
Seventh day Adventist (SDA)	135	2
Other	90	1
Total	7878	100
Marital status		
Never in union	240	3
Married/living with partner	6827	87
Widowed/Divorced/Separated	804	10
Total	7871	100
Age at first sexual intercourse		
18 & below	6016	77
19-24	1185	15
25 & above	80	1
Inconsistent	582	7
Total	7863	100
Occupation (currently working)		
Yes	5886	75
No	1992	25
Total	7878	100
	Number	Mean
Age at first birth	7878	18.42
Age at first sexual intercourse	7878	22.38

to catholic women (OR=1.667, Pr=0.000) while a Pentecostal woman is 1.49 times more likely to have a child at an early age compared to a catholic woman (OR=1.49, Pr=0.000). However, protestant women and women of other religions have no significant difference from a catholic woman (Table 2). The results are in agreement with those by Lucas (1980); Rindfuss et al. (1983); Sarker (2010) and Rabbi et al. (2013).

The study further shows that age at first sexual intercourse has a significant effect on age at first birth. A woman who starts having sexual intercourse at an age between 19-24 years is 0.25 times less likely to have the first child at an early age compared to a woman who started at the age of 18 years and below (OR=0.248, Pr=0.000). Furthermore, a woman has had first sexual intercourse at

25 years and above is 0.20 times less likely to have her first child at an early compared to the one who started at the age of 18 years and below (OR=0.202, Pr=0.000).

Conclusion

This study focused on examining the socio- economic and demographic factors that determine age at first birth among Ugandan women aged 15-49 years old. The study found that the average age at first birth is 18 years. The findings from the proportion hazard model indicate that age of respondent, education, religion, region, residence, and age at first sexual intercourse are the most important determinants of age at first birth.

Table 2. The results of the proportional hazard model

b	Haz. Ratio	Std. Err.	P-value	95% Confidence Interval
Age group				
15-20	1			
21-29	0.52838	0.05974	0.000	0.4234 - 0.6595
30-39	0.39564	0.04874	0.000	0.3108 - 0.5037
40& +	0.33296	0.05367	0.000	0.2429 - 0.4564
Education level				
No education	1			
Primary	0.72964	0.34424	0.000	2.13186 - 3.49505
Secondary	0.88061	0.38926	0.000	2.21035 - 3.75413
Higher level	0.83862	0.31076	0.000	1.32015 - 2.56078
Religion				
Catholics	1			
Muslim	1.66999	0.12804	0.000	1.43698 - 1.94078
Pentecostal	1.49403	0.12249	0.000	1.27026 - 1.75252
Protestant	1.06115	0.07679	0.412	0.92081 - 1.22286
Seventh day Adventist (SDA)	1.84942	0.31749	0.000	1.32102 - 2.58919
Others	1.41619	0.38712	0.203	0.82878 - 2.41993
Residence				
Urban	1			
Rural	1.73337	0.109158	0.000	1.53210 - 1.96108
Marital status				
Divorced/separated/widowed	1			
Living with partner/married	0.92212	0.07912	0.345	0.77939 - 1.091
Single	1.13569	0.16274	0.375	0.85759 - 1.50395
Occupation				
Working	1			
Not working	1.26625	0.075796	0.000	1.12607 - 1.42387
Age at first sexual intercourse				
8 - 18	1			
19 - 24	0.248396	0.034633	0.000	0.1890 - 0.32646
25 & +	0.202461	0.050247	0.000	0.12447 - 0.3293
Inconsistent	0.854779	0.101404	0.000	0.67744 - 1.07853

Recommendation

The study recommends that programs to improve girls' access to education be promoted as these have the effect of increasing the girl's age at first birth. Policies that aim at increasing the women's age at first birth should be promoted and these policies should be targeting young women, particularly those with no or little education. Information on reproductive health should be given to young women to enable them avoid early sexual activities and in the end early childbearing. Such information should emphasize health as well as the economic advantages of delayed childbearing.

Competing interests

The authors declare that they have no competing interests

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