ANALYSIS OF FERTILITY IN KIBOGA DISTRICT.

By

Olivia Nankinga and James P. M. Ntozi, Department of Population Studies, Makerere University, Uganda.

Email: onankinga@isae.mak.ac.ug and jntozi@isae.mak.ac.ug

Abstract

Kiboga is one of the districts with the highest growing population (4.1% per annum) in the Central region of Uganda (MoFPED, 2008). It has an overall sex ratio of 104 males per 100 females, which makes it quite different from most of the other Ugandan districts with more females than males. The paper gives an analysis of fertility levels of Kiboga district using the data collected in the 2002 Uganda population and housing census investigates the effect of the different socioeconomic characteristics of women on fertility levels. The results show that fertility in the district was high, women residing in rural areas had higher fertility than those in urban areas, highly educated women had lower fertility levels than other women, married women had higher fertility than unmarried ones, women in polygamous union had more children than those monogamously married, fertility among women who were not employed was higher than that of the employed women. It is therefore recommended that girl child education and employment should be promoted in order to reduce fertility in the district.

Introduction

Population growth is highly dependant on the fertility trends. Currently, fertility levels in the sub Saharan Africa are among the highest in the world and researchers and policy makers have been interested in investigating the factors that affect fertility. Although Uganda is among the poorest countries of the world, its population growth is one of the world's highest and fastest growing populations. Uganda's TFR at 6.7 in 2006 was the highest in eastern and southern Africa. The TFR for the different years shows that the trends of fertility in Uganda have remained constant for several decades oscillating between 6.7 children and 7.3 children per woman. For example, the TFR for Uganda was 7.1 in 1991, 7.3 in 1995, 6.9 in 2000, and 6.7 in 2006 (PRB, 1991, 1995, 2000, 2006 and

UBOS and Macro International, 2007). This has led to an average growth of 3.4% per annum between 1991 and 2006, which is one of the highest in the world and if not radically reduced will result into more than doubling of the total population of the country in less than 2 decades to come.

Uganda currently has close to 100 administrative districts of which is Kiboga. The district was created in 1991 from Mubende district and is bordered by Nakaseke district to the east, Mityana district to the southeast, Mubende district to the south, Kibaale disrict to the west, Masindi district to the north and Hoima district to the northwest.

The three principal proximate determinants of fertility, which are marriage, contraceptive use and breastfeeding, are influenced by socioeconomic and demographic factors to affect fertility (Bongaarts et al, 1982). They include residence, education level, marital status, type of marriage union, employment status and religion (Karen et al, 1993). The purpose of this paper is to estimate fertility levels and investigate the effect of these factors on fertility in Kiboga district.

Methodology

The study used data from the Uganda National Population and Housing Census of 2002 collected by the Uganda Bureau of Statistics (UBOS). The investigation focused on Kiboga district because the district had the second highest growth rate of 4.1% in Uganda between 1991 and 2002. The dataset provided a sample of 10% of the census data for the district (4595 women aged 15-49) which was used for this study. The variables under study included child births in the last 12 months preceding the census, children ever born, education, marital status, type of marriage union, religion, and employment status of the respondent.

Data was analysed using STATA statistical software package (Version 10). Descriptive statistics were generated for the age, residence, level of education, marital status, type of marriage union, employment status and religion of the women under study. In order to establish the strength of the association between fertility and the independent variables, bivariate analysis was used. Statistical significance of the association between the

dependent and independent variables was interpreted using the Pearson Chi-square test, whose value was fixed at 0.05. Because the data was incomplete and defective, the Brass techniques were used to estimate various fertility measures (Unite Nations, 1983). Given the fairly constant levels of fertility in the past several decades, the Brass techniques were the best to apply.

A Poisson regression model was used to assess the contribution of each factor on fertility. This model belongs to the family of generalized linear models and it was preferred because the dependent variable is a count and it takes the following form;

$$\text{Log(CEB)} = \alpha + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n$$

Where;

α is a constant

β_i are the regression coefficients of the independent variables

X_i are the independent variables.

CEB is the number of children ever born alive by a woman.

Results.

Socio-demographic characteristics of respondents.

Table 1 shows the percentage distribution of selected socio-demographic characteristics of women under study. The distribution shows that the majority were young women aged 15-19 who comprised almost a quarter of the respondents (24.7%). More than 60% of the sample consisted of the young women aged 15-29 years old. This age distribution has an implication on future fertility levels if no control measures are taken because this population is sexually active.

The table shows that a high percent of the women resided in rural areas (93.1%). A rural population is likely to have high fertility because rural residents attach values to big numbers of children who are a source of labour to families. On the other hand, urban residence is associated with lower fertility because of increased exposure to conditions and services that favour reduced family sizes.

A high proportion of the sample reported having primary education or none (84.7%) and only a small proportion reported having post primary education (15.3%). These low

levels of education reflect the high levels of fertility in the district because of the low likelihood of contraceptive use among the women with low and no levels of education and of low age at marriage among such women.

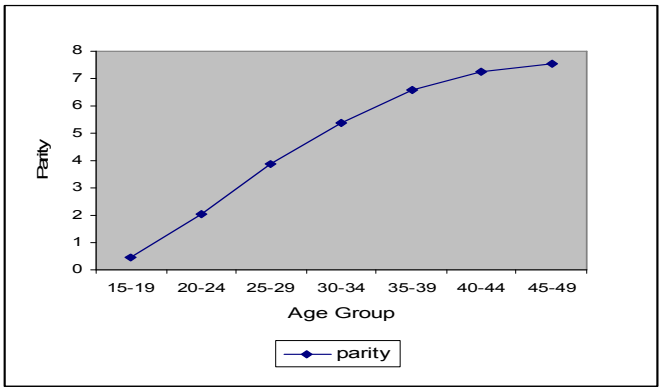
A high percent of the female population was married (64.1%). The high proportion of married women leads to high fertility levels within the district because marriage increases the frequency of sexual intercourse. Of all married women in the district, a high 85% were in monogamous marriages whereas only 15% were in polygamous marriages. The type of marriage affects fertility because women in polygamous marriages may compete with their co-wives to have more children because they want more attention from the husband leading to high fertility. On the other hand, women in monogamous marriages, stand a high risk of getting pregnant due to the frequency of sexual intercourse in such a marriage union.

The employment status of the women has an effect on their fertility decisions. Women doing professional jobs may not be willing to produce and care for many children because of the opportunity costs involved and their desire to develop careers. Table 1 shows that although a high proportion of women (57.8%) reported being employed, most of them were under informal or unpaid employment.

Religious affiliation has an effect on the fertility level of the women because of the values attached to children and the attitudes towards contraception. The results in Table 1 show that Anglican women accounted for the biggest percentage (38.6%) followed by the Catholic women (35.4%).

Fertility levels in the district.

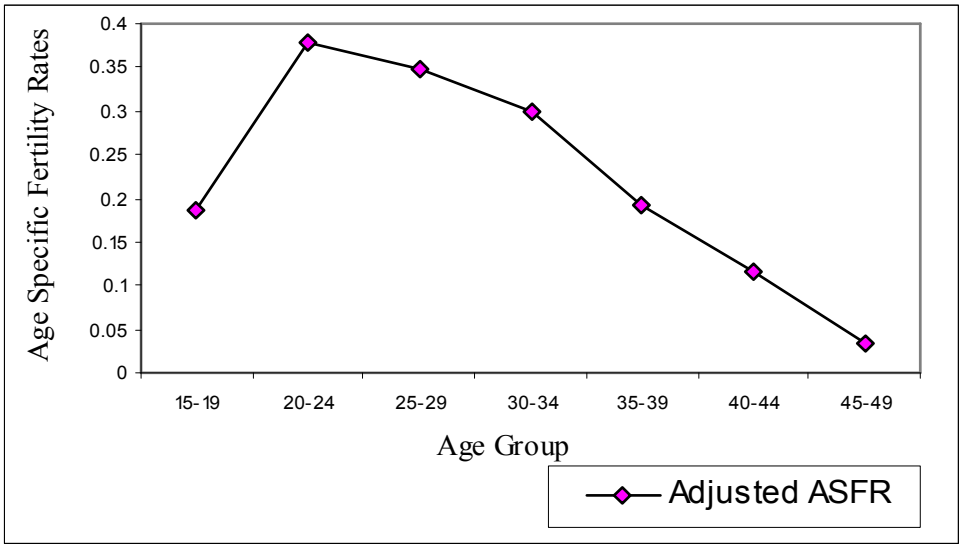
Figure 1: Parity of women in the district in 2002.



As shown by the figure, fertility levels in the district were high. The number of children ever born to women increased with age and by the end of the reproductive lifespan a woman produced almost 8 children, which is an indication of high fertility rate in the district.

By using the Brass P/F ratio technique to adjust fertility rates, it was found that age specific fertility rates were very high. As can be seen in Figure 2, the age specific fertility rates of women follow the expected inverted U pattern peaking at 20-24 years and thereafter declines. The peaking in the ages between 20 and 24 reflects the high levels of marriages among women in the early age range. The figure shows that the child bearing for the women in the district begins at a very early age of 15 and below and continues beyond age 45. This has an effect of increasing the TFR since their contribution to the rate is substantial. Basing on the adjusted ASFR, the TFR was 7.8 children, the CBR was 50.7 per 1,000 births, the GFR was 256 per 1,000 births, GRR was 3.8 and NRR was 2.8 girl children.

Figure 2: Age Specific fertility rates for women in the district.



The rates indicate that the population in the district had a high ability to increase since women had several daughters (2.8) to replace themselves. This shows that the district would have extra women in the reproductive period in future to enable the population to continue growing fast.

Differentials in fertility

Fertility levels in the district differed with socio-demographic characteristics of the respondents such as age, residence, education level, marital status, type of marriage union, employment status and religion. These differentials are showed in Table 2.

Age and fertility

The mean number of children ever born increases steadily with age for the women in the district, reaching over 6 children per woman by age group 35 and above. Less than 4% of all women have no child by age 45. Notably, more than 30% of the women aged below 20 years reported having had a child which reveals the higher rates of teenage pregnancies and early marriages in the district.

Residence and fertility

Women residing in rural areas have more children than urban residents. From the results of the study, 37.4% and 10.7% of the women reported having had 1-3 and over 7 children among women in urban areas compared to 32.3% and 21.0% respectively in the rural areas. More urban women reported not having had a child at the time of the census (29.9%) than 22.5% of the ones in the rural areas. The association between residence and fertility is highly significant (p=0.000). Available evidence suggests that women in urban areas desire smaller families because of the costs associated to child rearing, later marriages and more effective use contraceptives. However, urban women breastfeed for a shorter period of time than women in the rural areas, leading to earlier returns of early ovulation which may be followed with a pregnancy and correspondingly shorter interbirth intervals.

Education level and fertility

From the findings in Table 2, fertility decreased with higher levels of education while low levels of education attainment below secondary instead increased the number of children born per woman. More women with no education (27.5%) reported having 7 and above children compared to the women with secondary education (6.8%) and over 40% of the women with secondary education reported not having a child. However, the difference in the fertility levels between the women with no education and the ones with primary education was slight. This can be explained by the decrease in the infant mortality rate among children whose mothers have primary education which consequently increases child survival. Since the levels of education attainment were generally low in the district, overall TFR in the district was high.

Marital status and fertility

Variations existed in children ever born by marital status of their mothers. Table 2 gives the percentage of women in various categories of marital status and the children ever born. Women who were previously married (divorced and widowed) display higher numbers of children ever born compared to other woman. 34.1% and 29.0 % of the

previously married women reported having 4-6 and 7 and above children respectively higher than other women in the district.

Type of marriage and fertility

Type of marriage was found to have significant association with fertility (p=0.001). Monogamous marriages may increase fertility due to the high rates of sexual intercourse. On the other hand, polygamous marriage may increase fertility due to women competing to produce more children so as to get special care from the husband. Table 2 shows that women in polygamous unions reported higher numbers of children ever born than women in monogamous marriage unions (34.4% and 28.9% compared to 28.5% and 25.0% reported having 4-6 and 7 and above children respectively).

Employment status and fertility

The results in Table 2 show that the association between employment status and fertility is significant (p=0.000). A higher percentage of employed women (24.2%) reported having 7 and more children compared to 15.0% of the unemployed women. Available evidence shows that there are very low levels of formal employment in rural areas such that the women who report being employed have either informal or unpaid jobs. This may explain the unexpected result.

Religion and fertility

From the table, 29.8% and 22.1% of the Catholic women reported having had 1-3 and 7 and more children respectively. The rates were 34.0% and 19.4% among the Anglican women, 36.7% and 17.9% among the Moslems and 32.6% and 19.9% among other women who included the Pentecostals, Seventh day Adventists, and other religious affiliations. Because of the differences in the fertility norms and beliefs about child bearing, there are differences in the number of children for women in the different religious beliefs. For example, Catholics do not accept the use of modern contraceptives and the Moslems normally encourage polygamous marriages and marry off their

daughters at early ages which may increase the number of children ever born. However, the results show no significant association between religion and fertility (p=0.055).

Factors of fertility in Kiboga

Using children ever born as the dependent variable, a Poisson model was used to explore the relationship between fertility and the various factors and the results are presented in Table 3.

The table shows that the age of a woman has an effect on her fertility level. Fertility increases with an increase in the age of the woman and the differences in fertility show a highly significant relationship with age of the women (p=0.000). Women aged 20-24 and 45-49 had 2.3 and 7.7 times more children than a woman aged 15-19. The highest increase was between women aged 20-24 and 25-29 who reported a difference of over 18% and the lowest increase was between the women aged 40-44 and 45-49 (2%). The highest increase can be explained by the high rates of marriages and pregnancy among the women aged 20-29 and the lowest increase can be explained by lower levels of pregnancy among women aged above 40. Marriage levels are low among the younger ages, peak amongst women aged 20-29 and reduce thereafter due to increases in widowhood and divorce for older women.

The results in Table 3 show that women residing in rural areas have 24% more children than those who reside in urban areas and the variation is highly significant at (p=0.000). Type of residence plays a role in fertility changes since it has an effect on accessibility and use of contraceptives. Women in an urban area are more likely to access education than women in rural areas. Access to education increases the years spent in school by women, increases age at marriage and increases one's acceptability to use modern contraception.

From the table, women who had attained primary education had 2% more children than women with no education. Women with secondary or higher education had 14% lower fertility than women with no education. The relationship between education attainment and fertility was highly significant for women with secondary or higher education (p=0.000) and not significant for women with primary education (p= 0.172) respectively. Female education influences fertility in a number of ways; it is associated with later age at marriage, contraceptive use and desire for a smaller family size. Women with primary education have higher fertility than those with no education because of the reduced infant mortality rates among children whose mothers have primary education as a result of the acquired basic knowledge of sanitation which increases child survival. Generally, education level for a woman has a negative effect on fertility through the use of contraceptive and age at marriage.

The results of the model show that women in polygamous unions have 3% more children than women in monogamous unions but the relationship between type of marriage and fertility levels was not significant (p=0.304). Women in polygamous marriages tend to compete by producing more children so as to get special favour from their husbands. However, this result is contrary to several other studies who argue that women in monogamous marriages stand high chances of producing more children than the polygamously married women due to the high frequency of sexual intercourse.

The findings showed in Table 3 indicate that unemployed women had 2% more children than employed women. This is because of some types of work which conflict with the African woman's traditional roles of child bearing and rearing as there is no time for these roles which make career women forego their jobs when they are not prepared to do so. However, the results in the table do not show significant relationship between employment status and fertility (p=0.556)

Religion is another factor of fertility considered. The results of the study showed that Protestant women had 1% less children than Catholic women while the Muslim women had 1% more children than the Catholics. In addition, women from other religious

affiliations had 0.2% children more than Catholics. These variations are partly explained by the differences in religious beliefs and norms which influence fertility decisions of women.. However, the relationship between religion and fertility was insignificant (p=0.368-0.938).

Conclusions and recommendations.

The major determinants of high fertility in the district were higher ages, low levels of education, rural residence, and involvement of women in informal employment. It is therefore recommended that government should prioritize the education of girl children in the district. Improved education of women and girls boosts their decision making ability on matters related to their reproductive health, enhances their status within the family, delays age at marriage, and motivates them to achieve a desire for smaller family sizes.

There is need for provision and efficient delivery of family planning information and services free of charge to both urban and rural women so as to achieve smaller families. This information should be communicated to women within the district to facilitate utilization of the available family planning services. Women should be employed in formal sectors and provided with loans to encourage them to maximize participation in non domestic spheres.

References:

Bongaarts, J and R.G. Potters (1983) Fertility, Biology and Behaviour. An analysis of proximate Determinants. New York Academic Press

Karen. K. F., Ken. H. and Linda G. M. (1993). Demographic Change in Sub-Saharan Africa, (Population Dynamics of Sub Sahara Africa), National Academic Press, Washington DC, USA

Ministry of Finance, Planning and Economic Development (2008). The State of Uganda Population Report 2008. The role of Culture, Gender and Human Rights in Social Transformation and Sustainable Development. Itersoft, Kampala.

Ntozi, J.P.M (1995). High Fertility in Rural Uganda. The role of Socio-economic and Biological Factors. Fountain Publishers Kampala.

Population Reference Bureau (1995-2005). World Population Data Sheet. Connecticut Avenue, Washington DC, USA.

Uganda Bureau of Statistics and ORC Macro (2001). Uganda Demographic and Health Survey 2000-2001. UBOS and ORC Macro, Calverton Maryland,

Uganda Bureau of Statistics (2004). Uganda Population and Housing Census Report. UBOS

Uganda Bureau of Statistics (UBOS) and Macro International Inc. 2007 Uganda Demographic and Health Survey 2006. Calverton Maryland, USA: UBOS and Macro International

United Nations (1983). Manual X. Indirect Techniques for Demographic Estimation. Department of International Economic and Social Affairs. New York, USA. ST/ESA/SER.A/81.

TABLES

Table 1: Percentage distribution of selected socio-demographic characteristics of the respondents under study

Background characteristics	**Total women**	**Percentage**
Age group		
15-19	1134	24.7
20-24	958	20.8
25-29	768	16.7
30-34	639	13.9
35-39	462	10.1
40-44	380	8.3
45-49	254	5.5
Total	**4595**	**100**
Place of residence		
Urban	318	6.9
Rural	4277	93.1
Total	**4595**	**100.0**
Education Level		
No Education	1348	29.3
Primary	2546	55.4
Secondary+	701	15.3
Total	**4595**	**100.0**
Marital Status		
Never married	1076	23.4
Married	2944	64.1
Previously married	575	12.5
Total	**4595**	**100.0**
Type of marriage Union		
Monogamous	2490	84.6
Polygamous	454	15.4
Total	**2944**	**100.0**
Employment status		
Not employed	1937	42.2
Employed	2658	57.8
Total	**4595**	**100.0**
Religion		
Catholics	1626	35.4
Anglicans	1775	38.6
Moslems	507	11.0
Others	687	15.0
Total	**4595**	**100.0**

Table 2: Differentials in fertility by socio economic characteristics.

	Children ever born				
Age	**0**	**1-3**	**4-6**	**7+**	**Total**
15-19	69.1	30.7	0.2	0.0	1134
20-24	17.3	66.6	15.1	0.9	958
25-29	5.3	34.8	52.0	7.9	768
30-34	3.8	19.2	45.1	31.9	639
35-39	4.8	11.3	28.4	55.6	462
40-44	3.4	11.3	21.1	64.2	380
45-49	3.1	11.0	24.0	61.8	254
χ^2 **= 4012.221**	**df=6**	**p=0.000**			
Place of residence					
Urban	29.9	37.4	22.0	10.7	318
Rural	22.5	32.3	24.2	21.0	4277
χ^2 **=25.468**	**df=1**	**p=0.000**			
Education Level					
No Education	12.2	29.3	31.0	27.5	1348
Primary	23.2	33.7	23.0	20.1	2546
Secondary+	43.4	35.2	14.6	6.8	701
χ^2 **=353.667**	**df=2**	**p=0.000**			
Marital Status					
Never married	74.3	20.4	4.2	1.0	1076
Married	7.5	37.5	29.4	25.6	2944
Previously married	6.4	30.4	34.1	29.0	575
χ^2 **=2173.927**	**df=2**	**p=0.000**			
Type of marriage Union					
Monogamous	8.1	38.4	28.5	25.0	2490
Polygamous	4.4	32.4	34.4	28.9	454
χ^2 **=17.367**	**df=1**	**p= 0.001**			
Employment Status					
Not-Employed	35.6	29.6	19.8	15.0	1937
Employed	13.8	34.8	27.2	24.2	2658
χ^2 **=312.209**	**df=1**	**p= 0.000**			
Religion					
Catholics	24.0	29.8	24.0	22.1	1626
Anglicans	22.0	34.0	24.6	19.4	1775
Muslims	20.9	36.7	24.5	17.9	507
Others	24.9	32.6	22.6	19.9	687
χ^2 **=16.627**	**df=1**	**p=0.055**			

Table 3: Results from the Poisson model expressing the relationship between children ever born and the selected factors.

Fertility	**IRR**	**Std error**	**Level of Significance**
Age			
*15-19	**1.000**		
20-24	2.333	0.139	0.000
25-29	4.101	0.236	0.000
30-34	5.575	0.319	0.000
35-39	6.859	0.396	0.000
40-44	7.527	0.440	0.000
45-49	7.707	0.472	0.000
Residence			
*Urban	**1.000**		
Rural	1.248	0.052	0.000
Education level			
***No education**	**1.000**		
Primary	1.026	0.019	0.172
Secondary+	0.854	0.030	0.000
Type of marriage Union			
*Monogamy	**1.000**		
Polygamy	1.025	0.024	0.304
Employment Status			
*Not-employed	**1.000**		
Employed	0.989	0.019	0.556
Religion			
*Catholics	**1.000**		
Protestants	0.982	0.020	0.368
Muslims	1.015	0.031	0.630
Others	0.998	0.027	0.938

NB * Reference category