A cross-regional investigation of demographic and socio-economic factors associated with low fertility among women in Uganda

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Abstract

Background: Studies on fertility in Uganda have highlighted persistently high fertility, amidst several interventions in the country, and no logical attempt has been undertaken to understand whether the determinants of low fertility would be different across regions of the country among women (40-49 years) that have had enough time to have their "large" or "less large" families.

Method: This paper examined low fertility among women (40-49 years) using the 2016 Uganda Demographic and Health Survey data. The Multivariable Logistic regression analysis was applied to examine the net-effects of demographic and socio-economic and demographic factors on low fertility across regions of Uganda.

Results: Low fertility was highest among women in central region (26.9%), followed by western region (22.7%) and eastern region (17.5%) and lowest in northern region (15.5%). Across regions, factors associated with low fertility across regions were; education level, wealth quintile, and ever-used contraceptives. Religion, residence, marital status, age at first marriage, ideal number of children, and number of lifetime sexual partners were factors associated with low fertility in particular regions.

Conclusions

The study recommends appreciation regional-differences in averting high fertility. Also, the study further deliberate efforts in empowering women /girl child across all regions, and investment in further scientific research in order to understand the variations in factors associated with low fertility in particular regions of the country. This shall be able to accelerate the process of averting the issue of persistence in high fertility and its negative effects.

Keywords: Low fertility, high fertility, regional, mortality, Uganda

Background

Globally, countries with high fertility rates are found in Africa, and most of them are in Sub-Saharan Africa [2–4]. Fertility decline in Sub-Saharan Africa is considerably slower than Northern Africa, Latin America, Asia and the Caribbean. According to Shapiro (2017), the persistent slower rate of fertility decline in Sub-Saharan Africa together with high fertility, implies that in the absence of policies that hasten fertility decline, rapid population growth shall be experienced [5, 6]. For instance, from 2005 – 2011, Sub-Saharan Africa stood at 5.1 children per woman, and currently at about 5.0 children per woman [7, 8]. Additionally, Sub-Saharan population is expected to reach 1.96 billion in 2050, and 3.36 billion in 2100, which consequently results into social, economic and environment challenges [9]. Presently, within Sub-Saharan Africa, Uganda is one of those countries with the highest fertility of 5.4 children per woman, higher than the regions' average [8, 10, 11]. Uganda currently is battling with high fertility related issues that include but not limited to; persistent maternal mortality of 336 deaths per 100,000 live births, poverty, and destruction of the environment [11–17].

In Uganda, high fertility has been persistent; in 2006 fertility rate stood at 6.7 children per woman, and it is currently at 5.4 children per woman [10, 11]. Preceding studies in Uganda document that high fertility varied by type of residence (rural or urban), age at first birth, religion, education level, wealth quintile, contraceptive use, and region. For instance, low levels of contraceptive use are associated with high fertility, rural residence (in 2006 it had 7.1 children per woman and in 2016 it was 5.9 children per woman), education level (highly educated women were associated with low fertility), by region (Karamoja has persistently recorded high fertility (7.2 in 2006 and 7.9 in 2016)) [10, 11, 18–20]. These aforesaid studies highlight the significance of demographic and socio-economic factors in influencing fertility. However, these studies do not have an exhaustive scrutiny of low fertility predictors across regions of the country among women (40 – 49 years) who have had enough time to have their "large" or "less large" families; to ascertain whether the same predictors are shared across regions or each region has peculiar predictors. It should be noted that several intervention are underway towards reducing high fertility in order to achieve the demographic dividend [15, 20, 21]. Therefore, this study is aimed at understanding the demographic and socio-economic factors associated with low fertility across regions of the country and offer decisive ways of dealing with the vice of unacceptable high fertility among young women using the findings from the women that have had all the time to achieve their fertility.

Methods

The present study used data from the 2016 Uganda Demographic and Health Surveys (UDHS). It was a cross-sectional survey that was obtained from a nationally representative sample of women aged 15 – 49, on socio-economic, demographic and health issues. The household samples were based on a two-stage cluster sampling design after choosing a cluster sample at the initial stage [11]. Access and permission to download and utilize the 2016 UDHS data was obtained through the web platform from DHS program/Macro International United States of America, after submission of study proposal. Importantly, out of the four data mining tools used in 2016 UDHS, the present study placed interest on the women's questionnaire that targeted women aged 15 - 49. In the 2016 UDHS, women were asked about their age at first cohabitation/marriage; importantly, data that accrued from this question became a bench mark for the present study because sexual intercourse is a proximate determinant of pregnancy and birth of child/children. Inclusion of only women aged 40 – 49, ensures that we have women who have had enough time to have their "large" or "small" family size. Since the Children Ever Born (CEB) measure is a cumulative measure of fertility, the inclusion criteria also facilitate the assessment of fertility after women have had enough time to have their "large' or 'small" family sizes. Therefore, out of 18,506 women aged 15 – 49 in the survey; 2,798 women aged 40 – 49 were included in the study, and 15,753 women aged 15 – 39 were excluded. The 2016 UDHS data was obtained from ten (10) regions of the country, however, the study grouped the regions into four (4) traditionally administrative regions of the country; Eastern, Northern, Western and Central Uganda. Noteworthy, data weighting was done to ensure that the sampled data was representative.

Variables

The dependent variable "Low fertility" was assessed in the study using a binary outcome; whether a woman had less than five children (coded 1 (Yes)), or had five, and or more than four children (coded 0 (No)). The explanatory variables used in the study were; education level (highest level of education attained by the respondent), religion (religious affiliation of the respondents), wealth quintile (wealth index of the respondent's household), residence (place of respondent's residence), marital status (this was grouped into two categories; married (includes the married and the women living with partners), and not married (to include the divorced, separated, never married), age at first marriage (age respondent first cohabited), ever-used contraceptive (grouped into two; yes or no), ideal number of children (the number of ideal children preferred), and number of lifetime sexual partners (total number of sexual partners ever had). The explanatory variables influence the dependent variable through distribution and

impact; for example, difference in the number of children to a woman can be associated to wealth status, as well as the impact of wealth status on the reproductive behaviour of woman.

Statistical analysis

The present study undertook the analysis using STATA 13.0 at basically three stages: Firstly, a descriptive summary on women's socio-economic and demographic characteristics was performed across the regions using frequency distributions. Secondly, assessment of differences in fertility by women's socio-economic and demographic characteristics across the regions was made using the cross-tabular analysis and associations further investigated with Pearson Chi-square test. Lastly, the net-association of socio-economic and demographic variables by low fertility across regions was done using a logistic regression analysis in order to attain the likelihood estimates of a low fertility across the regions of the country. Due to the nature of the modelled outcome variable (binary outcome), logistic regression was adopted. In addition, Akaike's Information Criterion and Bayesian Information Criterion were run, which further informed the adaptation of the logistic regression model. Therefore, Odds ratios (OR's) with 95% confidence intervals were used in the presentation of the study findings. In addition, associations with a P-value less than or equal to 0.05 ($p \leq 0.05$) were regarded statistically significant; further, P-value less than 0.001 signified very strong association, p-value less than 0.01 indicated strong association, and p-value less than 0.05 meant moderate association [22, 23]. The aptness of the model was investigated using Archer-Lemeshow goodness of fit test [24].