

Factors Associated with Adolescent Pregnancy and Fertility in Uganda: Analysis of the 2011 Demographic and Health Survey Data

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Abstract Adolescent pregnancy and fertility are often discussed in literature as causes of health concern and as a social problem. Taking these accounts as a starting point, this paper uses the 2011 Uganda Demographic and Health Survey Data to explore the factors related to adolescent fertility and pregnancy in Uganda. A total of 2,026 female adolescents are selected for this study. Logistic regression analyses adjusted for socioeconomic and demographic characteristics are estimated to predict the odds of an adolescent having borne a child in the 5 years preceding the survey, being currently pregnant and both having had a child in the 5 years preceding the survey or being currently pregnant at the time of the survey. Marital status is a strong predictor of the likelihood of both having a child in the 5 years preceding the survey and being currently pregnant at the time of the survey. Age equally appears to be an important predictor of the two outcomes, such that an increase in age was associated with increase in the odds of being pregnant and of having born a child. The discourse in this paper shows that adolescent pregnancy and childbearing is a serious policy intervention area that requires redress.

Keywords Adolescent Pregnancy, Fertility, Uganda, Demographic, Health Survey

1. Introduction

There is growing evidence that associations between teenage motherhood and poor health outcomes can be explained by young mothers' long-term socioeconomic disadvantage[1]. In spite of the recognition that teenage motherhood is a complex issue reflecting individual, familial and structural forces, the focus in medical related journals on health disparities due to maternal age makes teenage mothers visible as a certain class of person. Current constructions position teenage pregnancy as a sign of individual failure and deviance[2;3;4] and scientific interest in teenage mothers is justified on grounds of poor health and economic disadvantage[5]. The recent shift from representing teenage motherhood as a moral problem to being a psychological or health problem both reflects and further legitimizes early pregnancy as an issue for science [6;7].

Teenage pregnancy and motherhood has remained a major health and social concern in Uganda because of its association with higher morbidity and mortality for both the mother and child. In addition to the physiological risks, there is a negative effect on the socioeconomic status of the mother, and hence the child, because current school policy is to have

pregnant girls terminate their education.

With 24 percent of adolescent girls becoming pregnant before the age of 19, Uganda has one of the highest rates of adolescent pregnancy in Sub-Saharan Africa[8]. The country's high adolescent pregnancy rate has two distinct implications. First, the risk of maternal death is higher in adolescents than in older women. In addition, pregnant adolescent girls are more susceptible to pregnancy- and childbirth-related complications because they have not yet developed the physical maturity required for a healthy pregnancy. Other common medical problems associated with adolescent pregnancy include obstructed labour, eclampsia, fistula, low birth weight, stillbirths, and neonatal death.

In Uganda evidence suggests that the proportion of teenagers who have started childbearing has declined over time, from 43 percent in the 1995 UDHS, to 31 percent in the UDHS 2000-01, to 25 percent in the 2006 UDHS, and finally, to 24 percent in 2011. As expected, the percentages of women who have started their reproductive life increases with age because of longer exposure, from 2 percent of women age 15 to 58 percent of women age 19. Furthermore, the socio-economic impacts of adolescent motherhood are devastating.

Adolescent girls who become pregnant are often unable to complete a secondary education, a fact that diminishes their potential to find employment [9]. Education and economic status are factors that influence adolescent pregnancy.

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Published online at <http://journal.sapub.org/sociology>

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Adolescents who have completed secondary school tend to have low pregnancy rates (15%) compared to adolescents who have no secondary education (50%). From an economic perspective, adolescents from poor households are more likely to become pregnant compared to adolescents from wealthier families. For the former, the pregnancy rate is 41 percent and for the latter the rate is 16 percent [10].

2. The Context of Adolescent Pregnancy and Fertility in Uganda

Uganda's National Adolescent Health Policy defines adolescents as people between the ages of 10 and 19 years. Twenty-five percent of Uganda's population is comprised of adolescents. A 25 percent pregnancy rate among adolescents in a population of 30 million people is therefore a worrying issue for the government of Uganda [10]. The Uganda government has enacted policies to address adolescent pregnancy. These policies set definite targets and are aimed at protecting young girls from unplanned pregnancies. Traditionally, social, economic and cultural norms in Uganda encourage marriage and childbearing at an early age. As such, female adolescents in Uganda face cultural and social pressure from their families to marry young and begin child-bearing early [11]. However, adolescent pregnancy outside wedlock is frowned upon in Uganda. The social stigma associated with pregnancy outside wedlock is further compounded when adolescents are forced to terminate their studies and families feel compelled to send their pregnant daughters away [12]. The social stigma and the resultant stress often compromise the health and well-being of pregnant adolescent girls and their unborn babies. Stigma, coupled with lack of support from families and society at large, compels some unmarried pregnant adolescents to seek abortions [9].

Statistics show that about 15 to 23 percent of female youths aged between 15 and 24 have had an abortion [13]. This is an issue of concern because abortion, which is illegal in Uganda, is performed by untrained midwives in unsafe conditions, greatly increasing the risk of disability and death for pregnant adolescents. Figures indicate that 13 percent of maternal deaths and 27.8 percent of deaths among adolescents in Uganda are primarily due to unsafe abortions [13].

There are various policies designed to delay and protect young women from becoming pregnant during adolescence. These policies include the National Health Policy, the National Adolescent Health Policy, the National Policy on Young People and HIV/AIDS, the Sexual Reproductive Health Minimum Package, the Minimum Age of Sexual Consent Policy (set at 18 years of age), the defilement law and a Universal Primary Education – (UPE) policy [14]. These policies also serve the purpose of fostering a supportive environment to encourage adolescent reproductive health. Notable among these policies is the National Adolescent Health Policy, introduced in 2004 to

address the specific needs of adolescents, including pregnant girls. The policy's objective is to streamline adolescent health needs to national health and development policies. Additionally, Uganda released the National Policy Guidelines and Service Standards for Reproductive Health Services in order to provide direction for reproductive health service provision and set national rules and regulations [15].

The guideline calls for increased access to contraception, adolescent-friendly services and post-abortion services, as well as support for unwanted pregnancies and services for single adolescent mothers. The Uganda government has also enacted laws to protect adolescent girls from pregnancy and sexual coercion. The minimum age of sexual consent was raised from 14 to 18 in the 1990s to help curb the spread of HIV/AIDS [16]. Further, a law governing defilement makes it a criminal offence to impregnate a girl under the age of 18 [12].

One of the major shortcomings of Uganda's health policies is the lack of full and proper implementation. This is mainly because of funding shortfalls that confound support for dissemination and implementation of these policies across the country [17;18]. For example, although maternal and child health is identified as a priority by the government, huge funding gaps prevent the health sector from achieving the goals outlined in the National Health Policy [18]. Health care centers in the country are underfunded, understaffed and overcrowded, which means adolescent-friendly services are few and far between.

Furthermore, various stakeholders lack knowledge about the country's health policies and awareness of individual roles and responsibilities in implementing these policies [17]. For instance, the National Adolescent Health Policy states that pregnant adolescent girls should be readmitted to school after they have delivered, but Uganda's Education Policy is silent on this issue [19; 14]. As a result, researchers have noted that the school systems tend not to offer social support to pregnant girls, but rather send them away [12]. Terminating studies at adolescent age due to pregnancy and motherhood places these young persons in a precarious socio-economic situation given that it limits their future employment prospects. It is against this background that this study seeks to examine factors associated with adolescent pregnancy and fertility in Uganda.

3. Data and Methods

In this analysis, we use data from the Uganda Demographic and Health Survey [8]. This data allows us to select individual females in the adolescent ages 15-19 years, and overall a total of 2,026 females were selected for this study. The survey traditionally collects information on socioeconomic characteristics of individual women in the reproductive ages; in addition information is available in the data set concerning various reproductive health issues including pregnancy and child birth. For this reason, the UDHS 2011 data for Uganda provides an opportunity to

study adolescent pregnancy and fertility in the country. We use descriptive analysis, first, to compare the characteristics of adolescents across the different socioeconomic factors including: region, residence, marital status, wealth index, educational level attainment age, religion and ever use of family planning. At the second level of analysis, three logistic regression models are estimated predicting three outcomes: 1). whether the individual adolescent is currently pregnant; 2). whether the individual bore a child within the five years preceding the survey; and 3). whether the individual was either pregnant or had borne a child in the 5 years preceding the survey. In all the three models control variables were added to account for either mediation or confounding effects of these variables. Formally, these equations may be expressed as follows:

$$\text{logit}[P(Y = 1)] = \beta_0 + \sum_{j=1}^k \beta_j X_j$$

Where $\text{logit}[P(Y=1)]$ refers to the natural log odds that a respondent will: be pregnant (Model I), borne a child in the 5 years preceding the survey (Model II), or be pregnant or had borne a child in the 5 years preceding the survey (Model III); β_0 refers to the intercept of the regression model; and $\beta_j X_j$ refer to regression estimates for the set of explanatory variables (numbered 1 through k) included in each of these models.

4. Results and Discussion

The descriptive findings presented in Table 1 closely resemble those reported elsewhere, notably, the results show that the majority of the female adolescents (77%) were not yet married and that in this group as high as 6.5% were either currently pregnant or had already born a child. Among the female adolescent who were married, those living with their partner and the previously married, over 80 percent were either currently pregnant or had borne a child already. Similarly, the percentage of female adolescents who were either pregnant or had borne a child was highest (30.4% among the poorest and 34.4 among the poorer female adolescent, respectively) among those in the poor and poorest categories. As expected the least proportions pregnant and those who had borne a child was among the richest category of female adolescents (17.3%).

Furthermore, female adolescents with no education had the largest proportion either currently pregnant or having borne a child (30.4%), while those with post secondary education had only 13.8% percent of this category currently pregnant or having borne a child. Concerning rural/urban residential characteristics, the findings in Table 1 were as expected, with rural residence associated with a larger proportion (24.8%) either currently pregnant or having born a child, compared to 22 percent among those in urban areas.

Table 1. Descriptive statistics for selected indicator variables in the logistic regression models 2011 Uganda Demographic and Health survey (Women only)

<i>Selected variable/Category</i>	<i>Number of Women (n)</i>	<i>Percent of Women in DHS Sample</i>	<i>Percent of women either pregnant or had a child in last five years</i>
Marital Status			
Never married	1566	77.3	6.5
Married	164	8.1	81.7
Living together	233	11.5	84.1
Previously married	63	3.1	87.3
Wealth Index			
Poorest	374	18.5	30.2
Poorer	320	15.8	33.4
Middle	325	16.0	25.2
Richer	430	21.2	19.5
Richest	577	28.5	17.3
Educational Attainment			
No education	112	5.5	30.4
Primary	1,262	62.3	26.9
Secondary	623	3.8	17.3
Higher	29	1.4	13.8
Residence			
Urban	601	29.7	22.0
Rural	1,425	70.3	24.8
Region of Residence			
Kampala	223	11.0	22.0
Central 1	171	8.4	22.8
Central 2	189	9.3	21.7
East Central	207	10.2	31.4
Eastem	231	11.4	28.1
North	208	10.3	24.5
Karamoja	135	6.7	19.3
West Nile	247	12.2	29.6
Western	209	10.3	22.5
South West	206	10.2	14.6
Age category			
15	482	23.8	2.1
16	407	20.1	8.9
17	356	17.6	21.9
18	407	20.1	37.6
19	374	18.5	55.9
Religion			
Catholic	879	43.4	24.1
Protestant	802	38.6	21.6
Muslim	294	14.5	29.3
Other	52	2.5	25.0
Family Planning Use			
No	1862	93.4	21.9
Yes	134	6.6	52.2

Table 2. Effects of selected explanatory variables on the log odds of an adolescent being currently pregnant (Model I); having borne a child in the five years preceding the survey (Model II) and either of the two options (Model III)

<i>Variable/Category</i>	<i>Model I</i>	<i>Model II</i>	<i>Model III</i>
Marital Status			
Never married ^{RC}	1.000	1.000	1.000
Married	*16.839	*20.375	*39.840
Living together	*16.431	*17.928	*41.854
Previously married	*4.663	*58.178	*67.502
Wealth Index			
Poorest ^{RC}	1.000	1.000	1.000
Poorer	0.971	0.981	0.962
Middle	0.965	0.914	0.712
Richer	0.527	0.680	*0.510
Richest	*0.412	*0.443	*0.332
Educational Attainment			
No education ^{RC}	1.000	1.000	1.000
Primary	1.173	1.103	1.569
Secondary	1.429	0.736	1.226
Higher	*5.658	0.319	1.041
Residence			
Urban ^{RC}	1.000	1.000	1.000
Rural	1.294	*0.439	*0.464
Region of Residence			
Kampala ^{RC}	1.000	1.000	1.000
Central 1	0.586	*3.476	*2.209
Central 2	0.563	1.842	1.438
East Central	1.156	*2.470	*2.661
Eastern	*0.353	1.650	1.067
North	0.447	1.042	0.873
Karamoja	0.416	0.637	0.495
West Nile	0.522	0.888	0.810
Western	0.476	1.576	1.262
South West	0.533	0.925	0.714
Age category			
15 ^{RC}	1.000	1.000	1.000
16	*3.295	*2.801	*3.021
17	*3.792	*5.711	*5.435
18	*3.472	*10.411	*9.172
19	*3.696	*18.322	*15.158
Religion			
Catholic ^{RC}	1.000	1.000	1.000
Protestant	0.681	0.891	0.815
Muslim	1.050	1.276	1.213
Other	1.612	0.415	0.912
Family Planning use			
No ^{RC}	-	1.000	1.000
Yes	-	*3.617	1.742
Pseudo R²	0.286	0.480	0.539
Observations (n)	2026	2026	2026

^{RC} = Reference category; * = significant coefficient (p<0.05)

The descriptive findings presented in Table 1 also suggest very wide regional variations in the proportions of female adolescents that were currently pregnant or had borne a child at the time of the survey. The highest proportions were recorded for East Central region (31.4%) followed by West Nile with 29.6 percent and Eastern with 28.1 percent. The lowest proportions currently pregnant and having borne a child were found to be in South West region (14.6%). Furthermore, the descriptive findings suggest a direct relationship between the age of a female adolescent and one being either currently pregnant or having borne a child. The latter percentages increased from 2.1 percent at age 15 to 55.9% at age 19. Religious variations in proportions currently pregnant and those who had borne at least a child existed and suggest that Muslim adolescents had the highest percentages (29%) while Protestants depicted the lowest percentages (22%). Finally, only about 7 percent of the adolescents had ever used family planning methods and out of these, the majority (52%) were either pregnant or had borne a child in the five years preceding the survey.

The findings for the three logistic regression equations are presented in Table 2. Consistent with the descriptive statistics, the findings from the logistic regression suggest that all marriage coefficients were very highly significant in the model. The findings suggest that marital status is a very key factor explaining pregnancy and child bearing among adolescents in Uganda (Model I).

As already noted in the descriptive findings, all the three models show highly significant log odds associated with the marital status variable the results suggest that the ever married state increases the individual's likelihood of being pregnant or having borne a child in the adolescent ages. In Model I the results show that the log-odds of a female adolescent being currently pregnant were 17 times if the adolescent was married compared to if they were single. The results also show that if the female adolescent was previously married, the log odds of being pregnant at the time of the survey were also higher (OR=4.663; p=0.000) than if this adolescent was never married. This pattern of results does not show much variation in Models II and III.

The findings with regard to wealth index are also consistent with descriptive statistics presented earlier, and show that being in the richest wealth category significantly reduced the log odds of being pregnant (OR=0.412, p=0.000) compared to belonging to the poorest category. Similarly, those female adolescents belonging to the richest wealth category had significantly reduced odds of having borne a child compared to those who were in the poorest category as shown in Model II. In Model III which combines both the likelihood of being pregnant and having borne at least one child, the results are similar to what has already been observed in Model I and II. The categories poorer and middle class did not exhibit any significant difference from the poorest with regard to the likelihood an adolescent being pregnant and having borne a child.

It was surprising that education level attainment coefficients were not significant in the regression model

predicting the log odds of being pregnant. Similarly all except the higher category for education was significantly associated with the likelihood of having borne a child (Model II). The results in Model II show that the log odds of having borne a child increased nearly sixfold if the adolescent had a higher education compared to those who had no education. Finally, all coefficients for education were not significant in Model III. Furthermore, concerning residence, in Model I the variable was not significant in the equations, however in Model II as well as the combined Model III there is evidence to suggest that residence in the rural areas significantly reduced the odds of either being pregnant or having borne a child.

According to Table 2 the findings in Model I the findings show that there were wide regional variations in the log-odds of a female adolescent being pregnant at the time of the survey, however, these differences were significant only in Eastern region (OR=0.353, $p=0.047$) of the country. The findings also reflect a similar pattern in Models II and III, suggesting that the log-odds of an adolescent bearing a child in the five years preceding the survey increased 3.5 times in Central I and were 2.5 times in East Central, respectively, compared to Kampala. As indicated earlier, the findings in Model III suggest a similar pattern already presented in Model II, where the log odds of an adolescent bearing a child in the five years preceding the survey were significantly higher in Central 1 and East Central regions compared to Kampala region.

Age was shown to be an important predictor of pregnancy and child bearing in Uganda. The findings in Model I show that the log odds of a female adolescent being pregnant increased with their age. The log odds increased from 3.3 at age 15 to 3.7 at age 19. In Models II which predicts the odds of having borne a child, the increase in age of the adolescent equally increased the log odds having borne a child, and the increase was more clearly marked. The findings in Model III depict a similar pattern as already presented for Model II. Finally all the coefficients for religious affiliation were not significant in the three regression equations estimated.

The variable, contraceptive use was also examined, given that it is strongly related to pregnancy and childbearing. However, use of contraceptives perfectly predicted the failure rate in Model I, implying that those who used contraceptives were less likely to be pregnant at the time of the survey. At the same time the variable use of contraceptives was not significant in the combined Model III. On the other hand, ever use of contraceptives significantly increased the odds of having had a child in the five years preceding the survey. It is plausible that the few adolescents who used family planning methods had already born a child and were using in order to prevent or delay having another birth.

This study contributes to the on-going debate on the factors that are associated with adolescent pregnancy and fertility. This research strongly suggests that marriage is one of the most significant explanatory variables for adolescent pregnancy and child bearing in Uganda. The marriage

dynamics in Africa are intricate, and Walker[20] describes sub-Saharan region as an area with the highest rates of early marriage in the world. The latter works also point to the harmful effects of early marriage in terms of impact on the health, education and economic well-being of young girls. Indeed many women in the developing world and in Uganda are subject to marriage at an early age. Most such women have little choice in the age at which they marry, or whom they marry [21]. The findings in this paper also suggest that pregnancy and childbearing increase with age of the female adolescent. The latter is expected given that the proportion of women who have started their reproductive life increases with age because of longer exposure especially due to the marriage factor.

With respect to wealth status of adolescents, it seems plausible that the wealth status of the adolescent could affect their pregnancy and childbearing outcomes. The findings revealed that those in the richest wealth quintile had the least odds of being pregnant in adolescence compared to the poor. The pathways of this influence could be that the poor tend to marry at an early age, while those in the richer groups continue with their education and other career goals.

The findings further reveal significant regional variations in pregnancy and childbearing. This study revealed that there were some regional differences in adolescent pregnancy and that these were significant in Central 1 and East Central regions of the country where the odds of adolescent pregnancy were significantly higher compared to Kampala, the reference category. These regional differences could be a result of the differences in the local norms and behaviors as well as varying socioeconomic factors related to pregnancy and child bearing in these regions of the country.

5. Conclusions

Given that this study was an initial attempt to explore the factors that are associated with adolescent pregnancy and child bearing in Uganda; it may be difficult to suggest policy recommendations at this point. However, a few conclusions and policy recommendations can be harnessed from this study. First of all, marital status variable appears to be the single most important factor determining pregnancy and child bearing among the adolescent age category. Even education which often provides positive effects on delaying pregnancy and child bearing does not appear to provide significant positive outcomes. This suggests that targeted programmes aimed at sensitizing communities, households and adolescents themselves on behaviour change leading to delayed entry into marital unions could help reduce fertility and the negative outcomes of adolescent pregnancy and child bearing. Second, the analyses suggest that adolescents who cohabit (living together) had significant likelihood of being pregnant and having borne a child. Social policies designed specifically to mitigate this practice among adolescents could prove effective in reducing pregnancy and child bearing rates in Uganda. Third, the regional differences

observed in Central and East Central suggest that targeted interventions for behavioral change should prioritize those areas where pregnancy and child bearing are significantly higher, notably the areas in Central region and East Central regions of Uganda.

The factors associated with adolescent pregnancy and childbearing in Uganda are intriguing and important for both health, economic and social concerns. It is hoped that improved understanding of the factors associated with adolescent pregnancy and child bearing will lead to improved social policies, ultimately reducing adolescent pregnancy and childbearing in Uganda and elsewhere.

Further research is necessary that infers on norms and behaviors of adolescents as they relate to pregnancy and childbearing across subgroups in Uganda. The strength of socioeconomic explanations for subgroup differences, and the link between norms and behavior should be adequately studied. Further studies should also measure the perceptions of negative social sanctions for pregnant adolescents, which relate to the presence or absence of norms against adolescent pregnancy. The improved understanding of these associations will lead to improved social policies, ultimately reducing adolescent pregnancy and childbearing in Uganda.

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