

## **When Ignorance Is No Bliss: The Influence of Maternal education on Maternal Health Service Utilisation**

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### **Abstract:**

**Background:** Many strategies have attempted to address some of the socio-economic factors and barriers contributing to poor maternal health service utilisation. However, utilization of maternal health services is often influenced by several factors including women's educational status. Understanding the influence of maternal education on maternal health service utilisation provides information for better planning and better service utilization, and thus lead to decline in maternal mortality. The objective of this study was to highlight the influence of maternal education on maternal health service utilisation in Uganda.

**Methods:** Data from the 2011 Uganda Demographic and Health Survey was used. The dependent variable was education. Data analysis was done using SPSS for windows version 20.0. Bivariate and multivariate logistic regression models were used in the analysis.

**Results:** The study results show that maternal education has a significant association with use of maternal health services.

**Conclusion:** There is an undisputed strong relationship between education status of women and maternal health service use. Government efforts and policies should be geared towards reducing the burden of the cost of schooling, so as to increase the enrolment and retention of girls in education.

**Keywords:** maternal education, antenatal care, delivery care, postnatal care services

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### **I. Introduction**

Globally, the maternal mortality ratio remains high at 289, 000maternal deaths worldwide every year; with more than 99% of these occur in the developing world[1].The situation is more calamitous in sub-Saharan Africa where a woman has 1 in 160 chance of dying in pregnancy or childbirth, compared to a 1 in 3,700 risk in a developed country[2]. In Uganda, mortality is still high at 438 per 100,000 live births, with maternal deaths accounting for 18% of all deaths to women aged 15-49[3].Maternal mortality is an issue of utmost public health concern, especially in the developing world, in countries like Uganda, where literacy levels of women are low.

Studies have documented an association between maternal education and utilisation of maternal health services[4], and on maternal l mortality[5].Lower levels of maternal education have been shown to be associated with higher maternal mortality even amongst women able to access facilities providing intrapartum care[6].Moreover, lack of education has been noted as one of a number of stressors affecting women during pregnancy and childbirth, creating susceptibility and increasing the chance of negative outcomes[7].

Although the Ugandan government has introduced several initiatives to increase literacy levels, including introducing the UPE (universal primary education) project aimed at providing full tuition to four children per household ([8], with a mandate to ensure equal access by gender, the literacy levels for women are still low (64.6%), compared with those for men (82.6%)[9].

Like most countries of the world, Uganda targets the reduction of maternal mortality by three-quarters, by 2015 with the endorsement of the MDGs. However, maternal health service utilisation in Uganda is low; with only48 percent of pregnant women making four or more antenatal care visits during their entire pregnancy, only 58 percent of births being assisted by a skilled attendant and only 42 percent of these occurring in health facilities. Post natal care is no exception, with 74 percent women who had a live birth receiving no postpartum care at all[9].

While studies on the influence of education on maternal health service use have been extensively documented in other countries, there is a paucity of knowledge on such studies, particularly in Uganda and Sub-Saharan Africa as a whole.

Using data from the 2011 Uganda Demographic and Health Survey (UDHS), we examine the relationship between maternal education and utilization of maternal health services; antenatal care, delivery care

and postnatal care services. We postulate that the practices of educated women, with regard to pregnancy, childbirth, fertility, are quite different from those of their uneducated or lesser educated counterparts.

## **II. Data And Methods**

### **Data source**

This study utilized secondary data from the 2011 Uganda Demographic and Health Survey (UDHS). The data are analyzed using bivariate and multivariate analyses. The DHS is conducted every 5 years and the 2011 survey is the fifth in Uganda. In the survey, two-stage cluster sampling was used to generate a nationally representative sample of households. The first stage involved selecting clusters from sampling frames used in recent nationwide surveys, followed by the second stage, which selected households in each cluster. Stratification of urban and rural areas was taken into account. The data was collected from a representative sample of women in the reproductive age group (age 15-49) from all regions in Uganda.

### **Sampling procedures**

A representative sample of 10,086 households was selected for the 2011 UDHS. The sample was selected in two stages. In the first stage, 404 enumeration areas (EAs) were selected from among a list of clusters sampled for the 2009/10 Uganda National Household Survey (2010 UNHS). An EA is a geographic area consisting of a convenient number of dwelling units.

In the second stage of sampling, households in each cluster were selected from a complete listing of households, which was updated prior to the survey. Households were purposively selected from those listed. The study population for this study was all women in the reproductive age group (aged 15 to 49 years) who delivered at least once in the last 5 years preceding the survey[9].

### **Data collection**

A structured questionnaire was used as a tool for data collection. The questionnaire was adapted from model survey instruments developed by ICF for the MEASURE DHS project and by UNICEF for the Multiple Indicator Cluster Survey (MICS) project.

Interviewers were trained; a pretest and mock interviews were conducted before data collection in order to ascertain the quality of data to be collected. Supervision was ensured during data collection[9].

The researcher received approval from Measure DHS to use the data, upon submission of a research proposal.

### **Data analysis**

Analysis was done using SPSS version 20.0. Descriptive exploration of both dependent and independent variables was first conducted. Frequencies were first determined followed by cross tabulations to compare frequencies.

Bivariate and multivariate analysis techniques were then conducted. At bivariate level, analysis was made by the chi square ( $\chi^2$ ) test for categorical variables. The association between dependent and independent variables was measured by means of odds ratio for which 95% confidence interval was calculated. Variables that show a statistically significant association ( $p < 0.05$ ) at bivariate level were further analyzed at multivariate level by logistic regression. Results were accepted at the 95% Confidence level. All the variables were included in the multivariate model once they were significantly associated at the bivariate level.

## **III. Results**

The results of the study are presented based on a descriptive, bivariate and multivariate logistic regression analysis. The dependent variable was education level (coded as 0 for low, 1 for high), and the independent variables included; contraception method, ANC (antenatal care), skilled delivery care, and PNC (postnatal care).

### **Socio-demographic characteristics of the respondents**

A total of 4,909 women aged 15 to 49 years of age who had at least one birth five years before the survey were interviewed. Majority of the women were in the 25-29 (27.7%) and 20-24 (24.1%) age groups. 75.9% of the respondents lived in rural areas, while 24.1% lived in urban areas. 43.5% of the respondents were Catholics, 28.1% were Protestants, and 14.0% were Muslims, 11.5% were Pentecostals, and 1.8% and 1.1% were SDA and others, respectively. Majority (24.3%) of the respondents were from the poorest wealth quintile, while 23.4% were in the richest wealth quintile. 47.6% of the respondents were married, while 0.7% were divorced.

**Table 1: Socio-demographic characteristics of women**

Variable	n	(%)
<b>Age</b>		
15-19	375	7.64%
20-24	1182	24.1%
25-29	1362	27.7%
30-34	871	17.7%
35-39	686	14.0%
40-44	325	6.62%
45-49	108	2.20%
<b>Residence</b>		
Urban	1185	24.1%
Rural	3724	75.9%
<b>Religion</b>		
Catholic	2136	43.5%
Protestant	1378	28.1%
Muslim	688	14.0%
Pentecostal	566	11.5%
SDA	88	1.8%
Other	53	1.1%
<b>Wealth index</b>		
Poorest	1193	24.3%
Poorer	932	19.0%
Middle	841	17.1%
Richer	795	16.2%
Richest	1148	23.4%
<b>Marital status</b>		
Never in union	216	4.40%
Married	2338	47.6%
Living with partner	1790	36.5%
Widowed	118	2.40%
Divorced	34	0.7%
Separated	409	8.3%
<b>Education</b>		
Low	3709	75.6%
High	1200	24.4%
<b>Total</b>	<b>4909</b>	<b>100%</b>

**Table 2: Logistic regression: relationship between respondents' education and factors influencing maternal mortality**

	Highest education level ( $\chi^2$ )	p-value
<b>Variable</b>		
<b>Method of contraception</b>	<b>164.045</b>	<b>0.000***</b>
No method		
Traditional method		
Modern method		
<b>Skilled ANC provider</b>	<b>11.955</b>	<b>0.008**</b>
No		
Yes		
<b>Timing of first Antenatal checkup</b>	<b>15.562</b>	<b>0.000***</b>
0-3months		
4-6months		
7-9months		
<b>No.of Antenatal care visits</b>	<b>64.913</b>	<b>0.000***</b>
Less than 4		
4 visits		
More than 4		
<b>Skilled birth assistance</b>	<b>367.613</b>	<b>0.000***</b>
No		

Yes		
<b>Place of delivery</b>	<b>382.724</b>	<b>0.000***</b>
Health facility		
Other		
<b>Attended Postnatal checkup</b>	<b>251.560</b>	<b>0.000***</b>
No		
Yes		

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Logistic regression analysis showed a significant association between education and maternal health service utilization; method of contraception, timing of first ANC checkup, number of ANC visits, skilled birth provider, place of delivery, PNC attendance with p-value <0.001, use of skilled ANC provider was also significantly associated with education, p-value <0.01.

**Table 3: Logistic regression: relationship between respondents' education and factors influencing maternal mortality**

Variable	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I.	
							Lower	Upper
<b>Contraception</b>			76.306	2	0.000			
No method	-0.636	0.080	63.612	1	0.000	0.530	0.453-0.619	
Traditional	0.222	0.188	1.396	1	0.237	1.248	0.864-1.804	
Ref: modern method								
<b>Skilled ANC</b>								
Yes	0.563	0.155	13.177	1	0.000	1.756	1.296-2.379	
Ref: no								
<b>Timing of ANC checkup</b>			1.301	2	0.522			
0-3months	0.153	0.146	1.093	1	0.296	1.165	0.875-1.553	
4-6months	0.140	0.127	1.222	1	0.269	1.151	0.897-1.475	
Ref: 7-9months								
<b>No. of ANC visits</b>			15.799	2	0.000			
Less than 4	-0.385	0.098	15.452	1	0.000	0.680	0.562-0.825	
4 visits	-0.266	0.097	7.448	1	0.006	0.767	0.634-0.928	
Ref: More than 4								
<b>Skilled birth assistance</b>								
No	-0.523	0.259	4.066	1	0.044	0.593	0.357-0.985	
Ref: yes								
<b>Place of delivery</b>								
Home	-0.842	0.254	10.958	1	0.001	0.431	0.262-0.709	
Ref: health facility								
<b>Postnatal care</b>								
No	-0.553	0.078	50.154	1	0.000	0.575	0.493-0.670	
Ref: yes								
Constant	0.040	0.156	0.066	1	0.798	1.041		

The regression analysis indicated that after controlling for other covariates, method of contraception, skilled antenatal care, number of antenatal care visits, place of delivery, birth order and postnatal care were significantly associated with education. Women with low education were less likely to use modern methods of contraception, skilled antenatal care, and postnatal care as compared to those with high education. There was however, no significant association between skilled birth assistance and education.

#### IV. Discussion

While many policies have endeavored to address the socio-economic and physical factors contributing to poor maternal health outcomes, women's utilization of maternal health services is often influenced by several factors including women's educational status.

In our study, maternal education had an overwhelming association with use of maternal health services. Women with high education tended to choose health facilities for delivery more, compared to their counterparts with lower education. This may be because better educated women are more aware of health problems, and they use this information more effectively to sustain or attain good health status. Formal education also empowers women to know their rights and make healthy personal choices; thereby influencing obstetric performance. This result is in line with other studies that have highlighted the association between maternal education and utilisation of maternal health services. Studies in Peru[10] and Guatemala[11] for example, showed that women with primary level education were more likely to utilize maternal health services compared to those without any

formal education. Mother's education was found to be an important determinant of the use of maternal health services [12-19]. Better educated women are more aware of health problems, as well as about the availability of health care services, and use this information more effectively to sustain or attain good health status. Education has been shown to augment the woman's knowledge of modern health-care facilities, as well as increase the value she places on good health, resulting in heightened demand for modern health-care services [20-22].

Several studies have documented a positive and significant relationship between maternal education and contraceptive use [23-26]. Maternal education also has a positive association with contraceptive knowledge [26]. This is because learned women are more knowledgeable as pertains to contraception, and they fully understand the benefits of family planning. Educated women are also in better position to discuss with their spouses on issues of contraception. A study in India showed that 95% of the women with secondary education knew about the IUD form of contraception, while only 39% of the uneducated women had the knowledge of this method of birth control. Maternal education affects the use of contraception through the attainment of knowledge regarding contraception and also through increased communication between spouses. Education affects spousal communication through increased decision-making autonomy [25]. Educated women are thus at better liberty to discuss and choose their preferred method of contraception, as compared to women with no education, whose decision making autonomy is usually very low, if any. Furthermore, educated women are also more likely to use contraception consistently as soon as their desired family size has been reached. A study by Hoque et al [27] observed statistically significant and substantial differences in use of contraceptives between women with different levels of education, even after controlling for other related variables. Women with no education were thrice less likely to use contraception as compared to their learned counterparts with degrees from colleges/universities. In a study in Dhaka, Bangladesh, the maternal education emerged as the most significant factor influencing contraception [26].

The importance of ANC cannot be underrated; it is useful in improving pregnancy outcomes for both the mother and the fetus. Antenatal care improves some outcomes through the detection, management of, and referral for potential complications. ANC is used to detect early obstetric complications, counsel and motivate women to seek appropriate care [28]. In our study, maternal education was significantly associated with use of ANC services. The possible reason for this might be the health awareness information availed to women at ANC visits, which bolsters the importance of using skilled care during delivery. Frequent antenatal care attendance has an impact not only through early detection of obstetric conditions but also by influencing women's decision to deliver babies at health facilities. This is in line with other studies that have highlighted the influence of maternal education on ANC utilisation [29-34].

Our study is limited by possible recollection bias as participants might not fully recall events that happened during the last 5 years preceding the survey. Furthermore, there is a possibility that the associations that we found in our study are due to the effect of unmeasured variables that are connected with both the dependent and independent variables in our estimated models.

## **V. Conclusion**

This study set out to investigate the influence of women's education status on maternal health service utilisation. There is an undisputed strong relationship between education status of women and maternal health service use. Government efforts and policies should be geared towards reducing the burden of the cost of schooling, so as to increase the enrolment and retention of girls in education. The girl child should be motivated and encouraged to pursue education; an endeavor that later pays dividends, not only to her, but to the country as well. Government policy should aim at increasing female child enrollment in schools, so as to increase the female literacy rate.

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**Competing interests:** The authors declare that they have no competing interests.

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