Determinants of Obstetric Fistula in Uganda: Evidence From the DHS data

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Introduction

Maternal mortality and morbidity remain a conspicuous and stark challenge to public health in developing countries. Each year, pregnancy- related complications claim the lives of 500,000 women worldwide, with around 99% of these deaths occurring in developing countries (WHO 2005). Current best estimates indicate that for each woman who dies from pregnancy- related complications, 15 to 30 women are seriously impaired and disabled from childbirth related complications in less developed countries. In sub-Saharan Africa alone, between 30,000 and 130,000 of women giving birth develop fistula each year (UNFPA 2008).

Obstetric fistula is an extremely debilitating morbidity that occurs in situation of obstructed and prolonged labor resulting in an opening connecting the bladder and the vagina or connecting the bladder and the rectum, which leaves women with chronic incontinence of urine, feces, or both. The severe nature of obstetric fistula puts a serious toll in the lives of those affected by this condition. Most of the women who suffer from fistulas are often stigmatized; they experience acute social isolation stemming from the persistent odor due their incontinence (Wall 2006).

Yet, despite the severity of this health condition, obstetric fistula has been less researched than female genital cutting in the field of reproductive health (Dejong 2005). Most of the published research on fistula in developing countries comes from clinical based studies (Wall 2006; Ramphal et al. 2007; Di Marco 2008), therefore limiting scope and broader generalizability. These studies are also largely descriptive and focus on fistula treatment and repair. Knowledge on the magnitude as well as on the characteristics of the women affected by the morbidity is still limited.

Owing to the paucity of existing published research, this study aims to examine the determinants of obstetric fistula using the first round of data collected to study this topic from a population perspective, the 2006 Demographic and Health Survey (DHS) in Uganda.

Review of the literature

The literature on obstetric fistula is extremely scarce in the social sciences regardless of the gravity of this health condition. To date, there is only one research article that has been conducted from a population perspective in a developing country setting, in which the author has used the 2005 Malawi Demographic and Health Survey (Johnson 2007). Results from this study suggest that a lack of education, poverty, rural residence and sexual violence are associated with obstetric fistula in Malawi. Based on

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evidence from Johnson (2007) and on information from the medical literature, obstetric fistula appears to be linked to the biologic characteristics of women, the social factors and the cultural context in the developing world.

A certain number of biological factors have been identified as covariates of obstetric fistula. In this regard, height, weight, and small pelvic size have been cited to be linked to the risk of obstetric fistula (Arrowsmith, Hamlin et al. 1996; Creanga, Ahmed et al. 2007; Moodley 2007). The authors reported that women with a height less than 146cm and a weight of 50kg or less are more likely to experience fistula. Similar evidence were reported by Wall et al. (2004) based on a retrospective study using medical records of all women who had obstetric fistula at the local hospital in Jos (Nigeria) between January 1992 and June 1999. Wall and colleagues found that of 899 fistula cases, 75 percent had a height less than 150cm and a weight less than 50kg. The body of literature suggests that malnutrition in childhood and adolescence might interfere with growth, leading to stunted stature and underdevelopment of the pelvis, which in turn can impede pregnancy outcomes (Lawson 1989; Arrowsmith, Hamlin et al. 1996; Wall, Karshima et al. 2004; Creanga, Ahmed et al. 2007).

Studies also show that socioeconomic characteristics of women such as maternal education, socioeconomic status, and place of residence have an impact on the risk of fistula. Maternal education has been found to be a protective factor against the risk of obstetric fistula (Donnay and Weil 2004; Johnson 2007; Muleta, Fantahun et al. 2007). The reasons underlying this association include the fact that education may directly improve an individual's knowledge, as well as ability to process information, regarding healthy pregnancy behaviors. Another important determinant of fistula in sub-Saharan Africa is the socioeconomic status of the woman (Bangser 2006; Johnson 2007; Meyer, Ascher-Walsh et al. 2007; Norman, Breen et al. 2007). Research has shown that obstetric fistula predominately occurs among women with low economic status compared to their better-off peers (Bangser 2006; Johnson 2007; Meyer, Ascher-Walsh et al. 2007; Norman, Breen et al. 2007). Moreover, living in rural areas put women more at risk of developing fistula, because not only are they marginalized in terms of health infrastructures but also because they often live in remote areas, too far from clinics to receive timely care (Cook, Dickens et al. 2004; Wall 2006 Johnson 2007).

The cultural context appears also to play a role in the risk of obstetric fistula. With respect to cultural factors, early marriage and early childbearing are often cited as predisposing factors of obstetric fistula (Meyer, Ascher-Walsh et al. 2007; Muleta, Fantahun et al. 2007; Sombie, Kambou et al. 2007; Tsui, Creanga et al. 2007). In many African societies, early marriage is the cultural norm. Parents seek to marry daughters early to protect them against premarital sexual activity and unintended pregnancy. Since early marriage and early childbearing are strongly correlated in developing countries, young girls become pregnant right after marriage, potentially without full development of their pelvis, which may increase the risk of developing fistula (Kurz 1997). Women's autonomy is another determinant of obstetric fistula (Cook, Dickens et al. 2004; Wall 2006). In patriarchal societies like in sub-Saharan Africa, the male is habitually the one who decides important family matters; women do not take part in any household decisions, even when it is related to their own health. The lack of autonomy has an impact on the time frame to seek care, because women need permission from their spouse, or even their in-laws to go to a hospital, which can delay emergency care.

Besides, the literature argues that female genital mutilation –a harmful traditional practice –increases the risk of fistula. (Mahran 1981; Davis, Ellis et al.1999). In its different forms, female genital mutilation results in impaired female genital tract which ultimately endanger the health of the mother.

Data and Methods

The data for this research come from the 2006 Uganda Demographic and Health Survey (2006 UDHS) which collected information from a nationally representative sample of 8,531 women age 15-49 and 2,503 men age 15-54. The 2006 UDHS is the first of its kind to collect information on obstetric fistula adding to recent efforts of the United Nations Population Funds to raise awareness on this morbidity in developing countries. This study analyzes responses of 7239 women age 15-49 who are exposed to the risk of pregnancy.

The main dependent variable of this study is obstetric fistula which can be defined as an abnormal connection between the urinary tract and the vagina or the rectum and the vagina that result in the continuous involuntary discharge of urine or feces into the vaginal vault (Riley 2006). In the survey, all women were asked the following question: "Sometimes a woman can have a problem, usually after a difficult childbirth, in which she experiences uncontrollable leakage of urine or stool from her vagina. Have you ever experienced this problem?" The outcome variable assumes a value of 1 if the woman responds yes to this question, indicating she has obstetric fistula and a value of 0 otherwise. Covariates included in this study are current age, education, wealth index, place of residence, height, body mass index, anemia level, age at first intercourse, age at first marriage, age at first birth, female genital cutting, household decision making power, and region.

Our primary method of analysis is the logistic regression. Given the binary nature of the outcome in this study, we use the logistic regression to estimate the effects of the covariates linked to the risk of obstetric fistula in Uganda. The model is written as:

$$\text{Logit}(P_i) = \ln (P_i /1- P_i)= \beta_0 +\beta_1 x_{1,i} + \beta_2 x_{2,i} + \ldots\ldots\ldots \beta_K x_{Ki,}$$

P_i is the probability of having obstetric fistula based on a non linear function. β_0 represents the constant and β_1 to β_K represent the estimated regression coefficients related to each variables included in the model. We present odds ratios associated to the effects of covariates in four different models. It is important to note that in our analysis, the design effect is accounted for; we take into account weights, clustering and stratification of individuals within primary sampling units.

Expected Findings

The aim of this study is to examine factors that are associated to the risk of obstetric fistula in Uganda.

We expect:

(1) Women with short stature and poor nutritional status will be more likely to suffer from obstetric fistula.

(2) Women with low socioeconomic status, those living in rural areas, and those uneducated are more likely to experience obstetric fistula.

(3) Early age at first marriage, early age at first intercourse, and early age at first birth, will be associated with a greater risk of obstetric fistula.

(4) Lack of autonomy and female genital cutting will be associated with a higher risk of obstetric fistula.

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