Obstructed social services leading to obstetric fistula in Ethiopia: Evidence from DHS data

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Abstract

The main objective of this research is to assess the socio-cultural and demographic determinants of obstetric fistula in Ethiopia. The study used a nationally representative 2005 Ethiopia DHS data. Logistic regression model was employed to see the net effects of the predictor variables over the dependent one. In this study, 3.4 (4.5% for rural women) percent of the respondents experienced obstetric fistula, and surprisingly 70% of them were not treated for obstetric fistula. Women with secondary and higher education were less likely to be affected by obstetric fistula (OR=0.28) compared to those with no education. Women with five or more total children ever born were 3.8 times more likely to be affected by OF compared to those with zero total children ever born. Addressing this heart-breaking problem should be one of the national priority primary health care targets through improving access to quality health services.

Background

Obstetric fistula remains a major public health problem in areas where unattended obstructed labors is common. The most frequently reported global prevalence of obstetric fistula (OF) shows that approximately 2 million women have untreated fistula and approximately 100,000 women develop fistula each year. Other estimates show that as many as 130, 000 new cases of fistula are occurring annually in Africa (Holme et al., 2007; Tinuola and Okau, 2009) and globally up to 3.5 million women may be living with the condition (Wall, 2006).

Hemorrhage, sepsis, hypertensive disorders of pregnancy, unsafe abortion, and obstructed labor are the five main causes of maternal deaths. Obstructed labor is primarily responsible for obstetric fistula. It occurs in about 5% of pregnancies and accounts for 8% of maternal deaths (Hinrichsen, 2004). The vast majority of OF cases live in resource-poor countries, and almost all of these injuries could have been avoided if timely and competent obstetric care was available, accessible, and affordable. According to the 2006 Demographic and Health Survey in Uganda, an estimated 2.6% of women of reproductive age (15-49 years) had experienced obstetric fistula which approximates to over 142,000 women (UBOS, 2007).

OF is a devastating medical condition consisting of abnormal opening between the vaginal and the bladder or rectum resulting from helpless obstructed prolonged labour (24 hours) (WHO, 2006). In resource limited settings, women face various barriers in accessing health care: lack of knowledge to recognize pregnancy and labor complications; powerlessness to seek care; distance from facilities; lack of transport and poor roads; unaffordable costs of transport and health services; and low expectations of the care they deserve. Serious shortages of medical supplies and equipment, theater space, and particularly trained personnel, further undermine the timeliness and quality of the care they receive. As a result, they often remain sufferers for years or decades (Hilton, 2003; Cook et al., 2004; Wall, 1998; Grossmann-Kendall et al., 2001; Kyomuhendo, 2003; Women's Dignity Project and EngenderHealth, 2007).

The major consequences of OF include urinary incontinence, stigma and discrimination including: abandonment, not allowed eating with family members, not participating in social events and gatherings and others. Because of these bad exposures, they lose their self esteem, feel suicidal

ideation, and generally have bad feeling about the problem. Even after treatment, it is difficult for some women to fully enjoy family and community life. The negative social consequences, including divorce and ostracization from society are attributed to the bad odor arising from incontinence (Hilton, 2003; Cottingham, 19991).

Problem statement

Ethiopian MOH reported that 86.7% of the Ethiopian population has access to primary health care services (MOH, 2007), nonetheless, a substantial number of births (94 percent) between 1999-2004 were delivered at home. Only six percent of births were delivered with the assistance of a trained health professional, i.e., a doctor, nurse, or midwife, and 28 percent were assisted by a traditional birth attendant. The majority of births are attended by a relative or some other person (61 percent). Five percent of all births are delivered without any type of assistance at all. About 12% of the total fertility rate in Ethiopia derives from births to women aged between 15 and 19 years.

Despite the relatively better primary health service coverage available, health service utilization rate is very low (0.32) in Ethiopia. Hence, the country has one of the lowest antenatal care (52.1%), postnatal care (19%) and institutional delivery care (16.4%) coverage though progressively increasing every year (MOH, 2007). Ethiopia has one of the highest maternal mortality rates in the world with a maternal mortality ratio of 673 per 100,000 live births (CSA and ORC Macro, 2006).

Obstetric Fistula, one of the reproductive health problems prevalent in most countries of the sub-Saharan Africa, constitutes serious threat to the reproductive performance of women in Ethiopia. An epidemiological study conducted among the treated cases from Addis Ababa Fistula Hospital (AAFH) indicates that 97.4% of the cases were caused by obstructed labor out of which 63% of them were during their first birth (Kelly and Kwast, 1993). This Hospital has treated over 30,000 women over 33 years which is on average about 900 cases per year. Even a recent document review from the same Hospital indicates that 95.4% of the fistulae were caused by childbirth; coitus, surgery, trauma and others constitute only less than five percent of the cases (Biruk et al., 2006). Another evidence from AAFH indicates that the most important causes for not reaching a health institute during labor are distance, economical factors and poor knowledge in 28.2%, 13.6% and 9.8% of the cases, respectively (Muleta, 2006).

Some of the acute and chronic complications include: foot drop, contracture of the lower limb, vaginal scarring and sexual problems, amenorrhea, infection of the urinary and genital tract and infertility (Cron, 2003). A study conducted in rural Ethiopia indicated that among 39 untreated women, 38 (97%) had urinary incontinence; and about eight percent of them were also incontinent for flatus and feces (Muleta et al., 2008; Hinrichsen, 2004). The same study reported some of the bad consequences of fistula: three of the women with fistula repair reported the painfulness of sexual intercourse even intolerable. Women with such a problem are subjected to stigma and discrimination including: abandonment, not allowed to eat with family members, do not participate in social events and gatherings and others. Because of these bad exposures, they lose their self esteem, feel suicidal ideation, and generally have bad feeling about the problem (Hinrichsen, 2004). The negative social consequences, including divorce and ostracization from society are attributed to the bad odor arising from incontinence (Muleta, 2006; Wall, 1998).

Reports from Addis Ababa Fistula Hospital showed that more than 67% are already divorced when they reach the hospital and stillbirth occurring in 97%of the cases (Kelly and Kwast, 1993).

Many research findings have documented about the most important immediate clinical causes of obstetric fistula but, particularly for Ethiopia, the underlying factors and the different social consequences of the problem before and after treatment are not yet fully identified and adequately documented. Understanding the epidemiology of OF and its consequences helps to design appropriate interventions on the basis of scientific evidences and that i.e., why this study tries to document evidences beyond hospital-based studies.

Objective of the study

Objective: To assess the socio-cultural and demographic determinants of obstetric fistula in Ethiopia

Specifically the study will try:

- To examine the underlying causes of obstetric fistula by women of reproductive age
- To assess the magnitude of obstetric fistula in Ethiopia

Methods and materials

Data sources and Sampling Procedure

The source of data for the proposed study is the Ethiopia Demographic and Health Survey (EDHS) 2005. Individual women of reproductive age (15-49 years) were interviewed face to face on their background characteristics as well as reproductive health issues. In the survey, women were asked whether they have ever experienced obstetric fistula (OF) in their life. Only 3217 of them responded about their experience on OF which are considered in this study.

EDHS employed a two stage sampling and in the first stage, 540 clusters (145 urban and 395 rural) were selected from the list of enumeration areas (EA) from the 1994 Population and Housing Census sample frame (CSA and ORC Macro, 2006). In the second stage, a complete household listing was carried out in each selected cluster and between households from each cluster was then systematically selected for participation in the survey. To avoid problems that can arise from the non-proportional distribution of the clusters by region and to make the regional distribution nationally representative, the sample was weighted in the descriptive analyses part and regions with zero prevalence of OF are excluded in this study. The detail of the methodology was mentioned on DHS 2005 report.

Variable Identification

The dependent variable in this study is women's experience of OF and it was dichotomized with 1 being experienced and 0 being not experienced. The principal independent variables of interest are those reflecting women's socioeconomic status and demographic characteristics. Besides, type of residence was taken as a control variable to capture differences in women's life styles and living standards. Women's educational attainment, employment, and wealth status were included as major socioeconomic variables. As to women's educational attainment, there were three categories: no education, primary, and secondary or higher education. Employment status was measured by two categories namely: currently working and not currently working. Wealth index has three categories namely, poor, medium, rich. Age of women, age at first marriage, age at first birth, marital status and parity are important demographic variables included in the analysis model.

Statistical Analyses

To measure the impact of women's socioeconomic and demographic variables on experiencing OF, bivariate analyses and multivariate logistic regression models were estimated using SPSS (version 15.0) software. Chi-square tests have been used to test for associations between the dependent variable and the independent variables. Logistic regression modeling was undertaken to see the net effects of set of predictor variables over the dependent one.

Result

Socio-demographic characteristics

The majority of the respondents (57.2%) are found within the age group of 15-29 while 46% of them illiterate. More than 62% of the respondents reside in the rural part of Ethiopia. About 64% of the respondents were unemployed during; 58% were married; 61% of the respondents were included in the rich wealth index and 56% of the respondents were followers of Orthodox Christianity. The mean and median ages at first marriage were 16.4 and 16 years respectively with a standard deviation of 3.8 years where as the mean and median ages at first birth were 18.7 and 18 respectively with a standard deviation of 3.6 years. As to the regional distribution of respondents, most of the respondents (71.5%) represent three regions: Oromiya (35.7%), Amhara (17.3%) and SNNP (18.6%); while the remaining 20.2 percent represent the rest six regions and the two administrative councils (cities).

Socioeconomic and demographic differentials of Obstetric Fistula

In this study, more than 3.4% of the respondents experienced obstetric fistula and surprisingly 70% of them were not treated by the time of data collection. Women who were widowed or divorced or separated were the most affected by OF (6.5%) followed by then currently-married women (4.0%) and the never-married ones were the least affected (0.9%). There is a statistically significant association between marital status and experience of obstetric fistula (p-value<0.001). On the other hand, women with total children ever born of 5 or more (5.8%) are more affected by OF compared to those with TCEB of 1-4 (3.9%) and zero (0.9%).

In Ethiopia, the prevalence of OF is high in almost all of the regions and city administrations. Comparatively the highest prevalence was recorded in Afar region where about 6 percent of women had experienced OF. Somali region was the region with the second highest proportion of women (5.7

%) followed by Benishangul Gumuz region (5.6%). The lowest prevalence of OF was recorded in Addis Ababa (1.2%). Generally, five regions had records of OF ratio greater than the national average (3.4%). Among religious groups, yet high OF prevalence (2.5), Orthodox Christians were the least affected compared to Protestant (4.2%) and Muslims (5.3%).

OF and women's education, employment status and wealth status

Women's education is defined here as the highest level of schooling attended regardless of whether the woman completed the level. Secondary and higher education are combined into one category because only very few women achieved higher level of education. There is a negative association between mothers' education and OF whereby women with no education had the highest OF prevalence (5.2%) while those with secondary or higher education had the lowest prevalence (0.7%)(P-value <0.001). Those women who reported that they were unemployed or not working at the time of data collection were more affected by OF (3.7%) compared to those who were engaged in some economic activities (2.9%) though it doesn't show any statistical significant association. The findings also indicate that there is a positive statistical association between women's wealth status and their experience of obstetric fistula whereby nearly 6% of poor women were more affected as compared to those women with middle (2.7%) wealth status and rich (2.7%) ones (p-value<0.001) (Table 1).

Table 1 Socio-demographic characteristics of women of 15-49 ages by experience of OF, Ethiopia DHS 2005

	Respondent experienced an obstetric fistula (%)			
Variables	**No**	**Yes**	**Total**	**N**
Age 5-year groups ***				
15-19	97.9	2.1	100	632
20-24	96.9	3.1	100	614
25-29	98.0	2.0	100	592
30-34	97.4	2.6	100	389
35-39	95.7	4.3	100	392
40-44	94.1	5.9	100	306
45-49	92.8	7.2	100	291
Region **				
Tigray	97.1	2.9	100	347
Afar	94.1	5.9	100	17
Amhara	97.5	2.5	100	555
Oromiya	96.2	3.8	100	1149
Somali	94.3	5.7	100	35
Ben-Gumuz	94.4	5.6	100	18
SNNP	94.5	5.5	100	597
Addis Ababa	98.8	1.2	100	499
Type of place of residence ***				
Urban	98.3	1.7	100	1213

Rural	95.6	4.4	100	2004
Education level * **				
No education	94.8	5.2	100	1491
Primary education	96.7	3.3	100	750
Secondary and higher education	99.3	0.7	100	976
Respondent currently working				
No	96.3	3.7	100	2045
Yes	97.1	2.9	100	1171
**Religion ** **				
Orthodox	97.5	2.5	100	1804
Protestant	95.8	4.2	100	599
Muslim	94.7	5.3	100	697
Other	97.4	2.6	100	118
Current marital status * **				
Never married	99.1	0.9	100	950
Currently married	96.0	4.0	100	1853
Other	93.5	6.5	100	415
Wealth Index * **				
Poor	94.4	5.6	100	806
Middle	97.3	2.7	100	439
Rich	97.3	2.7	100	1972
Total children ever born * **				
0	99.1	0.9	100	1103
1-4	96.1	3.9	100	1196
5+	94.2	5.8	100	918
Total	**96.6**	**3.4**	**100**	**3217**

Source-own calculation, Chi-square test: **p-value<0.01, ***p-value<0.001

There are marked differences in the level of prevalence of obstetric fistula between urban and rural areas whereby OF is more common in rural areas (4.4%) than 1.7% of urban areas (Fig. 1). In urban areas, the highest (4.3%) and the lowest (0.4%) prevalences of OF were recorded for women of age groups 35-39, and 15-19 and 25-29 respectively. For rural cases, the lowest prevalence (2.7%) was observed for women of age groups 30-34. In both the urban and rural cases, higher OF prevalences, more than 4% were recorded for the older age groups i.e., more than 35 years with the highest record being for rural women of age group 40-44 years (8.7%).

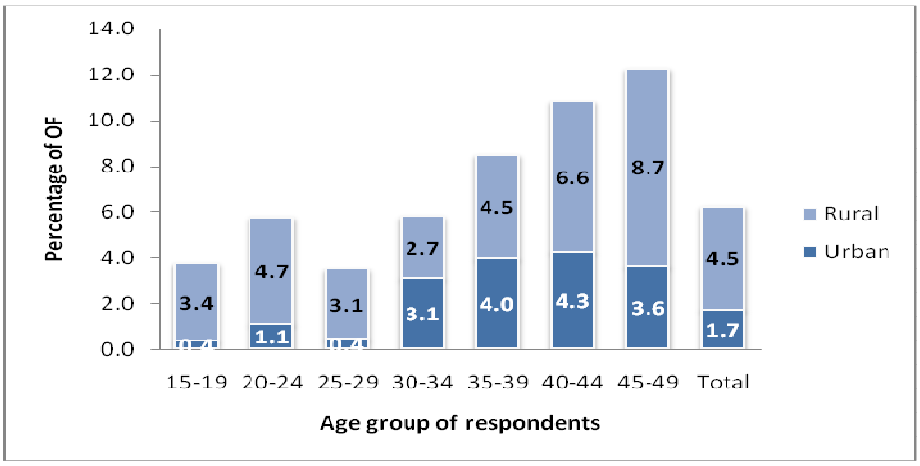

Fig. 1 Distribution of OF by age group and place of residence

Obstetric fistula by age at first marriage and age at first birth

As it can be seen in fig. 2 obstetric fistula is highly prevalent among rural women with less than 18 years of age at first marriage (5.3%) and urban women with less than 18 years of age at first birth (5.9%). Unlike the urban places, the prevalence of obstetric fistula was yet high among rural women of 18 years or more of age at first marriage (4.5%) and age at first birth (5.2%) respectively. The figure shows that women who give birth before 18 years of age are more affected by OF than those who marry in that same age.

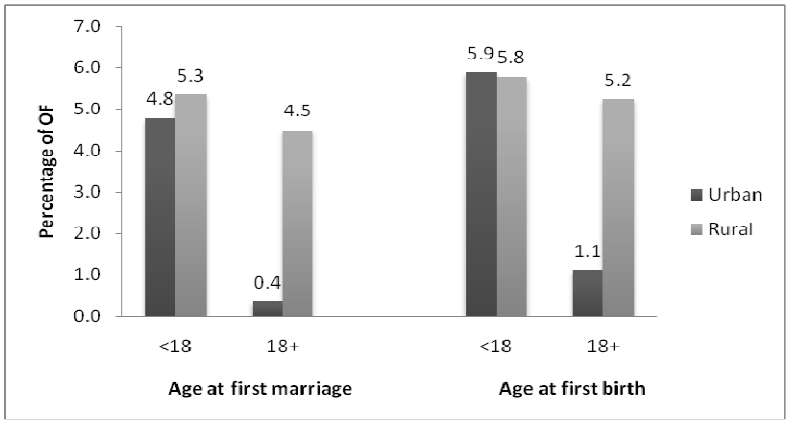

Fig. xx OF by age at first marriage and age at first birth and by place of residence

Determinants of obstetric fistula: A multivariate logistic regression analysis

The multivariate analysis adds to our knowledge on issues related to disparities of sociodemographics factors in OF among women in Ethiopia. The magnitude of the gap described in this study gives an evidence that will help programmers, researchers and policymakers in the management of OF among

underserved women. The present study is important in that it documented such factors as important determinant of women's exposure to OF besides the frequently assessed obstetric and immediate factors.

As can be seen in table 2, the logistic regression selected educational attainment, region and total children ever born (TCEB) as risk factors for OF among the predictor variables. On the other hand, women's age, place of residence, wealth index, work status and marital status seem to have no statistically significant effect on women's exposure to OF.

The overall level of literacy among the respondents is low with more than 46% of them with no primary or secondary education, and there seems to be some difference in women's fistula experience of the illiterate and the relatively educated respondents. The decreased likelihood of being affected by OF was observed for women with secondary and higher education. These women are less likely to be affected by OF by 72% (OR=0.28, CI=0.12, 0.66) as compared to the reference category. This might indicate that women with better education take care of their health than the un/less educated ones.

Women with five or more total children ever born were 3.8 times more likely to have OF (OR=3.79, 95% CI=1.08, 13.28) compared to those with zero TCEB. However the association between these two variables should be interpreted carefully which might be seen in different directions. The first case could be that older women are more affected by OF and this might imply that OF is more prevalent in previous days compared to recent ones. The second case could be that the higher the number of exposures to child births the higher the probability to be affected by obstetric fistula. The third condition is that OF could occur multiple years back from the date of data collection. For example, according to the in-depth interview report the victims stayed with the problem for about 6-15 years. Actually the fourth possible explanation for this correlation could also be attributed to the physiological and physical changes in older ages.

The other important risk factor for obstetric fistula is the regional variation. Women in Benshangul-Gumuz regional state are at higher risk of being affected by OF (OR=1.17; CI=0.37, 3.72) than women in Tigray region.

Table 2 Determinants of obstetric fistula among women 15-49 years, Ethiopia 2005

Variables	B	S.E.	Exp(B)	95.0% C.I. for EXP(B)	
				Lower	Upper
Region					
Tigray (RC)					
Afar	0.94	0.55	2.55	0.87	7.48
Amhara	0.02	0.46	1.02	0.41	2.53
Oromiya	0.40	0.36	1.49	0.73	3.02
Somali	0.07	1.06	1.07	0.13	8.60
Ben-Gumz	0.16	0.59	1.17*	0.37	3.72
SNNP	0.78	0.35	2.18	1.09	4.35
Addis Abeba	-0.01	0.48	0.99	0.38	2.55
Place of residence					
Urban (RC)					
Rural	0.05	0.38	1.05	0.50	2.23
Educational status					
No education (RC)					
Primary education	-0.27	0.30	0.76	0.42	1.37
Secondary and higher education	-1.27	0.44	0.28**	0.12	0.66
Current marital status					
Never married (RC)					
Currently married	-0.07	0.66	0.93	0.25	3.43
Other	0.33	0.68	1.39	0.37	5.22
Wealth Index					
Poor (RC)					
Middle	-0.37	0.37	0.69	0.34	1.42
Rich	-0.01	0.30	0.99	0.55	1.78
Total children ever born					
0 (RC)					
1-4	0.97	0.62	2.64	0.78	8.95
5+	1.33	0.64	3.79*	1.08	13.28

Source-own calculation, *P<0.05, **P<0.001

Conclusion and recommendation

Socioeconomic and demographic data from 3217 women living in Ethiopia has provided the opportunity to analyze the distribution of OF in a relatively recent year (2005), and within a wide

range of regional states and city administrations. Nationwide probabilistic samples, large sample sizes, highly standardized data collection procedures, and appropriate multivariate analyses all favor the internal and external validity of the study findings. The present study tried to achieve the stated research objectives by examining whether socioeconomic and demographic variables are important determinant of experiencing OF.

The relationship between educational status and OF, regardless of socio-demographic characteristics like, place of region, age, religion, and place of residence, suggests that women with secondary or higher education are less affected by OF than the relatively less-educated women in both the bivariate and the multivariate analyses.

The other important demographic factor for OF is the age at first marriage which shows an inverse relationship with experiencing OF. Those whose age at first marriage was less than 18 years are vulnerable to OF. This is a critical bottleneck particularly for rural Ethiopian women where early and child marriage is very common and later accompanied by early age at first birth like other similar findings (Tinuola and Okau, 2009).

Understanding the relative importance of the various determinants of OF among Ethiopian women is the key to designing evidence-based effective programs to address women's obstetric problems. The proportion of fistula cases vary by age, place of region, type of place of residence, total children ever born (CEB), marital status, wealth index, educational attainment and employment status with statistically significant chi-square values in the bivariate analysis. Rural women, women with larger CEB, those with age at first marriage of less than 18 years, and women who were relatively less educated or with no education were at high risk of being exposed to OF than the other counterparts.

Unless the obstacles and obstructed social services that prevent women from pregnancy and delivery related risk factors, it will be difficult if not impossible to avoid OF and achieve intended national development goals. Improvements in maternal health status can only be seen when the needy are not exposed to the risks of obstetric problems like fistula. On the basis of the study findings, improving the educational and employment status of women with the aim of enhancing their socio-economic status is vital for their health wellbeing. To avoid the risk of OF due to multiple pregnancy and delivery,

strengthening family planning and antenatal care services should be addressed extensively. Besides, the Ethiopian government should ensure the practice of the law against early marriage through enhancing family and community awareness about the dangers of early marriage and early pregnancy. Addressing this terrible problem should be one of the national primary health care targets through raising awareness and improving access to quality health services.

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