

Economic Impact of Obstetric Fistula and Cost Effectiveness of Care and Repair Interventions In Ethiopia

Author: Teweldebrhan Hailu Abrha, MD, MPH, MA

E-mail: Teweldebrhan.hailu@gmail.com

Phone: +251-91-148-1063

Abstract

Background: Obstetric fistula is an abnormal opening between the bladder and vagina or between the rectum and vagina, caused by abnormal childbirth. It allows urine and/or faeces to leak continually via the vagina. Apart its medical complications, it has significant negative economic impacts to the patient, household and community as well as the nation. However, there is no single study conducted so far to outline such economic consequence of obstetric fistula and the cost effectiveness of the interventions to treat it.

Objective: This study aims at providing better understanding of the economic significance of Obstetric Fistula (OF) and the cost effectiveness of obstetric fistula repair and care, in Ethiopia based on data from a selected fistula centers.

Methodology: This is a cross sectional study, in which using Hamline fistula centers (HFCs) as a sampling frame, a primary data from random sampling survey was collected and secondary data from HFC data base was used as secondary source. 94 cases from the survey and 3096 cases from the data base (Jan 2008 to Dec 2012) fistula cases included in the analysis, and the data set from the two sources was summarized and analyzed separately. A descriptive, econometric and cost-effectiveness methods were used for data analysis and estimations.

Findings: Average age at causative delivery is 24 years, most of them (51%) married before the age of 17, over 72% were illiterate, and 45% have BMI below normal (<20kg/m²). Most live in a rural setting and 84% gave birth without skilled assistance, after laboring for about 2.6 days on average. In 89% of the cases the outcome of the causative childbirth ends up to stillbirth. About 42% of the respondents were divorced or separated due to the condition. The average duration of the disability, before they presented to the fistula centers, 36.3 months. The respondents incurred a total expense of USD 1,071.44 (ETB 19,928.92) due to OF; this is significantly associated to duration of disability and income before disability. 9.46 DALY per case is lost due to the disability, and 9.28 QALYs could be gained by the individual when OF is prevented. The cost per DALY averted and the cost per QALYs gained were USD 54.9 and USD 68.80, respectively. This is much less than the GDP per capita for Ethiopia. The benefit-cost ratio (BCR) and net benefit cost ratio (NBCR) for care and repair intervention is 4.96 and 3.96, respectively.

Conclusions and policy implication: This study proved that, obstetric fistula has substantial economic impact and investing in obstetric fistula care and repair interventions, is worthy from the individual, household, and community perspective. However, the existing care and repair interventions, though cost effective, can further be tuned to make them more efficient. Hence, more preventive and decentralized approach should be considered.

Summary Report

Background: Obstetric fistula is an abnormal opening between the bladder and vagina (vesicovaginal) or between the rectum and vagina (rectovaginal). As the name describes, it usually develops when a prolonged labor presses the unborn child so tightly in the birth canal that blood flow is cut off to the surrounding tissues, which necrotize and eventually rot away. As a result it allows urine and/or faeces to leak continually via the vagina; leading to severe embarrassment of the affected women as they are unable to control their bodily functions, such that they are constantly soiled and wet, and smell. In most cases, obstetric fistula is seen from its medical and health consequences. Equally important is the significant negative economic impacts to the patient, household and community as well as the nation. However, there is no single study conducted so far to outline such economic consequence of obstetric fistula and the cost effectiveness of the interventions to treat it. Hence, this study aims at providing better understanding of the economic significance of Obstetric Fistula (OF) and the cost effectiveness of obstetric fistula repair and care, in the Ethiopia. The study explored and analyzed the socioeconomic factors strongly associated with obstetric fistula; economic effects of obstetric fistula on patient and households, and estimated their interactions. It also measured and provides estimates of the impact of obstetric fistula repair surgery and its cost-effectiveness.

Methodology: The main methods used in the study were mixed descriptive and correlational/analytical research approach, where a cross sectional study design was adopted. A primary data from random sampling survey and secondary data from data base was used as source of data. While the descriptive part attempts to describe systematically the social and economic dimension of the problem under investigation, the correlational/analytical research attempts to discover or establish the existence of a relationship/ interdependence between the case and selected economic variables. Cost-effectiveness analysis was done using a cost-utility and as well as benefit cost ratio. Descriptive data analysis was made using mean, frequency and percentage. All socio-economic indicators obstetric fistula were computed, measuring the costs of Obstetric fistula (OF) to individuals and families estimated using the results of the survey, and the understanding other dimensions of the costs of Obstetric fistula (OF) explored, and cost-effectiveness estimates done.

Result: The 94 cases from the survey and 3096 cases from the data base (Jan 2008 to Dec 2012) fistula cases included in the analysis. 95.7% of the fistula cases in the sample survey and 92.5% from the secondary data were cases of obstetric fistula. Over half (54%) had this condition before age 24, all were living in a marital union before sustaining fistula and divorced (and/or separated) (38%) due to the condition. Most of them (51%) married before the age of 17, and have no formal education, nor able to read or write a simple letter (72 - 83%). The obstetric fistula patients, 45% have BMI below normal (20 kg/m^2); live in a rural setting with limited access to health facility, and had to travel for more than two hours to get basic health message 84% gave birth at home or on the way to health facility after laboring for about 2.6 days on average; and in 89% of the cases the outcome of the causative childbirth end up to stillbirth (89%). The mean duration of illness, by the time the cases presented to the fistula centers, to be 36.3 and 32.8 months, in the sample cases and the cases from the secondary data, respectively. Distance from the fistula center (over 2.5 days on foot and by track/autobus) and to constraints lack of money for transportation and related expenses, lack of information, and lack of decision making power contributed to such delay to seek treatment in 71% of the cases. Students who are children and siblings are among the care providers (10.6%) and had to dropout from Due to obstetric fistula the sufferer or her household had incurred a mean total expenses of US\$1,071.44 (ETB 19,928.92) during the duration of illness; medical expenses to treat complications of obstetric fistula, money for soap to keep possible better hygiene, cloths as they need to change frequently than usual, transportation when traveling for medical services, and money for accommodation were among the key components of the total expenses incurred. In majority of the cases, such expenses were funded from different sources that include: sold of animals (oxen), household saving, sold agricultural assets, borrowing from relatives and wage of family member, consecutively. These depleted household savings and asset of the sufferer and/or her households – fundamental economic challenge to the women and/or the households hosting the affected women goes beyond the duration of disability.

The study clearly demonstrates the income before and after illness is statistically significantly different ($M = -996.54$ $t(89) = -4.116$, $p = .000.$), and it demonstrated a reduction of income by two-third. That is, the study shown strong evidence that sustaining obstetric fistula reduces average income. However, the major lack of controls in this study, would suggest methods with more stringent safeguards against confounds. Further, the average income after illness

was significantly lower in the divorced/separated group than those of married group [$M = -458.98$, 95% CI (-696.76 to -221.20), ($p = 0.000$)]. The income after illness difference between the sufferers who are illiterate and those who have primary level education were also statistically significant, $p < .05$). The Tukey post-hoc test revealed that the average income after illness of fistula cases was statistically significantly higher for the groups completed secondary ($1,187.50 \pm 943.70$ ETB, $p = .033$) school compared to the illiterate cases. Further, This study showed these women who were younger when they sustain obstetric fistula, had lower BMI than those who were older, that is age at causative delivery ($p = 0.004$) is statistically significantly to the prediction of BMI. The study showed that average income before illness and duration of illness has strongly associated with the total expenses incurred due to obstetric fistula $F(2,87) = 81.408$, $p < .0001$, $R^2 = .652$. A 1% increase in the duration of illness and a 1% ETB increase in the average income is associated with 0.75% and 0.29% increase in the total expenses incurred by obstetric fistula cases, respectively.

The DALY lost per case of obstetric fistula was estimated to be 9.46 DALY. If robust intervention to provide care and repair were in place 74,056 (86.8% of the total) DALY could have been averted. However, with the current capacity and practice only 5,084 to 8,200 DALYs per year averted every year; less than 11% of the need. Similarly, the QALE for an individual with obstetric fistula is calculated to be 12.31 per individual. If such a case of obstetric fistula could be prevented, for instance by appropriate safe motherhood services, 9.28 QALYs would be gained by the individual. With the effort of the Hamline fistula centers in providing obstetric fistula care and repair, at the current practice, resulted in gain of 6.54 QALYs per case treated on average. Based on this estimate, on average, 4,054 to 6,540 QALYs have been gained per year, due to the six fistula centers across the Ethiopia. Using the cost-utility estimation, the cost per DALY averter and the cost per QALYs gained were US\$54.9 and US\$68.80 respectively. Finally, the benefit cost ratio (BCR) and net benefit cost ratio (NBCR) of the obstetric fistula care and repair, had proved to be in favor of the intervention. The BCR (NBCR) calculated if the care & repair services are provided 'as is' is 4.96 (3.96), if the care and repair done given earliest possible (33 months earlier than the current practice), the BCR (NBCR) is 6.47 (5.47), and finally, if effective prevention of obstetric fistula is in place then the BCR (NBCR) will increase to 8.79 (7.79).

Conclusions: Obstetric fistula is one of several third world human tragedies; and one that seems to have been long neglected by individual states and the international community. Affecting the poor and marginalized part of the community, and not only is associated with low socioeconomic profiles, but also leads to chronic economic burdens on households and community. The tragedy is preventable by basic safe motherhood services, and can be cured, and all the interventions are cost effective and can be further optimized. To sum up, obstetric fistula has substantial economic impact and investing on obstetric fistula care and repair surgery, worthy from the individual, household, community perspective.

Policy implication: Improving reach and coverage of cultural sensitive maternal health promotional and prevention programs and improving access to quality preventive and therapeutic interventions are among the key areas to prevent obstetric fistula. Minimizing the economic impact of obstetric fistula through preventing the disability from the outset, and early detection, care and repair of the disability to minimize the cost of illness; support to improve the client flow is very important. As the economic burden on women with obstetric fistula and their households is an burden on the community and the country, sources of financial support might include, for example, allocations from woreda health budgets, development partners funding as part of a national fistula program or special project to curb maternal disability as a complication of childbirth.

Both the cost-utility and benefit ratio showed that the obstetric fistula, care, repair, and rehabilitation services in Ethiopia, is cost-effective. However, there is a clear room to improve and further optimized cost effectiveness of the services. Early identification of the cases, and early care and repair, improving client flow to the centers, integrated provision of similar services – such as provision of safe motherhood services – including obstetric emergency surgery, as well as providing surgical intervention to manage prolapsed uterus, a common but neglected problem in the rural areas, are some of the ways that fits to the current organization of the care center.