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Predictors of Time to Obstetric Fistula Repair; A Case Study of Fistula Survivors in Kitovu Mission Hospital (Masaka), Uganda

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Abstract

Background: Obstetrical fistula (OF) is a public health challenge that is among the previously neglected components of maternal health in the developing world. The condition, which in the recent past has increasingly drawn more attention from the public, has a devastating impact on the health and wellbeing of both women and girls worldwide. The most common cause of obstetric fistula in developing countries is prolonged obstructed labor affecting approximately 2 million women and girls across Africa and Asia.The objective of this study was to examine the predictors of time to obstetric fistula repair among women who successfully received fistula treatment in Kitovu Mission Hospital.

Methods: Hospital records of 149 obstetric fistula survivors from Kitovu Mission Hospital which is located in Masaka district were analyzed.

Results: Out of 149 participants, 68(45.6%) women were aged 18-24 years and only 28(18.8%) had attained education beyond primary school level. About 72(48.3%) of the survivors received fistula treatment within the first three years of its occurrence. There was a significant relationship among married women (RR = 0.28, p = 0.044), women below 18 years of age (RR = 0.16, p = 0.038), and primiparous mothers (RR = 13.58, p = 0.013) observed at a time to surgery of above 7 years relative to a time to surgery of less than 4 years.

Conclusion:In addition to advocacy for a national and community based health insurance schemes in order to reduce on the cost for health care, there is need to incorporate campaigns against gender based violence (GBV) in maternal health and increase community sensitization on the importance of antenatal care (ANC) in fistula awareness campaigns.

Keywords: Fistula, Obstetric fistula, Predictors of time to fistula repair, Survivors

List of Abbreviations:

ANC: Antenatal Care; GBV: Gender Based Violence; MoH: Ministry of Health; OF: Obstetric Fistula: RR: Relative Risk; SSP: School of Statistics and Planning; UBOS: Uganda Bureau of Statistics; UDHS: Uganda Demographic Health Survey; UNFPA: United Nations Population Fund; WHO: World Health Organization

Background

Obstetric fistula (OF) is a complication of childbirth occurring almost exclusively in developing countries. This abnormality results from prolonged obstructed labour which is usually associated with delays in seeking or receiving appropriate emergency obstetric care especially among young adolescent mothers [1,2]. Other causes of obstetric fistula include among others; destructive deliveries, caesarean section with or without hysterectomy and symphysiotomy [3].

This condition is increasingly drawing more attention among the previously neglected components of maternal health in the developing world because of its devastating impact on the health and wellbeing of those living with it [4]. It is one of the most severe childbirth injuries which leaves an opening between either the "bladder and the vagina" (vesico-vaginal fistula) or the "rectum and the vagina" (recto- vaginal fistula) resulting into urine or faecal incontinence respectively [5]. It is estimated that approximately 2 million women and girls across Africa and Asia are living with untreated obstetric fistula and up to 100,000 new cases occur each year worldwide [2]. In Malawi, the prevalence of obstetric fistula is estimated at 1.6 in every 1,000 women [6].

In Uganda, the Ministry of Health (MoH) recognized obstetric fistula as a silent morbidity among Ugandan women in 2001 however, strategic measures were not taken until the shocking reports in 2005, where Uganda reported the third-highest prevalence of fistula in the world [7]. It is estimated that in Uganda, 140,000 women were living with fistula by 2009 however; the Uganda Demographic and Health Survey (UDHS) reported a reduction in the prevalence among Ugandan women who had experienced fistula from 3 % in 2006 to 2 % in 2011. Of these, about 62 % of the women suffering from obstetric fistula sought for treatment from the available health facilities [8,9].

Obstetric fistula is such a devastating condition because it physically and socially disables women [10,11]. Besides instigating urine and faecal incontinence, obstetric fistula also affects the health, social, economic and psychological well-being of women. Economically, this life-long disability does not only affect the productivity of the woman alone but also that of her household and the community [11,14].

Despite the effects of obstetric fistula on women, the condition can be corrected through surgery and the success rate for the repair has been reported to be more than 80 % in different studies [14,15]. In as much as corrective surgery can be sought for and received by those suffering from obstetric fistula conditions, majority of the women take quite a long time before seeking medical intervention for their condition.

Delay to seek health care is one of the biggest challenges of health systems in Sub-Saharan Africa, Middle East and Asia. Research has shown that majority of the girls and women especially in Sub-Saharan Africa (SSA) on average take not less than a year with fistula. The average time frame that a woman spends with fistula is 3 years in Uganda and 1.75 years in Tanzania. According to Bangser et al., approximately 42% and 20% of the women had been living with fistula for more than 4 years and over 10 years respectively [16].

Such delays leave the fistula survivors with adverse consequences which may be social, psychosocial, economic and reproductive/ health related in nature. These can be experienced before or after the treatment yet they could can been avoided or reduced profusely with early treatment interventions. It is against this background that the researchers would like to ascertain the factors that could be responsible for delay in seeking medical attention by women suffering from obstetric fistula in Uganda.

Identifying the factors determining the time within which women suffering from obstetric fistula pursue medical attention will aid interventions which will seek to address the drivers for delay in access and health seeking behaviors among women suffering from obstetric fistula.

Methods

A descriptive case study design was used to determine the predictors of time to obstetric fistula repair among women suffering from fistula. The study was conducted among women aged 15-49 years who had experienced OF and successfully received corrective surgery from Kitovu Mission hospital which is located in Masaka district. These women constituted the cohort under follow up by the hospital between the years 2010 and 2012.

Kitovu hospital is one of the two private, faith-based hospitals under the partnership Fistula Care Plus. It is endowed with a special fistula repair clinic and the facility serves as a referral centre for complex fistula repairs. The hospital receives patients from different geographical regions and is also used as a regular camping site for massive fistula repair campaigns by visiting master surgeons.

Secondary data comprising of women characteristics from 149 hospital records was analyzed in Microsoft Excel and STATA version 12.0 and data presented at three levels (univariate, bi-variate and multivariate).

A multinomial logistic regression modeling technique was used at the multivariate level to establish the predictors of time to obstetric fistula repair. This model was preferred to others because the dependent variable (time to surgery) was not dichotomous in nature i.e. it had more than 2 categories.

Definitions

Time to surgery is referred to as the period between onset of the

fistula and the time when treatments inform of corrective repair is administered to the fistula patient.

Results

A total of 149 women records were analyzed and the study results showed that; majority of the women were aged 18-24 years (45.6%) and had only attained primary level education (43%). It also turned out that 55.7% of the women who reported having suffered from OF were married and house wives. As far as OF repair is concerned, 48.3% of the survivors received fistula treatment within the first three years while 35.6% of the survivors received fistula treatment after seven years of the incidence. Additionally, about half (52.4%) of the fistula cases reported occurred during the first pregnancy and less than a quarter (18.8%) of the survivors spent less than 2 days in labor (Table 1).

At bivariate level of analysis, none of the factors considered was found to have a significant relationship with time to surgery (Table 2).

At multivariate level of analysis, all the variables that were considered at the bivariate level of analysis with exception of residence were included in the final model despite the fact that none of them was found to be significantly associated with time to surgery. This is because residence had categories with cases that were less than 5%, some of which could not be combined into a single category.

The study findings revealed some significant relationships for time to surgery of above 7 years relative to time to surgery of less than 4 years (Table 3). Time to surgery was shown to be significantly shorter among married women as compared to their counterparts who are either separated or widowed (RR = 0.28, p = 0.044). Similarly, time to surgery was found to be significantly shorter among women below 18 years of age as compared to those aged 25 years and above (RR = 0.16, p = 0.038). Time to surgery was found to be very high among mothers carrying their first pregnancy as compared to their counterparts with more than four children (RR = 13.58, p = 0.013).

Table 1: General Characteristics of studied Population

Characteristic		Frequency (N=149)	Percentage
Residence	Central	106	71.1
	Western	35	23.5
	Eastern	5	3.4
	Rwanda	2	1.3
	Tanzania	1	0.7
Marital status before repair	Single	41	27.5
	Married	83	55.7
	Separated/widowed	25	16.8
Education level	No education	57	38.3
	Primary	64	43.0
	Above primary	28	18.8
Age at Pregnancy (Years)	Less than 18	38	25.5
	18-24	68	45.6
	25-31	33	22.2
	More than 31	10	6.7
Parity at delivery that caused fistula	1	78	52.4
	2	25	16.8
	3-4	24	16.1
	More than 4	22	14.8
Time spent in labour (days)	Less than 2	28	18.8
	2	57	38.3
	3	44	29.5
	More than 3	20	13.4
Time to surgery (years)	Less than 4	72	48.3
	4 - 7	24	16.1
	8+	53	35.6

Discussion

The study unearthed the factors that are responsible for either timely or late quest for health care intervention in obstetric fistula complications in Uganda. These 149 women are some of the fistula survivors who received treatment in the period 2010 - 2012 and were part of the cohort that the hospital was following up in their respective areas of residence.

Majority of the women never attended school (38.3%) or stopped at primary education level (43%). These figures imply that a microscopic number of women with the condition are knowledgeable about the signs, symptoms and treatment of fistula. The finding could be attributed to the high school dropouts especially for the girl child which is still a big challenge faced by the government education policy of Universal Primary Education (UPE). Teenage mothers are generally more inhibited in their abilities to attend or continue their pursuit for educational opportunities because of the responsibilities they quickly assume after conception yet they are still limited in their knowledge. The same also explains why there is still a big number of women who reportedly give birth from home and in other places with the aide of traditional birth attendants (TBAs) and unprofessional medical personnel other than skilled birth attendants. This practice increases the risk among women of experiencing adverse pregnancy outcomes such as developing fistula thus making maternal education a

Table 2: Relationship between Selected women characteristics and Time to surgery

Characteristic	Time to Surgery, n (%)			Chi square, p values
	<4	4-7	8+	
Age at Pregnancy				
Less than 18	22(57.9)	4(10.5)	12(31.6)	$\chi^2 = 3.0$ p = 0.564
18-24	30(44.1)	11(16.2)	27(39.7)	
25+	20(46.5)	9(20.9)	14(32.6)	
Marital status before Repair				
Never married	19(46.3)	8(19.5)	14(34.2)	$\chi^2 = 7.6$ p = 0.109
Married	46(55.4)	9(10.8)	28(33.7)	
Separated/widowed	7(28)	7(28)	11(44)	
Education level				
No education	27(47.4)	12(21.1)	18(31.6)	$\chi^2 = 6.5$ p = 0.167
Primary	32(50)	5(7.8)	27(42.2)	
Above primary	13(46.4)	7(25)	8(28.6)	
Occupation				
None/student	22(45.8)	11(22.9)	15(31.3)	$\chi^2 = 2.5$ p = 0.286
House wife	50(49.5)	13(12.9)	38(37.6)	
Time spent in Labour				
Less than 2 days	11(39.3)	8(28.6)	9(32.1)	$\chi^2 = 8.1$ p = 0.234
2 days	30(52.6)	5(8.8)	22(38.6)	
3 days	24(54.6)	6(13.6)	14(31.8)	
More than 3 days	7(35)	5(25)	8(40)	
Parity at delivery				
1	33(42.3)	12(15.4)	33(42.3)	$\chi^2 = 9.4$ p = 0.150
2	14(56)	1(4)	10(40)	
3-4	14(58.3)	6(25)	4(16.7)	
More than 4	11(50)	5(22.7)	6(27.3)	
Residence				
Central	47(44.3)	19(17.9)	40(37.7)	$\chi^2 = 6.7$ p = 0.564
Western	20(57.1)	5(14.3)	10(28.6)	
Eastern	3(60)	0	2(40)	
Rwanda	2(100)	0	0	
Tanzania	0	0	1(100)	
Total	**72(48.3)**	**24(16.1)**	**53(35.6)**	

key determinant as far as health seeking behavior is concerned. In relation to this finding, different studies carried out by Browning and Nisar et al. [17,18] reported high numbers of women suffering from obstetric fistula who had no formal education. The finding is also in agreement with the report by the Women's Dignity project and Engender Health on fistula among women in Uganda which highlighted the importance of education in regard to women's behavior on health seeking and utilization of health services [19]. However, the education level of girls and mothers suffering from obstetric fistula was found not to have any significant effect on their delays in seeking for medical attention.

The risk of spending more time before receiving corrective surgery associated to married women as compared to their counterparts who are either widowed or separated is only 28% with a time to surgery of above 7 years relative to a time to surgery of less than 4 years given other variables in the model are held constant (p = 0.044). This implies that being married reduces on the risk of taking a longer timeframe without receiving treatment among women suffering from obstetric fistula by 72%. Women who are married have higher chances

Table 3: Predictors of Time to Surgery among Fistula Survivors

Characteristic		Time to surgery (4 to 7 years)					Time to surgery (Above 7 years)				
		RR	Std. Err.	p value	C.I [95%]		RR	Std. Err.	p value	C.I [95%]	
Occupation	None/student	3.10	2.445	0.152	0.659	14.555	0.48	0.274	0.199	0.156	1.470
	House wife Ÿ	1.00					1.00				
Age at Pregnancy (Years)	Less than 18	0.28	0.314	0.256	0.032	2.505	0.16	0.143	0.038	0.029	0.908
	18-24	1.30	1.115	0.763	0.240	6.993	0.47	0.342	0.301	0.116	1.950
	25+ Ÿ	1.00					1.00				
Marital status before repair	Never married	0.48	0.446	0.427	0.076	2.986	0.44	0.338	0.285	0.096	1.994
	Married	0.34	0.250	0.143	0.078	1.445	0.28	0.176	0.044	0.080	0.964
	Separated/ widowed Ÿ	1.00					1.00				
Education level	No education	0.77	0.629	0.752	0.157	3.810	2.19	1.525	0.258	0.562	8.565
	Primary	0.34	0.253	0.148	0.077	1.474	2.04	1.213	0.228	0.639	6.543
	Above primary Ÿ	1.00					1.00				
Time spent in labour (days)	Less than 2	2.01	1.656	0.399	0.398	10.118	0.63	0.480	0.546	0.142	2.803
	2	0.33	0.271	0.177	0.067	1.650	0.82	0.540	0.758	0.223	2.982
	3 - 4	0.43	0.360	0.313	0.083	2.219	0.36	0.251	0.142	0.092	1.409
	More than 3 Ÿ	1.00					1.00				
Parity at delivery that caused fistula	1	1.21	1.560	0.882	0.097	15.110	13.58	14.278	0.013	1.731	106.591
	2	0.17	0.234	0.201	0.011	2.602	3.75	3.564	0.164	0.584	24.141
	3-4	0.87	0.777	0.879	0.153	4.996	0.81	0.698	0.811	0.152	4.371
	More than 4 Ÿ	1.00					1.00				

of having their partners getting involved in their health conditions in different ways (if they are willing once availed the opportunity). These results are consistent with studies carried out in Uganda and Zambia which revealed that 45.5% and 75.7% of the women were still married the time they got fistula [14,20].

Being a first time mother (primiparous) yet suffering from obstetric fistula makes you more susceptible to taking a longer time to receive medical attention. The risk of spending more time without receiving obstetric fistula treatment among women carrying their first babies relative to those with more than 4 children is 13.58 times higher among women with a time to surgery of above 7 years than those with a time to surgery of less than 4 years given other variables in the model are held

constant (p = 0.013). The above finding can be attributed to the immeasurable knowledge gap that exists among first time mothers with an increasing number of young or child mothers. This statistic causes a threat to maternal health given the fact that adolescent/ teenage pregnancies in Uganda have been recorded to be highest in Sub Saharan Africa with a prevalence of 25% [21]. Evidence from a study conducted by Kayondo et al. [14] in western Uganda showed that majority of participant (55.8%) were primiparous at the time of fistula development. Similar results were also portrayed in Zambia where women who reported having obstetric fistula in the study were primiparous at the time the fistula occurred [20].

In as much as being a primiparous mother increases the risk of not receiving timely obstetric fistula treatment among women suffering from fistula with a time to surgery of above 7 years relative to a time to surgery of less than 4 years; being younger (below 18 years) is rather of an advantage. The risk to delay in seeking for timely medical attention associated to women suffering from fistula aged below 18 years relative to their counterparts aged 25 years and above decreases by 84% given the other variables in the model are held constant (p = 0.038). This finding can be attributed to the cohesiveness and level of knowledge sharing that exists among teenagers. Usually, teenage mothers will try their level best to seek help especially from their age mates (friends or colleagues) in the shortest time possible for fear of being discriminated against as social outcasts within their communities. With the existence of internet and multitudes of information which is now easily accessible on different media platforms, young or teenage mothers can ably use their phones and other means to try and understand their health related problems and challenges in order to seek for medical attention as fast as they can to avoid being social misfits.

On the other hand, women who attended primary education and those who never attended school were associated with a high relative risk of 2.19 and 2.04 respectively as compared to their counterparts who attended school beyond primary level for a time to surgery of above 7 years relative to a time to surgery of less than 4 years. However, the relationship between the two variables was found not to be statistically significant. Similarly, even with the existence of high relative risks among the different variables; i.e. being a student or unemployed (RR = 3.1), primiparous (RR = 1.21), (18-24) years of age (RR = 1.3) and labour duration of less than 2 days (RR = 2.01), none of the variables was found to be statistically significant among women who delayed by 4 to 7 years to receive treatment relative to those who sought for fistula medical intervention in less than 4 years of the incidence.

One of the limitations of the study is its generalizability as the number of study subjects registered in the hospital records is relatively small which may affect generalization of the study results. A second possible limitation of the study is the limited number of information that was gathered from the patients on reaching the facility. There are some data components such as distance to the nearest health facility among others that were missed out yet important in determining accessibility and availability and quality of services rendered. These data components would be of great importance in ascertaining relationships between time to surgery and other determinants for decision making for medical intervention among fistula patients.

Conclusion

Although the number of girls and women seeking for obstetric fistula medical attention seems to be growing day by day, the timeframe within which they seek for medical intervention has not yet registered significant reductions. The findings of this study qualified being; married, young in age (below 18 years) and a first time mother (primiparous) as the factors that determine the time frame within which fistula patients seek for corrective medical intervention.

We recommend that campaigns against GBV should be incorporated in maternal health in order to promote unity among partners and increase male involvement in maternal health issues. Additionally, advocacy for national or community based health insurance schemes should be increased and empowered in order to reduce on the cost burden for health care among girls and women; there is also need to increasingly sensitise people on the importance of ANC in fistula awareness programs among other public health issues targeting all women and girls of reproductive age.

Lastly, we also recommend that further research should be done on the optimal time for obstetric fistula repair and the effectiveness of the types of repair undertaken.

Declarations

Ethics Approval and Consent to Participate Approval was secured from the Research and Ethics Committee School of Statistics and Planning (SSP), Makerere University.
Secondly, permission to carry out the study at the Kitovu Mission Hospital was also secured from the Research and Publication Committee of St. Joseph Kitovu Mission Hospital.

Consent for Publication Not applicableAvailability of Data and Material The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.Competing Interests The authors declare not having any competing interests whatsoever.

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Authors' Contributions

NJ mainly participated in the study design and data collection. BJB participated in the design, analyzed and interpreted the data and was a major contributor in writing and editing the manuscript. All authors have read and approved the manuscript.

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