Journal of Women's Health Care

Abdo and Halil, J Women's Health Care 2019, 8:1
DOI: 10.4172/2167-0420.1000453

Research Article Open Access

Magnitude and Factors Associated With Obstructed Labor among Women Delivered at Halaba Kulito Primary Hospital, Halaba Special District, Southern Ethiopia

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Received date: February 14, 2019; **Accepted date:** March 1, 2019; **Published date:** March 8, 2019

Abstract

Background: Obstructed labor is still major cause of maternal morbidity and mortality, and adverse birth out comes in low income countries. The issue of obstructed labor is unsolved problem in Ethiopia so far.

Objective: This study aimed to assess magnitude and factors associated with obstruct labor among women delivered at Halaba Kulito Primary Hospital, Halaba Special District, Southern Ethiopia.

Methods: A hospital based cross-sectional study was employed from March 1-21, 2015 at Halaba Kulito Primary Hospital. Systematic sampling technique was used to select 344 deliveries from delivery registration book. A pre-tested checklist was used to retrieve data from delivery card of the women. Data were entered Epi data version-3.1 and analyzed using SPSS version-21 software. To identify independent factors, bivariate and multiple binary logistic regressions were undertaken. A p-value<0.05 was used to determine association between variables was considered statistically significant.

Results: The magnitude of obstructed labor was 18.6%.The following factors were significantly associated with obstructed labor:o-antenatal care follow up (AOR=3.1, 95% CI:1.5, 6.4), women age less than 20 years (AOR=6.9, 95% CI (2.2, 21.6) and malpresentation (AOR=10, 95% CI: 3.7, 27.5).

Conclusion: Obstructed labor was very common in the study area. Antenatal care visit, maternal age and malpresentation were associated factors of obstructed labor. To reverse obstructed labor related problems, overall improvement in antenatal and intrapartum care.

Keywords: Magnitude; Obstructed labor; Factors; Southern Ethiopia

Introduction

Obstructed labor is one where in spite of good uterine contractions, the progressive descent of the presenting part is arrested due to mechanical obstruction. This may result either due to factors in the fetus or in the birth canal or both, so that further progress is almost impossible without assistance [1].

Obstructed labor is one of the common causes of maternal, perinatal morbidity and mortality in low income countries [2-6].

Worldwide the incidence of obstructed labor varies between 3%-6%. The lower figure was applied in more developed regions and the higher figured to less developed areas. It is responsible for about 9% of maternal death. Which is varies region to region 4.1% to all maternal deaths in Africa; for Asia this amounted to 9.4%and 13.4% for Latin America and the Caribbean.

In contrast most maternal deaths in developed countries are due to other direct causes, mainly complications of anesthesia and Caesarean sections [7]. In Ethiopia as observed in different studies from across the country the prevalence of obstructed labor is estimated between as low as 4.1% [8] and as high as 34.3%) [9].

Women who had obstructed labor have an elevated risk of ruptured uterus, puerperal sepsis and postpartum hemorrhage [3,4,6,10,11]. It also causes severe and distressing long-term complications like obstetric fistula (which is most severe and distressing long-term condition) and intrauterine infections following prolonged rupture of membranes [4,12].

In addition, place financial and emotional burdens on families and communities as whole due to hospitalization [13]. Moreover, trauma to the bladder during vaginal or instrumental delivery may lead to stress incontinence [6,10].

If the duration of obstructed labor is prolonged without intervention, the fetus dies because of anoxia by excessive pressure on the placenta and umbilical cord.

Obstructed labor also has consequences for the fetus or neonate-frequent results in asphyxia, that can result in stillbirth, neonatal demise, intracranial hemorrhage, cerebral palsy, and developmental disability, due to severe molding of the head leading to tentoria tear or traumatic delivery, caput, fetal distress, and acidosis due to fetal hypoxia and maternal acidosis and neonatal sepsis [2-6,8,14].

Empirical evidence from many different cultural settings have identified several associated factors of obstructed labor including:

living environment, parity (primipara and grand multipara, age between 15-19 [15, 16], pervious history of obstructed labor [15], malpresentation [16,17] and birth weight >4 kg [16,17].

Ethiopia has applied a multi-pronged approach to reduce maternal and perinatal morbidity and mortality by improving access to and strengthening facility-based maternal and newborn services [18]. Despite of this obstructed labor seems to be a common cause of maternal and perinatal morbidity and mortality in Ethiopia [19-22].

So the need of further study is absolute to recognize the magnitude and factors of obstructed labor. Therefore, this study aimed to assess the magnitude of obstructed labor and its associated factors among women delivered at Halaba Kulito primary Hospital, Southern Ethiopia.

Methods and Materials

The study was conduct in Halaba Kulito Primary Hospital is located in southern Ethiopia in Halaba special Woreda which found 203 km from Addis Ababa and 90 km from regional town, Hawassa. Halaba Kulito Primary Hospital is the only Hospital found in the Halaba Kulito, town of Halaba special district. It serves for 85000 people residing in urban and rural parts of southern Ethiopia.

The hospital has four wards (medical, pediatric, surgical, gynecology and obstetrics) and 1 emergency, 3 outpatient departments, maternal and child health care, antiretroviral treatment, ophthalmology and dentistry departments.

According to deliver register book from January 1, 2016 to December 1, 2018 delivery report 3329 mothers were delivered in this Hospital. The study was conducted from March 1-21, 2018.

A Hospital based retrospective cross-sectional study was employed. The source populations for the study were all cards of mothers who were gave birth from January 1, 2016 to December 1, 2018 at Halaba Kulito primary Hospital.

Study population were selected cards of mothers who were gave birth from January 1, 2016 to December 1, 2018 at Halaba Kulito primary Hospital. Mothers cards were missing of most information (incomplete) (delivery summary, labor History and Physical examination and lab investigation) were excluded.

The sample size was determined with Single population formula and calculated by using EPI INFO version-7 software.

The following assumptions were used to estimate the sample size; the proportion of obstructed labor was taken from the study conducted in Harerghe Zone 34.3% [9], with 95% confidence interval, desired precision 5%, and 10% missed items, the final sample was 344 cards. To obtain study subjects systematic sampling technique was employed.

First sampling frame was developed by using maternity (delivery) resister book from January 1, 2016 to December 1, 2018 before actual data collection period. Then k-value was calculated by dividing total deliveries (3329) to required sample size.

First number was selected by using a lottery method from the first 10 maternal registration numbers. Finally subjects were selected at every 10 interval and using selected card numbers of the mothers, cards were retrieved from card room. Obstructed labor was classified as: "yes" (having a clinical diagnosis of obstructed labor in the mothers' card) or "no".

Data were collected by using a pre-tested checklist from maternal cards. The checklist was developed based on instruments that were applied in other related studies [8-19,23-26]. Obstetric related characteristics and medical illness.

Data were collected by four midwives.To ensure the quality of data to be collected from the mothers card, first, data collection checklist was pretested on 17 mothers cards and necessary modifications were made based on the nature of gaps identified in the checklist.

Data collectors were trained for one day intensively on the study instrument and data collection procedure that includes the relevance of the study. The data collectors were worked under close observation of the supervisors to ensure reliability to correct data collection procedures.

In addition, supervisors and investigator checked the filled questionnaires at the end of data collection every day for completeness. Furthermore, the data were carefully entered and cleaned before the beginning of the analysis.

Data were entered using Epi data version-3.1 and exported to Statistical Package social science (SPSS) version 20 for analysis. Descriptive statistics was computed to determine the magnitude of obstructed labor and other factors. Binary logistic regression analysis was used to identify factors associated with obstructed labor.

First a bivariate logistic regression was carried out to select candidate for multivariable logistic regression analysis. Variable with $p<0.25$ in bivariate logistic regression was selected for multivariable logistic regression.

Multivariable logistic regression was done for variables that have p-value <0.25 during the bivariate logistic regression analyses to identify factors associated with obstructed labor and to control for potential confounders.

The degree of association between independent and dependent variables were assessed using odds ratio with 95% confidence interval. P-value<0.05 was considered as statistically.

The Hosmer-Lemeshow goodness-of-fit statistic was used to check if the necessary assumptions for multivariable logistic regressions were fulfilled and the model had p-value >0.05 which proved the model was good.

Before actual data collection formal letter of permission was obtained from Wachemo University College of Medicine and Health Sciences. In addition, letter of permission was secured from Halaba Kulito Health office and Hospitals Management committee. Confidentiality of information was maintained.

Results

Socio-demographic characteristics of the subjects

Of all (344) delivery cards were reviewed, about 226 (65.7%) mothers were aged between 20-29 years, the range between 16-40 years with a mean (± SD) 26.22 (± 5.19) years.

Nearly two thirds 223 (64.8%) of mothers were rural residents. Regarding to marital status, majority of mothers were 322 (93.6%) married (Table 1).

Variables	Frequency	Percentage (%)
Age group		
15-20	28	8.1
20-29	226	65.7
30-34	58	16.9
35 and above	32	9.3
Residency		
Rural	223	64.8
Urban	121	35.2
Marital status		
Single	22	6.4
Married	322	93.6

Table 1: Socio demographic characteristics of mothers who were gave birth at Halaba Kulito Primary from January 1, 2016 to December 1, 2018.

Obstetrics characteristics of the subjects

Regarding their gravidity, 191 (55.5) mothers were primipara. Seventy three (21.2%) cases were faced prolonged labor. Majority 292 (84.9%) of mothers had history of antenatal care follow up while 71 (24.3%) had more than two visits. A total of 321 (93.3%) of the neonates born alive and 23 born being dead in utero making the rate of still birth was 6.3%. The mean birth weight of the neonates was 3730.9 (± 414.7) grams and three hundred twelve (90.7%) newborns were born at term (Table 2).

Variables	Frequency (N)	Percentage (%)
Gravidity (n=344)		
Primigravida	136	39.5
Multigravida	191	55.5
Old grand gravida	17	4.9
Duration of labor (n=344)		
<12 hour	93	27
12-24 hour	178	51.7
>24 hour	73	21.2
ANC follow up (n=344)		
Yes	292	84.9
No	52	15.1
Number of ANC visits (n=292)		
>Two times	71	24.3
Two times	114	39
One times	107	36.6
Birth status		
Live birth	321	93.3
Still birth	23	6.7
Sex of the fetus		
Female	172	53.6
Male	149	46.4
Gestational age		
Pre-term (<37 weeks)	312	90.7
Term (37-42 weeks)	8	2.3
Post-term (≥ 42 weeks)	11	3.2
No data	13	3.8
Birth weight (n=321)		
Low birth weight (<2500g)	14	4.4
Normal birth weight (≥ 2500-4000g)	300	93.5
Macrosomia (>4000g)	7	2.2
Malpresentation (n=344)		
No	321	93.3
Yes	23	6.7

Table 2: Obstetric related characteristics of mothers who were gave birth at Halaba Kulito Primary Hospital from January 1, 2016 to December 1, 2018.

Health care factors

In two hundred eleven (61.3%) of the cases, the partograph was not utilized, it was entirely left blank. Only in 32 (9.3%) of all the files the partograph was filled correctly and completely. Majority of the cases 295 (85.8%) were self-referred (Table 3).

Variables	Frequency (n=344)	Percentage (%)
Utilization of Partograph		
Not at all	211	61.3
Partial	67	19.5
complete	32	9.3
Missing/no data	34	9.9
Source of referral		
No data	7	2
Self	295	85.8
Hospital	6	1.7
Health center	32	9.3
Traditional birth attendant	4	1.2

Table 3: Health care characters of obstructed labor in Halaba Kulito Primary Hospital from January 1, 2016 to December 1, 2018.

Magnitude of obstetric labor

The magnitude of obstructed was found to be 18.6% in the hospital (Figure 1).

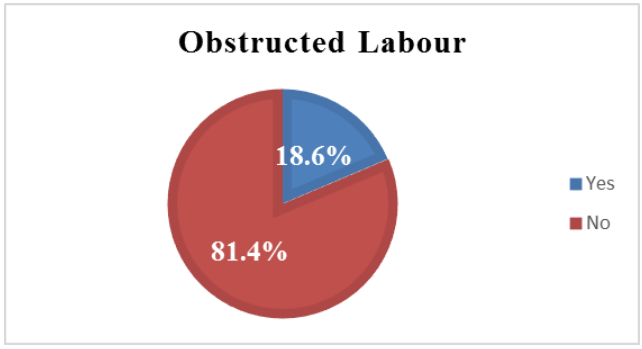

Figure 1: Magnitude of obstructed labor in Halaba Kulito Primary Hospital from January 1, 2016 to December 1, 2018.

Identified causes and intervention of obstetrics labor

As reported on mothers card, Cephalo Pelvic Disproportion (CPD) was recognized as a main cause of obstructed labor in 36 (56.3%) of the cases and the majority 62 (96.9%) were delivered by Caesarean Section (Table 4).

Variables	Frequency (no=64)	Percentage (%)
Identified causes of obstructed labor		
CPD	36	56.3
Malpresentation	15	23.4
Congenital anomaly	2	3.1
Malposition	11	17.2
Interventions		
Cesarean section	62	96.9
Destructive operation	2	3.1

Table 4: Causes of Obstetric labor and intervention obtained from mothers card in Halaba Kulito Primary Hospital from January 1, 2016 to December 1, 2018.

Factors associated with the obstructed labor

As shown in Table 5, no antenatal care follow up, malpresentation and age less than 19 years of the baby were found to be significantly associated with obstructed labor in multivariable logistic regress analysis model.

Mothers who didn't have antenatal care follow up were nearly 3 times more likely to have obstructed labor than mothers who had antenatal care follow up (AOR=3.1, 95%CI (1.5, 6.4)). The presence of any form of malpresentation to labor were 10 times more likely to have obstructed labor than their counterparts (AOR=9.2, 95% CI (3.3, 25.6).

Additionally, mothers age less than 19 years were nearly 7 times more likely to have obstructed labor than their counterparts (AOR=6.9, 95%, CI (2.2, 21.6)).

Variables	Obstructed labor		COR(95%CI)	AOR (95%CI)
Age group	No	Yes		
<19	11	17	8.4(3.0, 39.4)*	6.9 (2.2, 21.6)**
20-29	192	34	.964(.434, 2.1	.872 (.36, 2.01)
30-34(ref.)	49	9	1	1
35 and above	28	4	.778(.21, 2.8)	.63(.16, 2.4)
Residence				
Rural	174	49	1.9(1.06, 3.72)*	1.8(.90, 3.65)
Urban(ref.)	106	15	1	1
ANC follow up				
Yes(ref.)	245	47	1	1
No	35	17	2.5(1.31, 4.89)*	3.1(1.5,6.4)**
Malpresentation				
No (ref.)	272	49	1	1
Yes	8	15	10.4(4.2, 25.87)*	10.0(3.6, 27.5)**
Note: ** Significant at P<0.05				

Table 5: Bivariate and multivariable logistic regression of selected variables in relation to obstructed labor among deliveries at Halaba primary Hospital January 1, 2016 to December 1, 2018.

Discussion

In the present study the magnitude of obstructed labor is 18.6%. The prevalence of obstructed labor found in the present study is relatively similar to that reported in the Hospital based study conducted at

Gimbi Hospital (18.1%) [16]. However, this study found out a higher prevalence of obstructed labor compared to other Hospital based study in, Ilu Ababora Zone, Adama, Jimma and Mizan where 4.1%, 9.6%, 12.2% and 7.95% respectively [8,17,25,26].This variation may be due to difference in the skills of data collectors, study area and methodology. And it is lower than study West Harerghe Zone 34.3% [9] and Nigeria (20.5%) [23]. This difference may be explained by the difference in study setting and may be due to various intervention undertaken between these study time.

This finding was high as compared with the research done in Uganda and Pakistan where 10.5% and 5.2% respectively [15,27]. This difference is explained by the difference in study area, sample size, time gap, cultural difference and utilization of health care services between those studies.

As revealed by the present study,antenatal care visit was found to have significant association with obstructed labor. This may be attributed to the beneficial impact of antenatal care visit on pregnancy outcome, either through the detecting and help to ensure early interventions, thus those mothers at risk of obstructed labor. This is again supported by a research done in in Nigeria which revealed that mothers who didn't attend antenatal care visit were more likely to experience obstructed labor compared with those mothers who had antenatal care visited [23]. Obstructed labor also found to be associated with age of mothers less than 19 years in this study. This finding was almost found to be a universal fact and has been revealed in many studies [15,16].

In present study, malpresentation was significantly associated with obstructed labor. This finding was almost found to be a universal fact and has been revealed in many studies [3,4,15,17] and texts [1]. This study clearly shares the limitations of cross-sectional studies and the retrospective nature of the study and lack of some important variables due to inappropriate and/or non- recording of certain variables.

Conclusion

The Magnitude of obstructed labor was very common in study area. Findings indicated that no antenatal care visit, age between 15-20 years and malpresentation were significantly associated with obstructed labor. In general, highest results of this study to earlier studies show ineffectiveness of existing national programs for improving the maternal care. To reverse obstructed labor related problems, overall improvement in antenatal and intrapartum care. So it is essential to provide the necessary facilities for maternal health at both the community and the health system level.

Authors Contribution

Ritbano Ahmed Abdo the principal investigator designed the study, analyzed and interpreted the data, and also drafted the manuscript. Hassen Mosa Halil participated in conceptualization of the study, design, analysis and interpretation. All authors read and approved the final manuscript.

Acknowledgement

We are very grateful to Wachemo University College of Medicine and Health Sciences for allowing the conduct of this study. We would also like to thank Halaba Kulito district health office and Halaba Hospitals staffs for their support during the data collection process.

Funding Organization

Wachemo University

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