2022-09-19

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COLLEGE OF MEDIECENE AND HEALTH SCIENCES

SCHOOL OF MEDIECENE

DEPARTMENT OF Integrated Emergency Surgery and Obstetrics

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ATHESIS TO BE SUMMITED TO COLLEGE OF MEDICINE AND HEALTH SCIENCES, SCHOOL OF MEDICINE,DEPARTEMENT OF INTEGRATED EMERGENCY SURGERY AND OBSTATRICS; IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS IN INTEGRATED EMERGENCY SURGERY AND OBSTATRICS

SEPTEMBER, 2022

BAHIR DAR, ETHIOPIA

UNIVERSITY

COLLEGE OF MEDIECENE AND HEALTH SCIENCES

DEPARTMENT OF INTEGRATED EMERGENCY SURGERY

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Title	OBSTRUCTED LABOR AND ITS ASSOCIATED FACTORS AMONG MOTHERS WHO GAVE BIRTH AT PUBLIC HOSPITALS, SOUTH GONDAR ZONE ETHIOPIA, NORTH WEST ETHIOPIA
Total Budget	26,730.8 Etb.
Study Period	February 10 to March 10, 2022.
Study Area	public hospitals of south Gondar zone

ACKNOWLEDGEMENTS

Firstly, my deepest gratitude extends to Bahir Dar University, college of medicine and health science, department of integrated emergency surgery and obstetrics, for providing this opportunity to do this research.

Next my deepest gratitude goes to our advisor Dr. Amsalu Worku&Mr Zemenu Shiferawfor their unreserved advice, guidance and encouragement.

I would also like to thank Amhara Region health Bureau, Debre Tabor Hospital for their support and providing information during our research.

In addition, I extend my heartfelt gratitude to study participants, their parents, supervisors and data collectors for their time sharing and input. I would also like to thank my family, friends who supported me during the course of the study.

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ABBREVIATION AND ACRONYMS

ANC	Antenatal Care
AOR	Adjusted Odd Ratio
CPD	Cephalo Pelvic Disproportion

DHS	Demographic Health Survey
FGAE	Family Guidance Association of Ethiopia
GBD	Global Burden of Disease
GP	General Practitioner
LSTCS	Lower Segment Transverse Cesarean section
MDG	Millennium Development Goal
MMR	Maternal Mortality Rate
OL	Obstructed Labor.
SPSS	Statistical Package for Social Silences
RVF	Recto Vaginal Fistula
VVF	Vesico Vaginal Fistula
WHO	World Health Organization
PPH	Post-Partum Hemorrhage

ABSTRACT

Background: Globally obstructed labor accounted for 8% of all maternal deaths. In Ethiopia, obstructed labor is associated with adverse maternal and fetal outcomes. Ethiopia is a multicultural country and there is significant variation in socio-demographic characteristics,

delay in receiving quality care at health facilities, availability if supplies for emergency obstetric care. Although the particular challenges and complication of obstructed labor varies by settings.

Objective: To assess prevalence of obstructed labor and associated factors among women who gave birth at public hospitals of South Gondar zone, North West Ethiopia.

Methods: An institution-based cross-sectional study was conducted from February 10 tomarch 10, 2022 among women who gave birth at public hospitals of South Gondar zone.Systematic random sampling technique was used to select 381 study participants. Data were collected by using interviewer administered questionnaire and checklists. Data was entered in to Epi data version 3.14 and exported to SPSS version 25 for analysis. Bivariate and multivariable regressions were performed and adjusted odds ratio with its 95% confidence intervals was estimated to identify factors associated with obstructed labour. A p-value below 0.05 was used as a cut-off point for the significant association.

Results: The prevalence of obstructed labour was 13.6% [95% CI: 10.1-16.8]. Mothers who had no ANC follow up [AOR =3.18, 95% CI: (1.54-6.56)], distance from the health facility greater than 50 km [AOR =3.97, 95 % CI (1.87-8.43)] and mothers can not able to read and write [AOR=4.85, 95 % CI (1.54-15.27)] were factors associated with obstructed labour.

Conclusions and recommendation: This study revealed that there was still high prevalence of obstructed labor although the government has been making possible effort to prevent the problem. Factors like antenatal care follow up, Educational status and Distance to the Health facility were significantly associated with obstructed labour. Interventions should give emphasis on maternal education, utilization of antenatal care service and avail of maternal waiting home for those mothers come from distance more than fifty kilometers.

Keywords: Obstructed labor, Laboring mothers, South Gondar, Ethiopia.

1. INTRODUCTION

1.1. Background

Obstructed labor results from failure to descent of presenting part of the fetus in the birth canal due to mechanical reasons despite adequate uterine contraction. It is a life threatening obstetric complication with significant maternal and perinatal morbidity and mortality in developing and low-income countries including Ethiopia[1].

Globally, more than half a million women die each year because of complications related to pregnancy and childbirth. More than 70% of all maternal death is due to five major complications: hemorrhage, infection, unsafe abortion, hypertensive disorders of pregnancy, and obstructed labour of the estimated maternal deaths.Worldwide, 99 percent occur in developing countries, where 85 percent of the population lives. Half of the maternal deaths occurred in sub-Saharan Africa and one third occurred in South Asia[2] .

Ethiopia is one of the countries in sub-Saharan Africa with markedly high maternal mortality ratio. It is one of the ten countries that contribute for about 60% of global maternal deaths worldwide [1]. The chance that women die estimated at 1 in 14. The maternal mortality rate in the country is high which is, 412 deaths per 100,000 live births[3].

The major causes of maternal deaths in Ethiopia are similar to most developing countries: infection, hemorrhage, obstructed labor, abortion and hypertension in pregnancy. The proportion of maternal death ascribed to the different causes varies from year to year. Overall, the case fatality rates of ruptured uterus/obstructed labor and preeclampsia/eclampsia indicate an increasing trend while that of abortion remain stable [4-8].

Obstructed labour is an indicator of inadequacy and poor quality of obstetric care and immediate causes of maternal and prenatal morbidity and mortality due to uterine rupture, complications of cesarean deliveries, postpartum hemorrhage, anesthesia complications, puerperal sepsis, asphyxia, and brain damage[5].

Many of the morbidities and deaths due to obstructed labour are preventable and treatable. However, studies showed that the burden of obstructed labour and its adverse maternal and

perinatal outcomes appear to be high and remain a common challenge in Ethiopia[9]. Different studies conducted across the countries showed that there were different determinants of obstructed labor such as, maternal age, maternal residence, women's education status, women's occupational status,distance from the hospital /health center, parity, antenatal visit, weeks of gestation at the first visit of antenatal care[1].Age at first birth, fetal presentation, history of pregnancy-related complications and birth weight[9].

1.2. Statement of the problem

Obstructed labor is one of the most common causes of maternal illness and death in sub-Saharan Africa and Southeast Asia. Globally, obstructed labor occurs in an estimated 5 % of pregnancies. It is an indicator of inadequacy and poor quality of obstetric care and immediate causes of maternal and prenatal morbidity and mortality[4, 5].

Globally obstructed labor accounted for 8% of all maternal deaths [6]. Most of these deaths 99% is being occurred in the developing world [7, 8]. In Africa, obstructed labor is responsible for 10.3 to 38.9% of maternal deaths [7, 27]. In Ethiopia, obstructed labor is associated with adverse maternal and fetal outcomes [10, 11]. Studies conducted in Ethiopia showed that obstructed labor is responsible for 13-36% of all maternal deaths [11].

The commonest cause of obstructed labor is cephalo pelvic disproportion (CPD). This could arise as a result of reduced pelvic dimension from childhood, maternal malnutrition, infection, poliomyelitis, deformity, sickle cell disease, or in teenagers increased diameter of the presenting part, such as malposition and malpresentation. This includes brow presentation, compound presentation, occipto-posterior, and mento-posterior in face presentation and congenital malformation (hydrocephalus, fetal ascites, and double monsters)[12].

Maternal mortality from obstructed labor is caused by complication of ruptured uterus, postpartum hemorrhage, and puerperal sepsis, while substantial long term maternal morbidity includes, intrauterine infections following prolonged rupture of membranes, trauma to the bladder and/or rectum due to pressure from the fetal head or damage during delivery, and ruptured uterus with consequent hemorrhage, shock or even death. Trauma to the bladder during vaginal or instrumental delivery may lead to stress incontinence [13, 14].

Apart from maternal deaths, obstructed labor had different maternal outcomes such as postpartum hemorrhage (PPH), uterine rupture, puerperal sepsis and recto-vaginal fistula[10, 11]. Besides of their physical wounds such as fistula, serious social issues of divorce, separation from religious exercises and isolation from their families which might worsen poverty are the major problems of obstructed labor[5, 15]. In addition, fetal outcomes including stillbirth, birth asphyxia, neonatal sepsis, and neonatal jaundices were also reported [11].

In the long-term it can cause secondary infertility due to Sheehan's syndrome, hysterectomy due to rupture or vaginal scaring and stenos, severe anemia, musculoskeletal injury, urinary incontinent and obstetric fistula. 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. The dead fetus becomes softened by decay and may trigger the onset of coagulation failure and prolonged uterine contraction, end with rupture of uterus these leads to maternal hemorrhage and then to hemorrhagic shock, peritonitis, and septic shock, and death[13].

Maternal and perinatal mortality and morbidity associated with obstructed labor are almost totally prevented in developed countries because of improved nutritional status, wide health coverage, adequate transportation and communication system, availability of trained health personnel, optimal antenatal and intrapartum care, and other related factors [6, 11].

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 [16, 17]. Despite of this obstructed labor seems to be a common cause of maternal and perinatal morbidity and mortality in Ethiopia [6, 11] and among the 412 maternal deaths per 100,000 live births annually, 19.1% happened due to obstructed labor. So, the need of further study is absolute to recognize the magnitude and factors of obstructed labor. Therefore, this study aimed to assess the prevalence of obstructed labor and its associated factors among women who will deliver at hospitals of south Gondar Zone, Ethiopia.

1.3 Significant of the study

This study intends to assess magnitude and associated factors of obstructed labor among mothers delivered at hospital of south Gondar zone. The multi-center study will be generated information that may be useful to the policy makers and other organizations to design interventions. Appropriate recommendations will be made based on the result in which supervisors from federal ministry of health and non-governmental organization working on maternal and child health, program managers and health care providers can use for improving ways of service provision and quality of the service. Thus, information obtained from this study will alert Amhara Regional health office and other stakeholders so that proper measures can be taken to save the lives of health of mothers by educating them and provide appropriate services in many places. In addition, this research will be also inspiring other researchers who plan to conduct research in similar area.

2 LITERATURE REVIEW

2.1 Prevalence of Obstructed labor

Obstructed labor ranked 41st in Global Burden of disease in 1990, representing 0.5% of the burden of all conditions and 22% of all maternal conditions [4]. It was estimated to be the most disabling of all maternal conditions. To achieve MDG (reduce MMR by 75% between 1990 & 2015) will need a huge emphasis on improved pregnancy and delivery care throughout the developing world[6]

According to international journal of cost benefit analysis of operative delivery in 2012, MMR decreased from 585,000 in 1990 to 273,500 in 2011, but most decreasment occurred in developed world. In developing world, still there is no miserable difference[18]In Africa, the lifetime risk is 1 in 26 & the gap is widening. In Ethiopia, according to EDHS 20016, every year 25,000 maternal death & MMR 673 per 100,000 live births [13].

According to national baseline assessment for emergency obstetric & newborn care report on 2008, obstructed labor accounts 19% of direct cause of maternal death followed by ruptured uterus. It accounts 13% cause of maternal death in Hospitals & 12% in Health centers[18]. Maternal and prenatal mortality and morbidity associated with obstructed labor are almost totally prevented in developed world b/c of good nutritional status, wide health coverage , adequate transportation , and communication system ,availability of trained health personal ,optimal ante-natal and intrapartal care and other related factors, although it still presents a problem of major importance in developing countries, where adequate Antenatal care is not available to the large mass of the population [18-20].

In India out of 43,906 deliveries reviewed, 245 or 0.56% had obstructed labor. Of these, 155 (63.27%) weredelivered by lowersegment caesarean section (LSCS) and 90 (36.73%)by destructive operations. These two groups have been compared.38.37% (94/245) women presented with dead babies in whom destructive operations were performed in 91.49% and

LSCS in 8.51%. Complications following LSCS and destructive operations were 7.09 % and 21.11% respectively. Prenatal mortality was 12.90%. At birth, 28.57% babies were severely depressed. 8.57% of the live born babies continued with poor APGAR scores at 5 minutes. Maternal mortality was 2.04 %[12].

There are different studies in Africa showing incidences of OL varying from aslow as 1.3% in Sudan study to as high as 12.2% in retrospective study done at JUSH. The major cause of OL identified in different studies was CPD being responsible for 80.6% in JUSH, 67% in Nigeria study, and 41.1% in India study. Complications observed in women with OL at studied area were puerperal sepsis in 57% ofcases inNigeria to 12.5% in India and extension at time of surgery in 14% of cases in India. Maternal mortality from OL ranges from 32/1000 in Nigeria to 92/1000 in JUSH. Prenatal mortality was 160/1000 in India, 294/1000 in Nigeria and 621/1000 in JUSH [12, 19, 22, 23].

A study conducted in Jimma University Specialized Hospital and Mizan Aman General Hospital showed that the prevalence of Obstructed labor which was 12.2% and 7.95% respectively[24, 25]).A Studies found in other African and Asian countries like Nigeria (2%), India (1.11%), Pakistan (3.61%), and Bangladesh (4.2%)[9, 24, 26] .

2.2 Factors affecting Obstructed labor

Empirical evidence from many cultural settings have identified several associated factors of obstructed labor including: living environment, parity (primipara and grand multipara, age between 15-19[3], pervious history of obstructed labor, malpresentation[9,39, 40] and birth weight >4 kg[9] .

According to global causes of maternal death: a WHO systematic analysis, among the factors low social status of women in developing country limits their access to economic resources, basic education and thus their ability to make decision related to their health and nutrition. culture also promote maternal deaths in many areas, such as low status and neglect to girls and women, polygamy, early marriages and childbearing, underfeeding and dietary practices during pregnancy, and double standards of sexual ethics resulting in clandestine abortion or pre pubertal marriage[30].

A study conducted on Magnitude of Obstructed Labor and Associated Factors at Western Harerghe Zone showed Mothers whose partograph was fully or partially filled were found to have significantly, 93.6%, less likely to encounter obstructed labor compared to those whose partograph was not filled at all (AOR 0.064 (0.025 - 0.162) independent risk factors for obstructed labor were distance, partograph utilization and source of referral[15].

A hospital based cross-sectional study showed that the magnitude of obstructed labor was 18.6%. Antenatal care follow up, women age less than 20 years and malpresentation were factors significantly associated with obstructed labor[28].

Astudy showed that Prevalence of obstructed labor was 18.1% and the main causes were Cephalopelvic disproportion 61.3% followed by malpresentation 27.1%. Risk of obstructed labor was significantly associated with age, 15–19-year, 25–29-year, nullipara and birth weight, 2.5-4 kg. The major maternal complications were post-partum hemorrhage, ruptured uterus and puerperal sepsis. From the total obstructed deliveries 45 (78.9%) of them were live birth and 13 (21.1%) were still birth[9].

A study done in Mizan Aman on prevalence and risk factors of Obstructed labour shows that the prevalence of obstructed labor was higher among women who had no ANC follow up and also The duration of labor is the most important factor that is significantly associated with maternal and perinatal morbidity and mortality.[25]

A study conducted in Mekeneselam General Hospital showed that Factors like timeofarrivaltointervention, parityand duration of labour before visiting the hospital were significantly associated with obstructed labour[29].

A study conducted in Public Hospitals of West Shoa Zone showed that Mothers who were referred from the health center (AOR: 3.96, 95%CI: 1.61-9.8) and who had a trial of labor at the health center and home had a more likelihood of adverse maternal outcomes related to obstructed labour than those who were referred and had trial of labor at hospital respectively. In addition, mothers who were not followed by Parthograph and in labor for >24hrs had also a more likelihood of adverse maternal outcomes than their counterparts[31].

2.3. Conceptual Framework

To identify factors associated with obstructed labour, this conceptual framework were developed by adapt different literatures and this study focuses on socio demographic factors, obstetric factors and Health care factors.

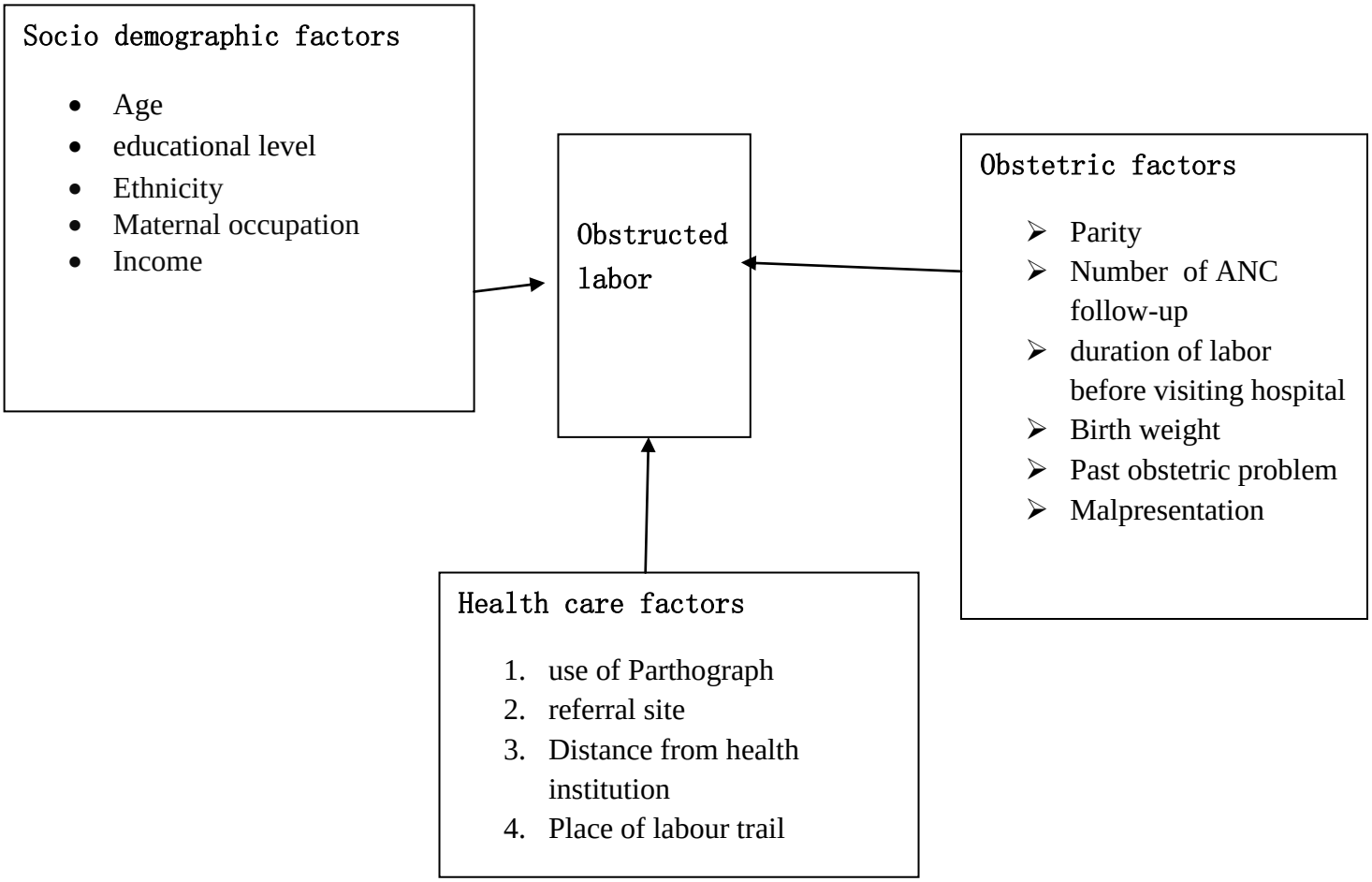

Figure 1:-Conceptual frame work to assess the prevalence of obstructed labor and associated factors among women who gave birth at public hospitals of South Gondar zone, 2022

3 OBJECTIVES

3.1General Objective

- To assess prevalence of obstructed labor and associated factors among women who gave birth at public hospitals of South Gondar zone, 2022.

3.2 Specific Objectives

- To determine prevalence of obstructed labor among women whogave birth at public hospitals of South Gondar zone, 2022
- To identify factors associated with obstructed labor among women who gave birth at publichospitals of South Gondar zone, 2022.

4 METHOD AND MATERIALS

4.1 Study Area and Period

The study was conductedfrom February 10 to March 10, 2022 in public hospitals of South Gondar Zone, Amhara regional state, Ethiopia. Debre Tabor town is located 98 Kms away from the regional capital city, Bahir Dar and 666 kms away from Addis Ababa, capital city of the country. Seventy five percent of its climatic condition is Dega whereas the remaining one fourth is Woyena Dega and its altitude is 2616m above sea level. Almost all the populations are followers of orthodox Christianity and Amhara in ethnic back ground.

Debre Tabor comprehensive and specialized hospital is the only hospital in the town and currently serves 3.5 million people. Currently the department of obstetrics and Gynecology has staff composition of 6 gynecologist and obstetricians, 5 IESOs, 36 midwifes. There are also three health centers and six private clinics in the town.

4.2 Study Design

Institutional based cross-sectional study design was conducted.

4.3 Population

4.3.1 Source Population

All mothers who gave birth at public hospitals of south Gondar zone.

4.3.2 Study Population

All mothers who gave birth atrandomly selected public hospitals of south Gondar zone during the study period.

4.4 Inclusion and Exclusion Criteria

4.4.1 Inclusion criteria

All mothers who gave birth at public hospitals of south Gondar zone during the study period.

4.4.2 Exclusion criteria

Women whose gestational age were less than 28 weeks (abortion)

The women who can.t able to speak and heard

4.5 Sample Size Determination

The study sample size was determined by using single population proportion formula with the assumptions of 95% level of confidence interval (CI), 5% margin of error,34.3% proportion of

Obstructed labor which is taken from previous study conducted in public hospitals of West Harrerghe Zone [15]and 10% non-response rate.

$$n = \frac{(Z_{\alpha/2})^2 p(1-p)}{d^2}$$

Where: **n** = required sample size

$Z_{\alpha/2}$ = critical value for normal distribution at 95% confidence level which equals to 1.96 (z value at α =0.05)

P = proportion of Obstructed labor 34.3% (15).

d = margin of error

$$n = \frac{(1.96)^2(0.343)(0.657)}{(0.05)^2}$$

n=346 and by adding 10% non-response rate, the total sample size was 381.

For second objective (significantly associated factors): sample size was determined by using cohort or cross-sectional sample size calculation technique from epi info version 7.2.4 StatCalc. By considering the following variables: distance, partial use of Parthograph and being referred from health center as independent variables with 95% confidence interval, 80% power, 1 for ratio of unexposed to exposed, sample size by formula from StatCalc software become 52,66 and 54 respectively.

Table 1-Summary of sample size determination for research on prevalence of obstructed labor and associated factors among women who gave birth at public hospitals of South Gondar zone, 2022.

No	Variables	Assumptions: **CI: 95% Power: 80%, Ratio:1 and Design effect:1**	Sample size	Reference
1	**Distance**	Percent outcome in unexposed: 95.8% AOR: 0.029	52	15
2	**Referred from health center**	Percent outcome in unexposed: 52.1% AOR: 0.346	54	15
3	**Partial use of partograph**	Percent outcome in unexposed: 90% AOR: 0.073	66	15

Therefore, the sample size calculated for the second objective is lower than that of the first objective and final sample size taken from the initial objective. After adding 10% incomplete retrieval rate of charts it becomes 346+35=381

4.6 Sampling technique and Procedures

In the south Gondar zone, there are a total of eight hospitals. Of these, two of the hospitals were taken by lottery method. The total numbers of deliveries were taken from the labor and delivery register for each hospital. Then, the total sample size was proportionally allocated to each selected hospitals. Finally, the study the study participants were selected by Systematic random sampling

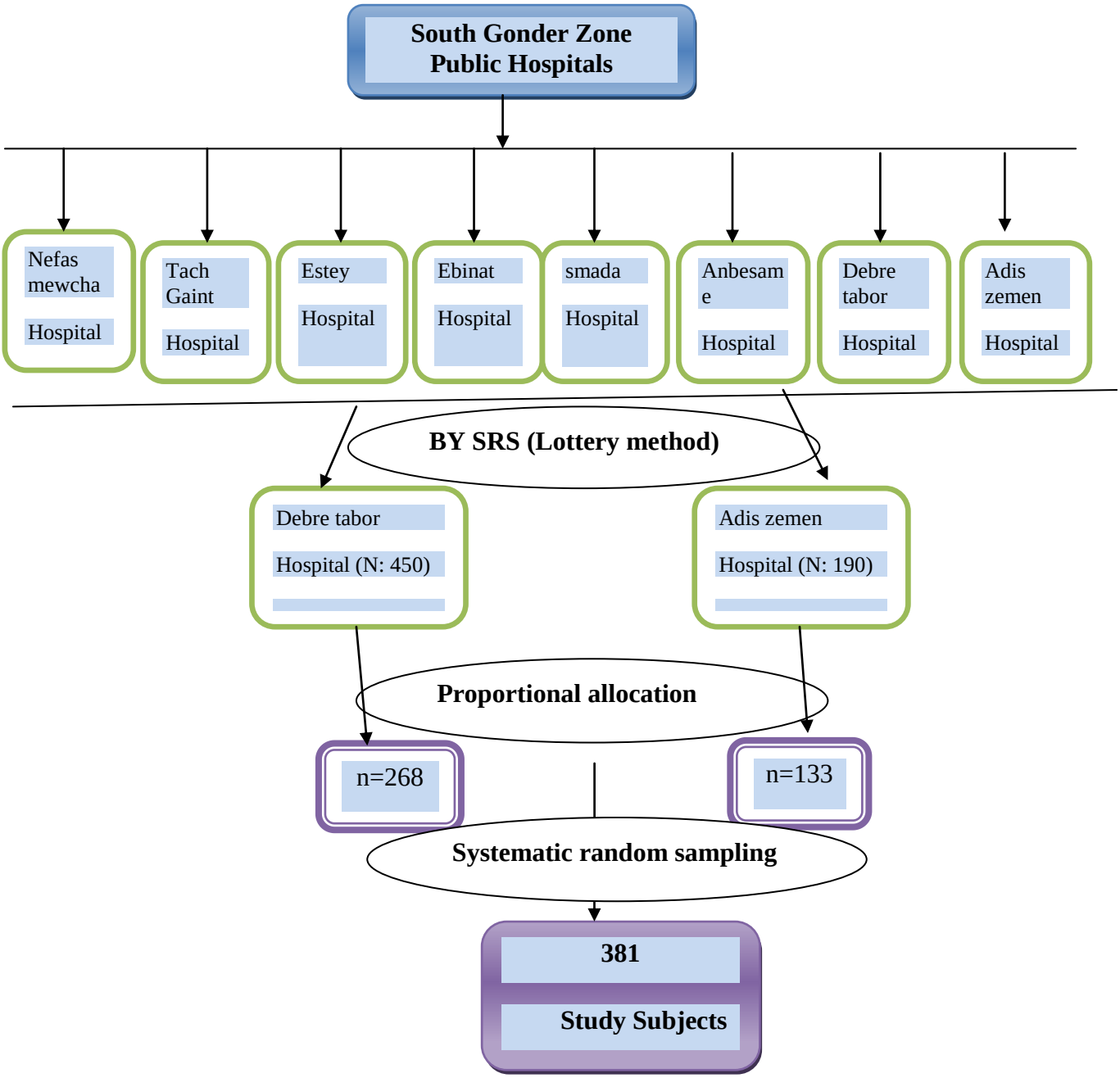

Figure 2 schematic presentation of sampling procedure to assess prevalence of obstructed labor and associated factors among women who gave birth at public hospitals of South Gondar zone, 2022.

4.7 Study Variables

4.7.1 Dependent variable

- Obstructed labor (yes/no)

4.7.2 Independent variables

- Socio demographic characteristics; age, educational level and marital status
- Obstetric factors; parity, number of ANC follow-up, duration of labor before visiting hospital, and Birth weight
- Health care factors; use of Parthograph, referral system, Distance from health institution

4.8 Operational definition and definition of terms

Obstructed Labor: Despite adequate uterine contractions the delivery of the baby could not be accomplished timely in a normal, natural fashion but active intervention by health professionals will needed. It is taken from physician diagnosis [9].

Antenatal follow up: when the mother reported that she had visited any health institution during her recent pregnancy.

Parthograph: A graphical representation of the dilatation of the cervix against time with an alert and an action line based on cervical dilatation of 1 cm/hr. between 4 and 10 cm

Multigravida: mother at least one previous delivery past 28 completed weeks of pregnancy Grand multipara: when the number of previous similar deliveries was at least five.

Destructive operation: is procedure done for Dead fetus after prolonged labor to affect vaginal delivery.

4.9 Data collection tools and methods

The data was collected using semi-structured questionnaire. After taking written consent, a uniform checklist was used to collect information from clients and their chart to gather information about the mother who comes to give birth from February 10 to March 10, 2022 at public hospitals of south Gondar zone. Three staff diploma midwife/Nurses and two BSc. nurses were recruited as data collectors, and the supervision was done by one MSc holder with maternity and Reproductive health.

4.10Data quality control

The data collection tool was pre-tested on 10% of sample size (39) study participants at Adisszemen primary Hospital to check for clarity of the items and also to identify any confusing or any vague items in the checklist in this health facility. Data collectors and supervisors were trained for two days to have a common understanding of the checklist how to collect and purpose of the study, details of the checklist, and insuring confidentiality of collected data.There were strict supervision on the data collection process, consistency and completeness of questionnaires on a daily basis. The overall data collection processes were controlled by the principal investigator.

4.11**Data Processing, Analysis and presentation**

Data was checked for completeness, edited, coded and entered using SPSS Version 25 software for analysis. Outcome variable was dichotomized into yes = 1 and no = 0. After cleaning data for inconsistencies and missing values, descriptive statistics were figured using figures and tables and expressed in terms of mean, median, standard deviation and so on. Binary logistic regression was used to see possible association between outcome variable and independent factors. First, Bivariate logistic regression was performed and variables with a p-value < 0.25 was transferred to multivariate logistic regression. In the multivariate logistic regression analysis, variables with p-value < 0.05 were taken as statistically significant factors. Modelfitness was checked by Hosmer and leme show test. Adjusted odds ratio with its 95% confidence intervals was considered to assessfactors associated with obstructed labor.

4.12Ethical Considerations

Ethical clearance was obtained from the Institutional Review Board of Bahir Dar University and submitted to selected hospitals of South Gondar zone. Written informed consent was obtained from each study participants after informing all the purpose, benefits, and risks of the study. Theywere also inform their full right to refuse, withdraw or completely reject part or all of their part in the study and they were assured that their treatment and other benefits they gain from the hospitals were not be influenced by their participation in the study. Confidentiality wascensured by removing identifiers and locking the questionnaire after data collection.

4.13 Dissemination of Results

The finding of this study was submitted to Bahir dar university College of Medicine and health sciences Department of integrated emergency surgery and obstetrics. Then it was disseminated to relevant and concerned bodies from the south Gondar zone Health Bureau, hospital medical directors and health center officers' after communicating with them. It also submitted to peer reviewed journals for publication.

5. RESULTS

5.1 Socio-Demographic Characteristics of the Study Participants

A total of 376 laboring women were included in the study with a response rate of 98.7%. The majority of the respondents 135 (35.9%) were aged between 25and 29 followed by 87 (23.1%) aged of 30-34. majority 217 (57.7%) of the respondents were from rural area and 349 (92.8%) were married. - **(Table 2)**

Table 2 Socio-demographic characteristics of women who gave birth at public hospitals of South Gondar zone, 2022

Variable	Category	Frequency	Percentage
maternal age	<19	20	5.3
	20-24	81	21.6
	25-29	135	35.9
	30-34	87	23.1
	>35	53	14.1
Place of residence	Rural	217	57.7
	Urban	159	42.3
Marital status	Married	349	92.8
	Divorced	12	3.5
	Widowed	5	1.3
	Unmarried	10	2.7
Religion	Muslim	98	26
	Orthodox	256	68.1
	Protestant	22	5.9
Ethnic group	Amhara	330	87.8
	Tigre	26	6.9
	Oromo	20	5.3

Educational status	unable to read and write	176	46.8
	able to read and write	117	31.1
	Primary and above	83	22.1
Occupation	Farmer	200	53.2
	House wife	156	41.5
	Government employee	20	5.3

5.2 Obstetric and health care Characteristics of Study participants

The majority of the cases involved 272 (72.3%) were multi gravida, majority 291 (77.4%) of participants had ANC follow upand 304(80.9%) of participants had less than12 hours for labor duration.Cephalic-Pelvic Disproportion (CPD) was the leading cause of obstructed labor cases which accounts for 32 (8.5%), more than half of the participants 199(52.9%) had to get intervention in <2 hours, and 321 (85.4%) neonates weighted from 2500-4000 gm.Among 182 respondents, the majority of 282 (75%) cases had used Parthograph.

Table 3 Obstetric Characteristics of obstructed labor and associated factors among women who gave birth at public hospitals of South Gondar zone, 2022.

Variable	Category	Frequency	Percentage
Parity	Primi Para	104	27.7
	Multi para	272	72.3
ANC	Yes	291	77.4
	No	85	22.6
Duration of labour	< 12 hours	304	80.9
	12-24 hours	56	14.9

	>24 hours	16	4.2
Causes	CPD	32	8.5
	Mal Presentation	13	3.5
	Mal Position	5	1.3
	Fetal Congenital Abnormality	2	0.5
Mode of delivery	SVD	172	45.7
	Instrumental	124	33
	C/S	67	17.8
	Destructive	9	2.4
	Laparatomy	4	1.1
Weight of Neonate	<2500	51	13.6
	2500-3500	321	85.4
	>4000	4	1.1
Partograph use	Yes	282	75
	No	94	25
Referral Site	Self	81	21.5

5.5 Factors Associated with Obstructed Labor

To identify factors, Binary logistic regression analysis was carried out. Initially, Bi-variate analysis was done and five variables namely place of residence, educational status, number of Parity, ANC follow-ups, and Distance from health institution wasassociated with the outcome at a P-value below 0.25. Fromthese variables ANC follow up,educational status, and Distance from the health institution were significantly associated with obstructed labor in multivariable analysis with a P-value below 0.05.

Mothers who had no ANC follow up werethree[AOR =3.18, 95% CI: (1.54-6.56)] timesmore likely to have obstructed labor as compared to those women who had ANC follow up.

Mothers who come from distance greater than 50 km far from health institution were nearly fourtimes more likely to develop obstructed labor as compared to women who come the health facility less than 50 km[AOR =3.97, 95 % CI ((1.87-8.43)].

Similarly, those mothers who cannot able to read and write were nearly five times more likely to develop obstructed labor as compared with those who had primary and above [AOR=4.85, 95 % CI (1.54-15.27)].

Table 4-Factors Associated with obstructed labor among women who gave birth at public hospitals of South Gondar zone, 2022

Characteristics	Variables	Obstructed Labour		COR (95% CI)	AOR (95% CI)	p-value
		yes	No			
Distance	<50 km	17	245	1	1	
	>50 km	34	80	6.13(3.25-11.55)	3.97(1.87-8.43)	0.000
Education	Un able to	41	13	5.99(2.07-17.37)	4.85(1.54-15.27)	0.007

al status	read and write		5			
	Able to read and write	6	111	1.07(0.29-3.91)		
	Primary and above	4	79	1	1	
Place of residence	Rural	37	180	2.13 (1.11-4.09)		
	Urban	14	145	1	1	
ANC follow up	Yes	28	263	**1**	**1**	
	No	23	62	3.49(1.88-6.46)	3.18(1.54-6.56)	0.002
gravidity	Primi	21	83	2.41 (1.11-3.76)		
	Multi	30	242	**1**		

* Significant with P-value <0.05

** Significant with P-value <=0.01

*** Significant with P-value <0.001

Hosmer Lemeshow test = 0.867

6. DISCUSSIONS

This study has found that about 13.6% of mothers were developed obstructed labour among mothers who gave birth in public hospitals of South Gonder Zone. Mothers who had no antenatal care follow up [AOR =3.18, 95% CI: (1.54-6.56)], distance from the health facility greater than 50 km [AOR =3.97, 95 % CI (1.87-8.43)] and mothers cannot able to read and write [AOR=4.85, 95 % CI (1.54-15.27)] were significant associated with obstructed labour

The overall prevalence of obstructed labour was 13.6% [95% CI: 10.1-16.8].The finding of this study was in line with studies conductedin Jimma (12.2%). (24). this might be due to time difference, socio-economic status.

On the contrary, the prevalence of this study was lower than study results in Adama Hospital Medical College (18.1%)(27). This might be due to time difference, socio-economic and study setting

On the other hand, the prevalence of this study was higher than a study conducted in Studies found in other African and Asian countries like Nigeria (2%), India (1.11%) and Pakistan (3.61%).(9,24,26) and Ethiopia of other sites like Mizan Aman (7.95%).(25). This might be due to differences insocio-economic status, cultural differences, utilization of health care services, and availability of health settings for the service provided regarding maternal health.

Mothers who had no ANC follow up were3.18times more likely to develop obstructed labor as compared to those women who had ANC follow up. This study was supported by studies inHalaba Kulito hospital andMizan Aman hospital shows that Antenatal care follow up were factors significantly associated with obstructed labor (28). This might be due to mothers who had no ANC follow were not get information about birth preparedness and complication readiness and this leads to mothers develop obstructed labor.

This study also found that distance from respondent's home to the facility more than 50 km were 3.97 times more likely to develop obstructed labor as compared to women who come the health facility less than 50 km.This study also supported by study conducted on Magnitude of Obstructed Labor and Associated Factors at Western Harerghe Zone shows that distance were significantly associated with obstructed labour. (15). The possible justification for this may be

due to Long distances to the health facilities may be a hindrance to the mothers to get delivery serviceseasily and this leads mothers to develop obstructed labour.

Lastly, this study also confirms that those mothers who cannot able to read and write were 4.85 times more likely to develop obstructed labor as compared with those who had primary and above. This might be due tothe fact that education was powerful effect on decision making of mothers to go timely in the health institution which later important to reduce the occurrence of obstructed labour.

7. LIMITATION

The major limitation of this study was lack of some data due to inappropriate and/or non-recording of certain variables on partograph. The other limitation was institution-based and therefore did not address the burden of the problem among the women who had given birth at homes where more obstructed labor and its complications including maternal death are expected.

8. CONCLUSION

This study revealed that there was high prevalence of obstructed labor although the government has been making possible effort to prevent the problem. Factors like no antenatal care follow up; mothers cannot able to read and write and distance from the health facility greater than 50 km were significantly associated with obstructed labour.

Hence, health professionals should give special attention to early diagnosis and referral of obstructed labor to higher facilities.

9. RECOMMENDATIONS

The following recommendations are forwarded for the concerned bodies based on the findings of this study;

For Zonal and Woreda Health Office:

Accessibility of health care servicesincluding avail ofmaternal waiting home for mothers/caregivers who has traveled more than 50km to reduce the risk of obstructed labour.

Monitoring the utilization of antenatal care

For non-governmental organizations:

Give emphasis on the women's empowerment and Education

For researchers:

Further studies should be done on study that could assess obstructed labour and its associated factors by other study design.

10. REFERENCES

1.Mulugeta Dile , H.D., Lealem Meseret, Fantu Abebe, Mulat Adefris, Yitayal Ayalew Goshu,Amare Simegn Ayele1 and Tewachew Muche Liyeh, Determinants of obstructed labor among women attending intrapartum care in Amhara Region, Northwest Ethiopia: A hospital-based unmatched case–control study. Women's Health Care, 2020.

2.Country Programme Action Plan (CPAP) 2010-2015. 2010-2015.

3.Demographic IE. Health survey 2016: Key indicators report. Addis Ababa, Ethiopia: Central Statistical Agency; Rockville, MD: ICF, 2016.

4.Bank, T.W., The World Bank's Reproductive Health Action Plan2010-2015. The World Bank, 2015.

5.Kalra, R., Feto maternal outcome in obstructed labor: a tertiary centre study. International Journal of Reproduction, Contraception, Obstetrics and Gynecology, 2019. **8**.

6.Wubegzier Mekonnen, D.H., Alem Gebremariam, Causes of maternal death in Ethiopia between 1990 and 2016: systematic review with meta-analysis. Ethiop. J. Health Dev., 2015.

7.Sabyasachi Mondal, A.C., Gourisankar Kamilya and Debojyoti Santra, Fetomaternal outcome in obstructed labor in a peripheral tertiary care hospital. Medical Journal of Dr. D.Y. Patil University, march 2022. **Vol 6 | Issue 2**.

8.erome K Kabakyenga, P.-O.Ö., Eleanor Turyakira, Peter K Mukasa and Karen Odberg Pettersson, Individual and health facility factors and the risk for obstructed labour and its adverse outcomesin south-western Uganda. Kabakyenga et al. BMC Pregnancy and Childbirth 2011, 11:73, 2018.

Halil, R.A.A.a.H.M., Magnitude and Factors Associated With Obstructed Labor among Women Delivered at Halaba Kulito Primary Hospital, Halaba Special District, Southern Ethiopia. Women's Health Care, an open access journal, 2019. Volume 8 • Issue 1 • 1000453.

9.Asnakech Tadesse Gudina, T.W.A., , Fikiru Abebe Gebremariam, Godana Jarso Guto,Magnitude of Obstructed Labor and Associated Risk Factors among Mothers Come for Delivery Service in Adama Hospital Medical College, Oromia Regional State, Central Ethiopia. Journal of Gynecology and Obstetrics, 2016.

10.Gizachew Assefa Tessema, C.O.L., Yohannes Adama Melaku, Awoke Misganaw,, A.H. Sintayehu A. Woldie, Azmeraw T. Amare, Yihunie Lakew, Berihun M. Zeleke, and a.A. Deribew, Trends and causes of maternal mortality in Ethiopia during 1990–2013: findings from the Global Burden of Diseases study 2013. BMC Public Health 2013.

11.Yifru Berhan, A.B., Causes Of Maternal Mortality In Ethiopia: A Significant Decline In Abortion Related Death. Ethiop J Health Sci., 2014.

12.Blake C. Alkire, Jeffrey R. Vincent,, Christy Turlington Burns, Ian S. Metzler, Paul E. Farmer, and J.G. Meara, Obstructed Labor and Caesarean Delivery: The Cost and Benefit of Surgical Intervention. plose one, 2012.

13.Biratu Yigezu, D.G., Central Statistical Agency, Federal Democratic Republic Of Ethiopia, Ethiopia Demographic and Health Survey 2016. Central Statistical Agency (CSA) [Ethiopia] and ICF. 2016. Ethiopia Demographic and Health Survey 2016. Addis Ababa, Ethiopia, and Rockville, Maryland, USA: CSA and ICF., July 2017.

14.Ethiopia, F.D.R.o., Review of Policy Documents On Climate Change, WASH and Public Health in Ethiopia. 2015.

15.Tizita Tamiru Wube, B.W.D., Zuriyash Mengistu Assen, Kelemu Abebe Gelaw, Robera Olana Fite, Magnitude of Obstructed Labor and Associated Factors Among Women Who Delivered at Public Hospitals of Western Harerghe Zone, Oromia, Ethiopia. Clinical Medicine Research, 2018.

16.Health, F.D.R.o.E.M.O., National Reproductive Health Strategy. 2016.

17.Robert E. Black, R.L., Marleen Temmerman,Neff Walker, Reproductive, Maternal, Newborn, and Child Health. volume 2, 2016.

18.JP Neilson, T.L., S Quenby and S Wray, Obstructed labour. British Medical Bulletin, 2022. **Vol. 67**.

19.AbouZahr, C.D.a.C., Global burden of obstructed labour in the year 2000. World Health Organization,, 2003.

20.Shimelis Fantu (MD), H.S.M.ψ., Fessahaye Alemseged (MD, MPHE), Incidence, Causes And Outcome Of Obstructed Labor In Jimma University Specialized Hospital. Ethiop J Health Sci., November 2010. **Vol.20, No. 3**.

21.Dutta DC, Text book of obstetrics including perinatology and contraception. 2014.

22.organization, w.h., Who Country Cooperation Strategyrepublic Of South Africa. 2013-2014.

23.Monitoring emergency obstetric care hand book. 2015.

24.Shimelis Fantu (MD), H.S.M., Fessahaye Alemseged (MD, MPHE), Incidence, Causes And Outcome Of Obstructed Labor In Jimma University Specialized Hospital. Ethiop J Health Sci., 2010. Vol.20, No. 3.

25.Dr. Shazia Rahman Shaikh, D.K.N.M.a.D., Gulzar Usman, Obstructed Labor; Risk Factors & Outcome Among Women Delivered In A Tertiary Care Hospital. TProfessional Medical Journal, 2015.

26.slam JA, A.G., Choudhury FR, Risk Factors and Outcome of Obstructed Labour at a tertiary care Hospital. J Shaheed Suhrawardy Med Coll, 2012.

27.Babagana Bako, E.B., Abubakar A. Kullima, Prevalence, risk factors, and outcomes of obstructed labor at the University of MaiduguriTeaching Hospital, Maiduguri, Nigeria. Sahel Medical Journal |, 2022.

28.Halil, R.A.A.a.H.M., Magnitude and Factors Associated With Obstructed Labor among Women Delivered at Halaba Kulito Primary Hospital, Halaba Special District, Southern Ethiopia. Women's Health Care, an open access journal, 2019. Volume 8 • Issue 1 • 1000453.

29. Adamu k, Zinabu F.Obstructed labor and associated factors among laboring women, Northeast Ethiopia, 2022

30. Global causes of maternal death: a WHO systematic analysis, September 2019

31. Alem Getachwe, Negash Wakgari, and Tolosa Gishille.Feto-Maternal Outcomes of Obstructed Labor and Associated Factors among Mothers Who Gave Birth in Public Hospitals of West Shoa Zone, Central Ethiopia: Cross-Sectional Study,Ethiopian.Jornal Health Sci,Volume31,NO.32021

11. ANNEX: QUESTIONNAIRES

11.1. Participant information sheet

My name is ahmed endrie; I am a third year intern IESO student, who is doing a research for the partial fulfillment of Master's Degree in IESO.

This questionnaire is intended to assess Obstructed Labor and Its Associated Factors among Mothers Who Gave Birth at Public Hospitals, South Gondar Zone Ethiopia, and North West Ethiopia. You are selected to be one of the Participants in the study.

Purpose of the study: The main objective of this research project is to assessment of Obstructed Labor and Its Associated Factors among Mothers Who Gave Birth at Public Hospitals, South Gondar Zone Ethiopia, and North West Ethiopia

The other purpose is for the fulfillment of master degree in IESO. The information you provide here will be very helpful to the investigator of this research project to write a research paper for the requirement in completion of master's program. The findings of this project could help in designing priority intervention regarding to obstructed labour and also important to improve the quality of care.

Procedures: There are questions that to assessment of Obstructed Labor and Its Associated Factors among Mothers Who Gave Birth at Public Hospitals. Then, I would like to ask you to give your honest answers on the questions forwarded. If you need clarification, please ask me at any time. You have the right to skip any question that you do not want to answer. But, your correct answer to each question can make the study valuable.

Risk and Benefit: By participating in this research project, I believe that there is no risk. The study will have direct and indirect benefits. Finally, this is important to identify future interventions related to the problem to be found in the study.

Confidentiality: The information collected from this research project will be kept the confidentiality. Any of your personal identification will not be included in any part of this research format, only a code number assigned to it will never revealed to anyone except the principal investigator.

11.2. Informed consent:

I have read the participant information sheet. I have clearly understood the purpose of the research, the risks and benefits, issues to confidentiality, the rights of participating and contact address for any queries. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that I have the right to allow or not to allow the study to be conducted in the hospital. Therefore, I declare my voluntary consent on the behalf of the hospital to allow this study with my signature as indicated below.

Name of Hospital Manager: ----------

Signature----------

Date----------

It has been read to me all information stated above. Therefore, I am willing to participate in this study

Signature ----------

Date of data collection----------

Data collector: I confirm that I have explained to the participant all relevant information about the study as indicated above. Name: ----------Signature--------

Thank you very much!

Data sheet

Obstructed labor is failure of decent of the fetus in the birth canal for mechanical reasons arising from either passage or passenger in spite of adequate uterine contraction. This questionnaire is prepared to assess the prevalence and associated risk factor of obstructed labor at public hospitals from south Gondar zone.

1. Socio demographic factors		
s.no	Factors	Response
101	Age in years	_____
102	Place of residence	1. Rural 2. Urban
103	Ethnicity	1. Amhara 2. Tigrie 3. Oromo
104	Occupation	1. farmer 2. house wife 3. government employee
105	Marital status	1. Married 2. Un married 3. Widowed 4. Divorced
106	Educational status	1. can't read and write 2. able to read and write 3. primary 4. high school 5. college and above
107	Religion	1.Orthodox 2.mulim 3. protestant

2. **Obstetric factors**

201	Parity	----------
202	Has ANC followed up	1. yes 2. no
203	If yes how many times	----------
204	Obstructed labour diagnosed	1. yes 2. no
204	What was the cause of obstruction?	1. CPD 2. Malpresentation 3. Mal position 4. Fetal congenital anomaly
205	Duration of labor in hours	----------hrs.
206	Duration of intervention	1. <2hrs 2. 2-4hrs 3. 4-8 hrs 4. >8hrs
207	Mode of delivery	1. spontaneous vaginal delivery 2. Instrumental 3. C/S 4. Destructive 5. Laparotomy
208	If the answer is E Type of destructive performed	1. Craniotomy 2. Evisceration 3. Other
209	Gestational age in weeks	--------weeks
210	Birth weight	----------kg.

3. Health care factors

301	Use of pantograph	A. Yes

		B. No
302	Referral site	1. Self-referral 2. health center 3. hospital
303	Was CPD diagnosed	1. yes 2. no
304	Distance from hospital in Kms	----------
306	Place of labor trail	A. home B. health center C. Hospital