

**PREVALENCE OF OBSTRUCTED LABOUR AND ITS
OUTCOME AMONG WOMEN DELIVERED AT GIMBI PUBLIC
HOSPITAL, WEST WOLLEGA, ETHIOPIA, 2015**

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Abstract

Introduction: Obstructed labour is absolute failure of descent of the presenting part despite good uterine contraction. It is still a major cause of maternal morbidity and mortality and of adverse outcome for women and newborns in developing countries, mainly the problem caused by maternal pelvis or the fetus or both.

Objective: To investigate Prevalence of obstructed labour and its outcomes among women delivered in Gimbi public hospital, west Wollega Ethiopia.

Methods: A cross-sectional study design was carried out in Gimbi public hospital, west Wollega, Ethiopia from February to March 2015. Single population proportion formula was used to determine sample size. A total of 321 mothers records were enrolled in the study. The study participants were selected by systematic sampling technique. Data were collected using a structured questionnaire. Data were entered using Epi Data version 3.1 and analysis was carried out using SPSS version 20. Bivariate and multivariable logistic regression analysis was applied. The independent variables with $p < 0.05$ in multivariable logistic regression analysis were considered as predictors of obstructed labour.

Results: According to this study result, Prevalence of obstructed labour was 58 (18.1%) and the main causes were cephalo pelvic disproportion 36(61.3%) followed by malpresentation 16 (27.1%). The major maternal complications observed among women with obstructed labour were PPH, ruptured uterus, and puerperal sepsis. The risk of maternal complications was 14/58 (24.1%) in women with obstructed labour compared to 6.1% (16/263) in women without obstruction. Among women diagnosed having obstructed labour 45 (78.9) of them were live birth and 13(21.1%) were Still birth. The perinatal mortality rate was 310 per 1000 total births (18/58) for women who had obstructed labour and 42 per 1000 total births (10/263) among women non obstructed group. Overall the perinatal mortality rate was 90 per 1000 total births. The risk of obstructed labour was statistically significantly associated with age, parity and birth weight.

Conclusion and recommendation

The study showed the prevalence of OL was high. Identified maternal morbidities were: PPH, uterine rupture, and sepsis and maternal mortality also identified and the prenatal complications were also high. Birth preparedness and complication readiness also need to be addressed within the community and the health system level. Further research in the management of obstructed labour within health facilities is advocated for and it also pertinent to study the community's perception of prolonged/ obstructed labour and actions taken when it occurs

Key words: Obstructed labour, Gimbi

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Table of content

Table of Contents

Abstract.....	i
Acknowledgement	v
Table of content	vi
List of tables.....	viii
List of figure	ix
List of abbreviations	x
CHAPTER ONE	1
INTRODUCTION	1
Background	1
1.1 Introduction.....	1
1.2 Statement of the problem	2
1.3. Significance of the study.....	3
CHAPTER TWO	4
2.1. LITERATURE REVIEW	4
2.2. Conceptual frame work.....	7
CHAPTER THREE	8
OBJECTIVES	8
3.1. General Objective	8
CHAPTER FOUR.....	9
METHODS AND MATERIALS.....	9
4.1. Study Area and period.....	9
4.2. Study design.....	9
4.3 populations.....	9
4.3.1 Source population	9
4.3.2 Study Population.....	9
4.4. Inclusion Criteria and Exclusion Criteria.....	9
4.5 Sampling technique and simple size determination	10
4.5.1 Sample size determination	10
4.6 Data collection instrument and procedure.....	11

4.7 Study Variables	11
4.8 Operational definition and key terms	13
4.9 Data entry and analysis	15
4.10 Data quality assurance	15
4.11 Ethical considerations	15
4.12 Dissemination plan of the findings	15
CHAPTER FIVE	17
RESULT	17
CHAPTER SIX DISCUSSION	25
CHAPTER SEVEN	29
7.1 Conclusions.....	29
7.2 Recommendation	29
APPENDIX I. REFERENCE.....	31
APPENDIX. II QUESTIONNAIRE	34

List of tables

Table 1 : Descriptive statistic for socio demographic factors among women delivered at Gimbi public hospital, west Wollega, Ethiopia, 2015.....	17
Table 2: descriptive statistic for obstetric and gynecological conditions among women delivered at Gimbi public hospital.....	19
Table 3: Fetal condition at birth among delivery with OL vs. age of mothers at Gimbi Public Hospital, West Wollega, 2015.....	20
Table 4 : Obstructed labour and fetal conditions at birth versus Parity at Gimbi Public Hospital, West Wollega, 2015.....	21
Table 5: Fetal complication versus duration of labour among obstructed deliveries.....	21
Table 6: Maternal complication/outcome among mother with obstructed delivery.....	22
Table 7: Duration of labour versus maternal complication among obstructed labour	22
Table 8: Factors independently Associated with obstructed labour among women delivered at Gimbi public hospital.....	23

List of figure

Figure1: Conceptual frame workFigure 1..... 7
Figure 2: Schematic representation of the sampling procedures of the record reviewed **Error!**
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List of abbreviations

ANC	Antenatal Clinic
BEmONC	Basic Emergency Obstetric and Neonatal Care
CEmONC	Comprehensive Emergency Obstetric and Neonatal Care
CFR	Case Fatality Rate
CPD	Cephalo Pelvic Disproportion
C/S	Caesarean Section
CSA	Central Statistical Agency
DF	Degrees of Freedom (in statistical significance calculations)
EDHS	Ethiopian Demographic and Health Survey
GA	Gestational Age
HSDP	Health Sector Development Plan
JUSH	Jimma University Specialized Hospital
KM	Kilometer
LSCS	Lower Segment Caesarean Section
MDG	Millennium Development Goal
MOH	Ministry of Health
OL	obstructed labour
OR	Operating Room
PPH	post-partum hemorrhage
SSA	Sub-Saharan Africa

SPSS	Statistical Package for the Social Sciences
UNFPA	United Nations Population Fund
USD	United States Dollar
TBA	Traditional Birth Attendant
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

Background

1.1 Introduction

Globally, at least 500, 000 women die each year by complications of pregnancy and child birth. More than 70% of all maternal deaths are due to five major complications: hemorrhage, infection, unsafe abortion, hypertensive disorders of pregnancy, and obstructed labor ¹.

Obstructed labour is the failure of the fetus to descend through the birth canal; it is generally a second stage phenomenon, in women whose labour is prolonged due to one of the 'Ps' (as midwives and obstetricians call them): 'passenger(fetus)' and 'passage(pelvis)' or both¹.

It continues to be a major contributor to the global maternal mortality caused by malnutrition of young girls resulting in underdeveloped pelvis, together with the inability of women to timely access adequate maternal/ midwifery care or the lack of such facilities in many regions of the world where resources are limited ⁹.

It is a totally preventable labour complication. But highly prevalent in the rural area in developing countries, particularly among women who are in labour at home for a long time ^{1,2}.

Obstructed labour is associated with a high perinatal mortality and morbidity (fetal and newborn deaths) and disease and disability occurring around the time of the birth. This shocking figure is certainly an underestimation of the problem, because deaths due to obstructed labour are often classified under other complications (such as sepsis, postpartum haemorrhage or ruptured uterus³.

Complication resulting from obstructed labour to the mother and the fetus is worse if neglected or intervention is delayed. Fistula Postpartum haemorrhage, Shock, Paralytic ileus Sepsis and Death to the mother as well as Neonatal sepsis, Facial injury, severe asphyxia jaundice and Death to the new born among its consequences⁴.

The prevention of obstructed labour can be promoted by: Skilled birth attendance, using the partograph, Birth preparedness and complication readiness, Nutritional education, Delaying early marriage²

1.2 Statement of the problem

Worldwide maternal mortality and morbidity due to obstructed labour has not significantly changed over the last 30 years⁵. Developing countries are still contributing 99% of all maternal mortality globally and the adult lifetime risk of maternal death (the probability that a 15 year old female will eventually die from a maternal cause) is highest in Sub-Saharan Africa (SSA) that is, 1 in 31⁶.

Twenty three countries in SSA have made no or insufficient progress in their attempt for achievement of MDG 5 which aims for a 75% reduction in maternal mortality by 2015⁶. Six nations together, among which Ethiopia, contribute more than half to the total global maternal mortality of around 350,000 to 500,000 women worldwide in 2007/2008⁵.

There has been very little change over the last decades in the prevalence of obstructed labour and the figure still stands at 3-6%. In the overview of the global burden of disease from 1990 to 2000 obstructed labour contributed 22% of all maternal conditions⁷. The range of obstructed labour in Ethiopia was from 3.3 to 12.2%^{2,14}.

However, so far there was no data on prevalence of obstructed labour and its outcome at study area and the aim of the current study fill the gap.

1.3. Significance of the study

Obstructed labour is one of the most common as well as a preventable cause of maternal and perinatal morbidity and mortality in developing countries. Therefore, it is necessary to determine the prevalence of obstructed labour among pregnant women as well as outcome for the mother and fetus/newborn in Gimbi public hospital, West-Wollega Zone which is necessary to achieve a millennium development goal 4 and 5. However, Reports of obstructed labour and its outcome found in different areas with different research methodology and different period of time, there is no published data in study area. That is why the investigator persuaded to the demand of the study.

The findings of this study provide some knowledge and insight into the prevalence; risk factors and outcome of obstructed labour at study area and could form the basis for further research, recommend for prevention, management practice governmental and non-governmental organization who works on improvements maternal health.

CHAPTER TWO

2.1. LITERATURE REVIEW

Though, obstructed labour is preventable, it is continuing problem in developing countries being leading cause of maternal and newborn morbidity and mortality¹.

According to Cross Sectional study conducted in Pakistan out of 9000 Total deliveries 5.2% patients found to have obstructed labour and 82% teenagers. Mode of delivery was LSCS in 84%. The Cephalo pelvic disproportion remained the commonest reason of obstruction (66%). In the same study maternal morbidity mortality observed were: PPH seen in 41%, 1.94% sepsis, 1.94% vesico vaginal fistula and 1.94 maternal death. Perinatal mortality was around 54.6%⁸.

A cross sectional study conducted in southwest Uganda, among 12,463 laboring mothers participated in the study revealed the Prevalence of obstructed labour was 10.5%. This study showed that cephalo pelvic disproportion (63.3%), malpresentation or malposition (36.4%) and hydrocephalus (0.3%) which contributed obstructed labour. The risk of obstructed labour was statistically significantly associated with residence, parity, and age group the mother. It also showed, Perinatal mortality rate was 142/1000 total births in women with obstructed labour compared to 65/1000 total births in women without the condition. The case fatality rate for obstructed labour was 1.2%⁹.

An observational study conducted in in India by clinical examination revealed, 1.64% patients admitted with features of obstructed labor. Income, residence, educational status, and ANC follow up were statistically significant. The study also showed commonest cause of obstructed labor was cephalo pelvic disproportion (55.59%). Other causes were malposition (23%), malpresentation (18.21%), fetal congenital abnormality (1.28%), myoma (0.32%), and non-dilatation of cervix (1.60%). The commonest mode of delivery was cesarean section (85.94%). sepsis 49.8%, post-partum hemorrhage (PPH) 33.9%, urinary tract infection (UTI) 10.9% wound infection 7.7%, Rupture uterus was seen in 8 (2.56%) cases, and (1.6%), maternal death were among maternal morbidity and mortality. Perinatal mortality rate was 71/313 (22.68%), still birth rate was 57/313 (18.21%), and live birth rate was 256/313 (81.79%). Perinatal morbidity (in 198 cases) was most commonly due to birth asphyxia (29.68%), jaundice (16.80%), septicemia (14.84%), and meconium aspiration syndrome (9.77%). Incidence of PPH, still birth, perinatal mortality, and cesarean section was significantly higher among multiparous women¹⁰.

According to a cross sectional study was conducted in Bangladesh from January 2007 to December 2007 showed a total number of 3171 deliveries were conducted during this period and 132 cases of obstructed labour constituting prevalence of 4.2%. The highest frequency was found among mothers with no ANC visit, primi gravid patients and illiterate. The commonest cause was cephalo-pelvic disproportion (47.5%) followed by fetal malposition (25.7%) and malpresentation (24.8%). The majority of the patients were between 25-29 years, caesarean section was the most common mode of delivery (78.09%). The study also showed Maternal morbidity due to different complication accounted for 76.19% of the case while the fetal morbidity was 51.31% of the cases. The maternal mortality was 1% and prenatal mortality was 24.76%¹¹.

Another cross sectional study conducted in Kenya with sample size consisted of 910 births; Obstructed or prolonged labour was the most commonly noted labour complication (8.5%). It also showed there were 108 perinatal deaths giving an overall perinatal mortality rate (PNMR) of 118 per 1000 births. The PNMR was significantly higher among women illiterate, and no ANC visit¹².

According to a retrospective cross sectional study conducted in Adigirat out Of 5,980 hospital deliveries during the study period 195(3.3%) were admitted for obstructed labour. Only 14.1% of all cases had received antenatal care, and the majority (88%) came from rural areas. Mean duration of labour was 45.4 hours for cases of obstructed labour. The most common cause of obstruction was cephalo pelvic disproportion (64.9%) followed by malposition/malpresentation (32.5%). Caesarean section was performed in 46.1%, craniotomy in 31(16.2%), instrumental delivery in 14.1%, hysterectomy in 14.6% and repair of ruptured uterus in 18.9%. Maternal and neonatal fatality rates were 3.7% and 55.5% respectively among obstructed labour. Serious complication increased with parity¹³.

A cross sectional study conducted in Jimma University specialized hospital from November 1, 2008 to April 30, 2009 revealed that the prevalence of obstructed labor was 12.2%. Out of these 61.5% did not have antenatal care follow up. The causes of obstructed labor were cephalo-pelvic disproportion in 121(67.6%) and malpresentation in 50 (27.9%) of the cases. This study also showed the commonest maternal complications observed were uterine rupture in 55 (45.1%) and sepsis in 48 (39.3%) of the cases with complications. Forty-five point eight percent of fetuses

were born alive and all had low first minute APGAR score and perinatal death 66.1 per 1000 total births .The study did not involve maternal mortality¹⁴.

A systematic review done on eighteen health facility based maternal mortality studies conducted between 1980 and 2012 in Ethiopia showed the proportion of maternal mortality due to direct causes and their case fatality rates. It has shown that the top four causes of maternal mortality in the year 1980-1999 were abortion related complications (31%), obstructed labor/uterine rupture (29%), sepsis/infection (21%) and hemorrhage (12%). The same study also revealed that, the top four causes of maternal mortality were obstructed labor (36%), hemorrhage (22%), and sepsis/infection (13%)¹⁵.

2.2. Conceptual frame work

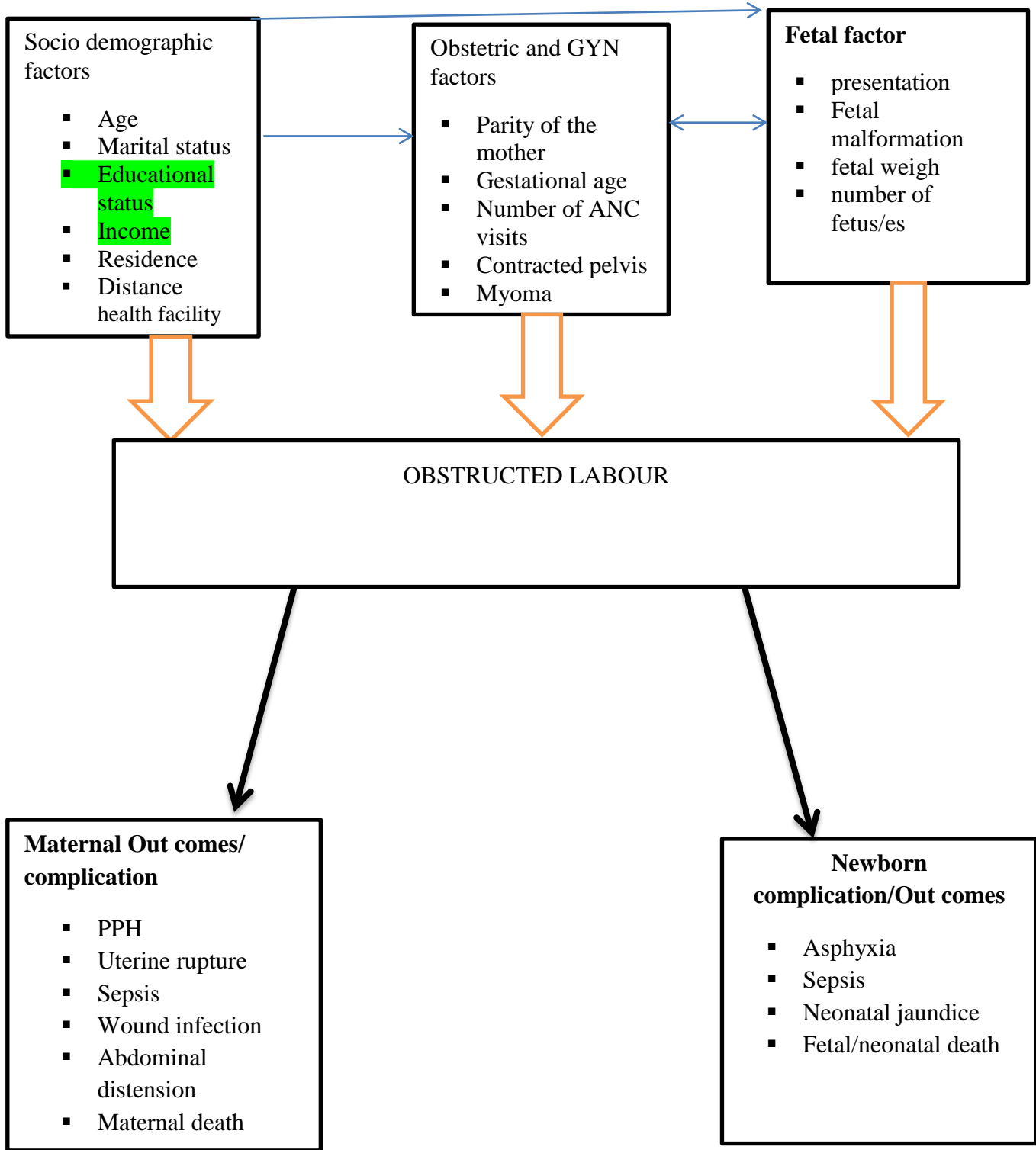


Figure 1: conceptual frame work

Developed after reviewing different literature

CHAPTER THREE

OBJECTIVES

3.1. General Objective

To Assess Prevalence of Obstructed Labour and its outcomes among women deliver at Gimbi Public Hospital, West Wollega, Ethiopia, 2015.

3.2. Specific objective

To identify prevalence of obstructed labour among women delivered at Gimbi Public Hospital, West Wollega, Ethiopia, 2015.

To determine outcome of Obstructed Labour among women delivered at Gimbi Public Hospital, West Wollega, Ethiopia, 2015.

To identify factors associated of obstructed labour among women delivered at Gimbi Public Hospital, West Wollega, Ethiopia, 2015.

CHAPTER FOUR

METHODS AND MATERIALS

4.1. Study Area and period

West-Wollega is found in western part of Ethiopia and one of the 18 administrative zones of Oromia National Regional State. Administratively, the zone has 21 districts, of which 19 are rural districts and 2 are urban administrations. It is a mountainous area with remote villages, many unpaved and very few tarred roads, a pressing lack of transportation, high levels of poverty and poor access to health services. Health facilities are lacking in number and many are of substandard quality with low utilization rates, and high case fatality rates among pregnant women who manage to access health care facilities²⁰. Women mostly deliver their babies at home and many of the occurring maternal deaths are avoidable but have a large impact on child health and development⁷.

Gimbi Town is situated in the West-Wollega Zone, about 450 km west of Addis Ababa. The total population of West-Wollega is approximately 2.5 million. The selected hospital is providing health care services to the residents of Gimbi Town (approximately 60,000) and the rural communities living in the surroundings of Gimbi (approximately 300,000). The majority of the population is composed of subsistence farmers, with per capita income below the international poverty line of \$1 USD per day²⁰.

Gimbi public hospital approximately attends about 2000 deliveries annually, the MCH department run by 8 midwives 3 clinical nurses and one OGY-Gynecologist. The study was conducted from Feb to March 2015

4.2. Study design

A retrospective cross-sectional study design was employed

4.3 populations

4.3.1 Source population

Delivery records used at Gimbi public Hospital from 2012-2014

4.3.2 Study Population

Sampled delivery records of 2012 to 2014 GC used at Gimbi public hospital

4.4. Inclusion Criteria and Exclusion Criteria

4.4.1. Inclusion Criteria

All cards/files used for labor/delivery management from 2012 to 2014 GC at Gimbi public hospital

4.4.2. Exclusion Criteria

Women who gave birth at home or another health institution and admitted for post-partum complication and incomplete records were excluded.

4.5 Sampling technique and simple size determination

4.5.1 Sample size determination

The sample size was calculated using single population proportional formula.

$$\frac{z \left(\frac{\alpha}{2}\right)^2 * P(1-p)}{d^2} = \frac{(1.96)^2 * 0.122(1-0.122)}{(0.035)^2} = 336$$

Where

n= the desirable calculated sample size

Z ($\alpha/2$)=critical value for normal distribution at 95% confidence level which equals to 1.96(Z value alpha equal to 0.05)

p= Prevalence of obstructed which is 12.2% taken from JUSH².

d= degree of accuracy desired setting at (3.5%)

☒ Because the source population is less ten thousand, using correction formula the sample size

$$\text{☒ } n = \frac{n_0 N}{n_0 + (N-1)} = \frac{336 \times 7190}{336 + (7190-1)} = 321$$

☒ Therefore the value of **n** was 321

4.5.2 Contingency

Sampling procedure

The three years delivery record review was employed by typical case sampling based on delivery registration books (records) to assess the level of obstructed labour. Systematic sampling method was employed to get the required sample using delivery registration books as frame.

$$K = N/n = \frac{7190}{321} = 22$$

Where:

K =sampling interval

N = population size

n= required sample size

The first sample was randomly selected by writing all the registration number of the first 22 from 2012GC orderly on a square piece of paper, mixing them in a bowl and then selected one of them by lottery method. Then after every 22 element in the list was included in the sample.

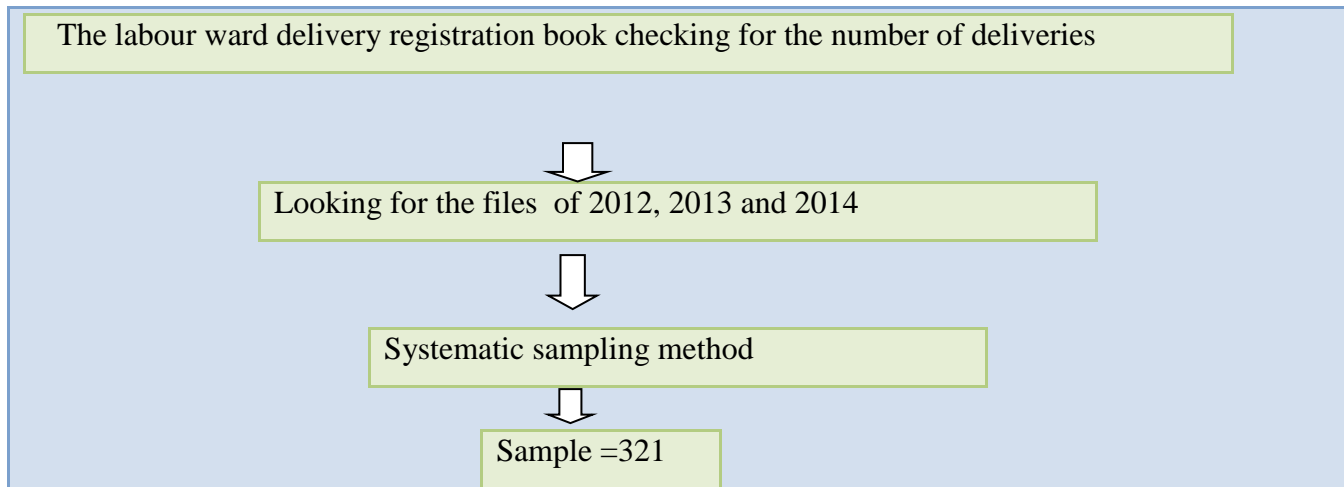


Figure 2: The schematic representation of the sampling procedures of the record reviewed.

4.6 Data collection instrument and procedure

4.6.1. Data collection Instrument

Structured check list adapted after review of relevant literatures and modified to the local situation was used for data collection.

Data collectors

Four BSc midwives were recruited from the selected hospital.

4.6.2. Data Collection Procedure

Data were collected through record review using structured format by trained data collectors

4.7 Study Variables

4.7.1 Outcome variables

Obstructed labour

4.7.2 Independent variable

Socio demographic factors

- Age
- Marital status
- Residence
- Income
- Educational status
- Distance

Obstetric and GYN factors

- Parity of the mother
- Gestational age
- Number of ANC visits
- Contracted pelvis
- Myoma

Fetal factor

- Malpresentation
- Fetal malformation
- fetal weigh
- number of fetus/es

Maternal complication/Out comes

- Puerperal sepsis
- Postpartum hemorrhage
- Ruptured uterus
- Wound infection
- Urinary tract infection
- Abdominal distension
- Maternal death

Newborn complication/Out comes

- Asphyxia
- Sepsis
- Neonatal jaundice
- Fetal/neonatal death

4.8 Operational definition and key terms

Obstructed labour: Is the failure of the fetus to descend through the birth canal, because there is an impossible barrier (obstruction) preventing its descent despite strong uterine contractions which usually occurs at the pelvic brim, but occasionally it may occur in the pelvic cavity or at the outlet of the pelvis. When labour is prolonged because of failure to progress, there is a high risk that the descent of the fetus will become obstructed.

Contracted pelvis: with normal fetal weight when the pelvis is not sufficiently enough to allow the fetus to pass through.

Complications of obstructed labour: For the purpose of this study, complications of this nature include rupture of uterus, PPH, sepsis, wound infection, abdominal distention and the later maternal death, as well as sepsis, jaundice and asphyxia and still birth and death for the baby.

Mode of delivery: In this study, mode of delivery indicated the manner by which the confinement was brought to an end, be it an assisted vaginal delivery, caesarean section, destructive or instrumental

Prevalence of OL: is the ratio (for a given time period) of the number of occurrences of a obstructed labour to the number of units at risk in the population

Apgar score: This is an assessment of the newborn condition right after birth, at 1, and 5 minutes, by evaluating the 5 indicators: colour, heart rate, Grimace (response to stimuli), Activity (Tone) and Respiration (breathing rate).

Asphyxia: A condition in which insufficient or no oxygen and carbon dioxide are exchanged on a ventilator basis or APGAR less than 7 at 1st and 5th minutes.

Sepsis: The presence of pus-forming bacteria or their toxins in the blood or tissues

Neonatal jaundice: Yellowing of the skin and the whites of the eyes caused by an accumulation of bile pigment (bilirubin) in the blood; can be a symptom of gallstones or liver infection or anemia of the neonate

Still birth: Birth of a baby that has already died in the womb

Neonatal death: death of the newborn in the first month of life

Prenatal death: still birth and early newborn death.

Normal duration of labour: labour accomplished less than 24 hours

Prolonged labour: duration of labour greater than 24 hours

4.9 Data entry and analysis

The data was checked for completeness, consistency and entered in to Epi data version 3.1 statistical packages and exported to SPSS version 20.0. In addition to descriptive statistics, bivariate analysis was checked and variables having association(p value 0.25) were entered in to multivariable logistic regression and analysis was carried out to assess strength of statistical association (adjusted odds ratios and 95% confidence intervals) obstructed labour and the determining variables. Statistical significance was declared at $P < 0.05$. Finally the result was presented using tables, figures and charts

4.10 Data quality assurance

The questionnaires were pre tested on 5% of the sample size in the same hospital before the actual data collection to make sure clarity of the questionnaires as well as understanding of the data collectors. Data collectors were trained for one day intensively on the study instrument and data collection procedure that includes the relevance of the study, objective of the study and check list to be used. The data collectors were working under close supervision of the supervisors to ensure adherence to correct data collection procedures, supervisors and investigators reviewed the filled check lists at the end of data collection every day for completeness. And every morning the principal investigators and data collectors conducted morning session to solve if there was any faced problem as early as possible and to take corrective measures accordingly

4.11 Ethical considerations

Before the commencement of fieldwork, ethical clearance was obtained from Ethical Review Board of Jimma University College of Public Health and Medical Sciences college of nursing and Midwifery. Then formal support letter was sent to Gimbi public hospital. Informed verbal consent was obtained from each concerned body. Confidentiality of the patient's information was kept secure.

4.12 Dissemination plan of the findings

The results of this study will be presented to Jimma University College of Public Health and Medical Sciences school of Nursing and Midwifery. After having secured approval from the Department, it will be communicated to Federal Ministry of Health, Oromia Regional Health Bureau, west Wollega Zone Health Department and other concerned bodies through reports. The

findings will also be disseminated to different organizations that have a contribution in improvement of maternal and new born health. The findings will be also presented in various seminars and workshops. Efforts will be made to publish the research article in trustworthy journals.

CHAPTER FIVE

RESULT

5.1. Socio demographic characteristics of respondents

The finding showed that 118(36.8%) and 97 (30.2%) of the mothers were in the age group of 20-24 years and 25-29 years respectively followed by 15-19 years which accounts 60(18.7%). Majority of the mothers 305(95%) were married (lives with their husbands). 201(62.2%) of the women were from rural areas and 151 (47%) travel more than 20kms to reach the hospital (Table.1).

Table 1 : Descriptive statistic for socio demographic factors among women delivered at Gimbi public hospital, west Wollega, Ethiopia, 2015.

variable	Response	Frequency	%
Age	15-19	60	18.7
	20-24	118	36.8
	25-29	97	30.2
	39-34	28	8.7
	>=35	18	5.6
Marital status	single	10	3.1
	married	305	95
	Others	5	1.5
	missing	1	0.4
Residence	Rural	201	62.6
	Urban	120	37.4
Distance to hospital	0-4km	101	31.5
	5-9km	31	9.7
	10-14km	24	7.5
	15-19km	14	4.4
	20ormorekm	151	47.0
Distance to ANC	0-4km	236	73.5
	5-9km	63	19.6
	10-14km	20	6.2
	15-19km	2	.6

5.2. Obstetric conditions

Among selected cases, 80 (24.9%) has three visit, 78 (24.3%) two visit, 69 (21.5%) four or more, 51 (15.9%) one, 36 (11.2%) 0 and 7 women have no information regarding their visit. For all women attended the selected hospital 212 (66%) underwent spontaneous vaginal delivery followed by 105 (32.7%) caesarian section. For mothers who under gone CS, 58(18.1%) because of obstructed labour and 29 (9%) for fetal distress. The study also showed the main cause of obstruction was cephalo pelvic disproportion which accounts 36(61%) followed by malpresentation 16(27.1%) and others alike: hydrocephalous, twins and myoma 6(11.9%).

Weight of the babies was categorized as follows: < 2.5kg, 2.5 to 4kg and > 4kg. Accordingly 280(87.2%) were 2.5 to 4:00 kg, 24(7.5%) less than 2.5kg and the rest 15(4.7%) were greater than 4 kg. Among all deliveries conducted, 14(4.4%) was PPH, 6(1.9%) sepsis, 4(1.2%) was ruptured uterus and 297 (92.5%) were live births, 19(5.9%) was stillbirth and 5(1.6%) were IUFD. After live birth the following complication were observed. Asphyxia 88 (27.4%), 7.4% neonatal death and 0.3% has developed jaundice from all sample (Table.2).

Table 2: descriptive statistic for obstetric and gynecological conditions among women delivered at Gimbi public hospital

Variable	Response	Frequency	%
Parity	0	116	36.2
	1	182	56.7
	(2-4)	19	5.9
	>=5	4	1.2
ANC visit	0	36	11.2
	1	51	15.9
	2	78	24.3
	3	80	24.9
	4	69	21.5
	No information	7	2.2
Mode of delivery	SVD	212	66.0
	CS	105	32.7
	Destructive	3	.9
	instrumental	1	.3
Reason for CS	Fetal distress	29	9.0
	OL	58	18.1
	APH	3	.9
	Failed induction	4	1.2
	Others	11	4.8
Cause of OL	CPD	36	11.2
	malpresentation	16	5.0
	Others	6	2.2
APGAR 1 st Min	<7	183	57.0
	>=7	136	42.4
	No information	2	0.6
Baby wt	<2.5	24	7.5
	2.5-4	280	87.2
	>4	15	4.7
Number of baby	singleton	314	98.1
	Multiple	6	1.9
	No information	1	0.3
Fetal condition at birth	live birth	297	92.5
	IUFD	5	1.6
	stillbirth	19	5.9

Newborn complication	Asphyxia	88	27.4
	Neonatal Jaundice	1	.3
	Neonatal death	1	.3
	Asphyxia and Death	13	4.0
	PPH	14	4.4
	Ruptured uterus	6	1.9
	Sepsis	4	1.2
	Others		
Duration of labour	12-24	261	81.3
	>24	60	18.7

5.3. Maternal and Fetal outcome among delivery with obstructed delivery

5.3.1. Fetal outcome among mother with obstructed delivery

Out of 321 reviewed sample record 58(18.1%) of mothers developed obstructed labour. Among these 18/58(31.0%) end up with perinatal death of which 13/58(22.4%) still birth which was commonly seen at extreme age, extreme parity and prolonged labour. Out of 45 live birth 23/45 (51.1%) developed asphyxia and 5/45(11%) neonatal death. Among non-obstructed delivery 11/263 (4.2%) of death were observed (Table.3).

Table 3: Fetal condition at birth among delivery with OL vs. age of mothers at Gimbi Public Hospital, West Wollega, 2015.

Fetal condition	Age of mother in years					total
	15-19	20-24	25-29	30-35	>=35	
Live	20 (43.5%)	11(26.1%)	7(15.2%)	4(8.7%)	3(6.5%)	45(100.0%)
Still birth	7 (58.3%)	1 (8.3%)	1 (8.3%)	1 (8.3%)	3 (16.7%)	13 (100.0%)
Total	27(46.6%)	12(22.4%)	8(13.8%)	5(8.6%)	6(8.6%)	58(100.0%)

Out of delivery without obstruction 16/263(6.08%) of mothers developed maternal complications, these complications were postpartum haemorrhage 10(62.5%) followed by puerperal sepsis 4(25%) but there was no death documented.

Table 6: Maternal complication/outcome among mother with obstructed delivery

Maternal comp/outcome	frequency	%
PPH(n=13)	5	38.46
Ruptured uterus (n=13)	4	30.76
Puerperal sepsis(n=13)	2	15.38
Abdominal distension(n=13)	1	7.69
wound infection(n=13)	1	7.69
Total(58)	13	22.41
<i>Maternal outcome</i>		
Maternal death(n=58)	1	1.72

Women who have developed obstructed labour and faced complication, their duration of labour was greater than 24 hours.

Table 7: Duration of labour versus maternal complication among obstructed labour

variable	Duration Labour (Hours)		Total
	12-24	>=24	
Is there maternal complication yes	4(28.6%)	10(71.4%)	14(24.13%)
No	29(65.9%)	15(34.1%)	44(75.86%)

5.4. Determinants of obstructed labour

To identify determinants of obstructed labour, bivariate analysis was applied to each variable with obstructed labour. Variables with p-value less than or equal to 0.25 taken as candidate variables for multivariate analysis. After multivariate analysis: Age, Parity and Weight of the baby were statistically significant at p-value < 0.05.

Table 8 shows the results of multi variable logistic regression analysis on the association between age, parity, babies' weight and obstructed labour. The risk of OL was 11.22 times higher in the age group of 15-19 years when compared to age group of 20-24 years. Parity was significantly associated with OL (AOR= 5.430 CI 95%, p 0.0001), with regard to birth weight a mother with a baby >4 kg has high risk of obstructed labour when compared with a mother who gave birth for normal birth weight (AOR=4.761 CI 95%, p = 0.027).

Table 8: Factors independently Associated with obstructed labour among women delivered at Gimbi public hospital.

Variable	Sig.	95.0% C.I. for EXP(B)	
		Upper	Lower
15-19	0.001	11.223	(4.432-28.420)
20-24 ⁺⁺			
25-29	0.086	0.373	(0.121-1.152)
30-34	0.303	0.460	(0.105-2.017)
>=35	0.377	0.360	(0.037-3.464)
Parity	0.0001	5.430	(2.730- 10.801)
Bwt	0.181	0.229	(0.026-1.981)
<2.5kg			
2.5-4.kg ⁺⁺			
>4kg	0.027	4.761	(1.199-18.903)

Urban	0.338	1.440 (0.683- 3.033)
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Rural⁺⁺

ANC yes⁺⁺

no	0.865	1.107 (0.343- 3.573)
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++ referred to reference group with highest frequency

CHAPTER SIX DISCUSSION

Obstructed labour is an important cause of severe morbidity, long-term disability and death among both mothers and their babies ^{2, 10, 14}. In this study, the prevalence of obstructed labour among women delivered at Gimbi public hospital was 18.1%, this finding was higher than global prevalence of obstructed labour which was 8%. This finding was also higher than study finding done in Adigrat and JUSH which were 3.3% and 12.2% respectively.

This finding was also higher compared to study done in South west Uganda 10.5% ⁹, in Pakistan 5.2% ⁸, in India 1.64% ¹⁰, Asia 9.4% and 13.4% for Latin America and the Caribbean ²². But lower than research conducted on causes of maternal mortality in Ethiopia 2000 to 2008 amounted the prevalence of obstructed labor 29% and national survey of Uganda 22% of OL in 2012^{15,16}. The discrepancy might be because of difference in: study period, sample size, study design and socio cultural, access to antenatal care, labour management and emergency referral.

In this study the causes of obstruction were cephalo-pelvic disproportion 36(61%), malpresentation 16 (27.1%). Other causes: hydrocephalous, myoma, twins 6(11.9%). Study done else were also identified these factors as cause of obstructed labour ^(2, 14, 8 and 9). In these findings cephalo-pelvic disproportion was found to be a major cause of obstructed labour which was similar with this finding but shows variable proportion of these causes compared to study done different corners of world. For example, study done at: Jimma the causes of obstructed labor were cephalo-pelvic disproportion in 67.6% and malpresentation in 27.9% ¹⁴, 64.9% Adigrat CPD², 62% east Nigeria, and 66% in Pakistan ⁸, 63.3% west Uganda ⁹. This may be due to difference in sample size, methodology, study design and socio cultural and economic difference.

In this study Caesarean section delivery was performed on 54/58(94.7%) of the women with obstructed labour. The other preformed method was destructive delivery 4/58(5.3%). This proportion Caesarean section delivery was higher when compared to studies done in Adigrat 63.4%², 54.7 JUSH¹⁴, 84% and 85.9%) 2012 and 2013 Pakistan at different region ⁸, South east Nigeria (81.8%) ¹⁷. This gap might be because of different in the study setup, variation in professional experience, previous history caesarian section and status of fetus at arrival. In this study age, parity and birth weight were found to be associated with obstructed labour.

The risk of obstructed labour in the age group of 15-19 years of age was statistically significantly higher than that of the reference age group of 20-24 years. It was 11.22 times higher in the age group of 15-19 when compared to age group of 20-24. Para zero is statistical significant risk of obstructed labour than the reference parity one group (AOR= 24.963 CI 95%), while in grand multiparous women the risk was 21.8% higher than the reference group. The baby wt also statistically significant with obstructed labour and the risk of OL is 3 times higher when compared with reference birth wt. a baby >4 kg has a risk of OL by 4.814 when compared with a mother with normal birth wt. The finding was similar with study conducted in Jimma, out of 12.2% cases 8.4% were teenage ¹⁴ and southwest Uganda where age 15-20 and parity were associated with OL⁹. Women who were delivered for the first or second time may be young and as such be at a higher risk of obstructed labour than those who have delivered more times. Grand multiparous women may also be at a higher risk of obstructed labour from malposition and malpresentation due to lax uterus.

In different studies residence area and ANC visit was associated with obstructed labour but in the current study they were not found to be associated. It could be as a result of small sample size, otherwise there is no tangible evidence to deny the relationship.

Presence of maternal complication was common with obstructed labour and prolonged duration of labour. Accordingly, maternal complication most commonly occurred among women with obstructed labour when compared with non-obstructed group. Among the obstructed group maternal complication highly seen in deliveries with prolonged duration of labour. The following maternal morbidity and mortality were identified: PPH 5 (35.7%), 4(28.6%) ruptured uterus and sepsis 2(14.3%). others (maternal death, wound infection, UTI and abdominal distention) each accounts 1 (7.1%) each.

When compared with study done in Jimma, commonest maternal complications observed were uterine rupture in 45.1% and sepsis in 39.3%¹⁴, Adigrat Ruptured uterus 22.5% and sepsis 19.9%², in south west Uganda sepsis 49.8% uterine rupture followed by PPH (33.9%)⁹.

In the study group maternal a case fatality rate of 1.7% among obstructed group. It was due to ruptured uterus and might have been prevented through proper antenatal monitoring and skilled delivery care. The proportion is lower than those reported in India (2.04%)⁸, (3.3%) Nigeria⁴, 3.7% Adigrat² and the proportion was higher to study done in south west Uganda which was

1.2%⁹. the proportion of women with obstructed labour who developed complications was 3.39 times that of those who did not have the condition. The mentioned above difference might be because of improper documentation, intervention done and birth preparedness and complication readiness advocated during pregnancy.

The study also found that adverse outcomes of obstructed labour on the fetus and newborn. Prenatal complication was related with parity, and prolonged duration of labour. Accordingly prenatal complication was more common in > 24 hour duration when compared to normal duration of labour and as parity increases the risk of fetal complication is more likely occurred.

It was similar with study conducted in Kenya, that identified prolonged labour was a particularly important factor for perinatal deaths occurring within the first 24 hr after hospital delivery, with perinatal death in almost 40%¹². Data from West Africa, Bangladesh, and Guatemala also confirm high perinatal mortality following prolonged labour¹⁸.

This study revealed that the perinatal mortality rate was 310 per 1000 total births (18/58) for women who had obstructed labour and 42 per 1000 total births (10/263) among women in the no obstructed group and overall 90/1000 prenatal death found. Considerably higher than the perinatal mortality rate reported in: Kenya which was 118 per 1000 births¹², 271/1000 Sudan⁶, Nigeria 300/1000⁴, but lower than 555/1000 Adigirat² and 661/1000 Jimma¹⁴. The discrepancy may be because of the ability of the institution to carry out help baby birth practice and availability of skilled personnel and equipment.

The study findings point to the effect of socio-demographic factors and obstetric factors in the causal chain of obstructed labour. Since Ethiopia government through the Health Sector Strategic Plans has been in a process of increasing availability and accessibility of emergency obstetric services in the whole country. One of the key interventions was training health workers work at all level to offer comprehensive emergency obstetric services. It was hoped that since health centers are in easy reach of most of the population they would help to manage most obstetric emergencies including OL.

Although there are no published studies on the current availability of emergency obstetric services, unreliable information indicates that most health institutions in Africa countries are not able to offer a full range of emergency obstetric services. This is evidenced by the MDG report,

which shows Africa's poor performance towards attaining the target of reducing maternal mortality by the year 2015¹⁹.

Current study provided baseline information on the individual socio-demographic and obstetric factors associated with obstructed labour and can be used by policy makers and implementers to improve on management of obstructed labour in west Wollega.

CHAPTER SEVEN

7.1 Conclusions

The study showed high prevalence of obstructed labour. Identified maternal morbidities were: PPH, uterine rupture, and sepsis and maternal mortality were identified in obstructed group. The prenatal mortality was also high in obstructed group as well. The main causes were CPD and malpresentation. Age of the women, parity and birth weight are strongly associated with obstructed labour and fetal and maternal outcome. High risk of obstructed labour was seen at extreme age, parity and birth weight. Poor perinatal outcome was also higher with obstructed group and most of obstructed labour was managed by caesarian section.

7.2 Recommendation

- Since, the burden of the disease contradicts the government slogan ‘single mother should not die during child birth’ so policy makers, and any charity that works on maternal and new born health has to participate in averting the problem within the community and the health system level.
- Birth preparedness and complication readiness also need to be addressed in the whole country.
- Age at pregnancy specially, less than 20 should be prevented by educating the community. Family planning and birth weight which needs attention according to the current study.
- Further longitudinal research in the management of obstructed labour within health facilities is advocated for and it also pertinent to study the community’s perception of prolonged/ obstructed labour and actions taken when it occurs.

Strength

- The strength of this study is that a proper predesigned questionnaires has been made for collecting data before commencement of data collection
- The validity of the questionnaires was checked by expertise.
- Data collectors were staff working at the selected hospital, and they were familiar with the hospital and obstetric terms.

Limitations

Some important variables which were significant in different literatures have been missed. For example maternal income and level of education were missed and incomplete recording.

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APPENDIX. II QUESTIONNAIRE

Data collection checklist from patients files, antenatal cards, maternity records and operating room registers

SECTION A: Socio-demographic Characteristics

A.1. Age of the mother in years

- A. 15-19
 - B. 20-24
 - C. 25-29
 - D. 30-34
 - E. ≥ 35
-

A.2. Marital status

- A. Single
 - B. Married
 - C. Divorced
 - D. Widowed
-

A.3. Residence/Kebele

- A. Rural
 - B. Urban
-

A. 4. Distance from home to Hospital

- A. 0 - 4 km
 - B. 5 - 9 km
 - C. 10-14 km
 - D. 15 - 19 km
 - E. 20 or more km
-

A.5. Distance to ANC

- A. 0 - 4 km
 - B. 5 - 9 km
 - C. 10-14 km
 - D. 15 - 19 km
 - E. 20 or more km
-

SECTION B: Obstetric history and other variables

B.1 Parity of the mother

- A. 0
 - B. 1
 - C. 2-4
 - D. ≥ 5
-

B.2. Is there OL

- A. 1, Yes
 - B. 2, No
-

B.3 Gestational age in weeks

- A. <37
 - B. 37-40
 - C. ≥ 41
-

B.4 Number of ANC visits

- A. 0
 - B. 1
 - C. 2
 - D. 3
 - E. ≥ 4
-

B.5 Mode of delivery

- A. SVD
 - B. Caesarean section
 - C. Destructive delivery
 - D. Instrumental delivery
-

B.6 Reason for CS procedure/intervention Q, B 5

- A. Fetal distress
 - B. Obstructed labour
 - C. Antepartum haemorrhage
 - D. Amniotic infection
 - E. Failed induction
-

F. Other

B.7. If obstructed labour, cause of obstruction

- A. Cephalo-pelvic disproportion
 - B. Malpresentation
 - C. Hydrocephalous
 - D. Myoma
 - E. Twins
 - F. Others
-

B.8. Apgar score for the baby 1 & 5

B.9. Baby weight in Kilograms

- A. <2.5kg
- B. 2.5 -4kg
- C. >4kg

B.10. Number of baby/ies

B. 11. Maternal complication

- 1. Yes
- 2. No

B.12. If yes what? Q, B 11

- 1. Puerperal sepsis
 - 2. Postpartum hemorrhage
 - 3. Ruptured uterus
 - 4. Maternal death
 - 5. Wound infection
 - 6. Urinary tract infection
 - 7. Abdominal distension
 - 8. Other
-

B.13. Fetal Condition during birth

- 1. Live birth
 - 2. Still birth
 - 3. IUFD
-

B. 14. Was there newborn complication

1. Yes

2. No

B.15. If yes what Complication among the live birth?

A. Asphyxia

B. Neonatal jaundice

C. Umbilical sepsis

D. Neonatal death

E. Other

B.16. Duration Labour (Hours)

1. 12-24

2. >24
