

**PREVALENCE AND FACTORS ASSOCIATED WITH OPERATIVE
ABDOMINAL DELIVERIES AMONG WOMEN IN SAINT LUKE
CATHOLIC HOSPITAL AND COLLEGE OF NURSING IN WOLISO
TOWN, SOUTHWEST ETHIOPIA**

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**Prevalence and Factors Associated With Operative Abdominal Deliveries
among Women in Saint Luke Catholic Hospital and College of Nursing in
Woliso Town, Southwest Ethiopia**

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ABSTRACT

Background: *Operative delivery is an important component of obstetrical care. Operative Abdominal delivery, a vital component of basic emergency obstetric care worldwide remains an integral part of the obstetrician's duties. However there is no information on this study subject. Thus, this study aims to review the Prevalence and Factors Associated With Operative Abdominal Delivery in St. Luke Hospital with a view to suggest evidence-based practices that will help to achieve the goals of safe motherhood.*

Objective: *To determine prevalence and factors associated with operative abdominal delivery among women in St. Luke Catholic Hospital, Woliso town, January 2013- December 2013 GC.*

Methods: *A one year Facility based cross-sectional study was conducted from September to Jun 2014 at St. Luke Catholic Hospital, Woliso town. Secondary data was collected using structured questioners by trained data collectors. Data was analyzed by using SPSS window version 20.0. All variables with p-value <0.05 was declared predictors of Operative Abdominal Delivery and was considered statistical significance association on multivariable regression model. The result of the study was presented in tables, graphs and manual thematic analysis.*

Results: *Out of the 463 study subjects, 330 were delivered with Operative Abdominal Delivery, giving an overall Operative Abdominal Delivery prevalence of 71.3% (95%CI: 67.3, 75.4%).The commonest indications of Operative Vaginal Delivery was prolonged 2nd stage of labour 74 (64.9%).A multivariable logistic regression analyses carried out to identify the independent effects of the different covariates on Operative Abdominal Delivery showed that lack of ANC follow-up (AOR=23.9 , 95%CI= 5.8,98.7),fully cervical dilatation,(AOR=0.03, 95%CI= 0.004,0.2),low station,(AOR=0.003,95%CI=0.001,0.02)and high birth weight baby,(AOR=18.4, 95%CI= 2.3,149.2), were independent predictors of Operative Abdominal Delivery.*

Conclusions and Recommendations: *according to the findings of this study, Operative Abdominal Delivery was highly prevalent in the study area. Lack of ANC follow-up and high birth weight baby were independently associated with increased odds of Operative Abdominal Delivery, while fully cervical dilatation and low station were independently associated with reduced odds of Operative Abdominal Delivery. Stakeholders should due attention to the indication of Operative Abdominal Delivery to avoid unnecessary cesarean. These highlights the need to strengthen interventions aimed at improving obstetric care and outcome.*

Key words: Operative Abdominal Delivery, ANC follow-up

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Table of contents

Contents

ABSTRACT.....	i
ACKNOWLEDGEMENT.....	ii
Table of contents.....	iii
List of figure	iv
ACRONYMS.....	v
INTRODUCTION	1
1.1, BACKGROUND	1
1.2 STATEMENT OF THE PROBLEM	3
CHAPTER- TWO.....	5
2: 1 LITERATUR REVIEW.....	5
Conceptual frame work.....	8
2.3. Significance of the study	9
CHAPTER—THREE	10
OBJECTIVE OF THE STUDY	10
3.1 General objectives.....	10
3.2 Specific objectives	10
CHAPTER FOUR.....	11
METHODS AND MATERIALS.....	11
4.1 Study area:.....	11
4.2 Study design and period	11
4.3 Population.....	11
4.4 Inclusion and Exclusion criteria	12

4.6 Study variables	12
4.7 Data collection procedures	13
4.8 Data quality management	13
4.9 Data processing and analysis	14
4.12; Plan for dissemination	16
CHAPTER FIVE	17
5 RESULTS	17
5.1 Socio-demographic characteristics of Study Participants	17
5.2 Obstetric characteristics of Study Participants	18
5.3 Fetal and maternal indications of operative delivery	19
5.4 Operative Deliveries	20
5.4 Factors Associated with Operative Abdominal Deliveries	21
CHAPTER SIX.....	23
6 DISCUSSION	23
CHAPTER SEVEN	26
7 CONCLUSIONS AND RECOMMENDATIONS	26
7.1 Conclusions	26
7.2 Recommendations	26
REFERENCES	27
ANNEX-1 QUESTIONNAIRE	30

List of figure

Figure 1: Conceptual frame work of the study-----8

ACRONYMS

ANC	Antenatal Care
APGAR	Appearance, Pulse rate, Grimace, Activity and Respiratory rate
APH	Ante-Partum Hemorrhage
CPD	Cephalopelvic Disproportion
C/S	Cesarean Section
IVD	Instrumental Vaginal Delivery
JUSH	Jimma University Specialized Hospital
LBW	Lower Birth Weight
LGA	Large for gestational age
LUSTCS	Lower Uterine Segment Cesarean Section
NICU	Neonatal Intensive Care Unite
OAD	Operative Abdominal Delivery
OVD	Operative Vaginal Delivery
PPH	Postpartum Hemorrhage
UNDP	United Nation Developmental Program
VVF	Viseco-Vaginal Fistula
WGA	Weight for Gestational Age
WHO	World Health Organization

INTRODUCTION

1.1, BACKGROUND

Operative delivery; - obstetric procedure in which active (operative) measures either abdominal (caesarean delivery) or vaginal are taken to accomplish deliveries [1]. Operative vaginal delivery, a vital component of basic emergency obstetric care worldwide remains an integral part of the obstetrician's duties, employing obstetric forceps and vacuum extractor to shorten the second stage of labor or operative procedures like symphysiotomy or destructive operations performed to achieve vaginal delivery in dystocias with or without a living fetus ^{[3], [4]}. The incidence of operative vaginal delivery in the United States (US) is currently estimated at around 5%, or approximately 1 in 20 deliveries [5]. In 1985 the World Health Organization (WHO) stated: "There is no justification for any region to have CS rates higher than 10-15%" [6]. Although operative vaginal delivery may be performed, as infrequently as in 1.5% of deliveries in some countries, it may be as high as 15% in other countries. In the United Kingdom, the rates of instrumental vaginal delivery range between 10% and 15%; these rates have remained fairly constant, although there has been a change in preference of instrument. In the 1980s, most instrumental vaginal deliveries were by forceps, but by 2000 this had decreased to under a half. Much of the decline has been attributed to increasing preference for vacuum extraction or caesarean section when difficult vaginal delivery is anticipated. [7]

Ethiopia is one of the less developed countries where maternal and perinatal morbidity and mortality rates are still very high. The maternal mortality ratio in Ethiopia is one of the highest in sub-Saharan African, 676/100,000 live births according to 2011 DHS Data and the perinatal mortality is also high [8]. Symphysiotomy and destructive operations are performed mainly in developing countries where obstetric care for many women is still rudimentary ^[9]. Cesarean section (CS) was introduced in clinical practice as a life saving procedure both for the mother and the baby. As other procedures of some complexity, its use follows the health care inequity prevalence of the world: underuse in low income settings, and adequate or even unnecessary use in middle and high income settings. [10]

Several studies have shown an inverse association between CS rates and maternal and infant mortality at population level in low income countries where large sectors of the population lack

access to basic obstetric care shown additional benefit for the mother or the baby, and some studies have even shown that high CS rates could be linked to negative consequences in maternal and child health. [11, 12,]. Different maternal and neonatal outcomes have been proposed by many reports. At the end of the project it is expected that the major contributing factors for complications of instrumental vaginal delivery was identified and evidence based recommendations was forwarded to address the problem. This study was therefore aimed to assess prevalence and factors associated with operative abdominal delivery among women in St. Luke Catholic Hospital and College Nursing, Wolliso town.

1.2 STATEMENT OF THE PROBLEM

Cesarean section was introduced in clinical practice as a life saving procedure both for the mother and the baby. As other procedures of some complexity, its use follows the health care in equality pattern of the world; underuse in low income settings and adequate or even unnecessary use in middle and high income settings [13, 14]. The world health organization (WHO) published guide lines in 1985 suggesting that cesarean section rates should not exceed 15%.but revised these in 1994, suggesting that rates should be between 5-15%. Debate around these numbers has centered on implications that rates under 5% suggest that perhaps the population does not have sufficient access to lifesaving care [15, 16].

Operative vaginal delivery significantly increase the risk of anal sphincter injury compared with spontaneous vaginal delivery particularly when an instrument application at high station. Persistent occipital posterior presentation and or macrosomia are associated. Risk of vaginal tears, postpartum hemorrhage and urinary retention appear to be increased compared with spontaneous vaginal delivery. There is no evidence that one type of forceps is less safe than another.[17]

Although many studies suggest higher rates of cephalhematomas, retinal hemorrhages and intracranial hemorrhages). But, other report after vacuum delivery showed Apgar score < 7 more common at 5 min (18). An important finding of the differ study was the significantly higher median Apgar score at 1 min after vacuum extraction. Interestingly, Apgar score ≤ 4 at 1 min was more common after forceps delivery, while there was no difference of Apgar score ≤ 7 at 5 min. additionally the duration of NICU hospitalization was significantly longer after forceps application, a finding not supported by others, [19]. The influence of instrumental deliveries on Apgar score at 1 and 5 min is not clear. Bofill et al showed no differences in the APGAR scores values at 1 and 5 min, independently of the instrument used [19]. The risks of vacuum but consider it as a safe alternative to forceps .Complication rates and neonatal morbidity differs substantially among published reports. Nevertheless, despite the fact that some authors highlight the risk of vacuum, the latter procedure is generally considered as a safe alternative to forceps or with comparable outcomes concerning the neonatal morbidity [20, 21].

From a medical college hospital in Haryana, reported 51 destructive operations done for obstructed labor with dead fetus over a 7 year period. Of these 68.62% women had craniotomies, 19.60% had decapitation, 7.84% had evisceration and 3.92% had cleidotomy. Cephalopelvic disproportion was the commonest indication. Two fetuses were grossly malformed, 49.05% weighed between 3 and 4 kg, and 9.43% were macrosomic. 49.09% women developed complications like atonic postpartum hemorrhage, vaginal and perineal tears, puerperal sepsis, and urinary infection. There was no maternal death. The authors rightly conclude that destructive operation is a good option even today.

The neonatal mortality and maternal mortality rate of Ethiopia is 37/1,000 live births and 676/100,000 mothers respectively. Based on 2011 EDHS report the institutional delivery rate of the country increases from 5 % in 2005 to 10 % in 2011 and ANC visit at least once become 34% .The cesarean section rate at national level is 0.6% with a range from 0 to 9.9% among regions [22 – 24] . Globally, the proportion of births attended by a skilled birth attendant in less developed countries increased from about 50% in 1990 to 60% in 2006. The global targets set at a special session of the United Nations General Assembly in 1990 were 80% by 2005, 85% by 2010 and 90% by 2015. This shows that the achievement was far below the target and there is a great need for further endeavor. To be specific, regions with the lowest proportions of skilled-birth attended deliveries were eastern Africa (34%), western Africa (41%) and south- central Asia (47%). It is also in these regions where the highest numbers of maternal and perinatal deaths occur [25].

In view of the importance of operative delivery in reducing maternal and peri natal morbidity and mortality in our country and the absence of complete data on prevalence, and factors associated with operative abdominal delivery at Hospital level in the country and makes me to study on this topic at this specific Hospital. Forceps and vacuum have been compared in many studies. Review of the literature suggests differential maternal and neonatal predictor, outcomes and complication rates among these methods.

CHAPTER- TWO

2: 1 LITERATUR REVIEW

The global rate of CS is estimated as 15%. Rates are higher in developed countries and in Latin America and the Caribbean. but lower in other developing countries .the average rate of CS deliveries is 3.5% in Africa, with highest rate in South Africa (15.4),Egypt(11.5%),Tunisia(8%),Chad(0.4%), Madagascar ,Niger and Ethiopia(0.6%)show the lowest CS rates in the world .Central republic, Burkina Faso, Mali and Nigeria all show CS rate below 2% [15] .

A study done in USA on operative vaginal procedures based on hospital- based study in 2007, out of 4,316,233 deliveries, 4.3% was by OVD. 3.5% was by vacuum delivery while 0.8% was by forceps delivery [26].

A retrospective cohort study of 393 clients done to determine whether an unengaged vertex in nulliparous women experiencing active phase labour-arrest increased the caesarean delivery risk. Of these, the presenting part was unengaged in 307, and engaged in 86. Compared with the engaged vertex, unengaged vertex significantly increased the risk of caesarean delivery (27% vrs 7%, $P < 0.001$, with the risk increased 5 fold [Odds ratio 4.94, confidence intervals 2.08, 11.76]. The risk remains significant after adjusting for confounding variables on multiple logistic regressions [adjusted OR 4.71, CI 1.99, 11.01]. (39% at -3 station, 39% at -2 station, and 33% at -1 station; $P = 0.577$). While an unengaged vertex significantly increased the Cs. rate [27].

The study in Brazil shows that, Time of admission and membrane status, cervical dilatation on admission was still one of the variables most strongly associated with type of delivery: women Admitted with active dilatation had an OR for cesarean of 8.5 (95%CI: 4.3-16.6) as compared To those admitted with fully dilatation. [28]

Study done at Yekatit 12 Hospital Addis Ababa on caesarean section and foetal outcome in five year period (September 1987 to August 1992) shows, among 11,657 consecutive deliveries at Yekatit 12 Hospital, Addis Ababa, Ethiopia, there were 645 CSs, an overall CS rate of 5.5%. Based on this study, the indications for caesarean section were cephalo pelvic disproportion

(31.2%), fetal distress (21.4%), previous CS (17.5%), placenta previa (6.6%), cord prolapse (4.2%) and others (19.1%). There were 99 prenatal deaths, a gross prenatal mortality rate of 153.5 per 1,000 live births, which was a significantly higher rate than the total rate for all deliveries (67.5 per 1,000 live births, $p < 0.01$). There were seven maternal deaths (case fatality rate of 1.1%). The very high per natal mortality in this study calls for a better and more effective antenatal service to improve fetal and maternal survival. This could be achieved by strengthening the referral system for pregnant women with obstructed and prolonged labour. [29]

Prospective study done 100 mothers who underwent cesarean section in Jimma Hospital between June 23, 1992 and September 24, 1993 were analyzed to determine the incidence, indicators and postoperative complications of cesarean delivery. During the study period there were 1236 deliveries of which 100 were cesarean deliveries giving the cesarean birth rate of 8%. The leading indication for cesarean section were Cephalopelvic disproportion (44%) , mal presentations and mal positions (21%) repeat cesarean section (16%) ante partum hemorrhage (8%) and fetal distress (6%), accounting for 95% of the indications of cesarean section . [30]

Hospital-based study was done at Tikur Anbessa Teaching Hospital between July 1991 and July 1992 GC and total of 3237 deliveries conducted during the study period, 318(10%) were cesarean section .The leading or the major indication for abdominal deliveries were: repeat cesarean section , 103(32.4%), cephalo-pelvic disproportion , 93(29.2%), placenta previa and abruption-placenta 40(12.6%) . Age ranged from 15-40 years, 58(18.2%) were women under the age of 20, and 182(57%) were between 20 and 30 years of age which is the safest periods to bear children. Eighty one (25%) of the mothers were primipara. 158(50%) were between para one and para four, 79(25%) were grand multipara. Seventy six (24%) of the cases were not registered for antenatal care in any health institutions. Two hundred and fifteen (67.6%) of the mothers had primary cesarean section. Fifty seven (18%) had elective cesarean section and 261(82%) were emergency cesarean section .On eight (2.5%) of the patient, obstetric hysterectomy was performed. There were five maternal deaths among the cesarean section cases. [31]

The study in France shows that, Among 209 women, a cesarean delivery was performed without labor in 94 women (45%). Gestational weight gain higher than 15 kg (39% compared with 23%; odds ratio [OR], 2.2; 95% confidence interval [CI], 1.1–4.5) and suspected macrosomia (79%

compared with 21%; OR, 13.1; 95% CI, 5.3–32.2) were independently associated with cesarean delivery without labor. [32]

A retrospective and comparative study of women delivered by cesarean section over two different 3-years periods was conducted at Olabisi on banjo University Teaching Hospital, Sagamu, Nigeria. The cesarean section rate (CSR) increased from 10.3% in 1989-1991 to 23.1% in 2000-2003. The CSR rose from 13.3% to 25.0% while the instrumental vaginal delivery (IVD) rate decreased significantly by 11.4% among the nulliparous women between the periods increase in CSR can be attributed mainly to reduction in IVD rate and alteration in the management of labour complications. [33]

The study in Oman shows that, Hospital-based case-control study was done. A total of 500 participants (250 cases who had cesarean section and 250 controls who had spontaneous vaginal delivery), were randomly selected from four hospitals associated with increased risk of cesarean section: a) advancing age (above the age of 25 years, OR=1.42; p=0.03), b) increased body mass index (obesity, OR=2.11; p=0.07), c) extremes of neonatal birth weight (neonates birth weight <2.5 kg, OR=5.2; neonates birth weight >4.0 kg, OR=7.3; p<0.001).[34]

The study in Australia shows, one year Retrospective of the 3641 primiparas 2116 (58%) had a spontaneous vaginal delivery, 1242 (34%) had an operative vaginal delivery (642 forceps, 600 vacuum), and 283 (8%) had an emergency cesarean section. the results of multivariable logistic regression analysis in which significant independent risk factors for emergency cesarean section were compared with those for spontaneous vaginal delivery. With regard to the perinatal variables, heavier infant birth weight 3000-3499, OR=1.92(1.24-2.99); p<0.004), 3500+ OR=4.16(2.66-6.51); p<0.004 and long labor were significant independent risk factors for Operative abdominal deliveries. [37]

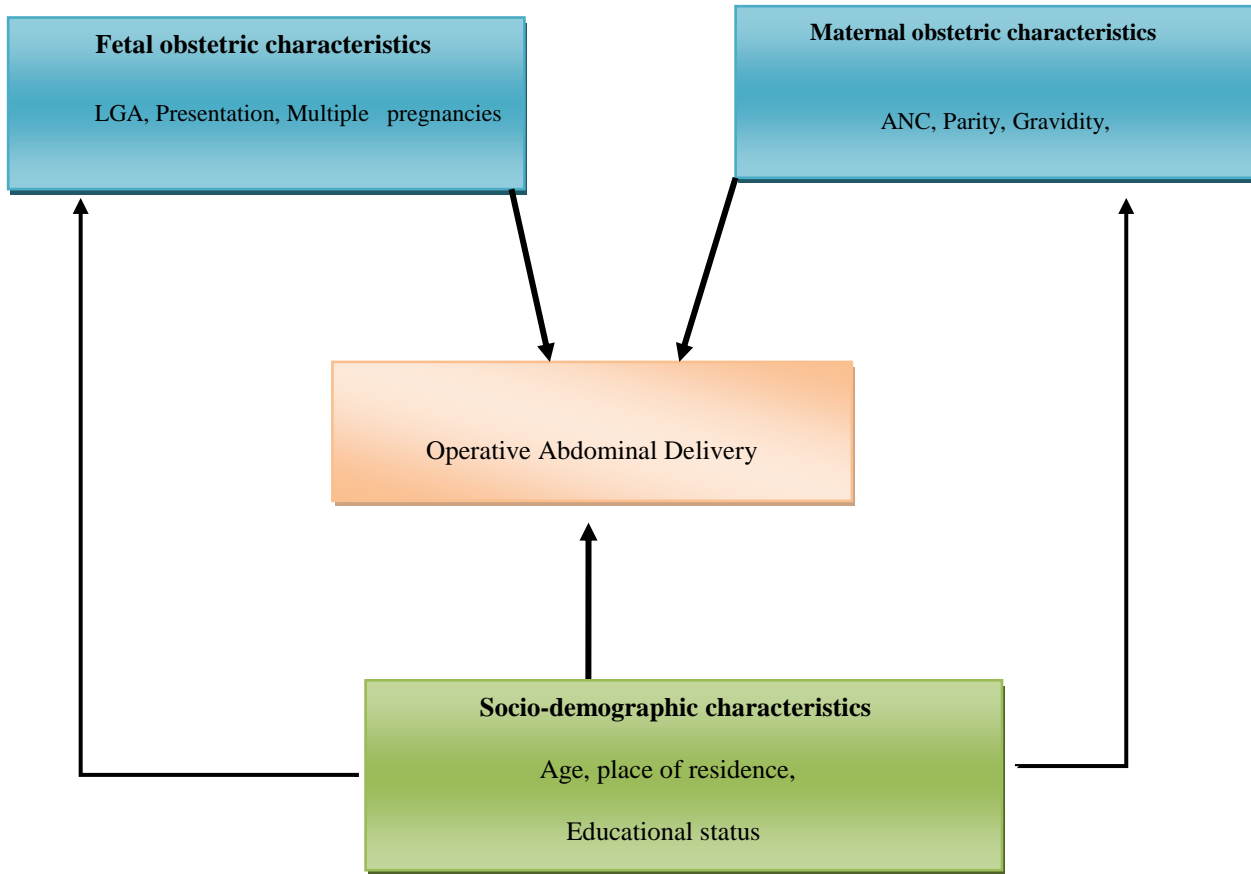


Figure 1: Conceptual framework for studying potential predictors of operative abdominal delivery among parturient women in Wolliso town, Jan.2013-Dec.2013

(Designed after literature review)

2.3. Significance of the study

In general maternal & neonatal morbidity and mortality in developing countries especially in Sub-Saharan country are very high. Ethiopia as a member of sub Saharan African country contributes a huge number in maternal & neonatal morbidity and mortality; to reduce this and to achieve the millennium development goal the country works hard in a multi directional way this includes the accessibility of compressive obstetric care in health institutions, in doing so operative deliveries should be performed in those health institutions for scientific reason based on the WHO recommendation rate ,additionally operative deliveries should improve and contribute in the reduction maternal & neonatal morbidity and mortality of the hospital as well as the country. Hospitals should have base line study in order to assess the progress through time for further study and intervention.

One possible explanation for poor health outcomes among women is non- availability and non-use of modern health services by a sizable proportion of women. Several studies have clearly demonstrated that utilization of existing maternal health services is very low in the country. Only a quarter of Ethiopian women received ANC and less than 10 percent of mothers received professionally assisted delivery [8].

Little is known about the current magnitude of use and factors influencing the use of these services in Woliso particularly, in St. Luke Catholic Hospital and College of Nursing. This study, therefore, aimed at filling the gaps, to make relevant recommendations, by attempting to explore the factors that are related with operative abdominal delivery in St. Luke Catholic Hospital and College of Nursing, Woliso town.

CHAPTER—THREE

OBJECTIVE OF THE STUDY

3.1 General objectives

To determine prevalence and factors associated with operative abdominal delivery among women in St. Luke Catholic Hospital and College Nursing, Wolliso town, January 2013-December 2013 GC.

3.2 Specific objectives

1. To determine the prevalence of operative abdominal delivery among women.
2. To describe the common maternal and fetal indications and complications of operative delivery among women.
3. To identify factors associated with operative abdominal delivery among women.

CHAPTER FOUR

METHODS AND MATERIALS

4.1 Study area:

The study was conducted in St.Luke Catholic Hospital and College of Nursing from September to Jun 2014 GC. The hospital is situated in Woliso town, the capital of Southwest Shoa Zone Oromia Regional state; it is 114 km away from Addis Ababa.

The Hospital is serving for a total population of over 1.2 million peoples of Woliso town, Woliso, Goro, Wonchi woredas and Wolkite town. Currently, in St.Luke Catholic Hospital and College of Nursing. There are currently two hundred beds in use for maternity twenty four beds and gynecology fourteen beds. It also has 4 delivery couches. Total Hospital staffs are three hundred sixty nine. Out of them one gynecologist, two surgeon and nine midwifery's.

4.2 Study design and period

Facility based a one year cross-sectional study design was conducted from September to Jun 2014 GC. A standard data extraction format was used to collect patient information from Delivery registration books, operation registration books and individual charts.

4.3 Population

4.3.1 Source population

All mothers who gave birth after twenty eight weeks of gestation in St. Luke Catholic Hospital and College of Nursing from January 01/2013- December 31/2013 GC.

4.3.2 Study population

All mothers admitted and managed with operative deliveries within the 1st 24 hrs. In St. Luke Catholic Hospital and College of Nursing within the study period.

4.4 Inclusion and Exclusion criteria

Inclusion criteria: All post operative mothers with-in the 1st 24hrs after getting operation either abdominal or vaginal to deliver a fetus after 28 wks of gestational age for different indication; maternal distress, exhaustion, delay in 2nd. Stage, fetal compromise, malposition.

Exclusion criteria: All mothers who had no full patient profiles.

4.5 Sample size

All mothers who was managed by operative delivery within the 1st. 24 hrs. In St. Luke Catholic Hospital and College of Nursing was included in the study.

4.6 Study variables

4.6.1 Dependent variables

- Operative abdominal delivery

4.6.2 Independent variables

- Maternal factors of Operative abdominal delivery
- Fetal factors of Operative abdominal delivery

Obstetric factor:

- Gravidity
- Parity
- ANC follows up
- Gestational age
- Fetal lie
- FHB
- Weight of new born

- Cervical dilatation
- Station

Socio-demographic or back ground variables:

- Age
- Marital status
- Educational status
- Ethnicity
- Religion

4.7 Data collection procedures

Data was collected using structured check list. The check list was prepared in English and data was collected from medical record books. Two supervisors and five data collectors will participate in the data collection process. One day intensive training was given to the data collectors and supervisors. The data collection was underwent from April 22-30/2014 GC.

Before the actual data collection, the questionnaire was tested on 5% of the total study that delivered by Operative delivery during study period.

4.8 Data quality management

The questionnaire was pre-tested on pilot sample, if necessary amendment was made to ensure their accuracy and consistency prior to actual collection of data. Data collectors was trained for one days on objective of the study, how to gather the appropriate information, procedures of data collection techniques and the whole contents and subject matter of the questionnaire. Day to day supervision was carried out during the whole period of data collection by the supervisor. At the end of each day, the questionnaire was reviewed and cross checked for completeness, accuracy and consistency by the investigator and corrective discussion was under taken with all the data collectors. Data was cleaned and edited before it is entered in to the SPSS version 20.0 computer program software.

4.9 Data processing and analysis

Data was first checked manually for completeness then coded and entered using epidata before exported to SPSS version 20.0 for analysis. Univariate (frequency, tables and graphs) and bivariate analysis was conducted using percentages crude odds ratios and 95% CI. Multivariable analysis was also done to control for possible confounding variables and to identify possible predictors of operative abdominal delivery. All Variables with p-value <0.25 was entered into multivariable logistic regression and all variables with p-value <0.05 was declared predictors of operative abdominal delivery and was considered statistical significance association on multivariable regression model. Finally, the data was described and presented using tables and charts.

4.10 Ethical consideration

Letter of ethical clearance was obtained from Research Ethical Committee of Jimma University and letter of permission was obtained from St. Luke Catholic Hospital and College of Nursing. Additionally confidentiality and anonymity of the record information was kept.

4.11 Operational term definitions

1. Operative delivery - obstetric procedure in which active (operative) measures either abdominal (caesarean delivery, Cesarean hysterectomy) or vaginal are taken to accomplish deliveries [1].
2. Cesarean hysterectomy- Hysterectomy after cesarean delivery is an emergency procedure that occurs in less of cesarean sections. [5]
3. A Caesarean section (also C-section, Cesarean section) is a surgical procedure in which one or more incisions are made through a mother's abdomen (laparotomy) and uterus (hysterotomy) to deliver one or more live babies, or rarely, to remove a dead fetus [9].
4. Elective cesarean section - operation that done at a pre-selected time before onset of labour, usually at completed 39 weeks.
5. Emergency cesarean section – the operation is done after onset of labour
6. Primary cesarean section – cesarean section done for the first time

7. Repeat cesarean section – cesarean section done in presence of previous c/s
8. Operative vaginal delivery – applying direct traction on the fetal skull with forceps or vacuum.
9. Destructive delivery- operation that reducing the size of the head, shoulder girdle or trunk of the dead fetus to allow its vaginal delivery
10. Parity - number of births (both life birth infants & stillbirth) of at least 28 weeks of gestational age [36].

Para one – a single delivery experience.

Multipara- deliveries experience between two-four.

Grandmultipara- delivery experience greater than or equal to five.

11. Gestational age- the duration of the pregnancy since the last menstrual period [36].

Preterm- <37 weeks

Term- 37-42 weeks

Post term- >42 weeks

12. Birth weight in grams. [1]

Low - 1500-2499 gms.

Normal -2500-3999 gms.

High- 4000 gms.

13. Station - degree of engagement of the presenting part, measured as distance in centimeters or between the fetus and the ischial spines. [5]

High- this situation where the head is 2/5th or more palpable abdominally and the presenting part is above the level of the ischial spines (>0).

Low -leading point of the skull (not caput) is below the level of the ischial spines (0) or more and not on the pelvic floor.

14. Arrest Disorders- (1) secondary arrest of dilatation, with no progressive cervical dilatation in the active phase of labor for 2 hours or more; and (2) arrest of descent, with descent failing to progress for 1 hour or more.[1]

15. Cephalopelvic Disproportion (CPD) - is failure of the fetus to pass safely through the birth canal because the fetal head being relatively larger than the maternal pelvic size. [36]

16. Prolonged 2⁰ stage: the 2⁰ stage of labor lasting more than 1 hour in multipara
And 2 hours in nullipara. [36]

17. Cervical dilatation status. [5]

Active stage- In general, requires ≥ 80 % effacement and ≥ 4 cm dilation of the cervix.

Full dilatation/ second stage -is from full dilation (10 cm) until delivery of the baby.

18. APGAR- a score for the new born based on appearance, heart rate, grimace, activity (movement) and response. [36]

19. Fetal Distress (NRFHRP) - abnormal fetal heart rate pattern with Tachycardia of > 160 beats / min. and Bradycardia of < 100 beats / min.

4.12; Plan for dissemination

Based on the finding conclusion & recommendation was given, then the result of the study was submitted to the college of public health & medical science & post graduate office of Jimma University, to St. Luke Catholic Hospital and College of Nursing. & other responsible bodies. Also, the result was presented during thesis defense, meeting & workshop. Moreover, effort was done to publish the finding in reputable journals.

CHAPTER FIVE

5 RESULTS

5.1 Socio-demographic characteristics of Study Participants

Of the 472 parous women records included in the study, analysis was based on 463 subjects giving a response rate of 98.1%. The mean (SD) age was 26.7 (4.9). years with age groups ≤ 19 , 20-29, 30-34 and ≥ 35 years constitute 17(3.7%), 302(65.2%), 97(21.0%) and 47(10.2%) of the participants, respectively. the study participants were from rural area, married and Oromo in Ethnicity accounting for 281(60.7%) ,456(98.5%) and 265(57.2%), respectively (**Table 1**).

Table 1: Socio-demographic characteristics of mothers from St. Luke Catholic Hospital Obstetric Ward, Woliso. (n=463)

Variables	Frequency (%)
Age (Years)	
≤ 19	17(3.7)
20-29	302(65.2)
30-34	97(21.0)
≥ 35	47(10.2)
Place of residence	
Urban	182(39.3)
Rural	281(60.7)
Ethnicity	
Oromo	265(57.2)
Amhara	107(23.1)
Gurage	88(19.0)
Others ¹	3(0.6)
Religion	
Orthodox	200(43.2)
Muslim	118(25.5)
Protestant	140(30.2)
Others ²	5(1.1)
Marital status	
Married	456(98.5)
Single	7(1.5)

¹ Tigre, Wolaita

² Catholic, Adventist

5.2 Obstetric characteristics of Study Participants

Concerning obstetric characteristics of study Participants, more than half of the study subjects 248(53.6) had no ANC follow-up and also fully cervical dilatation 246(53.1%). Regarding their parous status, 120(25.9%), 219(47.3%) and 124(26.8%) of women had one, two to four and five and above previous any type of deliveries, respectively. 424(91.6%) of them were term by their gestational age. specific to the birth weight below the normal range, normal range and macrosomia were accounts 49 (10.6%), 224(48.4%) and 190 (41.0%) respectively. Two in five of mothers had given birth of a high birth weight baby (**Table 2**).

Table 2: Obstetric characteristics from St. Luke Catholic Hospital Obstetric Ward, Woliso. (n=463)

Variables	Frequency (%)
Parity	
I	120(25.9)
II-IV	219(47.3)
≥V	124(26.8)
ANC follow-up	
Yes	215(46.4)
No	248(53.6)
Gestational age	
Preterm	17(3.7)
Term	424(91.6)
Post term	22(4.8)
Cervical dilatation	
Active	217(46.9)
Fully	246(53.1)
Station	
Low	142(30.7)
High	321(69.3)
Birth weight (grams)	
1500-2499	49(10.6)
2500-3999	224(48.4)
≥4000	190(41.0)

5.3 Fetal and maternal indications of operative delivery

Concerning the indications of operative vaginal deliveries, the commonest indications for forceps, vacuum, and destructive deliveries were fetal distress 3(50.0%), prolonged 2nd stage of labour 74 (64.9%), and obstructed labour 12(85.7%), respectively. The frequently encountered indications for operative abdominal deliveries were fetopelvic disproportion 124(49.6%), fetal distress, 45(33.6%) and uncontrollable post partum bleeding 5(62.5%), respectively (**Table 3**).

Table 3: Fetal and maternal indications of operative delivery, from St. Luke Catholic Hospital Obstetric Ward, Woliso. (n=463)

Variables	Frequency (%)
Indication of forceps delivery (=6)	
Prolonged 2 nd stage of labour	1(16.7)
Fetal distress(NRFHRP)	3(50.0)
Shortening of 2 nd stage for mother	2(33.3)
Indication of vacuum delivery(=114)	
Fetal distress	34(29.8)
Prolonged 2 nd stage of labour	74(64.9)
Shortening of 2 nd stage for mother	6(5.3)
Indication of destructive delivery(=14)	
Cephalopelvic Disproportion for Demise	2(14.3)
Obstructed labour	12(85.7)
Maternal indication of cesarean delivery(=250)	
Cephalopelvic Disproportion	124(49.6)
Obstructed labour	26(10.4)
AntePartumHeamorrhage	25(10.0)
Abnormal uterine action	7(2.8)
Previous uterine scar (myoma)	1(0.4)
Previous repair of (VVF)	2(0.8)
Two times previous C/s scar	42(16.8)
Others ¹	23(9.2)
Fetal indication for cesarean delivery(=134)	
Malpresentation	43(32.1)
Fetal distress(NRFHRP)	45(33.6)
Prolapsed pulsating cord	10(7.5)
Others ²	36(26.9)
Indication of cesarean hysterectomy(=8)	
Uncontrollable PPH	5(62.5)
Placental adherent	3(37.5)

¹ Arrest disorder, twin pregnancy, preeclampsia/eclampsia, Oligohydramnios

² Big babies, Hydrocephalus

5.4 Operative Deliveries

Out of the 463 study subjects, 330 were delivered with operative abdominal delivery giving an overall operative abdominal prevalence of 71.3% (95%CI: 67.3, 75.4%) and operative vaginal deliveries (28.7%). among operative vaginal deliveries 114(24.6%) vacuum, 6(1.3%) forceps and 14 (3.02%) were destructive deliveries. The prevalence rates of cesarean delivery, cesarean hysterectomy and Laparotomy for uterine rupture were 95.2%, 2.1% and 2.7%, respectively (**Figure 2**). Moreover, 133(28.7%) of women delivered via operative vaginal delivery, of these, 114 (85.7%), 14(10.5%) and 5(3.8%) of women were delivered by vacuum, destructive and forceps deliveries, respectively (**Figure 3**).

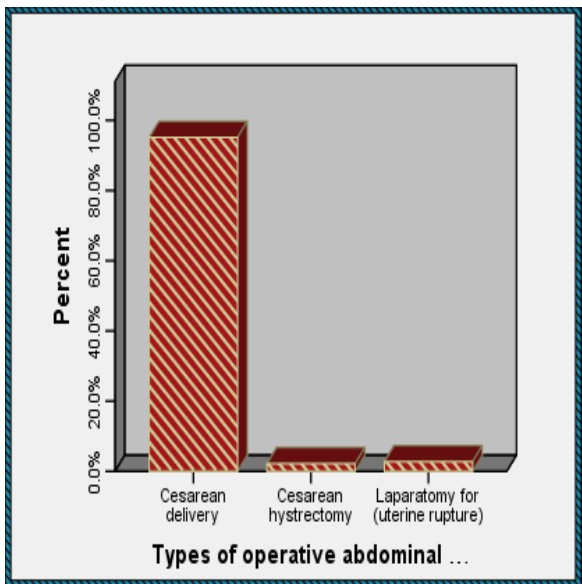


Figure 2: Prevalence of operative abdominal deliveries of mothers from Wolliso St. Luke Catholic Hospital Obstetric Ward (n=330).

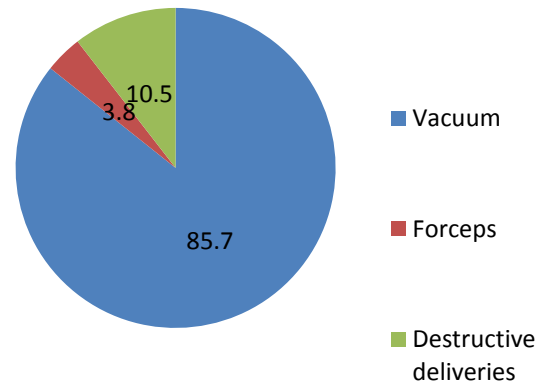


Figure 3: Prevalence of operative vaginal deliveries of mothers from Wolliso St. Luke Catholic Hospital Obstetric Ward (n=133),

5.4 Factors Associated with Operative Abdominal Deliveries

Results from bivariate analyses of each covariate on operative abdominal delivery are shown in Table 4. Lack of ANC follow-up (COR=9.6,95%CI= 5.8,15.8), multi-parity(COR= 2.1 ,95%CI= 1.3, 3.3), grand multi-parity (COR=6.7,95%CI=3.4, 12.9), fully cervical dilatation (COR=0.008,95%CI=0.002, 0.034), low station(COR=0.002, 95%CI=0.001,0.005), and high birth weight baby (COR =28.0,95%CI=12.1,65.0) were associated with operative abdominal delivery (**Table 4**).

Table 4: Factors associated with operative abdominal delivery on bivariate analysis, mothers from St. Luke Catholic Hospital Obstetric Ward, Woliso. (n=463)

Variables	Total	Abdominal operative Delivery (%)	COR (95% CI)
Age (Years)			
≤19	17	14(82.4)	1.3(0.3,5.3)
20-29	302	214(70.9)	0.7(0.3,1.4)
30-34	97	65(67.0)	0.5(0.2,1.2)
≥35	47	37(78.7)	1
Place of residence			
Urban	182	128(70.3)	1
Rural	281	202(71.9)	1.1(0.7,1.6)
Parity			
I	120	65(54.2)	1
II-IV	219	155(70.8)	2.1(1.3,3.3)**
≥V	124	110(88.7)	6.7(3.4,12.9)*
ANC follow-up			
Yes	215	106(49.3)	1
No	248	224(90.3)	9.6(5.8,15.8)*
Gestational age			
Preterm	17	16(94.1)	6.0(0.7,55.7)
Term	424	298(70.3)	0.9(0.3,2.3)
Post term	22	16(72.7)	1
Cervical dilatation			
Active	217	215(99.1)	1
Fully	246	115(46.7)	0.008(0.002,0.034)*
Station			
Low	142	14(9.9)	0.002(0.001,0.005)*
High	321	316(98.4)	1
Birth weight in (grams.)			
1500-2499	49	18(36.7)	1
2500-3999	224	133(59.4)	2.5(1.3,4.8)**
≥4000	190	179(94.2)	28.0(12.1,65.0)*

*Significant at $P<0.001$, **significant at $P<0.05$

A multivariable logistic regression analyses carried out to identify the independent effects of the different covariates on operative abdominal delivery showed that lack of ANC follow-up (AOR=23.9 , 95%CI= 5.8,98.7), fully cervical dilatation,(AOR=0.03, 95%CI= 0.004,0.2), low station,(AOR=0.003, 95%CI= 0.001,0.02), and high birth weight baby,(AOR=18.4, 95%CI= 2.3,149.2), were independent predictors of operative abdominal delivery (**Table 5**).

Table 5: Factors associated with operative abdominal delivery on multivariable logistic regression model, mothers from St. Luke Catholic Hospital Obstetric Ward, Woliso. (n=463)

Variables	Total	Abdominal operative delivery (%)	COR (95% CI)	AOR (95% CI)
ANC follow-up				
Yes	215	106(49.3)	1	1
No	248	224(90.3)	9.6(5.8,15.8)*	23.9(5.8,98.7)*
Cervical dilatation				
Active	217	215(99.1)	1	1
Fully	246	115(46.7)	0.008(0.002, 0.03)*	0.03(0.004,0.2)**
Station				
Low	142	14(9.9)	0.002(0 .001, 0.005)*	0.003(0.001,0.02)*
High	321	316(98.4)	1	1
Birth weight (in grams.)				
1500-2499	49	18(36.7)	1	1
2500-3999	224	133(59.4)	2.5(1.3, 4.8)**	
≥4000	190	179(94.2)	28.0(12.1, 65.0)*	18.4(2.3,149.2)**

*Significant at $P<0.001$, ** significant at $P<0.05$

CHAPTER SIX

6 DISCUSSION

Operative delivery is defined as any procedure undertaken to facilitate the delivery of the fetus. The success of such a procedure depends on the skill and or the experience of the operator. The timing of such an intervention must be in the interest of both the mother and the baby. This study tried to determine prevalence, indications of operative deliveries and factors associated with operative abdominal delivery among mothers who gave birth at St. Luke Catholic Hospital.

In this study the rate of application of vacuum and forceps were 24.6% and 1.3% respectively. Comparing this study finding with the research done in Nigeria, 2000- 2003, it is almost similar finding that is instrumental vaginal delivery was 21.4%. [33]

This study showed a high prevalence of operative deliveries among child bearing age women of Woliso town, south west Ethiopia.

In this study, the prevalence rate of operative abdominal delivery was 71.3% (95%CI: 67.3, 75.4%). This finding is inconsistent with a study conducted in Jimma University Specialized Hospital, which reported a prevalence rate of 8% and the cesarean section rate at national level is 0.6% with a range from 0 to 9.9% among regions [28, 30, 31]. This variation across the studies might be due to study setting and involvement of Jimma University researchers and clinicians in the area preventive activities and that contributed to the low prevalence of operative abdominal deliveries in the previous study area. As mentioned below the most common indication of cesarean section in this study is obstructed labour as compared to the study done at Black lion teaching hospital, this might be due to mother coming from remote area and lack of transportation.

The highest indication of operative vaginal deliveries in this study is prolonged 2nd stage of labour which is 64.9% followed by obstructed labour 85.7%.

The major indications of cesarean section were Cephal pelvic disproportion 49.6%, fetal distress, 33.6% and uncontrollable post partum bleeding 62.5% as compared to Tikur Ambesa teaching hospital study which is previous c/s 32.4%, Cephal pelvic disproportion 29.2% and 12.6% for AntePartumHeamorrhage. [29, 31]

This study indicates that of women who gave birth by cesarean section were prime para (25.9%), this can be due to the 1st and 3rd most indications for c/s were Cephalo pelvic disproportion and uncontrollable post partum bleeding which are more common in untested pelvis of prime's. From operative abdominal deliveries those laparotomy were done for uterine rupture all of them were multiy para that might be due to higher incidence of uterine rupture in this parity.

Nearly half of, (53.6%) the participants didn't attend ANC service. But, this is better than findings from other studies. Our study also showed that the probability of having operative abdominal delivery was twenty four times more likely in women who never had ANC follow-up, when compared with women who had ANC follow-up. This finding is consistent with a study conducted in Rio de Janerio, Brazil, which reported that absence of ANC follow-up was significant association with operative abdominal delivery .[8, 28].

In this study, parturiant women who had fully cervical dilatation were 97% less likely to be delivered by operative abdominal delivery, when compared with parturient women who had at active stage of cervical dilatation. This is in line with a study conducted in Rio de Janerio, Brazil, which reported that active stage of cervical dilatation was associated with increased risks of operative abdominal delivery [28].

In this study, parturiant women who had low station were 99.7% less likely to be delivered by operative abdominal delivery, when compared with parturient women who had at high station. This is in agreement with data from parturient women of Australia, which showed that low station of fetal head engagement was significant association with reduced odds of operative abdominal delivery. Other study showed, Compared with the engaged vertex, unengaged vertex significantly increased the risk of caesarean delivery with the risk increased 5 fold .39% at -3 station, 39% at -2 station, and 33% at -1 station. [27, 37]

In our study, parturient women who had a high birth weight baby were eighteen times as likely to be delivered by operative abdominal delivery, when compared with parturient women who had a low birth weight baby. This is in agreement with data from parturient women of Oman, extremes of neonatal birth weight. This is in line with a study conducted in Western Australia the results of

multivariable logistic regression analysis in which independently significant risk factors for emergency cesarean section. [34, 37]

Our study findings are based on a study conducted in a multicentre setting comprising parturient women from both urban and rural areas as well from different socio-cultural backgrounds on a year round collected data permits comparison with similar settings nationally and internationally and as likely to be representative of study population.

This findings are based on a cross-sectional study so that causal inferences cannot be made from the associations reported here. The use of secondary data affected the accuracy of some of the measurements.

CHAPTER SEVEN

7 CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

According to the findings of this study, operative abdominal delivery was highly prevalent in the study area. The major indications of operative abdominal were Cephal pelvic disproportion, fetal distress and uncontrollable post partum bleeding.

The most common indication for instrumental vaginal delivery was prolonged 2nd stage of labour which is followed by obstructed labour.

Lack of ANC follow-up and high birth weight baby were independently associated with increased odds of operative abdominal delivery, while fully cervical dilatation and low station were independently associated with reduced odds of operative abdominal delivery.

7.2 Recommendations

To: Federal Ministry of Health and Partners, Oromia Regional Health Beureau, West Shoa Zone Health Office, Wolliso Town Health Office and St.Luke Catholic Hospital and College Nursing and Mid-Wifery.

- Since the C/S rate is higher than the upper limit of WHO cut of line, and should due attention to the indication of cesarean delivery to avoid unnecessary C/s.
- To strengthen ANC initiation and follow-up
- To address the problem of high birth weight baby
- To strengthen the obstetric care given to parturient women with emphasis on clinical evaluation of cervical dilatation and station.
- Future research using rigorous prospective designs to identify determinants of operative abdominal delivery

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ANNEX-1 QUESTIONNAIRE

Questionnaire format: To be filled for those who had operative delivery in St. Luke Catholic Hospital and College of Nursing.

I am serving as a data collector for a the study done on prevalence, factors associated with operative abdominal delivery conducted in St. Luke Catholic Hospital and College of Nursing by MSC in integrated emergency surgery student of Jimma university: This is to collect data from patient records in St. Luke Catholic Hospital and College of Nursing A one year Facility based cross-sectional retrospective study.

Data collector name and signature _____

Instruction: Please encircle the letter corresponding to the correct record or write the correct record on the space provided

I. Identification

1. Questionnaire I.D: _____

2. Card No. (I.P) _____

II. Socio demographic characteristics

1. Age in years. _____

2. Marital status _____

1. Married

3. Widowed

2. Single

4. Divorced

3. Address _____

1. Urban

2. Rural

4. Occupational status

1. House wife

3. NGO

5. Merchant

2. Government employee

4. Student

6. Daily laborer 7. Others (specify) _____

5. Educational status (Grade completed)

1. Illiterate

4. 7-12th grade

2. Read and Write

5. College or university

3. 1-6TH grade

6. Ethnicity

1. Oromo

3. Gurage

4. Tigre

2. Amhara

5. Others (specify) _____

7. Religion

1. Orthodox

2. Muslim

3. Protestant

4. Catholic

5. Other (specific) _____

III. Obstetric variables

1. Parity_____ (in number)

2. Does she have ANC follow up

0. NO

1. Yes

3. Gestational age (with LNMP, physical examination ,or U/S)

1. Preterm

2. Term

3. Post term

4. Mode/type of operative delivery

1. Vaginal

2. Abdominal (**go to question NO. 16**)

5. Type of operative vaginal Delivery

1. Vacuum (**go to question 6**)

2. Forceps (**go to question 9**)

3. Destructive deliveries (**go to question 13**)

6. Indication of vacuum delivery

1. Fetal distress (> 8cm, full dilated)

2. Prolonged 2nd stage labour

3. Short 2nd stage labour for maternal indication

4. Other (specify) _____

7. Maternal complication after vacuum delivery

1. Cervical laceration

4. 3rd and 4th degree tears

2. Sever vaginal laceration

5. Other specify _____

3. Vaginal hematoma

8. Neonatal complication after vacuum delivery

1. Fetal scalp laceration and bruising

4. Intracranial hemorrhage

2. Cephalo hematoma

5. Other specify _____

3. Subaponeurotic hemorrhage

6. Skull fracture

9. Type of forceps delivery _____

1. Out let forceps

2. Low let forceps

3. Mid forceps

4. Other (specify) _____

10. Indication of forceps delivery

1. Prolonged 2nd stage of labour

2. Fetal distress (NRFHRP)

3. shortening of 2nd stage for maternal stage

4. For after-coming head breech

11. Maternal complication for forceps delivery

1. Cervical tear

3. 3rd degree and 4th degree tear

2. Rupture of lower uterine segment

4. Other (specify) _____

12. Neonatal complication for forceps delivery

1. Fetal scalp laceration and bruising

4. Intracranial hemorrhage

2. Skull fracture

5. Facial nerve palsies

3. Cephalic hematoma

6. Subaponeurotic hemorrhage

13. Types of destructive delivery

1. Craniotomy

2. Evisceration

3. Decapitation

4. Cleidotomy

14. Indication of destructive delivery

1. Hydrocephalus

2. Retained after coming head of the dead fetus

3. CPD dead fetus

4. Obstructed labour

5. Other (specify) _____

15. Maternal complication after destructive delivery

- 1. Uterine rupture.
- 2. Injury of the genital tract.
- 3. Other (specify) _____

16. Types of operative abdominal delivery

- 1. Cesarean delivery (emergencies, elective)
- 2. Cesarean hysterectomy
- 3. Laparotomy for (uterine rupture)

17. Maternal indication of cesarean delivery

- 1. CPD
- 2. Obstructed labour
- 3. APH (ante partum hemorrhage)
- 4. Abnormal uterine action (failed induction)
- 5. Previous uterine scar (like myoma)
- 6. Previous repair of (vesico vaginal fistula)
- 7. Previous C/S
- 8. Other (specify) _____

18. Fetal indication for cesarean delivery

- 1. Malpresentation
- 2. Fetal distress (NRF HRP)
- 3. Prolapsed pulsating cord
- 4. Post-mortem c/s
- 5. Other (specify) _____

19. Indication of cesarean hysterectomy

- 1. Uncontrollable postpartum hemorrhage
- 2. Placental adherence
- 3. Sever uterine infection
- 4. Other (specify) _____

Fetal outcome for all operative deliveries

20. Alive

- 1. Normal
 - i. APGAR score - at 1st min. _____ at 5th min. _____
 - ii. APGAR score - at 1st min. _____ at 5th min. _____
- 2. Congenital anomalies _____

21. Stillbirth (fetal death) _____

22. Birth weight (gram) _____

23. Maternal complication with in the first 24hr. after operative deliveries

1. alive with no disability

2. alive with disability

I. Infection

II. Foot drop

III. Fistula

IV. Other specify _____

3. Death

Risk factors of operative delivery

24. If pregnancy is twin fetal lie for TB is?

1. Longitudinal

2. Oblique

3. Transverse

4. Not stated

25. What is the status of cervical dilatation during decision (in cm?) _____

26. What is the station during decision (in number)? _____

DECLARATION

I, the undersigned, declare that this thesis is my original work, has not been presented for a degree in this or any other university and that all sources of materials used for the thesis have been fully acknowledged.

Name: _____

Signature: _____

Name of the institution: _____

Date of submission: _____

This thesis has been submitted for examination with my approval as University advisor

Name and Signature of the first advisor _____

Name and Signature of the second advisor _____

