CAESAREAN SECTION AND ASSOCIATED FACTORS AMONG WOMEN DELIVERED AT JIMMA UNIVERSITY SPECIALIZED HOSPITAL, SOUTH WEST ETHIOPIA 2016.

BY

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Abstract

Background: - Escalating caesarean section rate is a major public health problem because caesarean section increases the health risk for mothers and babies as well as the cost of health care compared with normal deliveries. Increasing evidence shows that women undergoing caesareans have a less satisfactory childbirth experience than those delivering vaginally and are more prone to postnatal depression, bonding difficulties and unsuccessful breastfeeding.

Objective: - To assess prevalence of caesarean section and associated factors among women gave birth at Jimma University specialized hospital, South West Ethiopia.

Method: Heath facility based cross sectional study design, which involved both quantitative and qualitative methods of data collection, conducted from March 25 to April 12, 2016. Consecutive sampling technique used to select 250 subjects. Data collected by using structured questionnaires, chart review and key informant in-depth interview. The data analyzed using simple and multivariable logistic regression and statistical associations measured using odd ratio and 95%CI. Qualitative result presented in narratives form with quantitative data.

Result: The prevalence of caesarean section was 45.2%. According to this finding, factors significantly associated with caesarean section were mal presentation (AOR: 3.469, 95%CI: 1.142, 10.540), fetal distress (AOR: 4.398, 95% CI: 1.398, 13.837), obstructed labor (AOR: 4.003, 95%CI: 1.089, 14.717). Coming from distance of >1 hour from the health facility (AOR: 3.508, 95%CI: 1.125, 10.945) and being getting an income of 4000Ethiopian Birr and above monthly income (AOR: 4.205, 95%CI: 1.077, 16.421) were significantly associated with caesarean section.

Conclusions: Prevalence of caesarean section at Jimma University Specialized Hospital is too higher than World Health Organization recommendations for caesarean section. Most of these factors are manageable by early detection and prevention of obstetric complications and staffing health facilities by trained health care providers for the community at prenatal period.

Recommendations: Jimma University Specialized Hospital obstetrics and gynecology department should act according to World Health Organization recommendations to reduce current caesarean rate. They should use partograph for labor and delivery monitoring.

Key Words: caesarean section, associated factors, Jimma University specialized Hospital

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Acronym and Abbreviations

ANC: ---Antenatal Care

APH: ----Antepartum Hemorrhage

CPD: ----Cephalo Pelvic Disproportion

CS: ----Caesarean Section

EMDHS: ----Ethiopian Mini Demographic and Health Survey

JUSH: ----Jimma University Specialized Hospital

PROM: ----Premature Rupture of Membrane

SNNPR: ----Southern Nation, Nationalities and Peoples Region

SPSS: ----Statistical Package of Social Sciences

WHO: ----World Health Organization

NRBP: ----Non-reassure Biophysical Profile

VBAC: ----Vaginal Birth after Caesarean section

GA: ----Gestational Age

ECV: ----External Cephalic Version

LNMP: ----Last Normal Menstrual period

NGO: ----Non-Governmental Organization

GTP: ---- Growth and Transformation plan

ACOG: --- American College of Obstetrics and Gynecology

CHAPTER ONE: INTRODUCTION

1.1: Background

A Caesarean section is an operation in which incisions are on mother's abdomen and uterus to deliver one or more babies. It is the most common and oldest surgical procedure globally. Depending on the type of incision made on the uterus, caesarean section can be lower uterine segment section, which is the most common procedure, and the classical Caesarean section that involves a midline longitudinal incision [1].

It believed that for the first time Greece man Lex Regia 715 Before Christ did CS. During that period the main aim was for surviving the child when the mother dead or at high risk to die. In 1582, François Rosset confirmed that CS could help in survive life of the mother. For this reason, he recognized as the father of the CS [2]. For first time modern cesarean section was successfully done by German gynecologist Ferdinand Adolf Kehrer in 1881 [3].

A caesarean section is medically indicated if there are severe maternal and fetal problems when the operation is not done at a given time such as a transverse lie, genital herpes, or cephalopelvic disproportion, hepatitis virus, previous caesarean section, major fetal anomalies, compound condition such as macrosomia with fetus in breech. It can reduce mortality among infants presenting breech and it may be advantageous for a preterm birth to avoid pressure on the fetal head [4]. In many developed countries, caesarean delivery can be by maternal request, defined as a primary pre labor caesarean delivery on the maternal request in the absence of any maternal or fetal indications [5].

In emergency cases, CS indicated as a last option in management of many obstetric emergencies such as collapse due to eclampsia, uterine rupture, uterine inversion, shoulder dystocia, large APH, cord prolapse, seizure due to eclampsia and any fetal complications such as mal presentation and fetal distress [6].

1.2: Statement of the problem

The rates of caesarean section show a wide variation globally ranging from 0.1 to 40%. The WHO in 1985 has stated that there is no justification for any region to have cesarean sections rates higher than 10 to 15 percent. However, the rate is frequently greater than this in many developed and some developing countries causing concern among clinicians [7].

The reason is due to decreased training for clinicians in instrumental vaginal and vaginal breech births, medico-legal issues, the increased use of electronic fetal heart rate monitoring in labor, and maternal request. Repeat CS after a previous CS birth is a significant contributor to overall increased CS rates. The challenge then is to reduce those CS that are unnecessary, while retaining those that are needed to save lives and decrease morbidity [8].

According to 2008 WHO statement, approximately 18.5 million cesarean sections are conducted yearly worldwide and 6.2 million of them are in excess performed. China and Brazil account almost for 50% of the total number of unnecessary CS. The estimation also puts that 3.2 million additional CS needed. (Nigeria, India, Ethiopia, Congo Democratic Republic, Pakistan and Indonesia) account for 50% of the total number of additional CS needed [9].

The global rate of CS estimated as 15%. The average rate of CS deliveries was 3.5% in Africa, 15.9% in Asia, 19% in Europe, and 29.2% in Latin America and the Caribbean. In developed regions (including Europe, Northern America, Japan, Australia and New Zealand) rates range between 6.2% and 36%, with an average of 21.1% [10].

In Sub- Saharan Africa few available data shows that the rate of caesarean section is less than 5%. This point to an urgent need for better access to caesarean sections in the area, which designed to avoid the risk of increasing unnecessary caesarean sections and iatrogenic morbidity and mortality [11]. In Ethiopia, the caesarean section rate is 2%, ranging from 0.2% in Amhara region to highest in Addis Ababa (22.9%) [12].

Escalating caesarean section rate is a major public health problem. Compared to vaginal delivery, C-sections pose greater risk of cardiac arrest, hysterectomy, infection, fever, pneumonia, blood vessel clotting, high cost, risk for subsequent pregnancy, Dehiscence, Stress response, bleeding as well as risks for the fetal death. While this increase has been attributes to known reason and risk factors of caesarean section in developed countries, it is less clear in developing countries [13, 14].

Increasing evidence shows that women undergoing caesareans have a less satisfactory childbirth experience than those delivering vaginally and are more prone to postnatal depression, bonding difficulties and unsuccessful breastfeeding [15]. National health goal speaks to CS to reduce the rate of caesarean among low risk women having their first child to 15% of live birth from 18% and reduce the rate of caesarean birth among women who have had prior CS to 63% of live birth from baseline of 72% [16].

The Healthy People target for 2020 is a CS rate of 23.9% in low-risk full-term women with a singleton, vertex presentation. The most effective approach to reducing overall morbidities related to caesarean delivery is to avoid the first caesarean delivery; because women with initial caesarean delivery, more than 90% will have a subsequent repeat cesarean delivery [17]. Management approaches may reduce cesarean deliveries in the second stage of labor are active management of the second stage, operative vaginal delivery, trial of labor and manual rotation of the fetal occiput for malposition [18].

In Ethiopia, large proportion of the population lacks access to essential obstetric care including CS. EDHS 2014 reported exceptionally low national CS rates of 2%. Further, WHO estimated that in 2008 the total number of additional CS needed in Ethiopia in order to reach the minimum 5% rate was 278,370 and the figure was the third highest in the world. However, the situation in JUSH is the opposite. The retrospective prevalence study conducted before two year showed CS rate 28.1%. Therefore, this health facility based study conducted to identify sociodemographic, previous obstetric factors, current obstetric complications and health facility related factors associated with caesarean section.

CHAPTER TWO: LITERATURE REVIEW

This chapter presents related literature on caesarean section and associated factors with the variety of relevant researches reviewed.

Nationwide Inpatient Sample study conducted in United State of America on Cesarean delivery rates variation on hospitals in 593 hospitals in 44 states in 2009. The result showed that the mean hospital-level rate of cesarean delivery was 32.8 %, with rates that ranged nearly tenfold, from a low of 7.1 percent to a high of 69.9 percent. The most common attributed factors for CS were multiple gestation, maternal obesity, preterm labor, gestational diabetes, or hypertension [19].

Cross sectional study on Risk factors for cesarean section by category of health service in Brazil between January 1 and December 31, 2007 included all women (2,557) who delivered during study period & overall cesarean section rate was 51.6%. Being in higher-class family, having obstetric complications, age >30years, higher educational status and previous scar were significantly associated with caesarean section [20].

National hospital-based study conducted on caesarean section and associated factors among prim parous adolescents in Brazil from February 2011 to October 2012. This finding revealed that among 23,940 subjects, the rate of caesarean section was 40%. Higher educational status, higher income category, being white in race and age groups within 17-19 were significantly associated with caesarean section [21].

Institutional based study conducted on the Epidemic of the Cesarean Section in Private Hospital in Puebla, México on 504 participants from November 2013 to February 2014 and revealed the prevalence of cesarean section was 57.3 %. According to this study, Cesarean decision was significantly associated with the age >30 years, scholar mother´s degree, higher income category and private hospitals delivery [22].

Analysis of Variation in rates of caesarean section conducted in England between 1 January and 31 December 2008. Among 620604-singleton births, 147726 gave birth by caesarean, giving the prevalence of caesarean section 23.8%. Age >30years, multi parity, mal presentation, fetal distress, preexisting medical problems, preeclampsia or

eclampsia and obstetric complications were significantly associated with caesarean section [23].

Descriptive cross sectional study on Prevalence and Indications of Caesarean Section in a Teaching Hospital conducted in Pakistan from 1 November 2010 to 30 October 2011 on 1149 subjects. This finding has shown the rate of caesarean section was 21.40%. The most common indication of caesarean section was previous caesarean scar, (22.76%), failed progress of labor (18.29%), fetal distress (15.44%) and breech presentation (14.25%) [24].

A hospital based retrospective study carried out on trends and indications for caesarean section in a tertiary care obstetric hospital in south India by including all deliveries conducted from Jan 1 2009 to Dec 31 2009. Among 7543 deliveries, 1756 were caesarean, giving a rate of 23.27%. There was an increasing trend of caesarean section from 2005 (20.24%) to 2009 (23.27%) in that hospital [25].

Another clinical chart study was conducted from January 2011 to December 2013 in Koco Gliozheni" Tirani on reasons of increasing trends of caesarean section rate year after year. Result showed that among 13483 deliveries, the rate of caesarean section was 32.3 %. In this finding, fetal distress and premature rupture of membrane were significantly associated with caesarean section [26].

Another prospective hospital based study conducted on Primary Caesarian Section in Multipara 186 women admitted at government general hospital, Vijayawada (India) during the period Jan-Dec, 2014. Among total number of 6498 deliveries for 1 year, the prevalence of caesarean section was 40%. The most common indications were fetal distress (24.7%), mal presentations (19.3%), APH (11.2%) and PROM (9.6%) [27].

A study on Trends and Determinants of caesarean delivery conducted in South-Western Iran from January 1, 2007 to December 31, 2009 showed the rate of caesarean section for the whole sample of 139,159 was 52.2%. Significantly associated factors for caesarean delivery were, number of living children 1 or 0, age ≥30years, gestational age between 29-36 weeks, history of abortion 3 or more and having obstetric complications [28].

Prospective multi-Country studies conducted on Cesarean Section Rates and Indications in Sub-Saharan Africa (Democratic Republic of Congo, Sierra Leone, and Burundi) from August 1 2010 to January 31 2011. Among the total 1276 women, the rate of CS was 6.2%. The most common indication was obstructed labor (31%) followed by mal presentation (18%), previous Cesarean section (14%), fetal distress (10%), uterine rupture (9%) and antepartum hemorrhage (8%) [29].

Case-control study was conducted(CS as case and SVD as control) on Caesarean section an appraisal of some predictive factors in Lagos State University Teaching Hospital of Nigeria between 1st October and 31st December 2011. Among the 641 deliveries, caesarean section rate was 40.1%. The finding showed that being multi-parity, maternal height, maternal weight, birth weight, previous caesarean scar and ante-partum bleeding were significantly associated with caesarean section [30].

Descriptive study conducted in South Africa in 2004 on rising rates of Caesarean sections. During the one-year study period, there were 346 deliveries and the prevalence of CS was 60.4%. The major indications for elective caesarean sections were previous caesarean scar (46.8%) followed by maternal request for caesarean delivery (8.3%) and CPD& HIV (7.3%) [31].

Registry based study of Trends and socio-demographic factors associated with caesarean section at a Tanzanian referral hospital from 2000 to 2013 conducted among 29,752 singletons. During the study period, there were 8590 singleton deliveries by CS, giving an overall average prevalence of 28.9%. Being referred, educational status of both mother and husband, being married, age>36 and multi parity were significantly associated with caesarean section [32].

A cross-sectional hospital based study was conducted on an Epidemic of Cesarean Deliveries at Khartoum Hospital in Sudan from October to December 2011.Among the total of 2128 deliveries, 919 were cesareans deliveries giving rate of caesarean section 43.2%. In this finding, obesity was significantly associated with CS [33].

Descriptive study conducted to determine and compare the rate and indications of caesarean section in two Cairo tertiary hospitals: Obstetrics and gynecology Cairo

university hospital (OGCUH) and Al mattaria teaching hospital (ATH) for four weeks in 2008 among 1338 subjects (993 at OGCUH and 345 at ATH). The result of study revealed the prevalence of caesarean section 37.8% and 36.5% at OGCUH and ATH respectively. The most common indications were previous CS delivery (31%) followed by prolonged labor (12%), fetal distress (11.7%) and CPD (10.4%) [34].

A case control study conducted on Determinants of caesarean deliveries and its major indications in Adigrat Hospital, North Ethiopia retrospectively for one year (July 2013 to June 2014) on 456 subjects. The study revealed that prevalence of caesarean delivery was 14.23%. According to the result, maternal age of 35 years old and above, No history of ANC follow up and not followed by partograph during labor had a significant association with caesarean delivery [35].

Retrospective chart review study conducted on factors leading to caesarean delivery at Felegehiwot referral hospital, North West Ethiopia on 2967 subjects from July 1, 2012 to June 31 2013. The study stated that the overall prevalence of caesarean delivery was 25.4%.Being rural in residence, abnormal fetal presentation, birth weight of greater than 4000gm and having obstetric risk observed to have positively significant association with caesarean delivery [36].

A cross-sectional study conducted on Prevalence of Cesarean Section and Associated Factors in Urban Health Facilities in private and government hospitals in Harar town Eastern Ethiopia from February 1 to March 30, 2013 on 630 subjects. The finding revealed that the overall prevalence of CS was 34.3 %. Monthly family income of 4000 ETB or more, Previous CS delivery, fetal birth weight of greater than 4000 g and private hospital delivery were found significantly associated to cesarean section delivery [37].

Institutional based cross sectional study conducted on Birth Outcome after Caesarean Section among Mothers who Delivered by Caesarean Section at Gondar University Teaching Hospital from January 1, to April 30, 2012. According the finding, prevalence of caesarean section was 27%. The most frequent indication for caesarean section in this study was fetal distress (23.2%) followed by mal position (14%) [38].

The study done on Trend and socio-demographic differentials of Caesarean section rate in Addis Ababa, Ethiopia based on the secondary data of three EDHS (2000, 2005, and 2011) among 1298 delivered women from 1995-2010. The result illustrated that the CS rate had increased from 2.3% in 1995–1996 to 24.4% in 2009–2010. According to the study, CS rate significantly increased with higher education, higher wealth index (rich household), parity and being delivering at private health facilities [39].

Cross-sectional retrospective study was conducted on Prevalence and Outcome of Caesarean Section in Attat Hospital, Gurage zone SNNPR, Ethiopia from January 2011–December 2013. Of 5611 deliveries, rate of CS was 27.6%. The leading indications for cesarean births were CPD (38.1%), previous CS (18.9%), fetal distress (12.5%), mal-presentation and malposition (7.1%), and APH (6%) [40].

Institution based retrospective cross sectional study conducted on Caesarean section and associated factors in Mizan Aman General Hospital during the period of September 11, 2012 to March 9, 2013. Among the 342 sampled medical records, the prevalence of CS was 21.1%. Increase in age >35 years, gestational age at labor and multiple pregnancy were significantly associated with CS [41].

Hospital based retrospective cross sectional study done on Prevalence of Caesarean Section in Jimma University Specialized Hospital from March to April 2014. Among the 338 deliveries, the rate of caesarean section was 28.14%. According to this finding, Age group >35 years, being urban in residence, No history of ANC visit, multiple pregnancy and previous scar were significantly associated in chi square test[42].

The above-discussed literatures were written after extensively searched using google scholar, public med and different articles, journals and update data related topic of study were searched. The searched literatures were synthesized and written.

2.1: Conceptual framework of the study

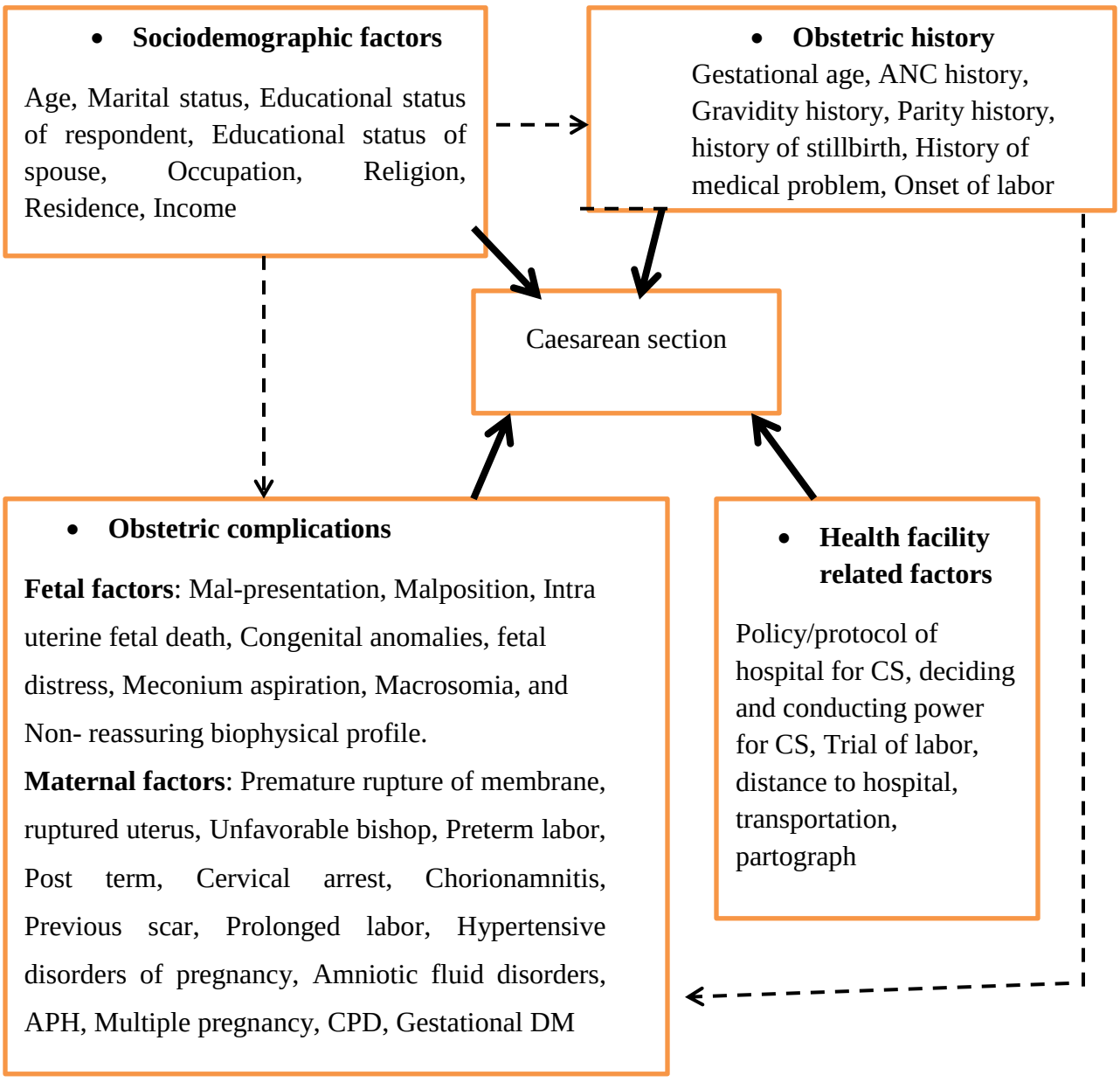

Figure 2: conceptual framework of the study developed after reviewing different relevant literatures.

Source: Variables included in this conceptual framework were taken from literatures referenced as 35, 36 and 37

2.2:-Significance of the study

Significant improvements in neonatal and maternal health will depend on essential interventions for mothers and babies before, during and immediately after birth. Many studies were conducted on rates and factors associated with caesarean section in many developed and some developing countries. Similarly, in Ethiopia some studies conducted previously regarding caesarean section and associated factors using only quantitative method. Also study was conducted before two years at the same study area; however it used only quantitative method of data collection, it was secondary chart review that might have missed important information, it didn't identified associated factors (it was only prevalence study) and didn't used higher statistical software for analysis.

To fill the gap, the current study is designed to assess the prevalence and associated factors of caesarean section at JUSH by both quantitative and qualitative methods using direct client interview from currently delivering pregnant mothers and health care providers In depth interview was conducted to explore information related to caesarean section and health facility related factors in JUSH. Furthermore, it will be a reference and baseline for those who are interested to do a research on the same topic. It will benefit the JUSH and the community around the area by providing basic information for preventing unnecessary caesarean section and identify major associated with caesarean section.

It believed that the provision of such information on this very important issue to this big institution would alert researchers, health care providers, community and other concerned bodies to the problem. It will helps to draw the attention for policy makers in developing new policy, local and national level NGO's and responsible parties of the study site to respond appropriately to WHO recommended standards of caesarean section and reduce/increase/keep to maintain setted standard depending on the result of this finding to study area.

CHAPTER THREE: OBJECTIVES

3.1. General objective

To assess prevalence of caesarean section and its associated factors among women delivered at Jimma University Teaching Hospital, South West Ethiopia 2016.

3.2. Specific objectives

1. To assess the prevalence of caesarean section among women delivered at Jimma University Specialized Hospital from March 25 to April 12, 2016.
2. To identify factors associated with caesarean section among women delivered at Jimma University Teaching Hospital from March 25 to April 12, 2016.

CHAPTER FOUR: METHODS AND MATERIAL

4.1. Study area and period

The study was conducted from March 25 to April 12, 2016 in maternity ward of Jimma University Specialized Hospital. JUSH is one of the oldest public hospitals in the country. JUSH established in 1938 by Italian invaders for the service of their soldiers. Geographically, it is located in Jimma town 352 km southwest of Addis Ababa. The Ethiopian Ministry of Health started to run it & give service to the people and as of 1984; it became a training center for health workers (Medical Doctors, Nurses, Pharmacy Technicians, Laboratory Technicians & Environmental Health Experts) without infrastructure change or major renovation.

Currently it is the only teaching and referral hospital in the southwestern part of the country, providing services for about15, 000 inpatient, 160,000 outpatient attendants, 11,000 emergency cases and around 6000 deliveries conducted in 2015 coming to the hospital from the catchment population of about 15 million people of southwest area. Now day JUSH has about 21 units and 503 beds. Maternity ward is one that has around 65 beds & provides delivery service for the community around the area. The ward has around 119 health professional and supportive staffs, namely: Seven (7) Senior Obstetricians and Gynecologists, 6 BSc Nurses, 6 BSc Midwifes, 5 Diploma Nurses, 32 Diploma midwifes,38 Residents, 16 Cleaners, 6 Porters and 3 Runners.

4.2. Study Design

Institution based cross-sectional study design, which involved both quantitative and qualitative methods of data collection was employed.

4.3. Source population

All mothers who came for delivery service at Jimma University Specialized Hospital during study period.

4.4. Study population

All eligible consecutively selected women who delivered at Jimma University Specialized Hospital during study period were included.

4.5. Eligibility Criteria

Inclusion Criteria

All women came for delivery service during study period.

Exclusion criteria

Clients with previously known psychiatry problem and has no attendants

4.6. Sample size and sampling technique

4.6.1. Sample size determination

The sample size was calculated using formula for a single population Proportion considering the following assumptions.

Assumptions: A 95% confidence level, margin of error (0.05), proportion of caesarean section in Jimma University Teaching Hospital (p = 0.281 [42] .

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

n = $(1.96)^2$x (0.281) (1- 0.281) = **n = 310**

(0.05)2

Where n= required sample size

$(Z\alpha/_2)^2$ = critical value for normal distribution at 95% confidence level which equals to 1.96 (z value at α =0.05)

P= Proportion of caesarean section 28.1 % in study area.

The annual delivery report at JUSH in 2015 during current data collection period (March & April) was 848 used as a source population.

Since 848 is (<10,000), correction formula is used.

$$Nf = \left(\frac{n}{1+\frac{n}{N}}\right) = \left(\frac{310}{1+\frac{310}{848}}\right) = 309, \quad n = 227$$

d= 0.05

Considering 10% non-response rate, 227 x 10% = 23

227 +23 = 250

Finally=250 pregnant women who gave birth during study period were studied.

For qualitative data:

Nine interviewees were selected purposively for conducting in depth interview.

4.6.2. Sampling technique

For quantitative

Consecutive sampling technique was used to select 250 study participants from the women who came for delivery service in Jimma University Specialized Hospital. Data was collected from all women came for delivery service until required sample size reached for 18 days (from March 25 to April 12, 2016).

For qualitative

Criterion based purposive sampling technique was used to select participants for in depth interview to select nine key informants. Criteria's to select respondents were based on their seniority, nearness, and responsibilities to conduct CS and decision making power. Respondents were Senior Obstetrician and Gynecologists, Chief Residents or Residents of Obstetrician and Gynecology (R2, & R3) and Heads of maternity and labor ward. Five in depth interviews conducted and the final sample size was determined based on saturation of data.

4.7. Data collection procedures

Quantitative data:

The data was collected by face-to-face interview and chart review using structured questionnaires. Interview was held just soon after confirmed diagnosis for delivery (first stage of labor) and client card was seen for obstetric complications contributed to CS before client taken to operation room (for elective CS) and up to postpartum period (for emergency CS. In obstetric emergencies in which full information of the client might not written, physicians who conducted CS were immediately asked in order not to miss any data. One data collector assigned to each shift (there are three shifts in JUSH). Data collected starting from active first stage of labor to postpartum period (March 25 to April 12, 2016). During data collection, the case of delivery, which extended beyond one shift of working time, was handover to next data collector.

Qualitative data:

In-depth interview conducted by principal investigator with the selected interviewees that took about 30-45 minutes for each interview.

4.8. Study Variables

Dependent variable

Caesarean section

Independent Variables

- **Socio demographic factors**

  Age, Marital status, Educational status of respondent, Educational status of spouse, Occupation, Religion, Residence, Average monthly income

- **Obstetric history:-**

  Gestational age of current pregnancy, History of ANC, Number of Gravidity, History of Parity, stillbirth history, Onset of labor, history of medical complications.

- **Obstetric complications**

  Fetal factors: Mal-presentation, Malposition, Intra uterine fetal death, Congenital anomalies, fetal distress, Meconium aspiration, Macrosomia, and Non- reassuring biophysical profile.

  Maternal factors: Premature rupture of membrane, ruptured uterus, Unfavorable bishop, Preterm labor, Post term, Cervical arrest, Chorionamnitis, Previous scar, Prolonged labor, Hypertensive disorders of pregnancy, Amniotic fluid disorders, APH, Multiple pregnancy, CPD, Gestational DM

- **Health facility related factors**

  Ethics, policy/protocol of hospital for CS, deciding and conducting power for CS, distance to hospital, transportation, partograph

4.9. Operational definitions

Caesarean section:-operative abdominal delivery and includes all cases done due to uterine rupture.

Caesarean section rate:-Proportion of caesarean delivery per total number of delivery conducted during study period times hundred.

Mal presentation:- Any presentation of the fetus other than vertex presentation.

Antepartum hemorrhage:-In this study, it includes both the cases of placenta Previa and placenta abruption observed during study period.

Amniotic fluid disorders:-This includes both cases of polyhydramnios and oligohydramnios observed during study period.

Fetal distress:-In this study, it includes both cases fetal tachycardia (fetal heart rate >160 beat per minute) and bradycardia (fetal heart beat less than 100 beat per minute).

Higher income peoples: In this study, respondent who reported average monthly family income of ≥4000ETB considered as higher income category.

Medical complications: Delivering women considered to have medical complication, if she could have at least one medical problem/disease during current pregnancy.

Obstetric complications: Delivering women considered to have obstetric complication, if she had at least one of fetal or maternal complications during labor and delivery.

Malposition: - Any position of fetus other than anteroposterior position.

Multi gravida: In this study, if the women gave four or more live birth previously.

Long distance: Delivered women were considered came from long distance, if she came by travelling distance of 10 kilometer by foot and more than 30 kilometer (1 hour) by car.

Senior: is physician specialized in obstetrics and gynecology, **CR3**: is chief of year three residents, **R3:** is year three resident and **CR2**: is chief of year two residents in this exploration of qualitative results.

4.10. Tools for data collection

For quantitative part: Data was collected using structured questionnaires prepared in English language, which was adapted from different literatures done on similar and related titles of the study (35, 36, and 37). The questionnaire had four parts, Part I- socio

demographic variables, Part II- Obstetric history, Part III-Obstetric complications and Part IV-Health facility related factors. One senior obstetrician and gynecologist and two senior staff of Maternity Nursing Instructors of Jimma University validated the tools. Then necessary modifications made to the tools.

For qualitative one: In depth, interview guide used to collect data from selected key informants.

4.11: Data collectors

Five personnel recruited for data collection and supervision. Three BSc Midwifes recruited for quantitative data from Shenen Gibe Hospital and two BSc Nurses were supervisors from JUSH. Principal investigator collected qualitative data.

4.12. Data Quality Control

Fluent speakers can write and read Afan Oromo and Amharic were recruited from outside of study area (Shenen Gibe Hospital) for data collection. Two days training given for data collectors and supervisors on the objectives of the study, meanings of each question and techniques of interview. The questionnaire translated to local language Afan Oromo and Amharic by expert and then re translated to English by another person to check consistency. The collected data were reviewed and checked for completeness by the data collectors, supervisors and principal investigator daily. To assure anonymity, code numbers were placed on the completed questionnaires after they return to the investigators. The instrument was checked by doing pre tested on five percent (0.05*250=13) of the sample at Limu Genet hospital. Experts verified content validity of instrument and amendment made to the tools.

4.13. Data Processing and Analysis

For quantitative data: Data was checked for completeness and entered into Epi-Data Manager and Entry Client and exported to SPSS Version 20 for analysis. Descriptive

statistics such as Percentage, standard deviation, frequency and mean were calculated. Binary logistic regression analysis was done and all independent variables, which had association with the dependent variable at p-values of less than 0.25, were considered for adjustment in the multivariable logistic regression. Multivariable logistic regression was done using backward method to identify factors associated with caesarean section at P value < 0.05 were considered as statistically significant association with dependent variable. The results were reported as Odds Ratio (OR) with respective 95% confidence intervals.

For qualitative data: Data transcribed in to a text by the principal investigator after listening in depth interview audio records. Different ideas in the text color-coded and merged in their thematic areas and a thematic framework analysis employed manually. The results presented in narratives with quantitative data.

4.14. Ethical Consideration

Ethical clearance obtained from Institution review board of Jimma University College of Health Sciences. Permission letter sought from hospital management body. Finally, oral consent obtained from each study participants before making interview and confidentiality of the data also insured. In addition, the respondents' right to refuse or withdraw from filling out the questionnaire fully realized and the information provided by each respondent kept strictly confidential.

4.15. Dissemination plan

The findings of this study will be disseminated to JUSH, Jimma University library, Federal and Regional Health Bureau. In addition, the finding will present in different seminars, meetings and workshops. After the end of the study, all effort will be made to publish the paper on scientific journal.

CHAPTER FIVE: RESULTS

During the study period, 250 participants selected consecutively and response rate was 100%.

5.1 Sociodemographic characteristics of participants

The result showed that majority of respondent 108(43.2%) were between the age group of 25-29. The mean age of the respondent was 26.54 with SD of ±5.12.

Table 1: Distributions of women delivered at JUSH with their sociodemographic characteristics from March 25 to April 12, 2016.

Sociodemographic variable		Mode of delivery		TOTAL	
		Vaginal(137)	Caesarean(113)	count	Percent
Maternal age	≤19	8(3.2%)	1(0.4%)	9	3.6
	20-24	42(16.8%)	32(12.8%)	74	29.6
	25-29	57(22.8%)	51(20.4%)	108	43.2
	30-34	16(6.4%)	13(5.2%)	29	11.6
	≥35	14(5.6%)	16(6.4%)	30	12
	Total	137(54.8%)	113(45.2%)	250	100
Marital status	Married	133(53.2%)	112(44.8%)	245	98
	Divorced	1(0.4%)	0(0.0%)	1	.4
	Widowed	2(0.8%)	0(0.0%)	2	.8
	Separated	1(0.4%)	1(0.4%)	2	.8
	Total	137(54.8%)	113(45.2%)	250	100
Educational status of respondent	Cannot read and write	32(12.8%)	23(9.2%)	55	22
	Informal education	10(4%)	8(3.2%)	18	7.2
	Primary education(1-8)	52(20.8%)	36(14.4%)	88	35.2
	Secondary education(9-12)	27(10.8%)	21(8.4%)	48	19.2
	College and above	16(6.4%)	25(10%)	41	16.4
	Total	137(54.8%)	113(45.2%)	250	100
Educational status of spouse	Cannot read and write	26(10.4%)	17(6.8%)	43	17.2
	Informal education	13(5.2%)	9(3.6%)	22	8.8
	Primary education(1-8)	40(16%)	24(9.6%)	64	25.6
	Secondary education(9-12)	28(11.2%)	26(10.4%)	54	21.6
	College and above	30(12%)	37(14.8%)	67	26.8
	Total	137(54.8%)	113(45.2%)	250	100
Occupation of respondent	House wife	29(11.6%)	25(10%)	43	17.2
	Private employee	5(2%)	6(2.4%)	11	4.4
	Gov't employee	25(10%)	18(7.2)	54	21.6
	Farmer	50(20%)	40(16%)	90	36
	Merchant	17(6.8%)	21(8.4%)	38	15.2
	Daily laborer	11(4.4%)	3(1.2%)	14	5.6
	Total	137(54.8%)	113(45.2%)	250	100

Religion	Orthodox	33(13.2%)	29(11.6%)	62	24.8
	Muslim	98(39.2%)	71(28.4%)	169	67.6
	Protestant	6(2.4%)	13(5.2%)	19	7.6
	Total	137(54.8%)	113(45.2%)	250	100
Residence	Urban	79(31.6%)	58(23.2%)	139	55.6
	Rural	58(23.2%)	55(22%)	111	44.4
	Total	137(54.8%)	113(45.2%)	250	100
Average monthly income	≤1000	72(28.8%)	55(22%)	127	50.8.
	1001-2500	31(12.4%)	16(6.4%)	47	18.8
	2501-4000	9(3.6%)	17(6.8%)	26	10.4
	≥4001	25(10%)	25(10%)	50	20
	Total	137(54.8%)	113(45.2%)	250	100

5.2: Obstetric history

Regarding GA of current pregnancy, most of them were between 38-42 weeks 199(79.6%) followed preterm 41(16.4%) and the rest were post terms. For majority of women, their GA was known by amenorrhea 159(63.6%) followed by LNMP 82(32.8%) and other methods were by early ultra sound and uterine size. Majority of respondent had history of ANC visit for current pregnancy 223(89.2%). Regarding individual frequency among visited ANC, 125 (56%) of them visited ANC ≥4 times and 98(44%) attended ANC <4 times. Majority 152(60.8%) attended ANC at health center, 55(22%) at public hospitals and others attended at private health facilities and NGO's health facilities (3.2%) each.

Concerning previous history of pregnancy, 96(38.4%) of the respondent became pregnant for 2-3 times, 85(34%) were prim gravida and 69(27.6%) were multigravida. One hundred fifty three (61.2%) of the respondent gave live birth previously, among them 64(41.8%) gave birth once, 52(34%) 2-3 time and 37(24.2%) four times and above. Among those who had previous live birth history, 24(15.68%) had history of previous CS. Of them 19(79.2%) had history of previous CS one time and five (20.8%) had history of repeat CS two times. Of all respondents 43(17.2%) had history of stillbirth among them, 31(72%) of experienced once and 12(28%) reported two time and above. The onset of labor was spontaneous for 229 (91.6%), elective CS 15(6%) and the rest were by induction. Only 16(6.4%) had medical complications during

current pregnancy, of them hypertension was the most (37.5%) followed by anemia and HIV/AIDS (31.3% and 18.8%) respectively and others were DM and Malaria (6.3%) each.

5. 3: Obstetric complications

Among women who gave birth during this study period, 149 (59.6%) developed obstetric complications. Fetal distress, mal presentation, malposition, CPD, APH, hypertensive disorder of pregnancy and prolonged labor were among the frequently occurred complications (Table 2).

Table 2: Distributions of obstetric complications among women delivered at JUSH from March 25 to April 12, 2016.

Obstetric complications		**count**	**Percentage**
Mal presentation	No	88	59.1
	Yes	61	40.9
Mal position	No	102	68.5
	Yes	47	31.5
Prolonged labor	No	123	82.6
	Yes	26	17.4
Hypertensive disorders of pregnancy	No	126	84.6
	Yes	23	15.4
Ruptured uterus	No	139	93.3
	Yes	10	6.7
APH	No	124	83.2
	Yes	25	16.8
Obstructed labor	No	103	69.1
	Yes	46	30.9
Fetal distress	No	97	65.1
	Yes	52	34.9
IUFD	No	139	93.3
	Yes	10	6.7
Cervical arrest	No	136	91.3
	Yes	13	8.7
Multiple pregnancy	No	137	91.9
	Yes	12	8.1
Post term	No	140	94
	Yes	9	6
CPD	No	114	76.5
	Yes	35	23.5

Previous scar	No Yes	125 24	83.9 16.1
Macrosomia	No Yes	137 12	91.9 8.1
Amniotic fluid disorders	No Yes	139 10	93.3 6.7

Others: NRBPP (4.7%), meconium aspiration (4%), PROM (3.4%), preterm labor (3.4%), unfavorable bishop (2%) and chorionamnitis (1.3%)

5.4: Prevalence of caesarean section at Jimma University Specialized Hospital

Among all deliveries, 137 gave birth vaginally whereas the mode of delivery for 113 of them was caesarean giving the prevalence of CS at JUSH 45.2% at study site.

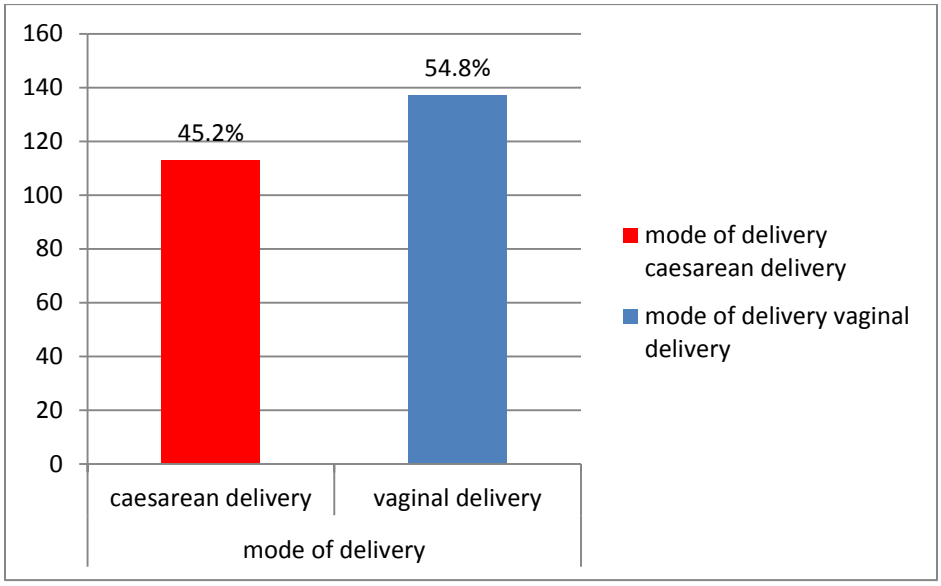

Figure 2*:* Distribution of women delivered at JUSH by their current mode of delivery at JUSH from March 25 to April 12, 2016.

5.5: Health facility related factors (from Quantitative data)

Majority of respondents came from the distance of greater than one hour and above 104(41.6%) followed by those came from distance of less than 30 minute 92(36.8%) and other were from distance that can take from 30 minute to one hour 54(21.6%). Regarding means of transport to hospital, majority of respondents travel by ambulance 184(73.6%) and 52(20.8%) used other vehicles. The rest came to hospital by foot (5.6%). All women who gave birth did not followed by partograph during labor and delivery. However, all of them checked by ultrasound during the labor.

All women delivered by caesarean informed the reason for CS and signed informed consent. Majority of caesarean conducted were emergency 99(87.6%) and 14(12.4%) were elective. Even if not successful, VBAC tried for 50% from 24 women with previous scar. Most of CS were conducted by Residents 108 (95.6%) and 4.4% was conducted by senior obstetrician and gynecologist. Before deciding for CS, there was consultation between physicians. Concerning number of newborn majority 237(94.8%) was single, 13 twins' babies born. Regarding the birth weight 210(84%) were between 2500-3999 g, 28(11.2%) between 1100-2499 g and 4.8% were ≥4000 g.

5.6: Health facility related factors (from Qualitative data)

A). regarding Policy/guideline that control caesarean section in JUSH

One 38 years old senior said, "JUSH has its own guideline that helps us to identify those cases needs caesarean delivery. This guideline helps as a teaching and learning material during morning session, round for all medical students and residents. Guideline also contains criteria's/protocols and all working staffs of JUSH follow guideline definitely. If somebody did against the guideline, senior will decide on that person, but most of the time, no more punishment rather than comment and critic on the morning session".

A 28 years old year three resident (**R3**) said, "We do have a guideline to conduct CS, which has its own set of standards, requirements, indications and expected blood loss. All staffs including medical students, interns, residents, and midwife informed about

this guideline by senior obstetrician and gynecologist. If somebody did against the guideline, he/she will be responsible for the action undertaken. The main punishment is not economically or legally, rather than giving comments and academically he/she may be delayed or even may be suspended from his/her resident ship depending on the condition of action undertaken.

Another 30 years old year three resident (**cR3)** said, "There is no policy that control/limit CS as country level, when indications come in to picture, we do CS as needed. However, JUSH have clear criteria/protocol taken from standard books, which include WHO recommendation".

B). regarding deciding and conducting for caesarean section

Senior said, "Final year resident give decision for CS and senior can be consulted by phone call, if he/she have a doubt, if there is a need to come, he/she will be avail every 24 hour and give decision. For previous scar, if the client full fills criteria for VBAC depending on estimated fetal weight, type previous incision, number of incision, fetal presentation, we practice VBAC if client give consent, but still, if the client refused to give consent and decline for VBAC, we go for caesarean delivery. Resident ship from year two (R-II) and above can conduct CS".

A 28 years old year three resident said "Decision of CS is by final year resident; however, in controversial like, hydrocephaly /congenital anomalies, we consult the senior. Type of consultation based on condition of the client and severity of the problem and most of the time it is telephone communication. Starting from year two resident ship (R-II) can conduct CS, but in complicated case such as deep bradycardia and extraction is difficult, last year resident is needed".

Another 30 years old year three resident said, "We go for elective CS if client decline for informing for VBAC by 39 weeks of gestation. ECV should be done around 37 full gestational ages, but there is difficulty in this case, because we are not experienced and most of the time not practiced here".

C). Concerning Indications and prevalence of CS at JUSH

Senior said, "In our setup, the common indications are CPD, Labor abnormalities and fetal distresses are common. Three residents put their assumption about indications. "Commonest indications are CPD and Fetal distress (R3), The three common indications are CPD, mal presentation and fetal distress (cR2) and Common indications are CPD, fetal distress, obstructed labor, APH, unfavorable bishop (cR3)".

Concerning prevalence of CS at JUSH, all respondent have similar pertinent supportive idea. Synthesized response of participants said, the prevalence of CS is looks high and it is in average about 35-40%. Reasons for increased prevalence of CS are one thing JUSH is the only hospital caring such type of operative deliveries in southwest area of the country; most of the cases are referral that are difficult to handle as a normal delivery at other health institutions due to complications. However, one 30 years old staff said, "I worked at JUSH for five years and the rate of CS is increasing year by year. I think it is due to increased referral cases and the number of specializing residents in obstetrics and gynecology are increasing. I think there may be mal practice of CS".

D). regarding knowledge of maternal request for CS

Senior said, **"**There are many mothers request for CS without any indications, but we do not accept them. However, in some exceptional conditions, such as for social and staffs those who do not want to have a labor and Pitocin induction at all, we go directly to caesarean delivery.

Another 27 years old year two resident (**cR2**) said, "In few cases, we conduct CS by maternal request". In contrary, **CR3 and R3** said, "We never do caesarean section by maternal request without clear indication".

5.7: Factors associated to caesarean section among Independent variables

Table 3:Simple logistic regression and corresponding p-values for the association between the caesarean section with socio-demographic characteristics and Obstetric history in JUSH from March 25 to April 12, 2016.

Categorical variables		P	COR	CI	
				Lower	Upper
Age	25-29		1		
	≤19	.096*	6.095	.725	51.245
	20-24	.068*	7.158	.865	59.212
	30-34	.096*	6.500	.717	58.592
	≥35	.049**	9.143	1.014	82.442
Educational status of respondent	Can't read &write	.065*	.460	.202	1.050
	Informal education	.242*	.512	.167	1.572
	Primary education()1-8)	.035**	.443	.208	.945
	Secondary education(9-12)	.107*	.498	.213	1.162
	College and above		1		
Educational status of spouse	Can't read &write	.110*	.530	.243	1.154
	Informal education	.247*	.561	.211	1.491
	Primary education()1-8)	.043**	.486	.242	.978
	Secondary education(9-12)	.439	.753	.367	1.545
	College and above		1		
Religion	Muslim		1		
	Orthodox	.518	.824	.459	1.480
	Protestant	.104*	2.466	.830	7.321
Average monthly income	≤1000		1		
	1001-2500	.271*	.676	.336	1.358
	2501-3999	.044**	2.473	1.025	5.967
	≥4000	.421	1.309	.679	2.523
History of ANC	No	.000**	19.176	4.431	82.993
	Yes		1		
Number of ANC visit	<4	.035**	.552	.318	.959
	≥4		1		
Number of gravida	1		1		
	2-3	.001**	2.797	1.517	5.158
	≥4	.019**	2.204	1.139	4.265

Note: *-shows variables are candidate for multivariable logistic regression (p<0.25)

**-shows variables significantly associated with caesarean section (p<0.05)

5.8: Factors associated to caesarean section among Independent variables

Table 4:Simple logistic regression and corresponding p-values for the association between the caesarean section with Obstetric complications and health facility related factors in JUSH from March 25 to April 12, 2016.

Categorical variables		p-value	COR	CI	
				Lower	Upper
Mal presentation	No		1		
	yes	.001**	4.741	1.832	12.272
Hypertensive disorders of	No		1		
pregnancy	yes	.074*	.424	.166	1.085
APH	No		1		
	yes	.131*	2.659	.747	9.473
Obstructed labor	No		1		
	yes	.006**	4.732	1.564	14.32
Fetal distress	No		1		
	Yes	.011**	3.433	1.323	8.907
Distance from hospital in	≤29		1		
minute	30-59	.600	.820	.391	1.721
	≥60	.000**	3.296	1.839	5.906

Note: *-shows variables are candidate for multivariable logistic regression (p<0.25)

**-shows variables significantly associated with caesarean section (p<0.05).

5.8: Significantly Associated variables in Multivariable Logistic Regression

Multivariable Logistic regression analysis was done to identify the effect of independent variables on caesarean section.

The study showed that women whose fetus developed fetal distress had 4.398 times more likely to deliver by caesarean (AOR: 4.398, 95% CI: 1.398, 13.837) than those free of fetal distress.

Women with obstructed labor were 4.003 times more likely to deliver by caesarean (AOR: 4.003, 95%CI: 1.089, 14.717) than those did not had obstructed labor.

The study also revealed that women with fetal mal presentation were 3.469 time more likely to give birth by caesarean (AOR: 3.469, 95%CI: 1.142, 10.540).

The study revealed that distance to health facility they gave birth in had positive significant association with caesarean delivery. Accordingly, women who came travelling from the distance of one hour and above were 3.508 times more likely to give birth by caesarean (AOR:3.508, 95%CI: 1.125, 10.945) than those who came from distance of less than 30 minute.

Average monthly incomes had positive significant association with caesarean delivery. Women earning monthly income of 4000ETB and above were 4.205 times more likely to deliver by caesarean (AOR: 4.205, 95%CI: 1.077, 16.421) when compared with those earn ≤1000ETB (Table 5).

Table 5: Multiple logistic regression model with their corresponding p-values for the associations between the caesarean section and independent predictor variables in JUSH from March 25 to April 12, 2016.

Model		Count (%)	COR	AOR	CI		P value
					Lower	Upper	
Fetal distress	No	97(65.1%)		1			
	Yes	52(34.9%)	3.433	4.398	1.398	13.837	.011
Obstructed labor	No	103(69.1%)		1			
	Yes	46(30.9%)	4.732	4.003	1.089	14.717	.037
Mal presentation	No	88(59.1%)		1			
	Yes	61(40.9%)	4.741	3.469	1.142	10.540	.028
Distance from Hospital in minute	≤29	92(36.8%)		1			
	30-59	51(20.4%)	.820	.945	.267	3.343	.930
	≥60	107(42.8%)	3.296	3.508	1.125	10.945	.031
Income in ETB	≤1000	127(50.8%)		1			
	1001-2500	47(18.8%)	.676	1.234	.344	4.424	.747
	2501-3999	26(10.4%)	2.473	4.187	.774	22.647	.096
	≥4000	50(20%)	1.309	4.205	1.077	16.421	.039

CHAPTER SIX: DISCUSSION

This study showed that the prevalence of caesarean section was 45.2 % at study area. Compared to the previous study in the same site that accounted for 28.1 % [42], the current prevalence is very high. On the other hand, the prevalence of this study is similar with that reported from Sudan [33] that revealed 43.2%. Since both study area have no common sociodemographic characteristics, this similarity might be due to chance. The study showed that this prevalence is less than reports from Brazil, Mexico, Iran and South Africa [20, 22, 28, 31] that revealed [51.6%,57.3%, 52.2%, 60.4%] respectively. This variation might be due to private hospital delivery and maternal request for caesarean delivery allowed at those countries.

However, the prevalence of this study is higher than what has been observed in other countries, like Brazil, England, Pakistan, Tiran, India, Nigeria, Tanzania and Egypt [21, 23, 24, 26, 27, 30, 32, 34] that revealed [40%, 23.8%, 21.4%, 32.3%, 40%, 40.1%, 28.9%, 37.8%] respectively. When compared with previous studies conducted in Ethiopia, this finding is greater than findings from Adigrat, Felegehiwot, Harar, Gondar, Addis Ababa, Attat, Mizan Aman and Jimma [35, 36, 37, 38, 39, 40, 41, 42] that revealed [14.23%, 25.4%, 34.3%, 27%, 24.3%, 27.6%, 21.1%, 28.1%] respectively. This gap might be due to type of health facility, methods of data collection, increased referral cases and absence of health facility that give similar service with current study area.

High prevalence of caesarean section is observed in this study. The reasons are explored by qualitative method. One 38 years old senior said, *"JUSH is the only hospital caring for complicated operative deliveries in southwest area of the country, including Ilubabor zone and SNNP. Most of the cases come with emergency that are difficult to handle as a normal delivery at other health institutions due to complications".* A 28 years old year three residents added that," *prevalence of CS at JUSH is definitely higher about 35-37% and significantly greater than double of WHO recommendation for developed county. However, it is not due to routine practice of CS, instead it is due to continuous flow of complicated cases to this tertiary center". Another 30 years old staff*

said, "I worked at JUSH for five years and the rate of CS is increasing year by year. I think it is due to increased referral cases and the number of specializing residents in obstetrics and gynecology are increasing. I think there may be mal practice of CS".

From sociodemographic variables, higher family monthly income has positive significant association with caesarean delivery. This finding is consistent with findings from Brazil [20, 21] Mexico [22], Harar [37] and Addis Ababa [39] in Ethiopia. In fact, many studies in developed and developing countries revealed that as income increases, chance of caesarean delivery also increases. Assumption is that people with higher income most of the time do not want to go through labor pain and rather opt for CS. With this context, labor pain is very severely exacerbated pain that may lead those women to any decision. Therefore, they may decline vaginal delivery and even VBAC. However, clinical guideline of ACOG recommends VBAC for all women with previous scar, because it was success on more than 70% of women with previous scar.

The study showed that maternal and fetal factors significantly associated with caesarean delivery were fetal distress, mal presentation and obstructed labor. This study has found that fetal distress was significantly associated with caesarean delivery. This is consistent with findings in England, Tirane and Felegehiwot [23, 26, 36] respectively. As all of the fetuses were monitored by electronic fetal monitoring system, over diagnosis of fetal distress is expected. Appropriate interpretation of fetal heart rate and close follow up of maternal vital sign specially using pulse oximetry might be effective in reducing cesarean section rate. Otherwise, incorrect diagnosis of fetal distress would lead to unjustified use of CS. In addition, if confirmed diagnosis, clinical guideline of ACOG implies that CS for fetal distress that takes more than 30 minute represents neglected care. Therefore, fetal distress is an obstetric state of emergency to save the life of a newborn and women in recommended time.

Obstructed labor significantly increases the chance of caesarean delivery. This finding is also consistent with study conducted in Brazil, England, Iran and Felegehiwot hospital Ethiopia [20, 23, 28, 36] respectively. Clinical guidelines recommend using parthograph for labor monitoring to reduce likelihood of CS. Because it is considered to be very effective tool to monitor labor and prevent prolonged and obstructed labor.

Contrarily, in this study parthograph was not used at all for labor monitoring. This is incomparable with study conducted at Adigrat that 91.2% of delivered women monitored by parthograph during labor and delivery. Generally, partograph stabilizes the clinician and helps in giving time and preventing fast decisions to caesarean section. In addition, obstructed labor can result from prolonged labor, malposition and cephalo pelvic disproportion and these complications are associated with fetal and maternal compromise that results in difficulty of vaginal delivery and caesarean section may be a last option.

There was association between mal presentation and caesarean section. Similar findings reported in several studies in England, Iran and Felegehiwot hospital in Ethiopia [23, 28, 36] respectively. The reasons behind is non-vertex presentations such as face, brow, shoulder, breech, compound presentations and cord prolapse in complicated case mostly managed by caesarean section in alive fetus.

From health facility related factors, women who travel long distance to reach health facility to give birth was significantly associated with caesarean section. In GTP-1, The Federal Ministry of health planned to give quality maternal and child health service by trained care provider at distance of not more than 10 kilometer (2 hour) on foot. However, during this study, 107 (42.8%) of women who gave birth came by travelling more than 30 kilometer (1 hour) by car. The assumption with this is that when laboring women referred from health facility to this tertiary center with suspected labor or pregnancy abnormality, there is anxiety (stress). During stress condition, there is hormonal release such as Epinephrine, Norepinephrine or oxytocin. These hormones have their own effect on maternal heart and placenta and aggravate predisposed complication or leads to any complications on the road where laboring women cannot get care. With any of the complications and delayed basic obstetric care, vaginal delivery may be difficult and caesarean section would be viable option.

Discussed below variables were significantly associated with caesarean section in my review. However, they were insignificant in this finding.

Age group was significant at Brazil[20,21], Mexico[22], England[23], Iran[28], Nigeria[30], Tanzania[32], Ethiopia (Adigrat, Felegehiwot, Mizan Aman, Jimma)[35,36,41,42] respectively. This may be due to different socioeconomic characteristics and time of study. Educational status was significantly associated in Brazil[20,21], Mexico[22] and Tanzania[32]. This may be due to early marriage, low socioeconomic status and low educational scholar in study area.

Previous scar was associated with caesarean section in Brazil [20], Nigeria [30], Ethiopia (Felegehiwot, Harar, Jimma)[36, 37,42] respectively. This may be due to many cases of caesarean by maternal request in other countries and in context of Ethiopia; it may be due to few case of previous scar in this finding. Also multiple pregnancy was associated at Mizan Aman[41] and Jimma[42], the reason behind is that there were few cases of multiple cases in this finding.

Big birth weight was significant at Nigeria [30],Harar [37] and Felegehiwot [36]. Assumptions are due to poor nutritional status of the area that women did not gained during pregnancy period that result in no more cases of big baby. Not attending ANC service was associated at Brazil [20], Adigrat [35] and Jimma [42]. This may be due to high coverage of ANC service in current study and many cases were from urban area. Similarly, residence was significantly associated in Felegehiwot [36] and Jimma [42]. This also related to high ANC coverage.

Limitations of the study

Referral cases might overestimate the true prevalence of Cesarean Section. Therefore, the observed prevalence might not use as reference data for the source population.

CHAPTER SEVEN: CONCLUSSION AND RECOMMENDATION

7.1. Conclusion

The prevalence caesarean section is too high when compared with the profound figure that was reported in min EDHS 2014 and other studies in different countries. It is also higher than studies conducted in our country including the study conducted in the same area. Mal presentation, fetal distress, obstructed labor, higher family monthly income and distance from health facility were found to be significantly associated with CS. Majority of these factors might be manageable by early detection of any obstetric complications during ANC service, labor and delivery.

7.2. Recommendations

1. JUSH obstetrics and gynecology department should act according to WHO recommendations to reduce caesarean rate.

2. Oromia regional health bureau in collaboration with Jimma zone health office should equip available hospitals and health centers in the zone with trained health care providers to prevent caesarean sections due to referral from long distance and obstetric complications that women may develop on the road.

3. JUSH obstetrics and gynecology team should prevent caesarean section due to maternal request in some cases as in social and staff. In addition, VBAC should be tried for all women with previous scar if fulfill criteria's.

4. JUSH maternity ward should use partogram to follow the progress of labor. This can prevent complications that may rise and help to take an action before complication developed .This was observed at Adigrat hospital that following laboring women by partograph decrease chance of CS. Therefore, this can help to reduce the prevalence of CS from current rate

5. There is need to conduct prospective observational study on large sample size and longitudinal comparative study on the outcome of babies delivered by vaginal and caesarean delivery.

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ANNEXES

Annex-1: Questionnaires

Jimma University College of Health Sciences Department of Nursing and midwifery Information sheet

This information sheet and consent form is prepared for the aim of explaining the research project that you will be asked to join by the principal investigator of research.

Greeting_____

My name is _____ I am a data collector for the research to be conducted by Adugna Olani a post graduate student in Maternal Health in Jimma University College of health sciences. He is conducting a study on caesarean section and associated factors among women delivering at Jimma University Specialized Hospital.

Consent form

The information collected from you for this research will be kept confidential and closed cabinet, without your name and other identifiers. In addition, it will not be revealed to anyone except the investigators. You have full right to withdraw from this study at any time.

This questionnaire is meant to collect information used in a research.

If you have any question related to this study, please contact Principal Investigator:

Adugna Olani: Mob: 0910119559.

We would like to say thank you in advance for your information

Are you willing to participate in the study? A. Yes B. No

Respondent's signature……. Date……

Principal Investigator

Adugna Olani Akuma

THANK YOU

Part one: Socio-demographic characteristics

No	**Questions**	**Coding categories**	**Skip**
	Code	…….	
101	How old are you?	---------- years	
102	Marital status	1. Single 2. Married 3. Divorced 4. Widowed 5. Separated	
103	Educational status of respondent	1.Can't read & write 2. Informal education 3. Primary education (1-8) 4. Secondary education (9-12) 5.College and above	
104	Educational status of spouse	1.Can't read & write 2. Informal education 3. Primary education (1-8) 4. Secondary education (9-12) 5.College and above	
105	Occupational status of respondent	1.House wife 2. Private employee 3.Government Employee 4.Farmer 5.Merchant 6.Daily laborer	
106	What is your religion? (do not read list)	1.Orthodox 2.Muslim 3.Protestant 4.Catholic 5. Others specify…	
107	Place of residence	1.Urban 2. Rural	
108	Average family monthly income?	_____in birr	

Part two: Questions related to obstetric history

201	GA of current pregnancy	1. LNMP_____weeks 2.Early US_____ weeks 3.Uterine size_____ weeks 4.Amenorrhea_____ weeks 5.Unknown	
202	Have you visited health institution for ANC service for current pregnancy?	1.Yes 2.No	
203	If 1 to Q 202, number of ANC visit?	_____visit	
204	Where did you attended ANC service in the current pregnancy	1.Health post 2.Health center 3.Public Hospital 4.Private health facility 5.NGO health facility 6.Others, specify----------	
205	Number of gravidity	…… pregnancy	
206	Have you ever gave live birth previously	1.Yes 0.No	If1 → 207& 208
207	If 1 to Q 2006, how many live birth you had gave?	……children	
208	What was your previous mode of delivery? (possible more than one answer)	1. CS (_____frequency/times) 2. SVD 3.Instrumental vaginal delivery	
209	Have you ever had history of stillbirth?	1.Yes 2.No	
210	If yes to Q 209, how many times?	_____times	
211	What is the onset of labor	1.spontaneous 2.Induced 3.Elective CS	
212	Did you have any medical complications during current pregnancy?	1. Yes 0. NO	If1 → 21

			2
213	If yes Q213, select medical complication the mothers had during current pregnancy.		
	a) Excessive vomiting	1. Yes 0. NO	
	b) Malaria	1. Yes 0. NO	
	c) Thyroid disorder	1. Yes 0. NO	
	d) high blood pressure	1. Yes 0. NO	
	e) DM (Diabetic Mellitus)	1. Yes 0. NO	
	f) Cardiac Disease	1. Yes 0. NO	
	g) Anemia	1. Yes 0. NO	
	h) Asthma	1. Yes 0. NO	
	i) Others, specify---------	1. Yes 0. NO	

Part Three: Questions related to obstetrics complications during labor and delivery.

301	Did mother have any obstetric complication in current pregnancy?	1.Yes 0. No	If1 →302
302	If yes Q301, select obstetric complication the mother had during this pregnancy. (select more than one if necessary)		
	a) Mal-presentation	1. Yes 0. No	
	b) Malposition	1. Yes 0. No	
	c) Cord around baby neck	1. Yes 0. No	
	d) Prolonged labor (>18 hour)	1. Yes 0. No	
	e) Gestational DM	1.Yes 0.No	
	f) Hypertensive disorders of	1. Yes 0. No	

	pregnancy		
	g) Ruptured uterus	1. Yes 0. No	
	h) Polyhydramnios	1. Yes 0. No	
	i) Oligohydramnios	1. Yes 0. No	
	j) Abruption placenta	1. Yes 0. No	
	k) placenta previa	1. Yes 0. No	
	l) PROM > 18 hours	1. Yes 0. No	
	m) Obstructed labor	1. Yes 0. No	
	n) Other specify	……	

Part Four: **Questions related to health facility related factors**

Listed below question should be filled after interviewing women came for delivery service			
401	Mode of current delivery	1. Spontaneous vaginal deliver 2. Caesarean delivery	
402	If 3 to Q 303, which type	1.elective 2.emmergency	
403	Does mother checked by US to detect any maternal or fetal factors before delivery?	1.Yes 0.No	
404	How many hours /kilometers does it take to reach this hospital?	----------hours or ----------kilometers	
405	What mode of transportation you used to reach this health facility?	1.On foot 2.Ambulance 3.Other vehicles 4.Other,specify-------	
	Information from the card (should be filled immediately after postpartum period)		
406	Parthograph	1.Documented 2.Not documented	
From question number 408-413 filled only for women delivered caesarean			
407	Estimated blood loss after CS	_____ml	
408	VBAC tried for previous scar(for only with client of previous scar)	1. Yes 0. No	

409	Was there any written consultation/line of communication in giving decision for CS?	1.Yes 0.No	
410	Is the women informed detail information about reason for CS?	1.Yes 0.No	
411	Is the women/ relatives signed informed consent before conducting CS?	1.Yes 0.No	
412	Who has conducted the caesarean section?	1.Medical Resident 2.Senior obstetric & gynecologist Other, specify_____	
413	Newborn Birth Weight	……grams	
414	Numbers of newborn during current delivery	1.Single fetus 2.Twin 3.Triplet fetus	

Annex 2: In-depth Interview Guide

Information Sheet and Informed Consent for In- Depth Interview English Version

Hello, how are you? I want to say thank you for taking the time to meet with me today.

My name is **Adugna Olani**. I am postgraduate student of Jimma University. I am working in the research team of Jimma University. I would like to interview you a few questions about your experience and opinion of Caesarean Section while you are in this hospital ward. You are selected to participate in this study and I think that you will be in a position to provide me relevant and detail information to meet my study objectives. If you are interested to participate in this study, I will proceed to the interview and administrative questions that help to answer the study questions. The interview will take a minimum of 45 minutes. I will be taping the session because I don't want to miss any of your comments. Although I will be taking some notes during the session, I can't possibly write fast enough to get it all down. Because we're on tape, please be sure to speak up so that we don't miss your comments.

All responses will be kept confidential. This means that your interview responses will not be shared with any other person and I will ensure that any information I include in the report does not identify you as the respondent. Your name or your identification information will not be registered instead I use codes. Therefore, you are free to respond questions that you don't have to talk about anything you don't want to and you may end the interview at any time.

Are there any questions about what I have just explained?

Are you willing to participate in this interview? Yes _____ No_____

Participant number _____

Name of interviewer _____ signature _____

Date of interview _____

Annex-2: In-depth interview guides questions.

1. Are there any policies/protocol/guideline that regulate/monitor CS at JUSH? Probe…

2. Who decide for caesarean section? Who conduct CS?

3. In your setup, what are common indications for CS and the prevalence?

4. Does the mothers request for CS? Explore it

Afan oromo Version of the Structured Questionnaire

Gucha odeeffannoo hirmaattootaaf

Yuuniivarsiitii Jimmaatti kolleejjii saayinsii fayyaa muummee barnoota Midwifarii fi Narsiingii

Gaaffilee qindaa'oo odeeffannoo waa'ee opiraasiyoonii dhimmi da'umsaatiif hojjetamuu fi sababa isaa dudartoota da'umaaf gara hospitaala Ispeeshalayiizdii Universitii Jimmaatti bara 2016 tti dhufan irratti taasifamuuf qophaa'e.

Unka oddeeffaannoo

Heloo ani maqaan koo _____jedhama. Ani garee qorattoota yuunivarsitii Jimmaatiin hojjataa jira. Yoo fedhii keessan ta'e gaaffilee isin gaafatamuuf jirtan waa'ee dubartoota dhimmi da'umsaatiif opiraasiyoonii ta'aniifii sababoota isaan wal qabatan kan ilaallataniidha. Kaayyoon qorannoo kanaa dhibbantaa/persentii haadholii opiraasiyoonii ta'anii beekuufi sababa maaliin akka ta'e lafa kaa'uudha.Deeggarsii fi fedhiin keessan gaaffii isin gaaffannuuf nuuf kennitan rakkoo kayyoo qoranichaa kanaa midhan adda baasuuf nu gargaara.Gaaffii fi deebiin kun daqiiqaa 15 isiinitti fudhata. Waa'ee icciitii keesanii ilaalchisee, maqaan keessan gucha kana irratti hin barreeffamu. Oddeeffaannoon isiin nuuf keennitan kamiyyuu iciitiin isaa haalan eegamaadha.Hirmaannaan keessan fedhii irratti kan hundaa'e yoo ta'u gaaffii deebisuu hin barbaanne kamiyyuu dhiisuuf mirga guutuu qabdu.gaaffii fi deebicha erga eegaltanii booda yeroo itti isiinitti hin tolle kamittuu qoranicha addaaan kutuu yookiin dhabbuuf mirga guutuu qabdu.

Qorannicha ilaalchisee gaaffii yookiin wanti isiniif hin galle jiraa?

Unkaa walii galtee kan jechaan

Amma qorannoo kana keessatti hirmachuuf fedhii qabdaa?

Eyyee _____ Lakki _____,Yoo lakki ta'e waliigalticha kabajiitii isa yookiin ishee galateefachuun asitti dhabi

Yoo Eyyee ta'e qorannicha itti fufi.

Maqaa nama gaaffii gafatuu _____Mallattoo _____ Guyyaa_____

Maqaa to'ataa_____ Mallattoo _____ Guyyaa_____

Afan Oromo Vesion Questionnaires

Gaaffilee

Kutaa 1 ffaa: Gaaffiiwwan armaan gaditti dhiyaatan odeeffannoo walii galaa ilaallata

No	**Questions**	**Coding categories**	**Dar**
101	kooddii	…….	
102	Umriin kee meeqa?	---------- waggaa	
103	Haalli fuudhaaf heerumaa	1. Hin heerumne 2. Heerumeera 3. Walhiikneerra 4. Abbaan warraa narraa du'e 5. Kanbiraa, adda baasi.....	
104	Sadarkaan barumsaa hammami?	1. Hin baranne 2.Barumsa idilee hin qabu,garuu barreessuufi dubbisuu nan danda'a 3. Kutaa 1-8 4. Kutaa 9 - 12 5. Kolleejjii fi isaa oli	
105	Sadarkaan barumsaa abbaa warraa kee hammami?	1. Hin baranne 2.Barumsa idilee hin qabu,garuu barreessuufi dubbisuu nan danda'a 3. Kutaa 1-8 4. Kutaa 9 - 12 5. Kolleejjii fi isaa oli	
106	Hojiin kee maali?	1.Hojjetaa dhaabbata mootummaa 2.Dhaabbata miti mootummaa 3.Hojii dhuunfaa 4.Qotee bulaa 5.Haadha warraa 6.Hojjetaa guyyaa	
107	Amantaan kee maali?	1.Musiliima 2.Ortodoksii 3.Pirootestant 4.Kaatoolikii 5.Kanbiraa, adda baasi…	
108	Bakki jireenyaa kee eessa?	1.Magaalaa 2.Baadiyyaa	
109	Galiin kee waggaatti hammami?	---------- qarshii	

Kutaa 2 ffaa: Gaaffiiwwwan armaan gaditti dhiyaatan ofeeggannoo haati ulfa kanaaf godhaa turteefi dhibeewwan fayyaa ulfaan wal hin qabanne ishiin qabdu ilaallata

201	Ulfi amma kun turban hagami/ji'a meeqa?	_____torbee/ji'a	
202	Ulfa ammaa kanaaf hordoffii da'umsa duraa qabda turee?	1.Eyyen 2. Lakkii	If 1→ 203
203	Yoo deebiin gaaffii lakk. 201 1 ta'e, si'a meeqa?	…….ilaalame	
204	Hordoffii da'umsa duraaf eessatti ilaalamaa turte?	1.kellaa fayyaa 2.Buufata fayyaa 3.Hospitaala mootummaa 4.Kilinika dhuunfaa 5.Kilinika dhaabbata miti mootummaa 6.kanbiraa, adda baasi----------	
205	Kana dura yeroo meeqaaf ulfoofte/garaatti baaatte?	_____	
206	Kana dura daa'ima fayya qabeessa deessee beektaa?	1.Eyyen 0.Lakkii	
207	Ulfi kee yeroo ammaatti turban meeeqa?	…….torban	
207	Gaaffii 2006'f deebiin kee 1 yoo ta'e, meeqa deesse?	…… daa'ima	
208	Da'umsi kee kana duraa haala kamiini?	1.karaa uumamaa 0.opiraasiyoonii gadameessaa(yeroo meeqa?_____)	
209	Kana dura daa'ima lubbuu hin qabne deessee bektaa?	1.Eyyee 0.Lakkii	
210	Deebiin gaaffii 209 1 yoo ta'e, yeroo meeqa?	_____	
211	Ciniinsuun haala kamiin eegale	1.ofiin/haala uumamaatiin 2.qorichatu naaf kenname 3.opiraasiyoonii duraan karoorfameeni	
213	Ulfa yeroo ammaa waliin kan wal hin qabanne dhibee fayyaa gosa kamiillee nii qabda turtee?	1. Eeyyen 0. Lakkii	If 1 → 212
214	Yoo deebiin kee gaaffii 211, 1 ta'e, dhibee isa kami? Deebii tokkoo ol deebisuun nii danda'ama		

	a.olguuraa/ balaqqama	1. Eeyyen 0. Lakkii	
	b. Busaa	1. Eeyyen 0. Lakkii	
	c. dhibee xannacha taayirooyidii	1. Eeyyen 0. Lakkii	
	d. Dhibee dhiibbaa dhiigaa	1. Eeyyen 0. Lakkii	
	e. Dhibee sukkaaraa	1. Eeyyen 0. Lakkii	
	f. Dhibee onnee	1. Eeyyen 0. Lakkii	
	g. Dhibee hanqina dhiigaa---------	1. Eeyyen 0. Lakkii	
	h.Dhibee Asmii		
	i.kan biro, adda baasi_____		

Kutaa 3 ffaa: Gaaffiiwwan armaan gadii waa'ee dhibee ciniinsuu fi da'umsa yeroo ammaan wal qabatan ilaallata

301	Haati dhibee kan ulfa yeroo ammaa waliin wal qabatu nii qabdii?	Eeyyen 0. Lakkii	If 1 →302
302	Yoo deebiin kee gaaffii 310, 1 ta'e, dhibee isa kami? Deebii tokkoo ol filachuun nii danda'ama		
	a.Daa'imni haala sirrii hin taaneen gara gadameessaatii gadi lakkifamuu	1. Eeyyen 0. Lakkii	
	b.Daaa'imni kallattii sirrii malee daandii gadameessaarra dhiyaachuu	1. Eeyyen 0. Lakkii	
	c.hiddi handhuuraa morma daa'imaa faana wal xaxuu	1. Eeyyen 0. Lakkii	
	d. ciniinsuun sa'atii 18 ol turuu	1. Eeyyen 0. Lakkii	
	e. dhibee sukkaaraa ulfaaan wal qabate	1. Eeyyen 0. Lakkii	
	f. dhibee dhiibbaa dhiigaa ulfaan wal qabate	1. Eeyyen 0. Lakkii	
	g. gadameessi tarsa'uu	1. Eeyyen 0. Lakkii	
	h.baayyachuu bishaan buubbee	1. Eeyyen 0. Lakkii	
	i. xiqqaachuu bishaan buubbee	1. Eeyyen 0. Lakkii	

	j.”pilaasentaa abruption”	1. Eeyyen 0. Lakkii	
	k. pilaasentaa pireeviyaa”	1. Eeyyen 0. Lakkii	
	l.buubbeen bishaanii dursee dhangala’uu(>18hr)	1. Eeyyen 0. Lakkii	
	m.daa’imni gadameessa keessaa gara daandii ba’umsaatti seenuu diduu	1. Eeyyen 0. Lakkii	
	n.kan biraa, adda baasi_____		

Kutaa 4 ffaa: Gaaffiiwwan armaan gadii rakkoo karaa dhaabbata fayyaa ilaallata

Odeeffannoon armaan gadii dubartii da’umsaaf dhufte gaafachuun guutama			
401	Haati amma haala kamiin deese	1.karaa uumamaa 2.opiraasiyoonii gadameessaa	
402	Yoo deebiinkee 402, 2 ta’e gosa is akami	1.kan duraan karoorfame 2.kan atattamaa	
403	Utuu hin da’iin dura haati “ultra sound” ’n ilaalamteettii?	1. Eeyyen 0. Lakkii	
404	Hospitaala ga’uuf daqiiqaa/sa’atii/kiilomeetira hagam sitti fudhata?	_____daqiiqaa/sa’atii _____kiilomeetira	
405	Haala kamiin mana yaalaa dhufte?	1.miilaan 2.Ambulaansii 3.konkolaataa kan biraa 4.kanbiraa___	
	Odeeffannoo kaardii haaadhaarraa guutaman		
406	‘partograph” n galmaa’eeraa	1. Eeyyen 0. Lakkii	
Odeeffannnoo kaardiirraa dubartoota opiraasiyooniin da’an qofaaf guutamu(408-413)			
407	Yeroo opiraasiyoonii tilmaamaan dhiiga hagamtu dhangala’e?	_____ml	
408	Yoo dubartiin opiraasiyooniin deessee beekti ta’e, yeroo ammaatti akka karaa uumamaa deesse yaaliin taasifame jiraa(VBAC)	Eeyyen 0. Lakkii	
409	Utuu opiraasiyooniif hin murteessiin dura,Hakiimonni sadrkaa jiraniin mari’ataniiruu?	1.Yes 0.No	
410	Dubartiin sababa opiraasiyooniin hojjatamuufii guutummaatti hubannoon kennameeraafii?	1.Yes 0.No	

411	Dubartiin /firri ishii opiraasiyoonii hojjachuun dura unka waliigaltee mallatteessaniiruu?	1.Yes 0.No	
412	Opiraasiyoonii eenyutu hojjate?	1.”Residentii” 2.Ispeeshaalistiiulfaafi gadameessaa 3.Kan biraa, adda baasi____	
413	Ulfaatinni mucaa hammami?	……giraama	
414	Baay’inni mucaa gadameessa haadhaa keessa turee meeqa?	1.Tokko 2.Lakkuu 3.Mucaa sadii/ isaa ol	

Amharic Version Questionnaire **ክፍል አንድ፡ የእርሶን አጠቃላይ ሁኔታ**

ተ.ቁ	ጥያቄዎች	የኮድ መስጫ ክፍፍሎች	እልፍ
101	ዕድሜዉ ስንት ነዉ	---------ዓመት	
102	የጋብቻ ሁኔታ	1. ያላገባች 2. ያገባች 3. የፈታች 4. ባል የሞተባት	
103	የትምህርት ደረጃ	1. ምንም ያልተማረች 2. 1-8 3. 9-12 4. ›12ክፍል	
104	የባል የትምህርት ደረጃ	1. ምንም ያልተማረ 2. 1-8 3. 9-12 4. ›12ክፍል	
105	የስራ ሁኔታ	1. የመንግስት ሰራተኛ 2. የግል መስራ ቤት /መንግስታዊ ባልሆነ ድርጅት ወዘተ የምትሰራ 3. የንግድ ስራ 4. አርሶ አደር ና አርብቶ አደር 5. የቤት እመቤት 6. ሌላ----------	
106	ሀይማኖት	1. ሙስሊም 2. ኦርቶዶክስ 3. ፕሮቴስታንት 4. ካቶሊክ 5. ሌላ ጥቀስ----------	
107	መኖሪ ቦታ	1. ከተማ 2. ገጠር	
108	ገቢ(ከአመቱ ዉስጥ የምታገኘዉ ገቢ)	----------ብር	

በተመለከተ የሚጠየቁ ጥያቄዎች

ክፍል ሁለት ፡ከወሊድ ታሪክ ጋር የተያያዙ ጥያቄዎች

201	ለአሁኑ እርግዝና የወሊድ ክትትል አድርገዉ ነበር	1. አዎ 2. አይ አላደረኩም	መልሱ 1.ከሆነ202 እለፍ/ፊ
202	ለጥያቄ ቁጥር 201 መልሱ አዎ ከሆነ ፡ ለምን ያህል ጊዜ ክትትል አድርገዋል ?	----------ክትትል	
203	ለአሁኑ እርግዝንና የወሊድ ክትትሉን የት ነበር ያደረጉት?	1. ጤና ጣቢያ 2. ሆስፒታል 3. የግል ኪሊኒክ 4. መንግስታዊ ባልሆነ ድርጅት 5. ሌላ ጥቀስ----------	
204	ከጤና ባለሙያዎች መካከል የጤና ክትትሉን ያደረገሎት ማን ነበር?	1.ሚድዋይ ፍሪ 2.ነርስ 3.ዶክተር 4.ስፔሻሊስት 5. ሌላ ጥቀስ----------	
205	ከዚህ በፊት የፅንሱን እና የማህፀን በር ያለመመጣጠን ችግር አጋጥሞት ነበር?	1. አዎ 2. አይ አላጋጠመኝም	
206	የዕርግዝና ጊዜ	----------ሳምንታትን	
207	አጠቃላይ የእርግዝና ብዛት	----------እርግዝና	
208	የወሊድ ብዛት	---------- ልጆች	
209	የበፊት የወሊድ ሁኔታ	1. በቀዶ ጥገና ህክምና 2. በመሳሪያ 3. ከዚ በፊት አልወለድኩም	
210	በእርግዝና ወቅት በፊት የነበረ ችግር ነበር	1. አዎ 2. አልነበረም	
211	ለጥያቄ ቁጥር 210 መልሱ አዎ ከሆነ የነበረዉችግር ምንድነዉ?		
	1. የደም ግፊት	1.አዎ 2.አልነበረም	

	2. የስኳር በሽታ	1.አዎ 2.አልነበረም	
	3. የልብ ህመም	1.አዎ 2.አልነበረም	
	4. የደም ማነስ ችግር	1.አዎ 2.አልነበረም	
	5. ሚጥል በሽታ	1.አዎ 2.አልነበረም	
	6. አስም	1.አዎ 2.አልነበረም	
	7. ሌላ ጥቀስ----------	1.አዎ 2.አልነበረም	

ክፍል ሶስት፡ ከአሁኑ የወሊድ ሁኔታና እርግዝና ጋር የተያያዘ የጤና ችግሮች ላይ የሚያቶክሩ ጥያቄዎች

301	እናትየዉ በአሁኑ እርግዝና ወቅት የገጠማት ከእርግዝና ጋር የተያያዘ ችግር ነበር	1. አዎ 2. አልነበረም	መልስ 1 ከሆነ ወደ 302 እለፍ/ፊ
302	ለጥያቄ ቁጥር 301 መልሱ 1 ከሆነ እነዚህ ከእርግዝና ገረ የተያያዙ የጤና ችግር ምን ነበሩ ? (ከአንድ በላይ ሊሆኑ ይችላሉ) ከዕርግዝና ጋር የተያያዙ የደም ግፊት በሽታ		
	ከእርግዝና ጋር የተያያዘ የስኳር በሽታ	1. አዎ 2. አልነበረም	
	ከፍተኛ ደረጃ የደረሰ የደም ግፊት	1. አዎ 2. አልነበረም	
	ከፍተኛ ማቅለሽለሽእና ማስመለስ	1. አዎ 2. አልነበረም	
	የፅንሱ ተከሻ አለማለፍ ችግር	1. አዎ 2. አልነበረም	
	የማህፀን መቀደድ	1. አዎ 2. አልነበረም	
	የማህፀን ፈሳሽ መብዛት	1.አዎ 2. አልነበረም	
	የማህፀን ፈሳሽ ማነስ	1. አዎ 2. አልነበረም	
	የእንግዴ ልጅ ያለጊዜዉ መላቀቅ	1. አዎ 2. አልነበረም	
	የእንግዴ ልጅ ያለቦታዉ መጣበቅ	1.አዎ 2.አልነበረም	
	በትክክለኛዉ ጊዜ ስፌት የማህፀን	1. አዎ 2. አልነበረም	

	ፈሳሽ መፍሰስ (ከ18 ሰአት በላይ)	1. አዎ 2. አልነበረም	
	የቆየ ምጥ	1. አዎ 2. አልነበረም	
	ሌላ ጥቀስ	1. አዎ 2. አልነበረም	
303	የወሊድ ሁኔታ		
304	ለጥያቄ ቁጥር 303 መልስ 3 ከሆነ፣ የቆዳ ጥገን ህክምናው አይነት		

ክፍል አራት ፡ ከፅንሱ ጋር የተያያዙ ተፅዕኖች የሚመለከቱ ጥያቄዎች

401	ቀዶ ህክምናው ከፅንሱ ጋር የተያያዘ ነባር	1. አዎ 2. አልነበረም	
	ትልቅ ፅንስ	1. አዎ 2. አልነበረም	
	በጣም አነስተኛ ክብደት	1. አዎ 2. አልነበረም	
	ማንኛውም የተፈጥሮ የፅንስ ችግር	1. አዎ 2. አልነበረም	
	ሌላ ፣ጥቀስ	1. አዎ 2. አልነበረም	
402	የፅንስ አመጣጥ	1.በቄንቅላት 2.በመቀመጫ 3.በትከሻዉ 4.በግንባር 5.በፊት 6.የተወሳሰበ አመጣጥ 7.ሌላ ጥቀስ------	
403	የቀዶ ጥገናው ህክምና ከተካሄደ ፣ ፅንሱ አምጦ በመውሰድ የተደረገ ጥረት ነበር	1. አዎ 2. አልነበረም	
404	ለጥያቄ 403 መልስ 1 ከሆነ ምን አይነት ዘዴ ተሞክሮ ነበር	1.የእናትየው ቦታ መቀያየር 2.በማሸን እርዳታ 3.የማህጸን በርን በመቅደድ 4.ከውል ሆኖ ህጻኑን ለማገላበጥ በሞሞከር 5.ሌላ ጥቀስ_____	
405.	የተወለደው ልጅ ክብደት	_____ ግራም	

406	የተወለደው /ችው ልጅ ጸታ	1.ወንድ 2.ሴት	
407	የተወለደው ልጅ ብዛት	1.አንድ 2.መንታ 3.ሶስት እና ከዚያ በላይ	
408	ከቀዱ ጥገና ህክምናው በኃላ የወሊድ ሁኔታ	1.ከህይወት ያለ 2.የተጎዳ ልጅ 3.በጣም የታመመ 4.በህይወት የሌለ 5.ሌላ ጥቀስ	
409	ከቀዱ ጥገን ህክምናው በኃላ የእናትየው የጤና	1.ጤነኛ 2.የደም መፍሰስ 3.ዕልፊተ ህይወት 4.ሌላ ጥቀስ----------	

ክፍል አምስት ፤ በወሊድ ወቅት ጤና ተቋሙ ጋር የተያያዙ ጥያቄዎች

501	የቀዱ ጥገና ህክምናው ያደገረው ማን ነበር	1.የስፔሻሊስት ተማሪ 2. ስፔሻሊስት 3.ሌላ ጥቀስ----------	
502	ቀዱ ጥገናው በሚወስንለት ወቅት ምክክር ነበር	1. አዎ 2. አልነበረም	
503	የጤና ተቋሙ ከቤት ያለው ርቅ	----------ሰአት	
504	የመጡለት እዚህ ለመምጣት መጓጓዣ ነበር	1. አዎ 2. አልነበረም	