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**PREVALENCE OF CAESAREAN SECTION AND THE ASSOCIATED FACTORS IN
PRIVATE HOSPITALS IN ADDIS ABABA - A CROSS-SECTIONAL STUDY**

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Acronyms

AAHB – Addis Ababa Health Bureau

AAU – Addis Ababa University

CD – Caesarean Delivery

CPD – Cephalo-Pelvic Disproportion

FMOH – Federal Ministry of Health

GC - Gregorian Calendar

HMO – Health Management Organization

NGO – Non-Governmental Organization

PH – Private hospitals

VBAC – Vaginal birth after Caesarean section

VD – Vaginal Delivery

USA – United States of America

WHO –World Health Organization

Summary

Background: Caesarean delivery has been increasing at an alarming rate globally. This increase has become a major challenge across health institutions in both developed and developing countries. Caesarean delivery rate has been shown to be more common in the private fee-for-service hospitals than public hospitals. The Ethiopia Demographic and health survey reported an increase in the caesarean delivery rate between 2005 and 2011 from 16% to 21.8% and even a higher rate among women who delivered in private health institutions (41.7%) which was twice higher than their counterparts who delivered in public institutions (20.6%) signifying the possibility of over-utilization of the service in the private hospital.

Objective: To determine the prevalence of Caesarean delivery and the associated factors in private hospital in Addis Ababa.

Method: This study was a facility based cross-sectional survey carried out in private hospitals in Addis Ababa during the months of April to May 2017. Study participants were selected using multi-stage random sampling technique. Four hundred and eleven consecutive delivered mothers who consented from the selected private hospitals providing basic and comprehensive obstetrics services participated in study. A pre-tested structured questionnaire was used to obtain information from the respondents. Data was entered in Epi Info version 7 and exported to STATA version 12 for analysis. Multivariable analysis was carried out. Strength of associations and significance level was examined using odds ratio and 95% confidence intervals respectively.

Result: The prevalence of Caesarean delivery in private hospitals in Addis Ababa was 63.7% [CI (59.1%, 68.3%)]. Being primiparous [AOR=2.89, 95% CI (1.19, 6.98)], multiparous [AOR=10.2, 95% CI (4.13, 25.4)], previous Caesarean delivery [AOR=12.48, 95% CI (6.01, 25.95)] and having health insurance coverage were found to be positive and statistically significantly associated with having Caesarean delivery.

Conclusion: Limiting primary Caesarean delivery to the barest minimum by only performing such for only absolute indications, allowing vaginal birth after Caesarean section (VBAC) through close monitoring during labour, counselling of parturient at the antenatal clinics on possibility of VBAC and the risks associated with unnecessary request for Caesarean section would be important to decrease the high prevalence of CS.

1. Introduction

1.1 Background

The delivery of the foetus is one of the most highlighted events worldwide irrespective of the route of delivery; however Caesarean delivery has been increasing at an alarming rate globally. This increase has become a major challenge across health institutions in both developed and developing countries. The United States of America (USA) reported a Caesarean delivery rate of 32.2% in 2014, this represent a steady increase from the rate of 22.8% reported in 1993.^[1,2]

Caesarean delivery rate has been shown to be more common in the private fee-for-service hospitals than public hospitals. The phenomenon is seen in both the developed and developing world.^[3,4]

Similarly the Caesarean delivery rates also exceed 20% in most other developed regions of the world (with the exception of Eastern Europe).^[5]

The leading country in terms of the highest Caesarean delivery rate globally is Brazil with a reported rate of over 50% in 2010, this shows the rising cesarean rate of 1.2% each year from the 30.3% reported in 1978.^[6,7]

In Sub-Saharan Africa, being a low resource setting, the overall reported rate for CD is quite low between 1-2%, however differential rate has been reported between urban and rural areas with higher prevalence of CD in urban areas.^[3,8]

In Nigeria, Giedam et al evaluating the rising trend and indications of Caesarean section at a teaching hospital reported a CD rate of 11.8%.^[9]

The national review of Caesarean delivery in Ethiopia reported a rate of 15% and 18% for CD in public hospitals and overall institutional rates respectively.^[10,11]

The Ethiopia Demographic and health survey also reported an increase in the caesarean delivery rate between 2005 and 2011 from 16% to 21.8%. Gebremedhin evaluating the trend and socio-demographic differentials of Caesarean section rate in Addis Ababa, Ethiopia: analysis based on Ethiopia demographic and health surveys data reported even a higher rate among women who delivered in private health institutions (41.7%) which was twice higher than their counterparts who delivered in public institutions (20.6%) signifying the possibility of over-utilization of the service in the private hospital.^[12,13,14] Tsega et al evaluating the prevalence of Cesarean Section in urban health

facilities and associated factors in Eastern Ethiopia reported even a much higher prevalence of CS in private hospitals (58.7%) compared to the 26.6% prevalence in public hospitals.^[15]

These figures all exceed the 1985 World Health Organization (WHO) announced maximum acceptable rate of C-section in each geographical area of 10%-15%.^[16]

The International Federation of Obstetricians and gynecologist (FIGO) in their statement about Caesarean Section states that ‘Some countries have experienced increasing recourse to Caesarean delivery for non-medical indications. FIGO considers surgical intervention without a medical rationale to fall outside the bounds of best professional practice. Caesarean delivery should be undertaken only when indicated to enhance the well-being of mothers and babies and improve outcomes’ (FIGO 2014).^[17]

The factors responsible for Caesarean delivery are very complex and, in addition to clinical symptoms, it is also dependent on the economic, organizational, and socio-cultural status of women.^[18]

Several factors has been evaluated to be explain this increase in Caesarean delivery rate, these include medical, non-medical and health service reasons. However the growing consensus presently is that medical reasons cannot completely explain this increase. There are strong evidences to suggest that the non-medical factors may be more important in deciding to perform CD in brazil.^[19]

Available studies on this topic in Ethiopia has majored on the medical factors responsible for rising Caesarean delivery rate, there is paucity of data on the non-medical determinants in private hospitals in Addis Ababa, Ethiopia.

This study assessed both the non-medical and medical factors associated with Caesarean delivery rate in private hospitals in Addis Ababa.

1.2 Statement of the problem

With significant improvement in the choice of anaesthesia, surgical techniques and availability of blood transfusion services and potent antibiotics Caesarean delivery has become a much safer procedure, however it is still associated with potential clinical short and long term risk to the mother and the foetus such as haemorrhage, injuries to abdominal organs, wound infection, uterine synechie, secondary infertility etc when compared with spontaneous vaginal delivery. Also, Caesarean delivery is also associated with increased cost to the health care system and the patient which is highly important in low resource economic setting. Gonzalez- Perez et al. in a study in Mexico reported that the extravagant Caesarean delivery is associated with extra cost running into several millions of dollars yearly and this leads to noticeable impact on the country's economy.^[20] In the United Kingdom, a newly developed economic model examining the cost of Caesarean delivery due to non- medical factors showed that annually around 10.9 - 14.8 million additional pounds must be spent by the health system and the mean saved expenses for each normal vaginal delivery and appropriate Caesarean delivery was around 1,257 pounds.^[21]

In the context of Ethiopia, the World Health Organization (WHO) global study in 2010 estimated the financial implication of unnecessary Caesarean delivery in Addis-Ababa in terms of hospital consumables, length of stay in the hospital after surgery, human and time resources and cost of potential complications from surgery to be 132.7 US dollars per procedure. With a reported 4,076 unnecessary Caesarean delivery conducted in Addis Ababa in 2010 the total cost incurred will be around 540,885 US Dollars (10,276,815 Ethiopian Birr).^[14,22]

It is therefore highly important to determine both the medical and non-medical factors associated with increasing Caesarean delivery in private hospitals in Ethiopia where the Caesarean delivery rate is reported to be about 41.7% ^[14], Ethiopia being a low income country has other more pertinent health concerns and such resources saved from excessive Caesarean delivery can be invested in tackling such.

Existing studies on this topic in Ethiopia has focused more on public hospitals and the medical determinants for CD.

This study determined both the non-medical and medical factors associated with Caesarean delivery in private hospitals in Addis-Ababa, Ethiopia.

1.3 Significance of the study

The higher rate of Caesarean delivery in private hospitals compared to government hospitals is also associated with huge cost; evidences available are pointing more towards non-medical factors as being a major factor for this increase.

This study aimed to determine both the medical (CPD, fetal distress, previous CS, malpresentation, dysfunctional labour etc) and non-medical factors such as maternal age, level of education, occupation, economic status, health insurance coverage etc which are associated with Caesarean delivery in private hospitals in Addis-Ababa, Ethiopia.

The result from this study will help to better understand the important factors responsible for sustaining these trends of increased caesarian section rate in their broader context; it will also help the government to develop appropriate policies and guidelines for performing and monitoring cesarean deliveries in the country.

2. Literature review

Caesarean delivery refers to the delivery of the foetus through a surgical incision made through the abdominal wall (laparotomy) and the uterine wall (hysterotomy).

Birth, a normal human physiological process was once a high mortality event causing both serious maternal and newborn losses. Medical technology and public health measures were introduced to prevent childbirth complications including cesarean section (CS). CS was at first a major operation for high-risk pregnancy; there were major operative complications from CS. When surgical and anesthetic techniques and blood transfusion are well developed, CS safety has been increasing, leading to a rapid increasing of cesarean section rate.

Several authors have explored the determinants of the rising trend in Caesarean delivery in different context; however this issue remains a complicated and debatable important health concern. These determinants has been grouped by authors as medical or clinical, non-medical (socio-economic, cultural and demographic factors) and institutional/Obstetrician factors. This review of literature aims to address both the non-medical and medical factors.

2.1 Rising trend in the prevalence of Caesarean delivery

The prevalence of CD has been increasing globally and differential exists between private and public hospitals. Globally CD rate has been reported to have increased In the United States of America the CD rate increased from 5.5% in 1970 to 22.8% in 1993 and subsequently to of 32.2% in 2014.^[1,2]

In Brazil which is one of the countries with the highest CD worldwide rate of over 50% in 2010, this shows the rising cesarean rate of 1.2% each year from the 30.3% reported in 1978 ^[6,7], however there are significant differences between the prevalence of CD among the private and public hospitals. Viera et al in 2015 reported the prevalence of Caesarean delivery were 29.9 % and 86.2 % in the public and private sectors in Brazil.^[23] Similarly, in another recent study in Mexico, Elena et al reported that the percentage of CD rose from 45.2% in 2012 to 57.3 % in 2015 with a significant difference between private hospitals where the percentage CD was at an alarming rate of 85.6 %.^[24]

In Ethiopia, there has been a gradual increase in the CD rate with significant differences between the private and public hospitals. Gebremedhin reported that the CD rate increased significantly from 2.3% in 1995–1996 to 24.4% in 2009–2010. From 2003 onwards, it persisted above 15%. Also he reported that the rate of CD among parturient who delivered in private health institutions was twice higher than their counterparts who delivered in public institutions 41.7% vs 20.6%.^[14]

2.2 Non-medical factors

Non-medical factors that have been studied as being responsible for increasing prevalence of CD globally include: age of the mother, level of education, socio-economic status, insurance coverage, maternal demand, religion, employment status, and parity.

2.2.1 Age of the mother

The age of the parturient is one of the non-medical factors that have been considered to be associated with rising CD globally.

Elena et al in a study on the epidemic of the Cesarean Section in private hospital in Puebla, México in 2015 reported that the age of the women was directly associated with decision to perform CD. The frequency of CD was reported to be higher as the mother's age increased and the vaginal birth decreased as mother's age increased, and this was noted to increase significantly in those women who were older than 30 years old and generally the decision for CD is taken by the mothers without medical reason. In this study there was significant difference between the ages of women who attended the private as compared to public hospitals.^[24] In Ethiopia, similar findings were reported showing that the highest percentage of CD occurred between women aged 35-44 years.^[14]

Abebe et al evaluating the factors leading to cesarean section delivery at Felegehiwot referral hospital, Northwest Ethiopia also reported that women in the age category of 15–19 had 37 % lower probability of CS delivery compared to age category of 20–34 years).^[25]

Kahsay et al studying the determinants of CD and its major indications in Adigrat Hospital, Northern Ethiopia also reported that mothers aged 35 years and above were 3 times more likely to deliver by CS compared to those aged less than or equal to 24 years old.^[26]

This finding has also been corroborated by other authors ^[27,28], in contrast to this Khawaja et al in 2004 reported that even in the absence of complications among older parturient the rate of CD was still higher among older parturient, especially primiparous women.^[28]

2.2.2 Level of education

The level of education has also been shown to correlate with the choice of delivery; however findings from different studies have been inconsistent. In Mexico, higher level of education was associated with increased choice for CD; more than 56.7 % of the mothers with graduate education had CD in the private facility as compared to 18% in public hospitals, also the prevalence of CD decreased consistently with decrease in the level of education.^[24] In China educated women were 3-4

times more likely to have a cesarean section as compared to illiterates.^[29] These findings are also consistent with findings in Ethiopia where higher level of education was associated with increased prevalence of CD (higher education-33.3%, secondary education-32.3%, primary education-15.8%, illiterates-14.8%).^[14] This was also consistent with the findings from a study by Bayou et al evaluating pattern of CD in Addis Ababa which reported highest CD rate among women who had tertiary (33.6%) and secondary education (22.2%).^[30]

In contrast some studies in India and Brazil ^[31,32] showed no association between level of education and prevalence of CD.^[31]

2.2.3 Socio-economic and insurance status

Several studies have found socio-economic status and insurance status to be significantly associated with CD.^[14,24,30,31,33]

The findings reported in a Mexican study ^[24] showed that parturient with a stable socioeconomic status opted to deliver in the private hospitals in order to evade all the administrative procedure in the public hospital that is also associated with a poor medical attention due to the quantity of women that each doctor has to attend daily. The highest rate of cesarean section found in the private hospitals could be explained by the economic incentives to doctors, which are usually three times larger than those obtained with a vaginal birth, in a cesarean procedure in México a doctor could earn between \$1000-2900 USD in the private sector. However, economic incentives do not explain what happens in the public hospitals where doctors do not receive extra payment for performing a cesarean section. In the context of Ethiopia ^[14], CD rate were increased across all the level of household wealth index (Rich, Middle-income, poor), however the highest prevalence of CD was found among the rich (28.6% vs 19.5% vs 16.4%;^[34] hence the socio-economically empowered women who have limited financial barriers may over-utilize the service. In contrast employment status did not alter the prevalence of CD as the CD rate among the unemployed and the employed were almost the same (21.7% vs 21.2%).

The type and level of insurance coverage for parturient is another important non-medical determinant for increasing CD which has been studied.^[35-39] Studies in the US has shown higher prevalence of CD among parturient under private insurance coverage (high financial support) than those receiving Health Maintenance Organization (HMO) support.^[35-37] Similarly, Ostovar et al ^[39] reported than in Iran with a 74.6% total insurance coverage in the population under study . In this

study, complementary insurance coverage was also offered to the parturient, this covered 40.4% and 8.8% of women with CS and NVD, respectively. The result showed higher prevalence of CD compared to NVD among those who were covered with insurance (52.8% vs 47.2%), more significantly the CD rate was much more increased among those who received complimentary insurance compared to those who did not (81.5% vs 18.5%).

One of the reasons adduced for this significant increase may be the fear of legal or penal problems and the lack of clear and adequate laws and regulations to support specialists as well as the lack of necessary standards and sufficient insurance coverage and support regarding medical procedures. A recent study in Ethiopia also agree with above findings showing that the prevalence of CD was higher among women in high socio-economic class (27.6%), high-wealth quintile (20.2%) and women who had health insurance coverage (30.4%)^[30], however it is important to note that this study analysed data from information provided by mothers from their last pregnancies and childbirth.

2.2.4 Other non-medical determinants

The other non-medical determinant that has been discussed in literature as contributing to increasing rate of CD globally include the parity of the parturient, marital status, avoidance of pain by the patient during NVD and provider convenience.^[14,25,26,40,41]

Higher CD has been reported among Nulliparous women and the prevalence decreases with higher parity.^[14,25,26] However the incidence of cephalo-pelvic disproportion (medical indication for CD) is commoner in nulliparous women.

2.3 Medical factors associated with Caesarean delivery

The leading medical indications for Caesarean delivery in several studies were; non-reassuring fetal status or fetal distress, failure to progress in labour or arrest of dilatation, previous Caesarean delivery, malpresentation and hypertensive disorders in pregnancy (pre-eclampsia and eclampsia).^[42,43,44]

In developed countries, the rising trend in Caesarean delivery rates was more related to previous Caesarean delivery than any other clinical factors,^[43] however this is quite different for developing countries, where the leading medical indication for Caesarean delivery is fetal distress and dystocia.^[45,46] Consequently, there is a trend of performing more elective Caesarean deliveries in developed countries than in developing countries where majority of Caesarean sections are

performed as emergency procedures.^[47] Barber et al in a study in the United States of America examining the indications for Caesarean section to describe factors contributing to increases in Caesarean delivery rate found that primary Caesarean sections contributed to 50% of the increase in Caesarean section rate, the rest being repeat Caesarean sections. Considering the primary Caesarean sections, more subjective indications like non-reassuring fetal heart rate status contributed more to the rates than the more objective indications like malpresentation, cord prolapse and abruptio placentae.^[42] The study concluded that modifiable factors were involved and that it is possible to reduce Caesarean section rates.

Other clinical factors like multiple pregnancy, macrosomia, ante-partum haemorrhage, and failed induction contributed less significantly to the rise in Caesarean section rates.^[42]

In a recent systematic review to examine the rising trend in Caesarean section worldwide, Elena et al^[48] showed that the most frequently reported CS indications were; cephalo-pelvic disproportion (CPD), fetal distress, prior cesarean, dysfunctional labor and elective cesarean. Among these indications, the majority of them were maternal indications and only one represents a fetal indication. However the indications were different among countries and the health sector analyzed, for example Chanrachakul et al.^[49] showed that in Thailand a previous Caesarean was the most prevalent indication in private hospitals (63%), followed by failure to progress (22%) in the public sector. Otherwise a study in México, established that the main indication in both sectors were previous CD with a prevalence of 40.8% in private hospitals and 38.5% in public hospitals. Fetal distress was the prior indication in the private sector (9.5%) and (9%) in a public one; the second most frequent cause was CPD with 5.8% and 3.9% respectively.^[50] In Taiwan the following were the common indications: malpresentation (28.1%), prior cesarean delivery (28.1%), dysfunctional labor (26.4%) and fetal distress (8.3%).^[51] In a multi-country study on Caesarean Section rates and indications in Sub-Saharan Africa, the most common indication was obstructed labour (31%). Other indications included poor presentation (18%), previous Cesarean section (14%), fetal distress (10%), uterine rupture (9%) and antepartum hemorrhage (8%).^[8]

It was established in Ethiopia that CPD (34%) was the main indication, followed by fetal distress (15%) and with (14%) breech/multiple gestations or abnormal presentation.^[10]

Ayano et al also showed that the leading indications for CD were, cephalo-pelvic disproportion (38.1%), previous CD (18.9%), fetal distress (12.5%), mal-presentation and malposition (7.1%), and

anteartum haemorrhage (6%).^[52] This finding were consistent with similar studies in Ethiopia.^[25,26,53]

2.4 Conceptual framework

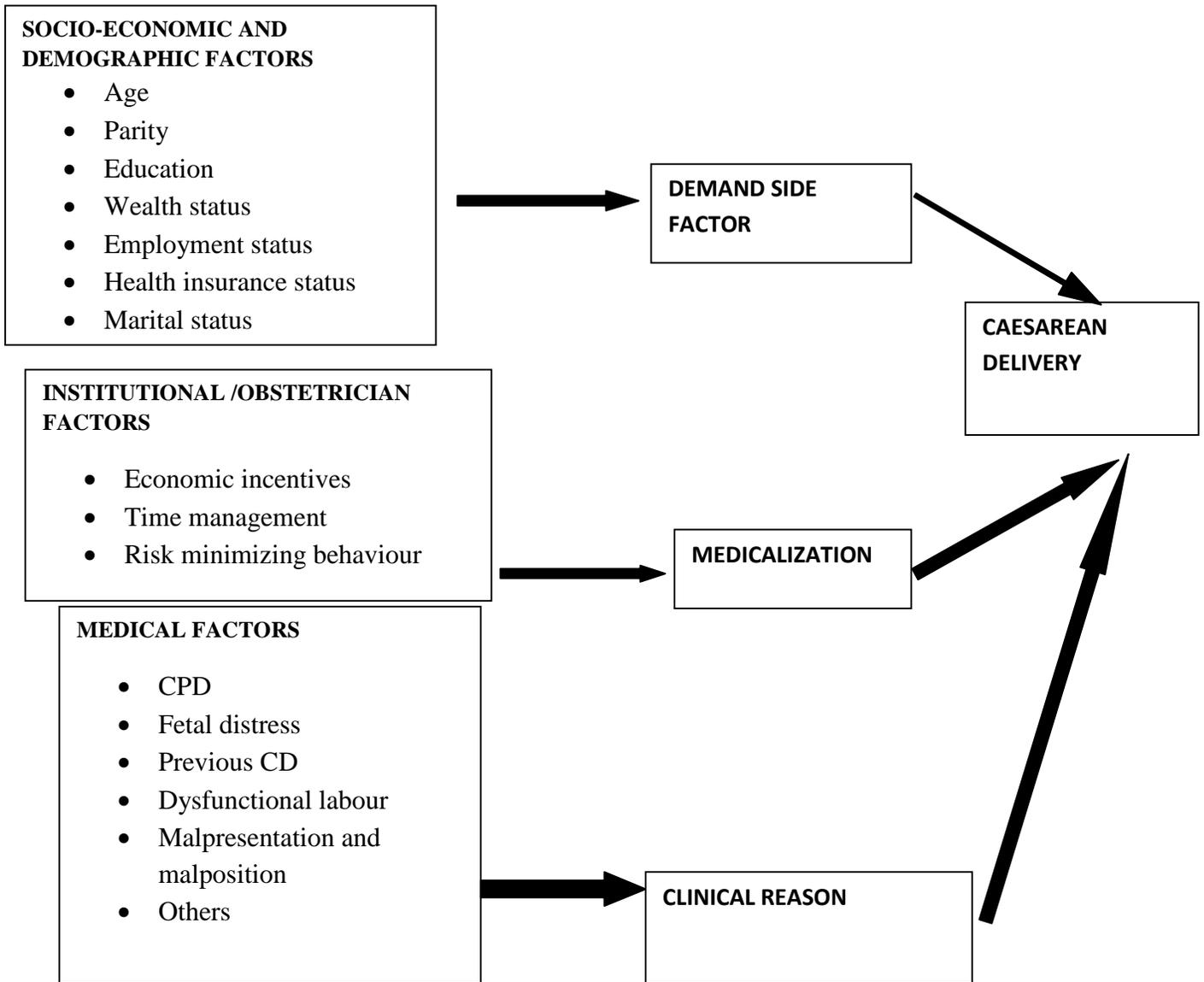
Several factors have been shown to lead to increasing rate of Caesarean delivery. These factors have been classified as non-medical, medical/clinical and institutional/Obstetrician factors.

Non-medical factors include age, parity, level of education, wealth status, employment status, health insurance and marital status. These factors usually lead to increase in demand side and subsequently to increase in Caesarean delivery.

Medical/clinical factors involves a wide range of maternal or foetal clinical indications for Caesarean delivery such as previous Caesarean delivery, cephalo-pelvic disproportion, labour dystocia, malpresentation, fetal heart rate irregularity, multiple gestation and suspected foetal macrosomia just to mention a few.^[43]

Institutional/Obstetrician factors include: economic incentives where CD are performed for financial gains, time management where the Obstetrician perform CD due to lack of time to monitor the patient to achieve vaginal delivery and also risk minimizing behaviour in order to avoid medico-legal actions when a catastrophic event occurs. These factors lead to medicalization of CD.^[54]

Despite the proven safety of Caesarean delivery, there are grave consequences that could follow the increasing CD especially to the mother and the institutions/Obstetrician. These include physical and psychological cost on mother also economic cost on the patient and health institution.



Adapted from Ghosh 2012 with modification after review of literatures ^[54]

Figure 1: Conceptual framework

3. Objective

3.1 General objective

To assess the prevalence of Caesarean delivery and its associated factors in private hospitals in Addis Ababa, Ethiopia, 2017

3.2 Specific objectives

- To determine the prevalence of Caesarean delivery in private hospitals in Addis Ababa, Ethiopia.
- To assess the factors associated with Caesarean delivery in private hospitals in Addis Ababa, Ethiopia.

4. Methods

4.1 Study design

A facility based quantitative cross-sectional study design was used.

4.2 Study area

This study was carried out in Addis Ababa, the capital and the largest city of Ethiopia, a strictly urban region. The city has ten sub-city administration and 116 Woreda administrations. In 2014, the estimated population of the city was 3,195,000 (Males-1,515,000, females-1,680,000).^[55]

There are eleven public hospitals of which five are owned by the Addis Ababa Health Bureau (AAHB), four by the Federal Ministry of Health (FMOH) and one (Tikur Anbesa hospital) which is under the Ministry of Education. There are also 35 privately owned hospital and 3 Non-Governmental Organization (NGO) hospitals. More than 90% of the privately owned hospital offer maternity services.^[55]

4.3 Population

4.3.1 Source population

All mothers who delivered in private hospitals of Addis Ababa within the period of April 1st to May 30th, 2017 (GC)

4.3.2 Study population

The study population was all women who deliver in the selected private hospitals and fulfilled the eligibility criteria.

4.3.3 Inclusion criteria

All mothers who delivered (within 24 to 48 hours after delivery) in the selected private hospital within the study period.

4.3.4 Exclusion criteria

Mothers who delivered but were unconscious or unable to communicate after delivery were excluded from the study.

4.4 Study period

The study was conducted for two months within the period of April 1st to May 30th, 2017 (GC)

4.5 Sample size estimation

The sample size (**n**) required for this study was calculated using formula for a single population proportion (**p**) by taking the proportion of Caesarean delivery in private hospital in Addis Ababa which was 41% ^[14], 95% level of significance and 5% margin of error or precision(**d**). The sample size was 374 by considering 10% non-response rate the final sample size was 411.

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

4.6 Sampling procedure

Study participants for this study were selected using multi-stage sampling technique. Addis Ababa has 10 sub-cities hosting 35 private hospitals, 50% of these sub-cities were selected using simple random sampling technique. All the private hospitals in the selected sub-cities providing basic and comprehensive obstetrics services were listed. The numbers of private hospitals in each selected sub-city (5 out of 10 sub-cities of the region) was determined proportionally considering the total number of private hospital in each sub-city. The numbers of study participants in each private hospital was determined using proportion to population size where the total sample size was proportionally allocated to the selected private hospital according to the total number of deliveries in each facility to meet up the study sample size. All delivered mothers who consented at the level of the selected hospitals were included in the study till the proportion in the hospital was met.

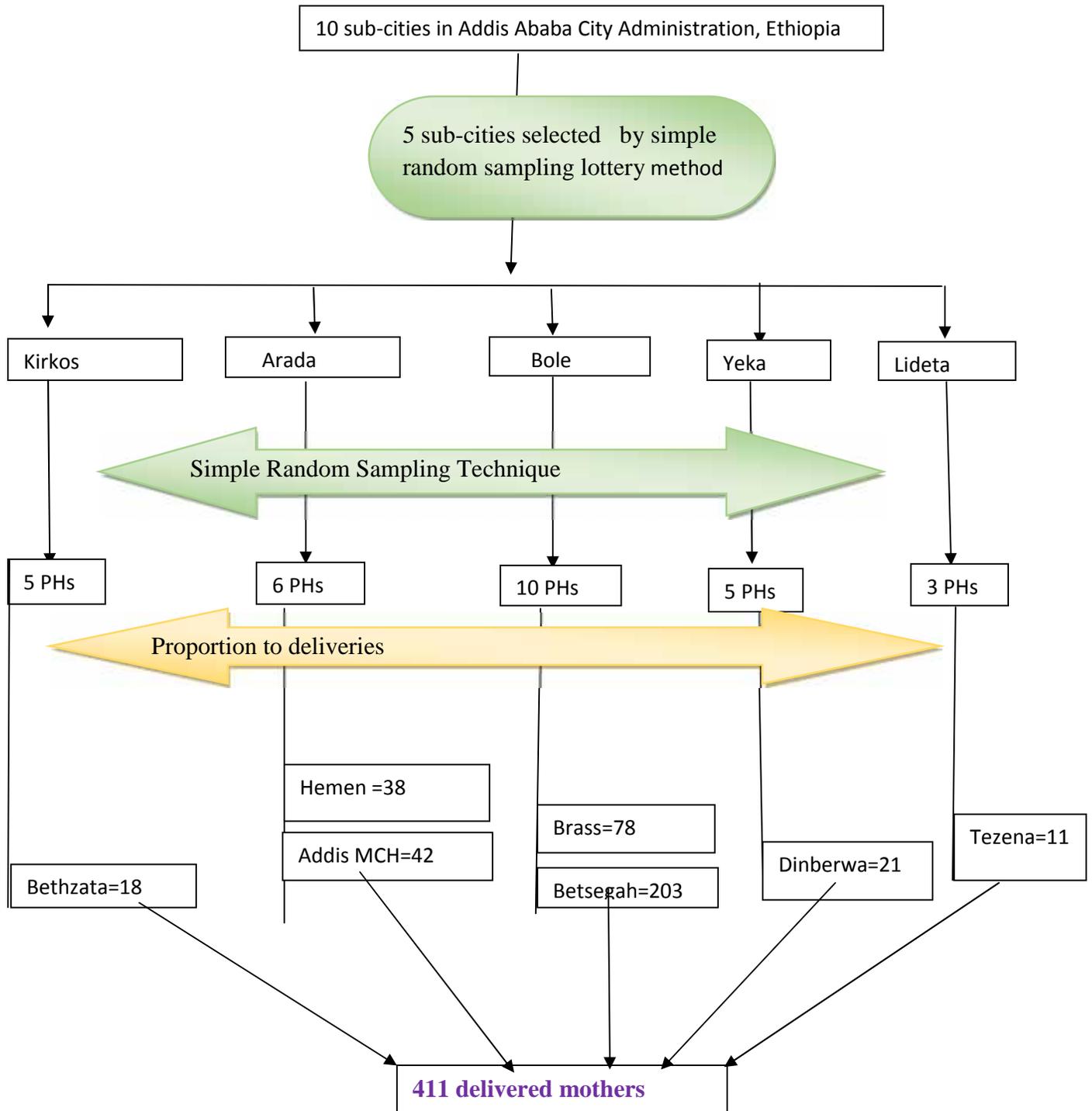


Figure 1: Schematic presentation of sampling procedure

4.7 Data collection procedure

Data was collected from mothers within 24 to 48 hours after delivery in the postnatal unit of each selected hospital by using structured standard questionnaire adopted from other researches. Trained interviewers administered pre-coded and pre-tested questionnaire after they obtained informed consent from mothers. The questionnaire included information on demographic data, socio-economic status, past and current obstetric history and mode of delivery. The questionnaire was developed in English and later translated into Amharic, the local language of the city and consistency and accuracy check was done to ensure proper and correct translation of the questions by back translation to English. The questionnaire was pre-tested and findings from the pretest were used to modify the questionnaire. Medical records of parturient were used to extract information such as last menstrual period, gestational age at delivery, type and indication for Caesarean section and birth weight of the fetus.

Data collectors and supervisor who were fluent in the local language were recruited and training was given to them on the purpose of research and techniques/skills on interview, sampling and ethical issues, emphasizing the importance of safety of participants and interviewers, minimization of under reporting and maintaining confidentiality.

4.8 Data quality control

The filled questionnaires were checked for completeness and consistency daily by the supervisors and principal investigator (PI). Supervision was done in-process as well as daily supervision of the completed questionnaires by the supervisors and PI for any needed clarifications based on the study. The PI visited each site to oversee data collection process and checked all previously completed questionnaires for consistency and completeness.

4.9 Variables

4.9.1 Independent variables

The independent variables for this study were: age of the mothers, parity, level of education, monthly family income, health insurance coverage status, occupational status and medical indications such as CPD, fetal distress, previous CS, malpresentation, obstructed labour etc.

4.9.2 Dependent variables

The dependent variable for this study was Caesarean delivery regardless of whether elective or emergency Caesarean delivery.

4.10 Operational definitions

Caesarean delivery or Caesarean birth: an operation for delivering a baby by cutting through the mother's abdomen and uterus. CS was considered irrespective of whether it was performed as an emergency or elective procedure.

Emergency caesarean delivery: an unplanned for caesarean section delivery.

Elective caesarean delivery: caesarean delivery done before the onset of labour in the absence of emergent situations that mandates urgent delivery

Vaginal delivery: birthing one or more young via the vagina irrespective of whether an instrument was used.

Nulliparous: parturient without previous delivery

Multiparous: parturient with previous two or more delivery.

Grandmultiparous: Parturient with five or more deliveries

Medicalization of caesarean delivery: process of using a medical language to justify indication for caesarean delivery

4.11 Data processing and analysis

Filled questionnaires were checked for completeness and coded by the PI. Data was entered on EpiInfo version 7 and exported to STATA version 12 for analysis. Frequencies were generated for categorical variables and summary measures for continuous variables. Tables and graphs were used to present the data. Descriptive statistics was used to show the frequency and percentage of the characteristics. Cross tabulations (chi-square) were computed to establish relationships among the variables. Logistic regression (binary and multiple) analyses were used to determine the effect of factor(s) on the outcome variable and to control possible confounders. Bivariate analysis was done and variables with P- value < 0.2 and other variables that have been shown to be associated with CD were subjected to multiple regression, P-value < 0.05 was considered to declare statistical significance.

4.12 Ethical considerations

Ethical clearance was obtained from the Research and Ethics Committee of School of Public Health, Addis Ababa University and the Addis Ababa City Administration Health Bureau public health research and emergency management core process. Permission was obtained from the various health facilities managers. All measure to maintain human rights including informed consent; the right to

participate in the study, right to privacy and confidentiality and right to prevention from any type of harm was taken into consideration. All Participants were informed about the objectives of the study and that their participation was on voluntarism basis. It was also clearly stated to the participants that the information they provided whether orally or in writing were for research purposes and strictly confidentially.

4.13 Dissemination of research findings

The final result of the study will be submitted to Addis Ababa University School of Public health, Federal Ministry of Health, Addis Ababa City Administration Health Bureau and the managers of the various health facilities in soft and hard copies. Presentation and publication of result will be carried out accordingly.

5. Results

5.1 Socio-demographic characteristics

Table 1 shows the socio-demographic characteristics of the respondents.

Four hundred and eleven parturient participated in this study. The age of the respondents ranged between 16 – 42 years with a mean of 27.6 ± 4.61 . Majority 190(46.23%) of the respondents were aged between 25 – 29 years. Most 388(94.4%) of the parturient were married. More than one-third (39.2%) had secondary education while only 2.4% had no formal education. About one-quarter (25.1) were unemployed.

Majority (41.9%) of the respondent were self-employed with most (77.6%) family having a monthly income greater than four thousand birr, while only 16(3.9%) had family income less than one thousand birr. Most 372(90.5%) of the respondent had no health insurance coverage, while only 39(9.5%) had health insurance coverage.

Table 1: Socio-demographic characteristics of respondents who delivered in the selected private hospitals in Addis Ababa, Ethiopia between April 1st and May 30th,2017

CHARACTERISTICS	FREQUENCY (NUMBER)	PERCENT
AGE (YEARS)		
< 20	14	3.4
20 - 24	67	16.3
25 - 29	190	46.2
30 - 34	105	25.6
>35	35	8.5
Mean age 27.6 ± 4.61		
MARITAL STATUS		
Married	384	94.4
Unmarried	23	5.6
LEVEL OF EDUCATION		
None	10	2.4
Primary	27	6.6
Secondary	161	39.2
Technical/Vocational	119	28.9
Higher	94	22.9
EMPLOYMENT STATUS		
Employed	308	74.9
Unemployed	103	25.1
OCCUPATION		
Business	61	19.8
Government	52	16.9
Self-employed	129	41.9
NGO	66	21.4
FAMILY INCOME (BIRR)		
< 1,000	16	3.9
1001 – 2,500	26	6.3
2,501 – 4,000	50	12.2
> 4,000	319	77.6
HEALTH INSURANCE		
Yes	39	9.5
No	372	90.5

5.2 Past obstetrics history

Table 2 shows the past obstetrics history of the respondents

Most 220(53.5%) of the parturient were multiparous, 111(27%) were primiparous, 64(15.6%) were nulliparous while only 16(3.9%) were grandmultiparous.

Majority 234(67.4%) has had vaginal delivery in the past, 113(32.6%) has had a previous Caesarean delivery. Of the parturient that had previous Caesarean delivery, majority (69%) of the CS took place in a private hospital, while 31% took place in a public government hospital.

Table 2: Past obstetrics history of respondents who delivered in the selected private hospitals in Addis Ababa, Ethiopia between April 1st and May 30th, 2017

CHARACTERISTICS	FREQUENCY (NUMBER)	PERCENT
PARITY		
Nulliparous	64	15.6
Primiparous	111	27
Multiparous	220	53.5
Grandmultiparous	16	3.9
PREVIOUS MODE OF DELIVERY		
Vaginal	234	67.4
CS	113	32.6
PLACE OF PREVIOUS CS		
Public government hospital	35	31
Private hospital	78	69

5.3 Current obstetrics history

Table 3 shows the current obstetrics history of the respondents.

Most 394(95.9%) of the respondents had at least one antenatal clinic visit during pregnancy, only 17(4.1%) did not receive any antenatal care during pregnancy. Most (56.6%) had antenatal clinic visit at a private hospital while only 3.3% had their antenatal clinic visit at an NGO health facility.

The mean date of first antenatal visit was 3.05 ± 0.41 months

The prevalence of Caesarean delivery during the study period was 63.7% [CI (59.1%, 68.3%)], while 149(36.3) had vaginal delivery.

The doctor was the decision maker for Caesarean delivery in majority 126(48.1%) of the cases, while the parturient took the decision in 26% of the cases.

One hundred and fifty (57%) of the Caesarean delivery were performed as an emergency procedure, while 112(43%) was an elective procedure.

Previous CS was the most 115(43.4%) common indication for Caesarean delivery, this was followed by fetal distress 45(17.2%) and CPD 30(11.5%).

The average gestational age at delivery was 38.94 ± 1.59 (38.78, 39.10).

The mean birth weight of babies delivered to the parturient was 34447.2 ± 493.3 grams (3399.4, 3495.1).

Table 3: Current obstetrics history of respondents who delivered in the selected private hospitals in Addis Ababa, Ethiopia between April 1st and May 30th, 2017

ANC VISIT	FREQUENCY (NUMBER)	PERCENT
Yes	394	95.9
No	17	4.1
PLACE OF ANC VISIT		
Public govt facility	59	15
NGO health facility	13	3.3
Private hospital	223	56.6
Private clinic	99	25.1
MODE OF DELIVERY		
Vaginal	149	36.3
CS	262	63.7
DECISION MAKER OF CS		
Self	68	26
Spouse	54	20.5
Family	14	5.3
Doctor	126	48.1
TYPE OF CS		
Emergency	150	57
Elective	112	43
INDICATION FOR CS		
CPD	30	11.5
Pre-eclampsia/Eclampsia	18	6.9
Placenta praevia	9	3.4
Uterine rupture	7	2.7
Prolonged obstructed labour	16	6
Fetal distress	45	17.2
Malpresentation	22	8.4
Previous CS	115	43.9

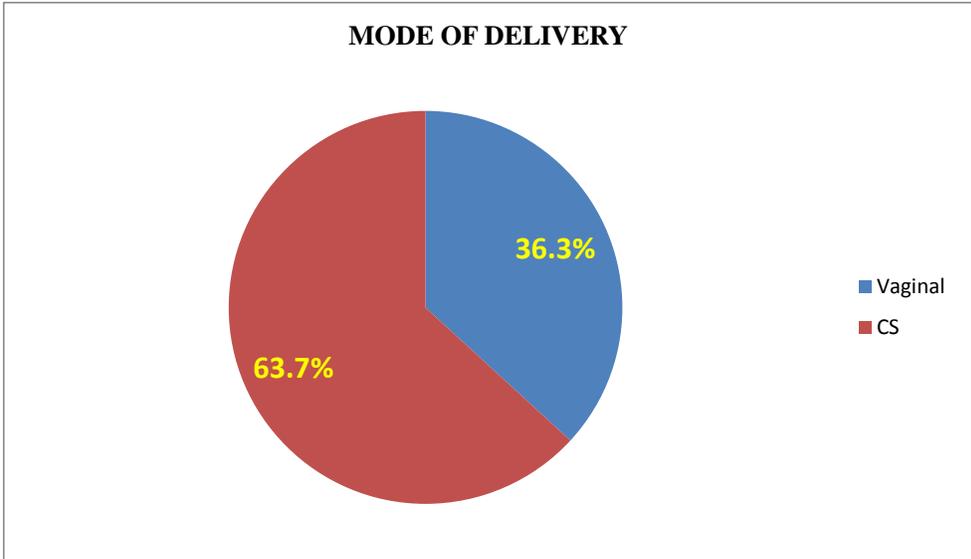


Figure 3: A pie chart showing the mode of delivery of respondents who delivered in the selected private hospitals in Addis Ababa, Ethiopia between April 1st and May 30th 2017

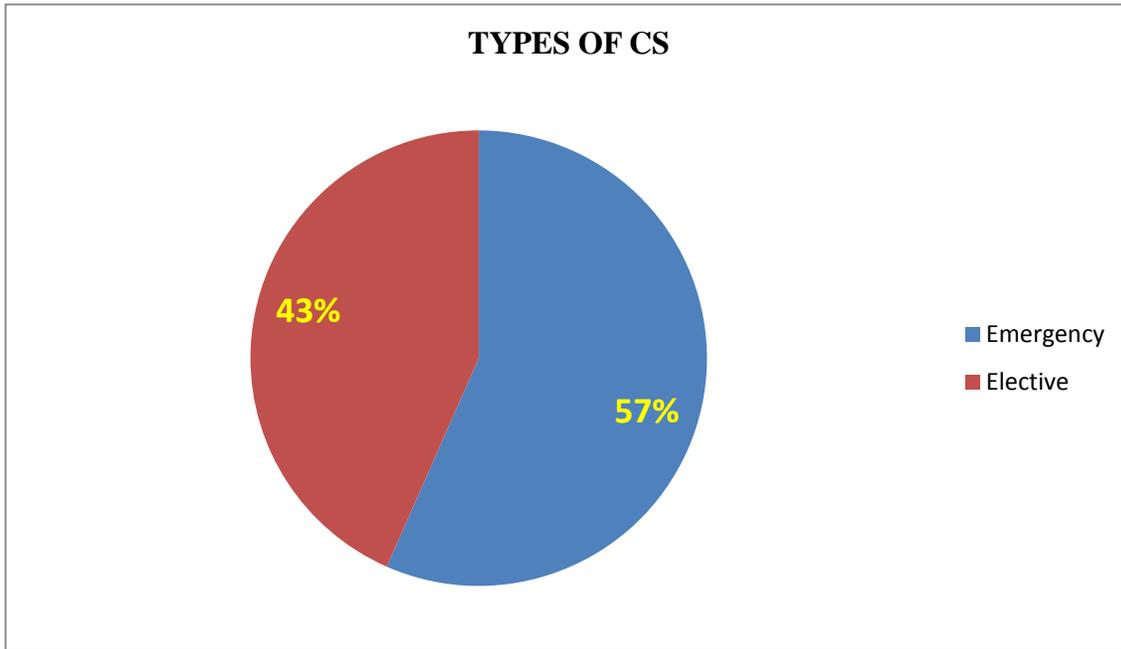


Figure 4: A pie chart showing the type of Caesarean delivery had by respondents who delivered in the selected private hospitals in Addis Ababa, Ethiopia between April 1st and May 30th 2017

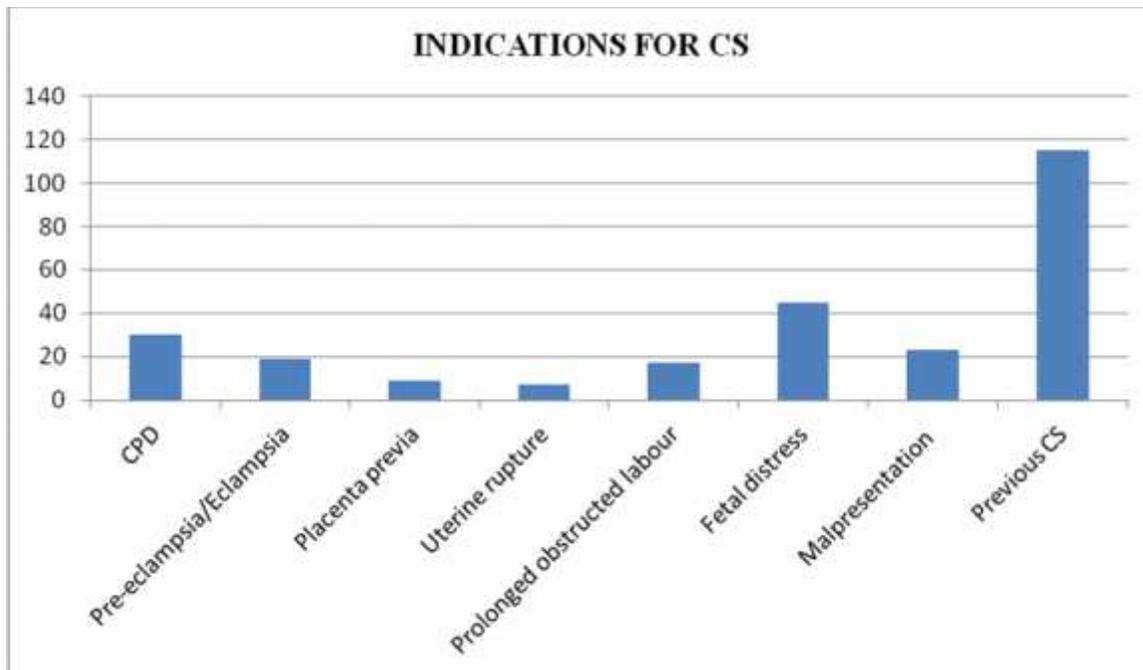


Figure 5: A bar chart showing the varying indications for Caesarean delivery had by respondents who delivered in the selected private hospitals in Addis Ababa, Ethiopia between April 1st and May 30th 2017

5.4 Bivariate and multivariate analysis

Table 4 shows the bivariate and multivariate analysis of independent and dependent variables in this study. In the bivariate analysis, parturient aged between 30-34 [COR=3.33, 95% CI (1.07, 10.42)], having health insurance coverage [COR=3.43, 95% CI (1.40, 8.40)], primiparity [COR=1.51, 95% CI (1.19, 6.98)], multiparity [COR=1.46, 95% CI (1.81, 5.12)], previous CS [COR=4.30, 95% CI (2.69, 6.86)], previous delivery at a private hospital [COR=6.1, 95% CI (1.05, 35.2)], antenatal clinic visit [COR=3.4, 95% CI (1.23, 9.39)] and attending antenatal clinic at a private hospital [COR=2.6, 95% CI (1.46, 4.74)] were found to be significantly associated with Caesarean delivery in the bivariate logistic regression.

The variables found significant in the bivariate model and other variables (age, marital status, level of education, employment status, occupation and family income) that has been shown to be associated with Caesarean delivery in the literatures were entered into the multivariate logistic regression model.

In the multivariate logistic regression model, being primiparous [AOR=2.89, 95% CI (1.19, 6.98)], multiparous [AOR=10.2, 95% CI (4.13, 25.4)], previous Caesarean delivery [AOR=12.48, 95% CI (6.01, 25.95)] and having health insurance coverage were found to be positive and statistically significantly associated with having Caesarean delivery.

Table 4: Bivariate and multivariate analysis of independent and dependent variables in this study.

VARIABLE	CS		COR	AOR
	YES (%)	NO (%)		
< 20	6 (42.86)	8 (57.14)	1	1
20 - 24	35 (52.24)	32 (47.76)	1.46(0.46, 4.66)	1.57(0.38, 6.49)
25 - 29	121 (63.68)	69 (36.32)	2.34(0.78, 7.02)	1.77(0.46, 6.83)
30 - 34	75 (71.43)	30 (28.57)	3.33(1.07,10.42)	1.96(0.48, 8.08)
>35	25 (71.43)	10 (28.57)	3.33(0.92,12.58)	2.46(0.49,12.32)
MARITAL STATUS				
Unmarried	12 (52.2)	11(47.8)	1	1
Married	250 (64.4)	138 (35.6)	0.6(0.26, 1.40)	1.2(0.44, 4.56)
LEVEL OF EDUCATION				
None	7(70)	3(30)	1	1
Primary	15(55.56)	12(44.44)	0.54(0.11, 2.53)	1.16(0.62, 5.16)
Secondary	103(63.98)	58(36.02)	0.76(0.19, 3.06)	0.68(0.55, 7.12)
Technical/Vocational	73(61.34)	46(38.66)	0.68(0.17, 2.76)	2.56(0.39, 5.12)
Higher	64(68.09)	30(31.91)	0.91(0.22, 3.78)	0.41(0.55, 6.08)
EMPLOYMENT STATUS				
Unemployed	63(61.17)	40(38.83)	1	1
Employed	199(64.61)	109(35.39)	1.16(0.73, 1.84)	1.8(0.55, 14.1)
OCCUPATION				
Business	41(62.12)	25(37.88)	1	1
Government	36(69.23)	16(30.77)	1.37(0.63, 2.97)	2.40(0.77, 16.1)
Self-employed	140(61.67)	87(38.33)	0.98(0.56, 1.73)	0.81(0.66, 10.4)
NGO	45(68.18)	21(31.82)	1.31(0.64, 2.68)	1.65(0.82, 11.4)
FAMILY INCOME (BIRR)				
< 1,000	9(56.25)	7(43.75)	1	1
1001 – 2,500	18(69.23)	8(30.77)	1.75(0.48, 6.37)	1.21(0.56, 2.57)
2,501 – 4,000	31(62)	19(38)	1.27(0.41, 3.97)	1.32(0.61, 3.85)
> 4,000	204(63.95)	115(36.05)	1.38(0.50, 3.80)	2.4(0.60, 7.40)
HEALTH INSURANCE				
No	229(61.56)	143(38.44)	1	1

Yes	33(84.62)	6(15.38)	3.43(1.40, 8.40)	3.09(1.18, 8.12)
CS				
VARIABLE	YES (%)	NO (%)	COR	AOR
PARITY				
Nulliparous	41(64.06)	23(35.94)	1	1
Primiparous	53(47.75)	58(52.25)	1.51(1.27, 3.96)	2.89(1.19, 6.98)
Multiparous	159(72.27)	61(27.73)	1.46(1.81, 5.12)	10.2(4.13, 25.4)
Grandmultiparous	9(56.25)	7(43.75)	0.72(0.24, 2.79)	2.47(0.53, 11.49)
PREVIOUS MODE OF DELIVERY				
Vaginal	116(49.57)	118(50.43)	1	1
CS	131(80.86)	31(19.14)	4.30(2.69, 6.86)	12.48(6.01, 25.95)
PLACE OF PREVIOUS CS				
Public Govt Hospital	25(86.2)	4(13.8)	1	1
Private hospital	76(97.44)	2(2.56)	6.1(1.05, 35.2)	5.4(0.49, 19.)
ANC VISIT				
No	6(35.29)	11(64.71)	1	1
Yes	256(64.97)	138(35.03)	3.40(1.23, 9.39)	5.02(0.22, 4.14)
PLACE OF ANC VISIT				
Public govt facility	30(50.9)	29(49.2)	1	1
NGO health facility	9(81.82)	2(18.18)	4.4(0.87, 28.74)	4.6(0.69, 18.4)
Private hospital	163(73.09)	60(26.91)	2.6(1.46, 4.74)	3.2(0.55, 11.1)
Private clinic	51(51.52)	48(48.48)	1.0(0.54, 1.95)	1.8(0.41, 7.54)

6. Discussion

This was a facility based cross-sectional study to assess the prevalence of Caesarean delivery and the associated factors in private hospitals in Addis Ababa, Ethiopia, 2017.

The prevalence of Caesarean delivery in this study was 63.7%, this is much higher than the reported national figure (41%) in private hospitals in Addis Ababa.^[14,30] , this finding is similar to finding in South Africa where the prevalence of Caesarean delivery has been reported to be 67%,^[56] however this finding is lower than figures in private hospitals in Mexico (85%) and Brazil (86.2%) where the highest rate of Caesarean delivery has been reported in the world.^[23,24] However, the prevalence of Caesarean delivery found in this study far exceeds the WHO recommended maximum limit of 15% cesarean section for any geographic area.^[3] Different studies has demonstrated no additional benefit when the prevalence of Caesarean delivery exceeds 10%.^[3,57] With this excessively high Caesarean delivery rate in Addis Ababa, a low resource setting, the huge financial implication of CD in terms of hospital consumables, length of stay in the hospital after surgery, human and time resources and cost of potential complications cannot be over-emphasized as this resources can be used for other challenging health problems.

The physicians were most (48.1%) responsible for making decision to perform Caesarean delivery followed by the parturient (26%), this finding may be due to the fact that physician are often quick to make decision to perform Caesarean section to avoid any obstetrics jeopardy and the rising trend of maternal request for Caesarean section. The factors that were statistically significantly associated with increased Caesarean delivery in this study were: parity (primiparity and multiparty), having health insurance coverage and having a previous Caesarean delivery.

Parturient who were primiparous and multiparous had higher odds of 2.89 and 10.2 of undergoing Caesarean delivery respectively compared to nulliparous women, this finding is inconsistent with findings from other studies which has shown higher CD among Nulliparous women and decreasing prevalence of Caesarean delivery with higher parity.^[14,25,26] This finding may be attributable to the fact that majority of the respondents were primiparous and multiparous and has had a previous Caesarean delivery prior to this current delivery.

Health insurance coverage was quite low (10%) among respondents but parturient with health insurance coverage had higher odds of undergoing Caesarean delivery as compared to those without health insurance coverage. This finding is similar to findings from other studies in Ethiopia,^[30] other developing countries like Iran,^[39] and developed countries such as the United States of America and United Kingdom.^[35-37] This finding could be attributed to the fact that the managers of most private health facilities may be afraid of medico-legal issues when there is an obstetrics jeopardy in form of maternal injury, birth asphyxia and fetal death during labour thereby resulting to Caesarean delivery to avoid these.

Having a previous Caesarean delivery was also found to be statistically significantly associated with undergoing Caesarean delivery, this finding is similar to result from a study by Tsega et al evaluating the prevalence of Caesarean Section in urban health facilities and associated factors in Eastern Ethiopia.^[15] This result may be due to the fact that obstetricians are less likely to allow vaginal birth after Caesarean section due to the rigorous monitoring required during labour and will be apt to offer Caesarean section to the parturient. It may also be due to the lack of appropriate monitoring equipments such as cardiotocograph and hand held Doppler ultrasound which are not available in most private hospitals.

The leading indication for Caesarean delivery in this study were previous Caesarean delivery (43.9%), fetal distress (17.2%) and cephalo-pelvic disproportion (11.5%), this finding is consistent with findings from other studies in Ethiopia and other countries in Africa.^[8,15,42-44]

It is therefore pertinent to take absolute measures to prevent primary Caesarean delivery where possible in order to reduce this excessively high prevalence of Caesarean delivery.

The limitations of this study include the facility based cross-sectional nature of the study design, failure to add design effect to the sample size estimation which could affect the generalisibility of the findings, failure to evaluate the institutional/obstetrician factors such as performing Caesarean section for economic incentives, time management and risk minimizing behaviour because of medico-legal issues. The study used a quantitative approach to collect the data; a qualitative approach may have been more useful in obtaining data for some of the variables. The short duration

(2 months) of the study was also considered as a limitation because deliveries may be higher or lower at different times of the year.

The strength of this study includes employing data collectors with higher level of education and providing good supervision to ensure good quality of data.

7. Conclusion

The prevalence of Caesarean delivery in private hospital in Addis Ababa was 63.7% which highly exceeds the 15% recommended by the WHO.

In the multivariate logistic regression model, factors identified to be significantly associated with Caesarean delivery in this study were parity (primiparity and multiparty), having health insurance coverage and having a previous Caesarean delivery.

Previous Caesarean delivery was the commonest indication for Caesarean delivery

8. Recommendations

Based on the findings from this study, the following are hereby recommended:

The attending physicians in the private hospital should limit primary Caesarean delivery to the barest minimum by only performing such for only absolute indications, allowing vaginal birth after Caesarean section (VBAC) through close monitoring during labour.

Counselling of parturient at the antenatal clinics on possibility of VBAC and dangers associated with unnecessary request for Caesarean section.

The government should provide adequate monitoring of maternity services offered in private hospitals in order to ensure availability of required equipments to monitor labour, there should also be regular unscheduled review of hospital delivery records to determine prevalence of Caesarean delivery at least twice a yearly.

Lastly, a further study using a qualitative study approach to evaluate the institutional and obstetrician factors associated with high Caesarean delivery in private hospital should be carried out.

9. References

1. Birth – Method of Delivery. Centers for Disease Control and Prevention. Available at <http://www.cdc.gov/nchs/fastats/delivery.htm>. July 26, 2016; Accessed: September 22, 2016
2. Centers for Disease Control. Rates of Cesarean delivery – United States, 1993 MMWR 1995;44: 303-07
3. Betran AP, Merialdi M, Lauer JA, Bing-Shun W, Thomas J, VanLook P, Wagner M. Rates of caesarean section: analysis of global, regional, and national estimates. *Paediatr Perinat Epidemiol* 2007;21(2):98-113.
4. Leung GM, Lam T, Thach TQ, Wan S, Ho LM. Rates of caesarean births in Hong Kong: 1987–1999. *Birth* 2001;28(3):166–72.
5. Lauer JA, Betrán AP. Decision aids for women with a previous caesarean section: focusing on women’s preferences improves decision making. *BMJ* 2007; 334:1281-1282.
6. TabNet Win32 3.0: F.8 Proporção de partos cesáreos. [<http://tabnet.datasus.gov.br/cgi/defthtm.exe?idb2011/f08.def>]
7. Gomes UA, Silva AA, Bettiol H, Barbieri MA. Risk factors for increasing caesarean rate in Southeast Brazil: a comparison of two birth cohorts, 1978-1979 and 1994. *Int J Epidemiol* 1999;28:687-94.
8. Chu K, Cortier H, Maldonado F, Mashant T, Ford N, et al. Cesarean Section Rates and Indications in Sub-Saharan Africa: A Multi-Country Study from Medecins sans Frontieres. *PLoS ONE* (2012) 7(9): e44484. doi:10.1371/journal.pone.0044484
9. Geidam AD, Audu BM, Kawuwa BM, Obed JY; Rising trend and indications of caesarean section at the University of Maiduguri teaching hospital, Nigeria *Annals of African Medicine* Vol. 8, No. 2; 2009:127-132
10. Hordofa Gutema, Ashenafi Shimye. Cesarean Section and Associated Factors at Mizan Aman General Hospital Southwest Ethiopia . *Journal of Gynecology and Obstetrics*. Vol. 2, No. 3, 2014, pp. 37-41. doi: 10.11648/j.jgo.20140203.12
11. Fisseha N, Getachew A, Hiluf M, Gebrehiwot Y, Baily P. A national review of caesarean delivery in Ethiopia. *Int J Gynaecol Obstet* 2011;115(1):106-11.

12. Central Statistical Agency of Ethiopia, Measure DHS: Ethiopia Demographic and Health Survey 2011. Addis Ababa and Calverton; 2011.
13. Macro ORC: Central Statistical Agency: Ethiopia Demographic and Health Survey 2005. Addis Ababa and Calverton; 2006.
14. Gebremedhin S; Trend and socio-demographic differentials of Caesarean section rate in Addis Ababa, Ethiopia: analysis based on Ethiopia demographic and health surveys data; Reproductive Health 2014, 11:14 <http://www.reproductive-health-journal.com/content/11/1/14>
15. Tsega F, Mengistie B, Dessie Y, Mengesha MM. Prevalence of Cesarean Section in Urban Health Facilities and Associated Factors in Eastern Ethiopia: Hospital Based Cross Sectional Study. J Preg Child Health (2015) 2: 169. doi:10.4172/2376-127X.1000169
16. WHO: Appropriate technology for birth. Lancet 1985, 2:436–437.
17. FIGO. FIGO Statement on Caesarean Section. International Federation of Obstetricians and Gynaecologists. (2014) <http://www.figo.org/Caesarean>
18. Stivanello E, Rucci P, Lenzi J, Fantini MP. Determinants of cesarean delivery: a classification tree analysis. BMC Pregnancy Childbirth 2014; 14:215.
19. Barros FC, Vaughan JP, Victoria CG, Huttly SRA, Epidemic of Caesarean section in Brazil. Lancet 1991; 338:167-69
20. Gonzalez-Perez GJ, Vega-Lopez MG, Cabrera-Pivaral C, Muñoz A, Valle A (2001) Caesarean sections in Mexico: are there too many? Health Policy Plan 16(1): 62-67.
21. The National Collaborating Centre for Women's and Childrens Health (2004) Caesarean section clinical guide- line. RCOG Press, London.
22. Gibbons L, Belizán JM, Lauer JA, Betrán PA, Meriáldi M, Althabe F: The global numbers and costs of additionally needed and unnecessary Caesarean sections performed per year: overuse as a barrier to universal coverage. Geneva: WHO; 2010.
23. Vieira GO, Fernandes LG, Oliveira NF, Silva LR, Vieiral TO Factors associated with cesarean delivery in public and private hospitals in a city of northeastern Brazil: a cross-sectional study; BMC Pregnancy and Childbirth (2015) 15:132

24. Elena SV, Marta UO, Fernando AV, Yazmin LBI, Hazel HRC. The Epidemic of the Cesarean Section in Private Hospital in Puebla, México. *Obstet Gynecol Int J* (2015) 2(6): 00058. DOI: 10.15406/ogij.2015.02.00058
25. Abebe FE, Gebeyehu AW, Kidane AN, Eyassu GA ; Factors leading to cesarean section delivery at Felegehiwot referral hospital, Northwest Ethiopia: a retrospective record review; *Reproductive Health* (2016) 13:6
26. Kahsay S, Berhe G, Gebremariam A, Birhan B. Determinants of Caesarean Deliveries and its Major Indications in Adigrat Hospital, Northern Ethiopia: A Case Control Study; *Epidemiology (sunnyvale)* 2015, 5:3
27. Bell J, Campbell DM, Graham WJ, Penney GC, Ryan M, Hall NH. 2001. Do Obstetric Complications Explain High Caesarean Section Rates Among Women over 30? a Retrospective Analysis. *BMJ* 322: 894–5.
28. Khawaja MT, Khasholian K, Jurdi R. 2004. Prevalence and Determinants of Caesarean Section in Egypt: Evidence from the Demographic and Health Survey. *Health Policy* 69: 273–81.
29. Feng XL, Xu L, Guo Y, Ronsmans C (2012) Factors influencing rising Caesarean section rates in China between 1988 and 2008. *Bull World Health Organ* 90: 30-39.
30. Bayou YT, Mashalla YJS, Thupayagale-Tshweneagae G. Patterns of Caesarean –section delivery in Addis Ababa, Ethiopia ; *African Journal of Primary Health Care & Family Medicine*; 2016 vol 8 no 2
31. Pukale RS, Joshi PS, Arathi MS.; A Cross Sectional Study of Rate, Trends and Determinants of Caesarean Section among Mothers Attending a Rural Medical College Hospital in Karnataka; *Indian Journal of Obstetrics and Gynaecology Research* 2016;3(1):13-17
32. Sueli de Almeida, Heloisa Bettiol, Marco Antonio Barbieri, Antônio Augusto Moura da Silva, Valdinar Sousa Ribeiro. Significant differences in cesarean section rates between a private and a public hospital in Brazil; *Cad. Saúde Pública*, Rio de Janeiro, 24(12):2909-2918, dez, 2008
33. Centers for Disease Control and Prevention (1993). Rates of cesarean delivery- United States, 1991. *Morbidity and Mortality Weekly Report (MMWR)*, 42, 285-289.
34. Mukherjee SN: Rising cesarean section rate. *J Obstet Gynecol India* 2006, 56(4):298–300.

35. Hueston WJ. (1995) Site-to-site variation in the factors affecting cesarean section rates. *Archives of Family Medicine*, 4, 346-351.
36. Lieberman E. (1997) Predictors of cesarean delivery. *Current Problems in Obstetrics, Gynecology, and Fertility*, 20, 98-131.
37. McCloskey L, Petitti DB. and Hobel C.J. (1992) Variations in the use of cesarean delivery for dystocia: Lessons about the source of care. *Medical Care*, 30, 126-135.
38. Lei H, Wen SW, Walker M; Determinants of Caesarean delivery among women hospitalized for childbirth in a remote population in China; *J Obstet Gynaecol Can* 2003;25(ii):937-43.
39. Ostovar R, Rashidi BH, Haghallahi F, Fararoei M, Rasouli M, Naeimi E ; Non-medical factors on choice of delivery (CS/NVD) in hospitals of Tehran University of Medical Sciences; *Open Journal of Obstetrics and Gynecology*, 2013, 3, 67-73
40. Baruffi, G., Strobino, D.M., & Paine, L.L. (1990). Investigation of institutional differences in primary cesarean birth rates. *Journal of Nurse-Midwifery*, 35, 274-281.
41. Taffel, S.M., Placek, P.J., & Kosary, C.L. (1991). U.S. cesarean section rates 1990: An update. *Birth*, 19, 21-22
42. Barber EL, Lundsberg LS, Belanger K, Pettker CM, Funai EF, et al. (2011) Indications contributing to the increasing cesarean delivery rate. *Obstet Gynecol* 118: 29-38.
43. Notzon FC, Cnattingius S, Bergsjö P, et al Cesarean section delivery in the 1980s: international comparison by indication. *Am J Obstet Gynecol*. 1994 Feb. 170(2): 495-504
44. Villar J, Valladares E, Wojdyla D, Zavaleta N, Carroli G, et al. (2006) Caesarean delivery rates and pregnancy outcomes: The 2005 WHO global survey on maternal and perinatal health in Latin America. *Lancet* 367(9525): 1819-1829.
45. Althabe F, Sosa C, Belizán JM, Gibbons L, Jacquerioz F, et al. (2006) Cesarean section rates and maternal and neonatal mortality in low-, medium-, and high- income countries: an ecological study. *Birth* 33(4): 270-277.
46. Sanders J, Beatie B, Chaundhry S. Caesarean section. *Royal College of Obstetricians and Gynaecologist guideline*, 2004. p. 1-165.
47. Naymi RS, Rehan N. Prevalence and determinants of caesarean section in a Teaching Hospital of Pakistan. *J Obstet Gynaecol* 2000;20:479-83.

48. Soto-Vega E, Casco S, Chamizo K, Flores-Hernández D, Landini V, Guillén-Florez A (2015) Rising Trends of Cesarean Section Worldwide: A Systematic Review. *Obstet Gynecol Int J* 3(2): 00073
49. Chanrachakul B, Herabutya Y, Udomsubpayakul U (2000) Epidemic of Cesarean Section at the General, Private and University Hospitals in Thailand. *J Obstet Gynaecol Res* 26(5): 357-361.
50. Suárez-López L, Campero L, Vara-Salazar E, Rivera-Rivera L, Hernández-Serrato L, et al. (2013) Sociodemographic and reproductive characteristic cesarean section associated with increased cesarean in Mexico. *Salud Pública Méx* 55(Suppl 2): S225-S234.
51. Hsu CY, Lo JC, Chang JH, Chen CP, Yu S, Haung FY; Cesarean births in Taiwan; *Int J Gynaecol Obstet.* 2007 jan;96(1):57-61.
52. Moges A, Ademe BW, Akessa GM; Prevalence and Outcome of Caesarean Section in Attat Hospital, Gurage Zone, SNNPR, Ethiopia; *Archives of Medicine* 2015 Vol. 7 No. 4:8
53. Aman H, Negash S, Yusuf L; Cesarean delivery practices in teaching public and non-government/private MCH hospitals, Addis Ababa Ethiop. *J. Health Dev.* 2014;28(1):22-28
54. Ghosh S. (2010). Increasing trend in Caesarean Section Delivery in India: Role of Medicalisation of Maternal Health. The Institute for Social and Economic Change, Bangalore. Working Paper 236.
55. Addis Ababa Health Bureau 2007 E.C Annual Report. 2007.
56. South Africa Demographic Health Survey 2016
57. Souza JP, Gulmezoglu A, Lumbiganon P, Laopaiboon M, Carroli G, Fawole B, et al. Caesarean section without medical indications is associated with an increased risk of adverse short-term maternal outcomes: the 2004-2008 WHO Global Survey on Maternal and Perinatal Health. *BMC medicine.* 2010;8:71.

8. Annexes

1. Information sheet

Addis Ababa University
School of public health

Study on “*Prevalence of Caesarean section and the associated factors in private hospitals in Addis Ababa*”.

Greeting, first of all I would like to thank you for your time.

Good morning /Good afternoon, I am.....working as data collector in this study. Dear respondents here are lists of questions with different sections, which are designed for research work to be conducted in partial fulfillment of master Degree in public health by Ayodeji Olanipekun with collaboration of Addis Ababa university school of public Health. The main purpose of the study is to assess “*Prevalence of Caesarean section in private hospitals in Addis Ababa and associated factors*”. We are inviting mothers who delivered in private hospitals to contribute for the study. The study will not cause any harm to you except giving the information.

I will ask you some questions about yourself. The interview will take about 30 minutes. There are no anticipated problems but in case some questions make you feel uncomfortable; you are free to express your discomfort or decide not to respond. If you choose not to participate or withdraw from the interview at any point, the support given to you by the hospital will not be affected in any way.

Your name will not be recorded and all the information you give will be kept strictly confidential and is to be used only for the purpose of this study.

At this time, do you want to ask me anything about the study? If you have any questions at any time even after the interview, feel free to ask. If you want to know more information you can contact Ayodeji Olanipekun at 0966924740 or pekundeji@yahoo.co.uk

2. Consent form

This consent form has been read and explained to me and I have understood, and my questions have been addressed. I therefore willingly agree to take part in the study.

1, Yes; continue to the consent form

2, NO; skip to the next participant

Participant signature/ finger print _____

Name of private hospital _____

Interviewer name _____ signature _____

Date of interview _____ Time started _____ time finished _____

Supervisor name _____ signature _____

3. Questionnaire in English

ID. No. _____ Date of Interview _____ Hospital of delivery _____

A. SOCIO - DEMOGRAPHIC DATA

Questions	Coding category
1. How old were you at your last birthday? 1.1 What is your date of birth?	_____ years (age in complete years) ___ day/ _____ month/ _____ year
2. What is your marital status?	1)Married _____ 2)Living together _____ 3)Divorced/Separated _____ 4)Widowed _____ 5)Never married/Never lived together _____
3. What is the highest level of education you attained?	1) None _____ 2) Primary _____ 3) Secondary _____ 4)Technical/Vocational _____ 5) Higher _____
4. Are you employed?	1) Yes _____ 2) No _____
5. What is your occupation?	1)Business _____ 2)Government employed _____ 3)Self-employed _____ 4)NGO _____ 5)Others (specify) _____
6. How much does your family make in a monthly (Birr)?	1)Less than 1,000 _____ 2)1,001 – 2,500 _____ 3)2,501 – 3,999 _____ 4) 4,000 and above _____
7. Do you have health insurance coverage?	1)Yes _____ 2) No _____

B. PAST OBSTETRICS DATA

Questions	Coding category	Skip
1. How many times have you delivered a baby before whether alive or dead?	1) 0 _____ 2) 1 _____ 3) 2-4 _____ 4) 5 or more _____	If 0, skip to section C
2. What was your previous mode of delivery?	1) Vaginal delivery _____ 2) Caesarean section _____ 3) Both _____	If vaginal delivery, skip to section C
3. If Caesarean section, what was the reason for it?	1)Cephalo-pelvic disproportion _____ 2)Pre-eclampsia/Eclampsia _____ 3)Placenta praevia _____ 4)Uterine rupture _____ 5)Prolonged obstructed labour _____ 6)Fetal distress _____ 7)Malpresentation _____ 8)Others (specify) _____	
4. Where was the Caesarean section performed?	1)Public government hospital _____ 2)NGO health facility _____ 3) Private hospital _____ 4) Others (specify) _____	

C. CURRENT OBSTETRICS DATA

Questions	Coding category	Skip
1. When was your last menstrual period?	1) date _____ 2) I don't know _____	
2. Did you attend antenatal care in the last pregnancy?	1) Yes _____ 2) No _____ 3) I don't know _____	If No, skip to question 6
3. Where did you attend the antenatal care?	1)Public government hospital _____ 2)Public government health centre _____ 3) Public government health post _____ 4)NGO health facility _____ 5) Private hospital _____ 6) Private Clinic _____ 7) Others (specify) _____	
4. How many months was the pregnancy when you registered?	1) Months _____ 2) I don't know _____	
5. Did you have any pregnancy or health related complications identified during pregnancy?	1) Yes, please state type _____ 2) No _____ 3) I don't know _____	
6. How long were you in labor?	1) Duration in hours _____ 2)I don't know _____	

7. What was the mode of last delivery?	1) Vaginal delivery _____ 2) Caesarean section _____ 3) I don't know _____	If vaginal delivery, skip to question 11
8. Who decided the mode of delivery?	1) Self _____ 2) Spouse _____ 3) Family _____ 4) Doctor _____ 5) Others (please state) _____	
9. If Caesarean section, what is the type of Caesarean section?	1) Emergency _____ 2) Elective _____ 3) I don't know _____	
10. What was the reason for the Caesarean section?	1) Cephalo-pelvic disproportion _____ 2) Pre-eclampsia/Eclampsia _____ 3) Placenta praevia _____ 4) Uterine rupture _____ 5) Prolonged obstructed labour _____ 6) Fetal distress _____ 7) Malpresentation _____ 8) Previous CS 9) Others (specify) _____	
11. What was the gestational age at delivery?	1) Gestational age (weeks) _____ 2) I don't know _____	
12. What was the weight of the baby at birth?	1) Birth weight (Kg) _____ 2) I don't know _____	
13. What was the Apgar score at birth?	1) Apgar score _____ 2) I don't know _____	

Thank you for participating.

A. Information Sheet, consent form, questionnaire (In Amharic)

የመረጃ ፎርም

አዲስ አበባ ዩኒቨርሲቲ

ኮሌጅ የህብረተሰብ ጤና ሳይንስ ኮሌጅ

የጥናቱ ርዕስ- ልጅ በአዲስ አበባ ውስጥ የሚገኙ የግል ሆስፒታሎች ላይ ለመውለድ የሚደረግ ቀደጥንና ብዛትና ክስ ጋር ያሉ ተያያዥ ሁኔታዎች

ጤና ይስጥልኝ። በመጀመርያ ሰአትዎትን ስጥተው ስላነጋገሩኝ አመሰግናለሁ።

ሰላም አደሩ/ሰላም ዋሉ። ስሜ _____ ይባላል። ጥናቱ ላይ ከሚሳተፉት ቡድን ውስጥ አንዱ ነኝ። ይህ ጥናት የሚካሄደው በአዮዴጂ አላኔፔንኩን ከአዲስ አበባ ዩኒቨርሲቲ ጋር በመተባበር ሲሆን ለሁለተኛ ዲግሪ በከፊል ለማሙዋላት ነው። የጥናቱ ዋነኛ አላማ በአዲስ አበባ ውስጥ የሚገኙ የግል ሆስፒታሎች ላይ ለመውለድ የሚደረግ ቀደጥንና ብዛትና ክስ ጋር ያሉ ተያያዥ ሁኔታዎች ማወቅ ነው። በግል ሆስፒታሎች የወለዱ እናቶችን ወደ ጥናቱ እየጋበዝን ነው። ለጥናቱ መረጃ መስጠት ነው እንጂ ምንም አይነት ጉዳት አይደርሰንም።

የተወሰኑ ጥያቄዎችን ስለራስዎት እጠይቆታለሁ። ጥናቱ የሚወስደው ወደ ሰላሳ ደቂቃ ነው። ምንም የሚጠበቅ ችግር አይኖርም ሆኖም ግን ምቹትን የማይሰጡ ጥያቄዎች በሚኖሩበት ጊዜ ጥያቄው ያለመመለስ ወይም ጥያቄው የፈጠረብዎትን አለመመቸት መናገር ይችላሉ። በጥናቱ ላለመሳተፍ በየትኛውም የጥናት ወቅት በመወሰኖ በሆስፒታሉ የሚያገኙት እርዳታ ላይ ምንም አይነት ለውጥ አያመጣም።

ስምዎት አይመዘገብም የሚሰጡትም መረጃ በጥንቃቄ ይያዛል። መረጋውም የሚውለው ለዚህ ጥናት ብቻ ነው።

አሁን ስለጥናቱ የሚጠይቁኝ ጥያቄ አለዎት/ በየትኛውም ሰአት ጥያቄ ካለዎት መጠየቅ ይችላሉ። ጥያቄ ጥናቱን ከጨረስን በኋላም ጥያቄ ከለዎት መጠየቅ ይችላሉ።

ለበለጠ መረጃ በስልክ ቁጥር 0966924740 ወይም በኢሜል አድራሻ pekundeji@yahoo.co.uk

በመጻፍ መረጃ ማግኘት ይችላሉ።

የፈቃደኝነት ፎርም

ይህ የፈቃደኝነት ፎርም ተነቦልኝ፣ አስረድተውኝ፣ ጥያቄዎቼ ተመልሰውልኝና ስለ ጥናቱ ገብቶኝ በጥናቱ ተሳታፊ ለመሆን ፈቃደኛ ሆኛለሁ።

1. አዎ የፈቃደኛ ፎርሙን ቀጥል
2. አይደለም ወደ ሌላ ተሳታፊ ሂድ

የተሳታፊ ፊርማ/አሻራ _____

የግል ሆስፒታሉ ስም _____

መረጃውን የሰበሰበው ስም _____ ፊርማ _____

መረጃ የተሰበሰበበት ቀን _____ የተጀመረበት ሰአት _____ ያለቀበት ሰአት _____

የሱፐርቫይዘር ስም _____ ፊርማ _____

አጠቃላይ መረጃ

መለያ ቁጥር _____ መረጃ የተሰጠበት ቀን _____

የማዋለድ አገልግሎት የተሰጠበት ሆስፒታል ስም _____

ሀ. አጠቃላይ መረጃ

ተ.ቁ	ጥያቄ	ኮድ
1.	ስንት አመትሽ ነው በመጨረሻ ልደት ቀንሽ	_____ አመት (በሙሉ በተጨረሰ አመት)
1.1.	የተወለድሽበት ቀን መቼ ነው	____ ቀን / _____ ወር / _____ አመተ ምህረት
2.	የትዳር ሁኔታሽ ምንድን ነው	1. ያገባ 2. አብሮ የሚኖር 3. አግብቶ የፈታ ወይም የተለያየ 4. የትዳር አጋሩ የሞተበት 5. ያላገባ
3.	ከፍተኛ የትምህርት ደረጃሽ ምንድን ነው	1. ያልተማረ 2. የመጀመርያ ደረጃ 3. ሁለተኛ ደረጃ 4. ቴክኒክና ሙያ 5. ከፍተኛ ደረጃ
4.	ስራ አለሽ	1. አዎ 2. አይደለም
5.	ስራሽ ምንድን ነው	1. ንግድ 2. የመንግስት ስራተኛ 3. የራስ ቅጥር 4. የመንግስት ያልሆነ ድርጅት 5. ሌላ ግለጽ _____
6.	የቤተሰባችሁ የወር ገቢ ስንት ነው (በብር)	1. ከአንድ ሺ ብር በታች _____ 2. 1000-2500 _____ 3. 2501-3999 _____ 4. 4000 እና ከዛ በላይ _____
7.	የጤና መድሀን ተጠቃሚ ነሽ	1. አዎ _____ 2. አይደለም _____

ለ. የድሮ እርግዝና ታሪክ

ተ.ቁ	ጥያቄ	ቁጥር	ዝላል
1.	ስንት ጊዜ ወልደሻል በህይወትም ሆነ የሞተ	1) 0 _____ 2) 1 _____ 3) 2-4 _____ 4) 5 ወይም ከዛ በላይ _____	0 ከሆነ ወደ ሐ ዝላል
2.	ድሮ የወለድሽው በምን መልኩ ነበር	1. በማህጸን 2. በአፕራሲዮን 3. በሁቱም	በማህጸን ከሆነ ወደ ሐ ዝላል
3.	በአፕራሲዮን ከሆነ ምንድነው ምክንያቱ የነበረው	1. የህጻኑ ጭንቅላትና የእናትየው ማህጸንን የሚይዘው አጥንት ስፋት አለመመጣጠን _____ 2. በእርግዝና ወቅት የሚከሰት የግፊት በሽታ _____ 3. የእንግዴ ልጅ በትክክል ቦታ ማህጸን ውስጥ አለመተከል _____ 4. የማህጸን መተርተር _____ 5. ረጅም ጊዜ የሚወስድ ምጥ _____ 6. የጽንሰ መታፈን _____ 7. ጽንሱ በትክክለኛ ቦታ አለመምጣት _____ 8. ሌላ ግለጽ _____	
4.	አፕራሲዮኑ የተካሄደው የት ነበር	1. የመንግስት ሆስፒታል 2. የመንግስት ያልሆነ ተቋም 3. የግል ሆስፒታል 4. ሌላ ግለጽ _____	

ሐ. የአሁኑ እርግዝና ታሪክ መረጃ

ተ.ቁ	ጥያቄ	ኮድ	ዝለል
1.	መቼ ነው የመጨረሻ የወር አበባሽን ያየሽበት ጊዜ	1. _____ ቀን 2. አላውቀውም	
2.	በመጨረሻ እርግዝናሽ ወቅት የቅድመ ወሊድ ክትትል ነበረሽ	1. አዎ 2. አይደለም 3. አላውቅም	አይደለም ከሆነ ወደ 6ኛ ጥያቄ ዝለል
3.	የቅድመ ወሊድ ክትትል የት ነው ያደረግሽው	1. የመንግስት ሆስፒታል 2. የመንግስት ጤና ጣብያ 3. የመንግስት ጤና ኬላ 4. የመንግስት ያልሆነ የጤና ተቋም 5. የግል ሆስፒታል 6. የግል ክሊኒክ 7. ሌላ ግለጽ _____	
4.	የስንት ወር እርጉዝ ነበርሽ ስትመዘገቢ	1. ወር _____ 2. አላውቅም	
5.	በእርግዝና ወቅት የተገኘ ከእርግዝና ጋር የተያያዘ ችግር ነበር	1. አዎ፤ እባክዎ ግለጹ _____ 2. አይደለም 3. አላውቅም	
6.	ምንያህል ጊዜ በምጥ ላይ ነበርሽ	1. ጊዜ በሰአት _____ 2. አላውቅም	
7.	የመጨረሻውን እርግዝና በምን መልኩ ነው የወለድሽው	1. በማህጸን 2. በቀዶ ጥገና 3. አላውቅም	በማህጸን ከሆነ ወደ ጥያቄ 11 ዝለል
8.	ማን ነው የአወላለድ ዘይቤን የወሰነው	1. እራሷ 2. ባል 3. ቤተሰብ 4. ሀኪም 5. ሌላ ካለ አባክሽ ግለጩ _____	
9.	በቀዶ ጥገና ከሆነ ምን አይነት ቀዶ ጥገና ነበረ	1. ድንገተኛ 2. በምርጫ 3. አላውቅም	

10.	የቀዶ ጥገና የተደረገበት ምክንያት ምን ነበር	1. የህጻኑ ጭንቅላትና የእናት-የው ማህጸንን የሚይዘው አጥንት ስፋት አለመመጣጠን _____ 2. በእርግዝና ወቅት የሚከሰት የግፊት በሽታ _____ 3. የእንግዴ ልጅ በትክክል ቦታ ማህጸን ውስጥ አለመተከል _____ 4. የማህጸን መተርተር _____ 5. ረጅም ጊዜ የሚወስድ ምጥ _____ 6. የጽንሰ መታፈን _____ 7. ጽንሱ በትክክልኛ ቦታ አለመምጣት _____ 8. የቆየ CS ኦፕራሲዮን ነበራት 9. ሌላ ግለጽ _____	
11.	በመውለድ ጊዜ የእርግዝናው እድሜ ስንት ነበር	1. የእርግዝና እድሜ(በሳምንት) _____ 2. አላውቅም _____	
12.	የህጻኑ ኪሎ ሲወለድ ስንት ነበር	1. ሲወለድ የነበረው ክብደት(በኪሎ) _____ 2. አላውቅም _____	
13.	የህጻኑ የ APGAR ውጤት ሲወለድ ስንት ነበር	1. APGAR ውጤት _____ 2. አላውቅም _____	

ስለተሳተፍሽ አመሰግናለሁ