" A ONE YEAR CROSS SECTIONAL STUDY OF PRIMARY CESAREAN SECTION AT KLE DR PRABHAKAR KORE CHARITABLE HOSPITAL"

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ABBREVIATIONS

ACOG	-	American College of Obstetricians and Gynaecologists
NIH	-	National Institutes of Health
RCOG	-	Royal college of Obstetricians and Gynaecologists
LSCS	-	Lower segment caesarean section.
VBAC	-	Vaginal birth after caesarean.
TOLAC	-	Trial of labour after caesarean.
ERCS	-	Elective repeat caesarean section
SD	-	Standard deviation.
EFW	-	Expected Fetal Weight
ST	-	Scar Tenderness
CTG	-	Cadiotocograph
NPL	-	Non Progress of Labour
CPD	-	Cephalopelvic disproportion
TMSL	-	Thick Meconium Stained Liquor
FT	-	Fetal Tachycardia
FD	-	Fetal distress
CS	-	Cesarean Section
PROM	-	Premature rupture of membrane.
FM	-	Fetal Macrosomia
BMI	-	Body Mass Index

LMP	-	Last menstrual cycle
EDD	-	Expected date of delivery
WHO	-	World Health Organization
EFM	-	Electronic foetal monitoring
GDM	-	Gestational Diabetes Mellitus

ABSTRACT

BACKGROUD AND OBJECTIVES

Cesarean section initially introduced as a life savior for both mother and the baby has now become the most commonly performed surgery in obstetrics.

The recent trend of rising cesarean sections across the globe has become an issue of international public health concern. It is important to reduce the rate of primary Cesarean section, in order to curb the commonest indication for LSCS today which is previous LSCS as today's decision depends on yesterday's choice, just as today's choice will determine tomorrow's decision.

METHODOLOGY

This one year prospective cohort study was conducted in labour room at KLES Dr. Prabhakar Kore Hospital and Medical Research Centre, Belgaum during the period of January 2017 to December 2017. A total of 1516 cases who had primary caesarean section,were recruited for the study and data was obtained and subjected to analysis using inferential statistics.

RESULT

Total number of deliveries conducted between January to December 2017 were 5756. The rate of cesarean section was 48.5% (2792), Out of which primary cesarean sections were 1516 (54.5%) The frequency of primary cesarean section was higher in primipara than multipara. Fetal distress(30.3%) was the commonest indication followed by malpresentation, non progress of labor, severe pre- eclampsia and eclampsia. PPH was the most common intraoperative complication leading to

extended operative interventions like compression sutures, and step wise uterine DE vascularization and peripartum hysterectomy. The most commonly observed post operative complications in the present study were abdominal distension, wound gape and fever. 2 maternal deaths were reported in the present study. There were 1539 live births, 12 fresh still births and 7 macerated still births. Majority of the babies had a birth weight between 2.5 to 3 kg with an average APGAR score of 7. There were 22 perinatal deaths with prematurity contributing the major part.

CONCLUSION

Since ours is referral hospital the rate is higher. The need of the hour is to limit its rate and develop a consensus on safe prevention of primary cesarean delivery. The most effective approach to reducing overall morbidities related to cesarean delivery is to avoid the first caesarean.This mandates the need of target driven restrictions on the primary cesarean deliveries

Keywords: Primary cesarean section, indications, maternal & fetal outcome

CONTENTS

LIST OF TABLES

LIST OF GRAPHS

INTRODUCTION

Cesarean section is certainly one of the oldest operations in surgery with its origin lost in the fog of antiquity and mythology. It is one of the most significant operative interventions in the whole of obstetrics.

The cesarean sections are rising globally. Cesarean section rates vary in different countries and different institutions of the same country. According to WHO (1985), Cesarean section rates higher than 10 % are not associated with reductions in maternal newborn mortality rates.[1]

Though considered to be a lifesaving procedure for both the mother and fetus, cesarean sections are found to have a 3 fold increase in the risk of severe maternal morbidities such as hemorrhage, major infection, shock, uterine rupture, wound hematoma, anesthesia related complications as compared to vaginal deliveries.[3]

In the year 1960 Munro Kerr one of the pioneers in the field of obstetrics feared that abdominal delivery (cesarean section) might become a legitimate method of dealing with each and every obstetric abnormality.[2]

Just true to his fears the cesarean delivery rates have soared to an all-time high the cesarean delivery rates in the US rose from 4.5% of all the deliveries to 32.8% from 1970 to 2010 [2]

The reasons for the continued increase in the cesarean rates are not completely understood but some of the explanations include:

1) Women society as a whole is opting for smaller families with fewer children as modernization is rampant. Average maternal age is rising &older women especially nulliparous are at increased risk of cesarean deliveries.

2) The widespread use of electronic fetal monitoring has been observed to be associated with an increased cesarean delivery rates as compared to intermittent fetal heart rate monitoring.

3) An abnormal or non re assuring fetal trace puts the obstetrician in a dilemma lowering the threshold for LSCS.

4) Many institutions especially post Hannah Trial recommend breech presentation as an absolute indication for LSCS due to vanishing of trained health professional conducting breech vaginal delivery and higher morbidity associated with vaginal breech delivery.

5) With the advent of modern cesarean techniques, there has been a drastic drop in the rate of operative vaginal deliveries.

6) Rates of labor induction continue to rise especially among nulliparous with a rise in lifestyle disorders like chronic hypertension and diabetes mellitus, induced labor especially among nulliparous lowers the threshold for LSCS.

7) Rates of elective cesarean sections performed for a variety of indications like concern's for pelvic floor injury associated with vaginal birth, medically indicated preterm birth for example women with severe pre eclampsia, reduction of fetal injury risk and those performed for maternal request have alarmingly increased.

8) Mal practice litigation related to fetal injury during spontaneous or operative vaginal delivery has been contributing towards the significant increase in cesarean delivery rates.[3]

The main characteristics of the Gravidas contributing to the rising cesarean rates are the one with previous LSCS as well as those undergoing cesarean section for the first time i.e primary cesarean section. One has to foresee not only at the risks associated with the primary cesarean section but also risks stemming up due to subsequent pregnancies &entry into a vicious cycle of repeat cesarean section and associated complications. The most effective approach to reducing overall morbidities related to cesarean delivery is to avoid the first cesarean.

Hence this one year cross sectional study was conducted to study the rate, indications, intraoperative &post-operative complications in order to achieve better maternal &fetal outcomes.

OBJECTIVES

PRIMARY OBJECTIVE

- To study the rate & indications of primary caesarean section.

SECONDARY OBJECTIVE

- To study the intraoperative and post-operative complications
- To study maternal and perinatal outcomes.

REVIEW OF LITERATURE

Historical Background

A sneak peek into the history &mythology reveals that the God's of medicine and wine Aescapulius & Bacchus were born by cesarean section.

It began as a practice to remove the infant from a dead or a dying mother and was a measure of last resort, with least importance given to the mother's life. The development of& application of cesarean section per say has saved lives of countless mothers and infants. The word cesarean and its origin is unclear. There exists a myth that Julius Caeser was born by this route, but it is contradicted by the fact that his mother survived his birth by many years. It is thought that one of the early kings of rome, NumaPompilium in 715 BC passed a law that proclaimed women who died before delivering their infant had to have the infant removed through abdomen before burial. This law continued under the ruling Caesers and was called 'LexCaeser' a probable contemplated origin of cesarean.

Traumatic cesarean sections have occurred throughout the course of history. One of the incidences report the cattle having torn apart &opening up the woman's abdomen and uterus and the infant being born. Earliest reported case of cesarean was by a swine gelder named Jacob Nufer, who performed the procedure on his wife who was in prolonged labor, but there was confusion whether it was a abdominal pregnancy or a uterine as she lived long and delivered more babies vaginally.

The first medical text advocating cesarean section before the mother was in extremis was published in 1581 by Franois Rousset (1530-1603AC).he was highly criticized for advocating cesarean section in women who could not deliver

vaginally[1].High mortality was seen in the pre anaesthetic era as cesareans were performed after prolonged labor on women who were dehydrated. With advent of anaesthesia and further refining and modernization in the methods and surgical skills of performing a cesarean section the mortality and morbidity reduced with improved neonatal outcomes.

Numerous studies have been conducted to audit the cesarean section rates across the world &the factors that are contributing to the rising rates have been a topic of heated debate and discussion.

Medline lists over 8000 articles with the key words Cesarean section, but hardly a handful of them address the issue on how to actually reduce the ever rising rates.[4]

The possible factors employed in the rising CS rates

MATERNAL ISSUES

- Fear of labour pains
- Intolerance to labour pains
- Misconception about genital damage after vaginal delivery;
- Misconception about safety of CS delivery for the baby;
- Cesarean section on request (CDMR**)**

HEALTH PROFESSIONAL ISSUES

- Financial gains
- Diminishing art of operative vaginal deliveries
- Lack of skill in anticipating complications in vaginal delivery
- Poor interpretation of CTG, Partogram
- Impatience for conduct of normal delivery
- Fear of rupture uterus in TOLACS
- Malpractice

MEDICO-LEGAL ISSUES

- Medico-legal responsibilities if baby had morbidity during the conduct of normal labour.
- Medical litigations for complications either fetal or maternal

- Negligence and medical reports
- Medical courts and civil aspects
- Compensations
- Insurance

SOCIAL FACTORS

- Social factors control the time and type of delivery
- Choosing specific birthdate and time

Caesarean section in the current context has become so safe that there is a myth among the people that caesarean section is far better as compared to vaginal delivery. In a study Of 32,834 subjects, 27,178 had vaginal delivery (operative were 4,908; spontaneous were 22,270) and 5,656 had a cesarean delivery. Third- or fourth-degree lacerations had occurred in 1,733 (7.8%) women who had spontaneous vaginal delivery as compared with 1,098 (22.3%) who had operative vaginal delivery.523 women (1.6%) had endometritis as Compared with spontaneous vaginal delivery, primary caesarean delivery with trial of labor conferred a 21.2-fold increased risk of endometritis. Even without trial of labor, women after primary cesarean delivery were 10.3 times more likely to develop endometritis than after spontaneous vaginal delivery. The risk of transfusion was highest in women delivered by primary cesarean after labor, 4.2 times higher (95% CI 1.8, 10.1) than spontaneous vaginal delivery. The risk of pneumonia was 9.3times higher after repeat caesarean delivery with labor. Deep venous thrombosis had occurred in 15(0.1%)after

spontaneous vaginaldelivery,2(0.04%)after operative vaginal delivery, and maximum of 12 (0.2%) after cesarean delivery.[5]

In one of the studies conducted in Nova scotia, Canada between 1988 to 2000, concluded that primary cesarean delivery rates increased from 13.4% of all deliveries in 199 to 17.5%in 2000.they demonstrated almost a 14 %increase in cesarean deliveries for dystocia,24%increase in breech,21% increase due to fetal distress.47%increase due to hypertension, and 73% increase in miscellaneous indication. They attributed this increase to changes in maternal characteristics like older maternal age, reduced parity, increased use of electronic fetal monitoring ,epidural anesthesia, reduced use of forceps, mal practice litigation& socio economic factors. Midpelvic forceps delivery was significantly and negatively associated with primary cesarean delivery .[6]

One of the earliest studies to evaluate and keep a tab on cesarean section rates in India was conducted by ICMR in 198O's which showed a cesarean section rate of 13.8% in teaching hospital well within the consensus recommendation of WHO. However this wasn't constant kept on escalating.[7]

In a study conducted by Kambo et al, comparative analysis between the year 1993-1994 1998-1999 showed an increase from 21.8% to 25.4%.this data was pooled from 30 medical colleges teaching hospitals. Almost 42.4%were primigravidas with 31%belonging to the rural areas.[8]

A similar study conducted by sree vidya et al in Chennai revealed that every other woman has delivered by cesarean section, with a whopping cesarean rate of 47.5%.[9]

In a clinical audit &confidential enquiry of cesarean section in one of the teaching hospitals in Wardha Maharashtra over a period of 18 months. Cesarean sections were distributed into 4 categories s per the nice guidelines 2011 on the basis of urgency.

Category I –Immediate threat to life of a woman or fetus

Category II-Maternal or fetal compromise which is not immediately life threatening

Category III-No fetal or maternal compromise but needs early delivery

Category IV-delivery timed to suit woman or staff.

A total of 6908 deliveries were conducted out of which 2548 were LSCS. Category I had 22.62%were LSCS, Category II being 38.6%, CategoryIII 28.37%&lastly Category IV had 10.40% of women undergoing LSCS. The rate of cesarean section was 36.8%.60% were done on emergency basis 53% of them were primary LSCS. They concluded that indications like fetal distress, previous LSCS should be reviewed &recommended the involvement of senior staff &faculty in decision making &training of junior faculty in conducting vaginal breech delivery, instrumental delivery &VBAC. They also emphasized that the family as a whole should be involved in decision making prior decision for LSCS.[10]

Various studies to evaluate the complications &indications of primary cesarean section in multi gravidae have been conducted but with a limitation of sample size.

In a prospective study conducted in Telangana revealed that 35% of cesareans belonged to gravid 2 ,with maximum number being in the age groups of 25-29.91%of the women had n emergency cesarean section with mal presentation being the leading contributor forming 23% of the indications followed by APH 17%&Fetal distress 16%.intraoperative complications like PPH &extension of uterine incision occurred in 8% of them,12% had morbidities like wound infection, fever paralytic ileus.17% of the babies had morbidities required NICU admission with 5%of perinatal mortality.[11]

A couple of studies have been undertaken in the government set up, as many a times it has been contemplated and blamed that un indicated cesarean sections are undertaken more in the private sector to avoid litigations as well as monetary benefits.

In a cross sectional study of rate of complications of primary cesarean section at Rajkot. Out of 7295 deliveries performed during a period of 1 year. Incidence of cesarean section was 18.5%.Primary cesarean section was 72.4%in primipara & 27.6%in multipara. Around 79.3%of them were performed on an emergency basis&20.7%on an elective basis. Anemia, Malpresentation, Oligohydramnios, eclampsia, pre eclamsia were more common antental complication in primipara's, were as APH was more commonly seen in multipara's. Malpresentation was one of the commonest indications accounting to 34.3%.Intra operative complications like extension of uterine incision, placenta previa & PPH was more common in cesareans performed on an emergency basis as compared to elective LSCS. Common morbidities in the mothers were abdominal distention, wound gape, fever. Perinatal mortality was 6.6%.APH was found to be a major contributing factor, while prematurity being the common cause of neonatal death.[12]

In a similar study conducted by Guntur medical college ,the rate of cesarean section was 36.9%.the major chunk was formed by repeat cesarean section accounting for 22%followed by obstructed labour 18.5%& fetal distress accounting for 16 % of the cases.59.2% were done on an emergency basis &rest were elective. They concluded that regular registration antenatal evaluation of expectant mother& training of primary level physicians &health workers in safe delivery practices will help to reduce cesarean rates. They attributed the cause of obstructed labor being the indication of cesarean section due to mishandling by Dai', injudicious use of oxytocics & emphasized that proper monitoring of risk factors &timely referral to tertiary care will prevent emergency cesareans[13]

Cesarean section is a double edge sword. On the one hand if it helps in preventing neonatal mortality &morbidity, on the other hand it is associated with increased maternal morbidity

As per a study conducted by DS Grifford et l. Almost one fourth of the primary cesarean sections are reported to be performed in the second stage of labor .the extraction of impacted fetal head of the fetus from the maternal pelvis constitutes one of the most difficult task, while performing a cesarean section in second stage of labor &is associated with a thinned out lower segment ,more chances of uterine extension, prolonged operating time, hemorrhage etc.[14]

In a comparative study conducted by T Shobha between cesarean section done in the first stage of labor versus those done in second stage, it was concluded that there was increased maternal morbidity, with a subsequent increase in perinatal morbidity & mortality in the cesareans performed in second stage of labor. A total of

200 cesareans were included in the study, Around 184 women underwent cesarean section in the first stage and 16 of them were taken up in the second stage of labor.

The most common indication for cesarean section done in the first stage of labor was fetal distress due to increased number of inductions ,whereas undiagnosed Cephalo pelvic disproportion was the main contributor for the sections in second stage. The maternal morbidities attributed to difficulty in handling the fetus impacted to maternal pelvis& the unfavorable neonatal outcomes were attributed to prolongation of labor which lead to birth asphyxia.[15]

In population based cohort analysis using Nova Scotia Atlee Perinatal Database from 1997 to 2002 of 1623 nullipara with singleton pregnancies at 37–42 weeks of gestation requiring caesarean delivery in labour. Compared to caesarean delivery at less than full dilatation, women undergoing caesarean delivery at full dilatation were more likely to have complications of intraoperative trauma (RR 2.6, $P < 0.001$) and infants with perinatal asphyxia (RR 1.5, $P < 0.05$). There was no significant difference in maternal or perinatal morbidity when duration of the second stage of labour or when failed assisted vaginal delivery was considered.[16]

In a prospective randomized hospital based study of primary caesarean sections performed in multiparous patients at Dhiraj General Hospital at the Department of Obstetrics and Gynecology. Amongst the various indications for caesarean section in multipara, fetal distress (25.58%) and antepartum hemorrhage (22.09%) were with the highest incidence. They concluded that previous vaginal delivery gives the patient as well as her relatives a false sense of security. The fact that a multipara has had one or more vaginal deliveries should be regarded as an

optimistic historical fact, not as diagnostic-criteria for spontaneous delivery of the pregnancy at hand.[17]

In an observational study during 2003 of complications of cesarean section, Intraoperative surgical complications occur in 12 to 15% of cesarean deliveries ,uterine vessel injuries/broad ligament hematoma/lateral wall extension amounting for 4.8 to 10.15% and blood loss greater than 1000ml about 7.3 to 9.2% are the most frequent complications .Others are bladder lacerations in 0.5 to0.8%,blood transfusion in 1% and hysterectomy in 0.2% cases.[18]

In a Retrospective cohort study of patients who underwent primary CD at The Mount Sinai Hospital during the years of 2011–2016. Women with a singleton pregnancy without a prior uterine scar attempting a trial of labor were included. An emergent CD was defined as a skin-to-uterine incision (I-U) time of <3 minutes. Subjects were dichotomized into those with an I-U time of <3 minutes or>5 minutes.1722 patients underwent primary CD and met eligibility criteria. 196 patients (11.9%) had an I-U time <3 minutes and 1454 patients (88.1%) had an I-U time >5 minutes. There were no differences in any outcomes between groups. The likelihood of transfusion, hysterectomy, or admission to the intensive care unit (ICU) was 1.5% in the emergent group and 1.0% in the control group (p¼.334). Postpartum length of stay was also similar between the groups (3.3 versus 3.2 days, p¼.259). When 384 patients with I-U times >10 minutes were excluded, surgical outcomes remained similar between groups. Among the subgroup of patients who were taken for cesarean section in the second stage of labor, surgical outcomes were also similar between groups.[19]

One of the major reasons for the dramatic rise in cesarean section was attributed to the lack of standardized internationally accepted classification system through which one can monitor &compare cesarean section rates in a consistent &action oriented manner, which would help in understanding the trends of the rise &the underlying causes of cesarean section.[20]

In 2001 M S Robson proposed a new classification system to allow critical analysis of cesarean sections based on their following obstetric characteristics

- Parity
- Previous cesarean section
- Gestational age
- Onset of labor
- Fetal presentation
- Number of fetuses

Robson's classification overcame the drawbacks of other classifications which are based on indication for performing cesarean section with categories that are not mutually exclusive &low reproducibility for some of the most common conditions that lead to cesarean section such a dystocia &fetal distress.

The major advantage of this classification is the flexibility for the creation of subdivisions in each group that can improve analysis of local clinical practices.

Panel 1: The Robson ten-group classification system9

1. Nulliparous, singleton, cephalic, ≥37 weeks' gestation, in spontaneous labour

2. Nulliparous, singleton, cephalic, ≥37 weeks' gestation, induced labour or caesarean section before labour

   2a Nulliparous, singleton, cephalic, ≥37 weeks' gestation, induced labour

   2b Nulliparous, singleton, cephalic, ≥37 weeks' gestation, caesarean section before labour

3. Multiparous (excluding previous caesarean section), singleton, cephalic, ≥37 weeks' gestation, in spontaneous labour

4. Multiparous without a previous uterine scar, with singleton, cephalic pregnancy, ≥37 weeks' gestation, induced or caesarean section before labour

   4a Multiparous without a previous uterine scar, with singleton, cephalic pregnancy, ≥37 weeks' gestation, induced labour

   4b Multiparous without a previous uterine scar, with singleton, cephalic pregnancy, ≥37 weeks' gestation, caesarean section before labour

5. Previous caesarean section, singleton, cephalic, ≥37 weeks' gestation

6. All nulliparous with a single breech

7. All multiparous with a single breech (including previous caesarean section)

8. All multiple pregnancies (including previous caesarean section)

9. All women with a single pregnancy in transverse or oblique lie (including those with previous caesarean section)

10. All singleton, cephalic, <37 weeks' gestation pregnancies (including previous caesarean section)

Vogel et al studied deliveries in 287 facilities in 21 countries that were included in both the WHO Global Survey of Maternal and Perinatal Health (WHOGS; 2004–08) and the WHO Multi-Country Survey of Maternal and Newborn Health (WHOMCS; 2010–11). They used the data from these surveys to establish the average annual percentage change (AAPC) in caesarean section rates per country. Countries were stratified according to Human Development Index (HDI) group (very high/high, medium, or low) and the Robson criteria were applied to both datasets. The caesarean section rate increased overall between the two surveys (from 26·4% in the WHOGS to 31·2% in the WHOMCS, p=0·003) and in all countries except Japan. Use of obstetric interventions (induction, pre labour caesarean section, and overall caesarean section) increased over time. Caesarean section rates increased across most Robson groups in all HDI categories. Use of induction and prelabour caesarean section increased in very high/high and low HDI countries and the caesarean section rate after induction in multiparous women increased significantly increased across all HDI groups. The proportion of women who had previously had a caesarean section increased in moderate and low HDI countries, as was the caesarean section rate in these women. They concluded that Strategies to reduce the frequency of the procedure should include avoidance of medically unnecessary primary caesarean section. Improved case selection for induction and prelabour caesarean section could also reduce the rates.[21]

Multiple such surveys have been conducted due to the implication of primary cesarean section on future gestations. To provide an update on economic related inequalities in caesarean section rates within countries, in an observational study conducted in 72 low and middle income countries. Data on caesarean section was disaggregated by asset based household wealth status and presented separately for five subgroups, ranging from the poorest to the richest fifth. The pace of change in the poorest and richest fifths was compared using a measure of excess of change. National caesarean section rates ranged from 0.6% in South Sudan to 58.9% in the Dominican Republic. Within countries, caesarean section rates were lowest in the poorest fifth (median 3.7%) and highest in the richest fifth (median 18.4%). 18 out of 72 study countries reported a difference of 20 percentage points or higher between the richest and poorest fifth. The highest caesarean section rates and greatest levels of absolute inequality were observed in countries from the region of the Americas, whereas countries from the African region had lower levels of caesarean use and comparatively lower levels of absolute inequality, although relative inequality was quite high in some countries. 26 out of 28 countries reported increases in their caesarean section rates over time. Rates had a tendency to increase faster in the richest fifth (median 0.9 percentage points per year) compared with the poorest fifth (median 0.2 percentage points per year), indicating an increase in inequality over time in most of these countries. These inequalities can be attributed to a combination of inadequate access to emergency obstetric care among the poorest subgroups and higher levels of caesarean use without medical indication in the richest subgroups, especially in middle income countries. They advocated that Country specific strategies should address these inequalities to improve maternal and newborn health.[22]

In a study carried out in KLE in 2016, A total of 6236 women were delivered. Out of which 3454 (55.38%) women delivered vaginally and 2782 (44.61%) women delivered through cesarean section. In this study, Group 5 was the largest contributor to the cesarean section rate 18.6% whereas, group 1 was second highest (8.1%). Group 1 (31.9%) and 3 (21.4%) contributed to most of the obstetric populations. However, Group 6, 7, 8 and 9 contribution to overall cesarean section rate was 1.7, 1.2, 1.4 and 0.5%, respectively. Group 10 also contributing significantly to cesarean section rate (4.4%).[23]

Institutional delivery rates varied widely between settings, from 21%inrural India to 90% in urban India in a study conducted by Neumann et al The proportion of private and charitable facility births delivered by caesarean section was 73% in Bangladesh, 30% in rural Nepal, 18% in urban India and 5% in rural India. The odds of caesarean section were greater in private and charitable health facilities than in public facilities in three of four study locations ,even when they were adjusted for pregnancy ,delivery characteristics ,maternal characteristics and year of delivery (Bangladesh: adjusted OR (AO) 5.91,95%CI5.15to6.78 ;Nepal:AOR2.37,95% CI1. 62to3.44; urban India: AOR1.22,95%CI1.09to1.38).they found that highly educated women were particularly likely to deliver by caesarean in private facilities in urban India (AOR2.10;95%CI1.61to 2.75) and also in rural Bangladesh(AOR11.09,95%CI 6.28to19.57).[24]

Data from 150 countries to estimate current global and regional CS rates were collected by ana p betran et al. This represented 96.1%of all live births worldwide in 2010.Coverage was high throughout the regions and sub regions. At regional level, except for Oceania with62.3% of the live births of the region represented, coverage

ranged from 92.8%in Africa to100% in Northern America. At sub regional level, excluding Southern Africa where data were available for only 11.7%of the live births, coverage ranged from81.8% in the Caribbean to100% in eight sub regions. According to the most recent estimates, the average global rate of CS is18.6%, ranging from 6.0% to27.2% in the least and more developed regions, respectively. The lowest rates of CS are found in Africa (7.3%) and more specifically in Western Africa (3%). The highest rates of CS are found in Latin American and the Caribbean (40.5%) and South America is the sub region with the highest average CS rates in the world (42.9%). Countries with the highest CS rates in each region are Brazil (55.6%) and Dominican Republic (56.4%) in Latin America and the Caribbean, Egypt (51.8%) in Africa, Iran and Turkey in Asia (47.9% and 47.5%, respectively), Italy (38.1%) in Europe, United States (32.8%) in Northern America, and New Zealand (33.4%) in Oceania.[25]

Various Recommendations and guidelines to control the rising cesarean rates have been advocated in many studies

In one of the studies Using a pre and post process measure, the quality improvement project team identified and implemented 3 physiologic birth parameters over a period of 12 month that have been shown to promote vaginal birth. These included reducing elective induction of labor in women who were less than 41weeks'gestation; standardizing a triage to admit women at greater than or equal to 4cm dilation; increasing the use of intermittent auscultation as opposed to continuous fetal monitoring for fetal surveillance. The team also calculated each obstetrician-gynecologist's primary cesarean birth rate every monthly and delivered these rates to the providers. Outcomes showed that the provider group has decreased its primary

cesarean birth rate from 28.9%to12.2% in the 12-month post process measure period. The 57.8% decrease was statistically significant.[26]

In a review which included 34 studies: 19 quantitative, 14 qualitative, and one using mixed methods, involving 7785 obstetricians and 1197 midwives from 20 different countries. Three main themes, each with several subthemes, Theme 1: "clinicians' personal beliefs"–('Professional philosophies';'beliefs in relation to women's request for CS'; 'ambiguous versus clear clinical reasons'); Theme 2: "health care systems"–('litigation'; 'resources'; 'private versus public. This systematic review and identified clinicians' personal beliefs as a major factor that influenced the decision to perform caesarean section, further contributed by the influence of factors that related to the health care system and the clinicians' characteristics. Obstetricians and midwives are directly involved in the decision to perform a caesarean section, hence their perspectives form the most vital part in understanding various factors that have an influence on decision-making for caesarean section. These results can further help clinicians identify and acknowledge their role as crucial members in the decision-making process for caesarean section within their organisation, and to develop intervention studies to reduce caesarean section rates in future.[27]

Four key strategies which were advocated by the CMQCC are as follows: Establish the view that "Cesarean Section rates are important" among employers, purchasers and health plans

Provide rapid-cycle data with standard measures for all facilities and providers Promote public and patient engagement n Change the culture on L&D to better support labor and vaginal birth[28]

As per a review based on pertinent publications that were retrieved by a selective search in the PubMed, Scopus, and DIMDI databases, as well as on media communications, analyses by the German Federal Statistical Office, and guidelines of the Association of Scientific M edical Societies in Germany (AWMF). The increased rates of cesarean section are thought to be primarily due to changed risk profiles both for expectant mothers and for their yet unborn children, as well as an increase in cesarean section at request. In 1991, 15.3% of all newborn babies in Germany were delivered by cesarean section; by 2012, it was 31.7%, despite the fact that a medical indication was present only in less than 10% of all the cases. This development could be explained by an increasing tendency towards risk avoidance, by risk adapted obstetric practices, and an ever increasing media attention.[29]

In a study conducted to estimate the contemporary relationship between national levels of cesarean delivery and maternal and neonatal mortality. National caesarean delivery rates of upto approximately 19 per 100 live births were associated with lower maternal or neonatal mortality among WHO member states. Previously recommended national target rates for caesarean deliveries could be too low. The estimated number of caesarean deliveries in 2012 was 22.9million(95%CI,22.5 millionto23.2million).At a country-level, caesarean delivery rate estimates upto 19.1per100 live births(95%CI,16.3to21.9)and19.4 per 100 live births(95%CI,18.6to20.3) were inversely correlated with maternal mortality ratio (adjustedslopecoefficient,−10.1;95%CI, −16.8to−3.4;P=.003) and neonatal mortality rate(adjusted slope coefficient,−0.8;95%CI, −1.1to−0.5;P<.001), respectively (adjusted for total health expenditure in terms of per capita, population, percentage of urban population, fertility rates, and region.[30]

In a study to check if the recommendations by ACOG were capable of reducing caesarean Recommendations and were made to the entire department regarding management of the first and second stages of labor. 2) Guidelines were set for elective inductions of labor strictly between 39 0/7 weeks and 41 0/7 weeks and to only allow those with bishop scores greater than 8. 3) Departmental and individual provider NTSV rates were shared with all physicians in an un-blinded fashion every quarterly basis. It was observed that Over a one-year time period they were able to reduce NTSV (nulliparous,term,singleton,vertex) cesarean section rates from 35% to 29.4%. Their second quarter of that year was 28.7%.[31 m bn]

METHODOLOGY

The study was conducted in the labour room at KLES Dr. Prabhakar Kore Hospital and Medical Research Centre, Belgaum during the period of January 2017 to December 2017.

STUDY DESIGN – A Cross Sectional study

STUDY PERIOD – One year (1st January 2017 to 31st December 2017)

SOURCE OF DATA

The data was collected from the patient's records of all Antenatal cases getting admitted to labor room of KLES Dr Prabhakar Kore Hospital & MRC, Belagavi above gestational age of 28 weeks, undergoing cesarean section for the first time irrespective of parity.

SELECTION CRITERIA

INCLUSION CRITERIA –

1. Patient, who underwent cesarean section for the first time, may or may not have delivered vaginally in previous pregnancy.
2. Period of gestation above 28 weeks.

EXCLUSION CRITERIA –

1. Patients who have had a previous cesarean section or hysterotomy
2. Patients with gestational age of less than 28 weeks.

ETHICAL CLEARANCE – Before the commencement of the study, the ethical clearance was obtained from the Ethical and Research Committee, Jawaharlal Nehru Medical College, Belagavi.

(Annexure 3 - Letter number MDC/DOME/71 dated 17/10/2016)

WAIVER OF CONSENT – Waiver of consent was sought and obtained as all data was procured through the patients record, before the commencement of the study.

METHOD OF COLLECTION OF DATA

The study was a cross-sectional study conducted over a period of one year. All the antenatal patients who were admitted to the labor ward above 28 weeks of gestational age, who underwent cesarean section for the first time were enrolled as the subjects of the study; the data was collected using a piloted proforma meeting the objectives of the study.

The following parameters are studied:

Age, parity, BMI, indications, intra and post-operative complications, maternal and neonatal outcomes and the data was collected using the above inclusion and exclusion criteria.

STATISTICAL ANALYSIS

The data obtained was coded and entered into Microsoft Excel Worksheet. The categorical data was expressed in terms of percentage and continuous data was expressed as mean ± standard deviation (SD)

RESULTS

The present one year cross sectional study was conducted in the labour room of KLE'S Dr. Prabhakar Kore Hospital and Medical Research Centre, Belgaum during the period of january 2017 to December 2017.

A total number of 5756 women delivered. Of those women, 2964 women had vaginal delivery. 2792 women underwent LSCS.1535 women had a primary cesarean section of whom 10 of them were excluded as per the exclusion criteria.9 of them had insufficient data and hence excluded.1257 of the women underwent repeat LSCS

The data obtained was coded and entered into the Microsoft Excel spreadsheet. The data was analysed and the final results and observations were interpreted as follows.

Table 1: Types of delivery (Vaginal and LSCS) wise distribution

Incidence of cesarean section in the present study	
Total no of DELIVERIES	**5756**
Total no of LSCS	**2792**
Incidence	**48.50%**
Total no of Primary LSCS	**1535**
Total no of Repeat LSCS	**1257**
Incidence of Primary LSCS	**54.90%**

Table 1 depicts the total number of deliveries .There were 5756 deliveries out of which there were 2792 Caesarean sections with incidence being 48.5%.Total number of primary LSCS was 1535,and repeat LSCS being 1257

Graph 1: Incidence of cesarean section

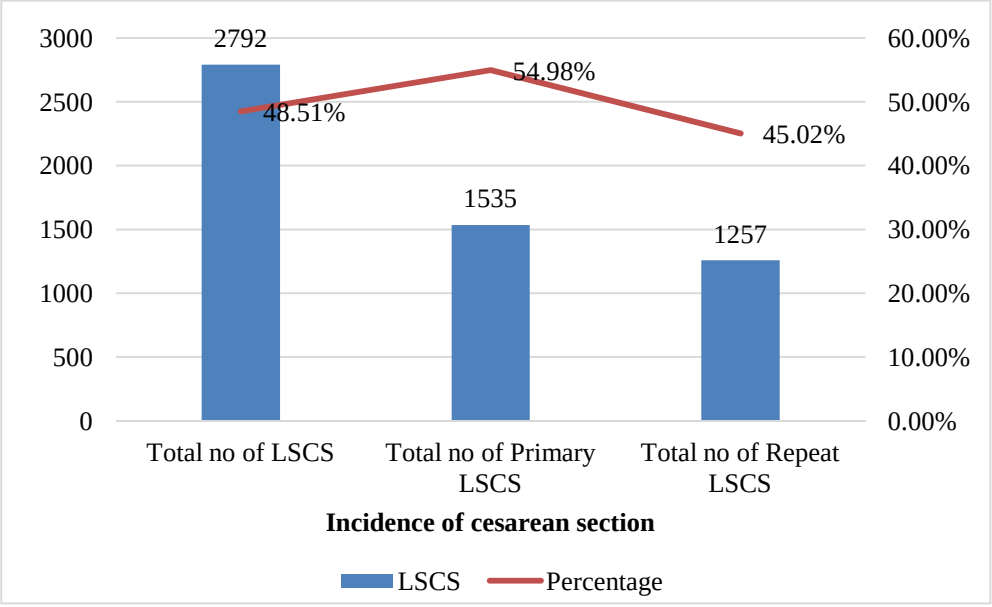


Table 2: Age wise distribution

AGE WISE DISTRIBUTION		
AGE in years	**NUMBER n=1516**	**PERCENTAGE**
=<20	**234**	**15.44%**
21 -25	**823**	**54.29%**
26 - 30	**335**	**22.10%**
31 - 35	**104**	**6.86%**
>= 36	**20**	**1.32%**
Total	**1516**	**100%**

Mean age of the study patients was 24.5 years. maximum number of cesareans were done in the age group of 21-25 years. However the age was not statistically significant.

Graph 2: Age wise distribution

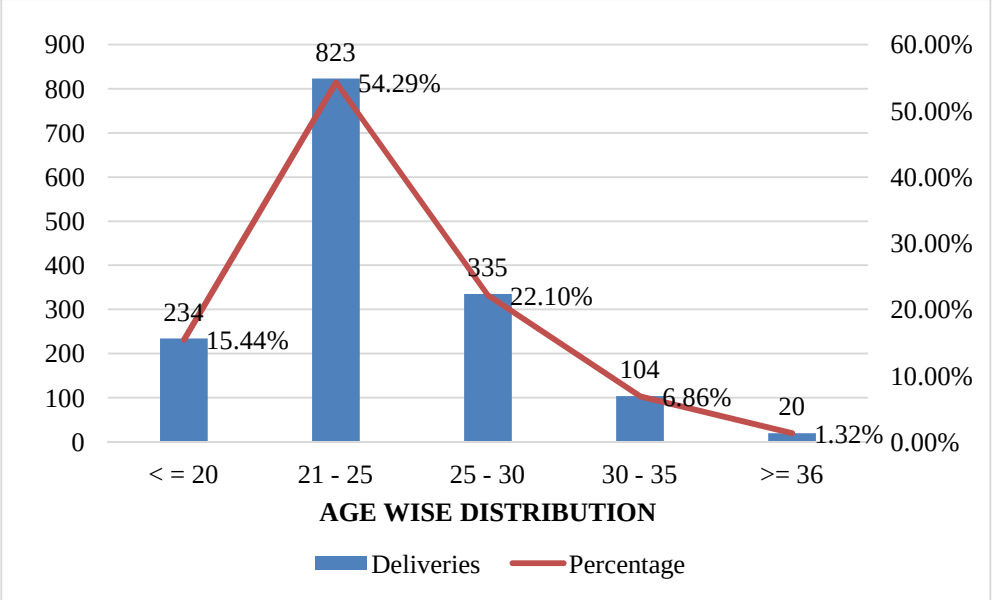


Table 3: Education wise distribution.

Education Wise Distribution		
EDUCATION	**NUMBER n=1516**	**PERCENTAGE**
Illiterate	**88**	**5.80%**
Literate	**1228**	**81%**
Schooling	**96**	**6.33%**
Graduate & Above	**98**	**6.46%**
Don't Know	**6**	**0.40%**
Total	**1516**	**100%**

There were 1228 literates, 98 patients had done their graduation and above .88 patients were illetrates

Graph 3:Education wise Distribution

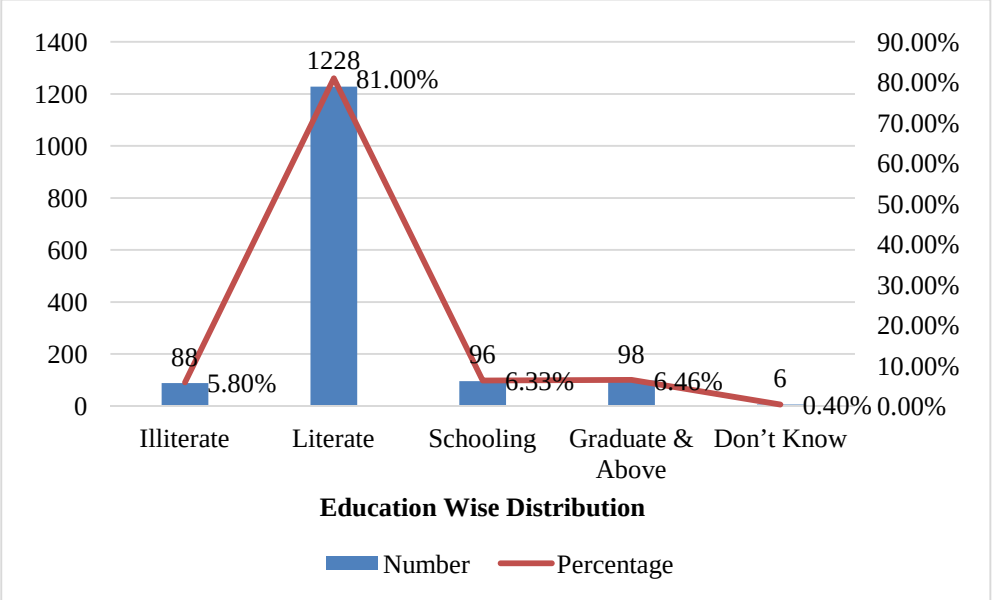


Table 4: Occupation wise distribution

Occupation Wise Distribution		
OCCUPATION	**NUMBER n=1516**	**PERCENTAGE**
House Wife	**1291**	**85.16%**
Laborer	**35**	**2.31%**
Agriculture	**49**	**3.23%**
Office Work	**115**	**7.59%**
Others	**26**	**1.72%**
Total	**1516**	**100%**

1291 mothers were home makers, 35 of them were laborers,49 of them were agriculturists.115cases were office employees.

Graph 4: Occupation wise distribution

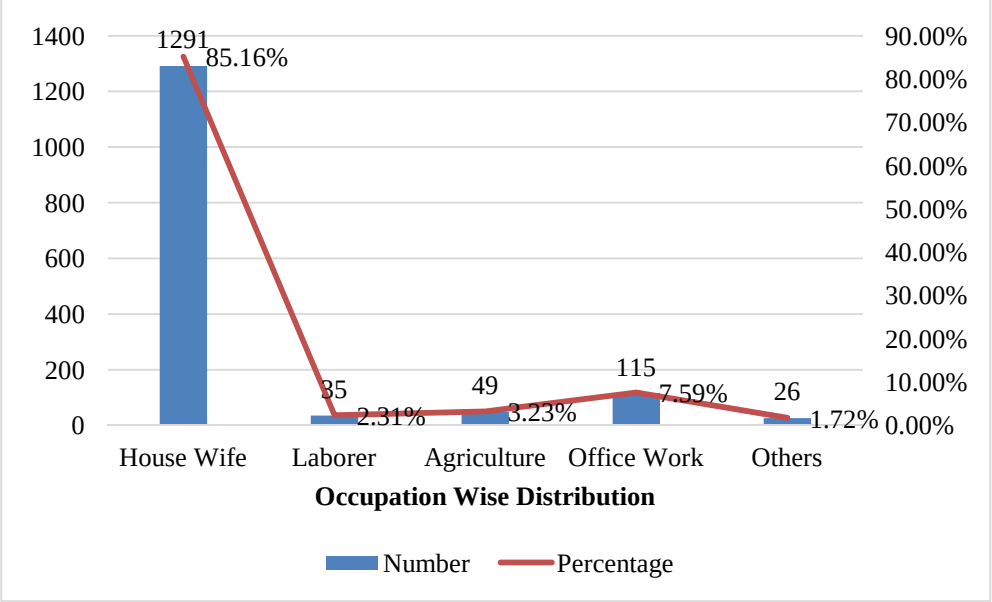
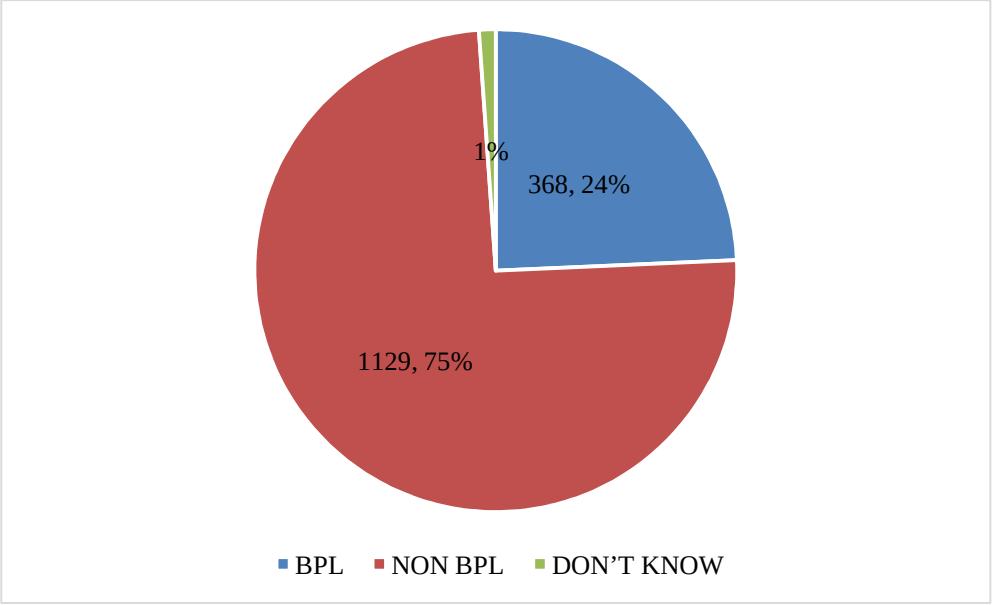


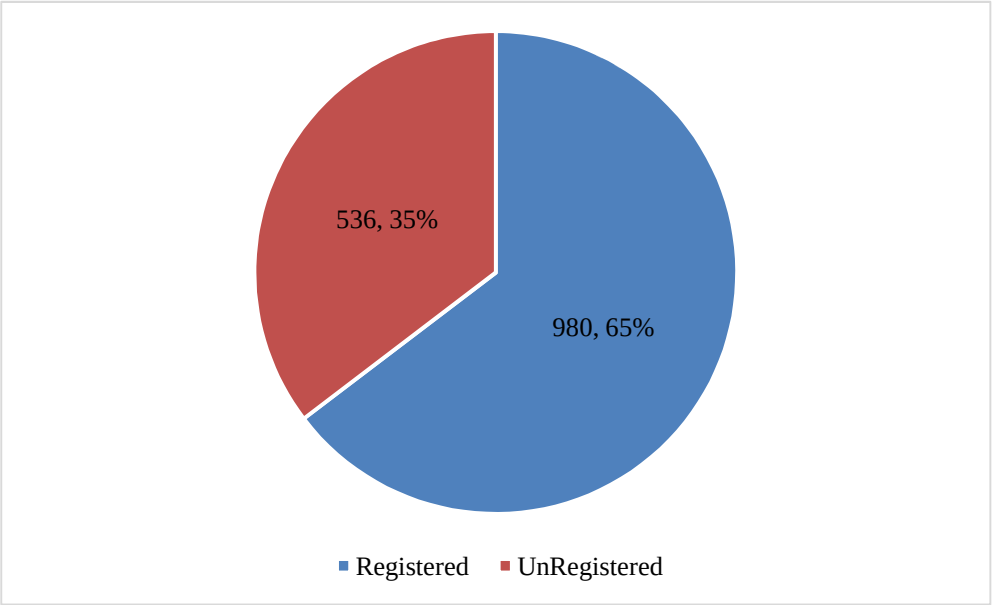
Table 5: BPL status

BPL STATUS		
BPL CARD	**NUMBER, N =1516**	**PERCENTAGE**
YES	**368**	**24.27%**
NO	**1129**	**74.47%**
DON'T KNOW	**19**	**1.12%**
TOTAL	**1516**	**100.00%**

Graph 5: BPL status



Graph 6 : Antenatal registration



Registered	980
Unregistered	536

536 cases were un registered, 980 cases were registered at KLE & had taken atleast three antenatal visits at KLE.

Table 6 : ANC Visit.

ANC Visit		
ANTE NATAL VISITS	**NUMBER n=1516**	**PERCENTAGE**
1	**3**	**0.20%**
2	**71**	**4.68%**
3	**146**	**9.63%**
4	**103**	**6.79%**
5	**20**	**1.32%**
6	**496**	**32.72%**
7	**75**	**4.95%**
8	**603**	**39.78%**
9	**9**	**0.59%**
10	**26**	**1.72%**
11	**7**	**0.46%**
12	**17**	**1.12%**
Total	**1516**	**100%**

71 cases had taken atleast 2 visits, 3 patients had taken only one visit. majority of the mothers had taken atleast 8 antenatal visits.

Graph 7: ANC Visits

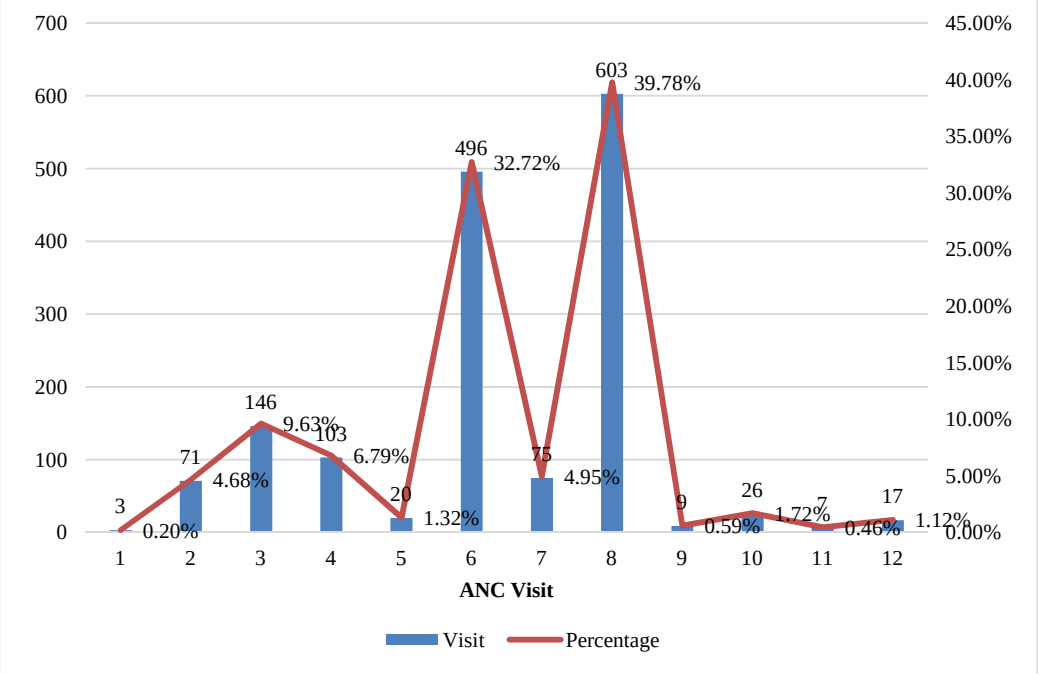


Table 7: Parity wise distribution

Parity Wise Distribution		
PARITY	**NUMBER n=1516**	**PERCENTAGE**
0	**1233**	**81.33%**
1	**208**	**13.72%**
2	**55**	**3.63%**
3	**13**	**0.86%**
4	**2**	**0.13%**
5	**5**	**0.33%**
Total	**1516**	**100%**

1233 mothers were primigravidas, 208 mothers had 1 prior vaginal delivery.55 cases had 2 prior vaginal deliveries,13 cases had 3 prior vaginal deliveries.5 mothers had previous 5 deliveries .

Graph 8 : Parity wise distribution

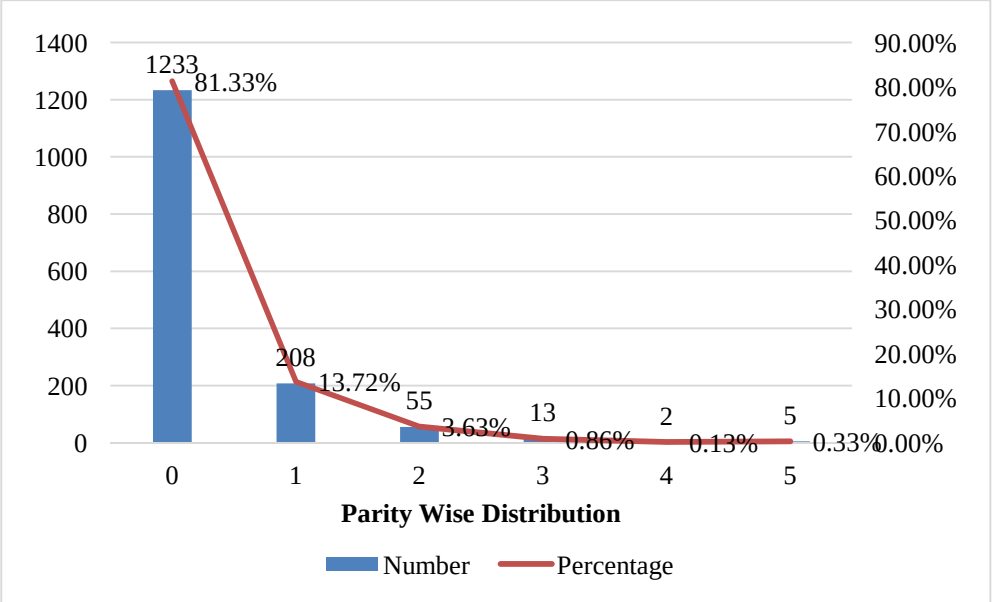


Table 8: Period of gestation at delivery

Period of Gestation at Delivery		
POG in Weeks	**NUMBER n=1516**	**PERCENTAGE**
< 32	**55**	**3.63%**
32 - 37	**378**	**24.93%**
37.1 – 38.6	**369**	**24.34%**
39 – 40.6	**607**	**40.04%**
41 – 41.6	**97**	**6.40%**
42	**5**	**0.33%**
>42	**5**	**0.33%**
Total	**1516**	**100%**

Maximum numbers of cesarean sections were done between 39 weeks to 40.6 weeks with 607 cases in the same period of gestation.

Graph 9 :Period of gestation at delivery

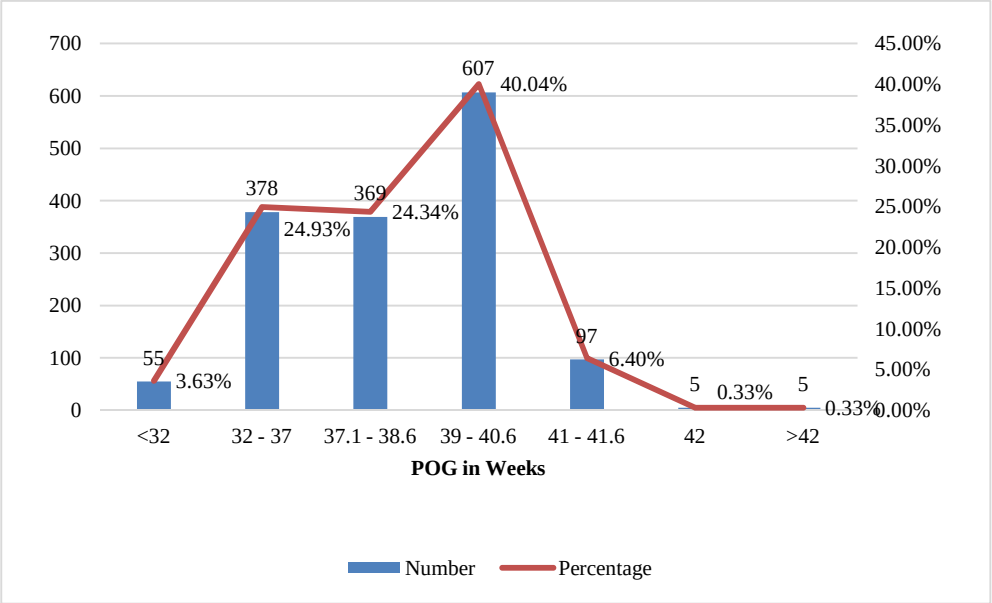


Table 9: Emergency versus Elective Cesarean section

Emergency Versus Elective caesarean		
Type of CS	**NUMBER n = 1516**	**PERCENTAGE**
FULL TERM EMERGENCY	**977**	**64.45%**
FULL TERM ELECTIVE	**169**	**11.15%**
PRETERM EMERGENCY	**328**	**21.64%**
PRE TERM ELECTIVE	**42**	**2.77%**
Total	**1516**	**100%**

977 cases were taken up on at term gestation on an emergency basis.169 cases had a full term elective caesrean section, 328 cases had a preterm emergency LSCS,42 cases had a preterm elective LSCS.

Graph 10 : Emergency Versus Elective Lscs

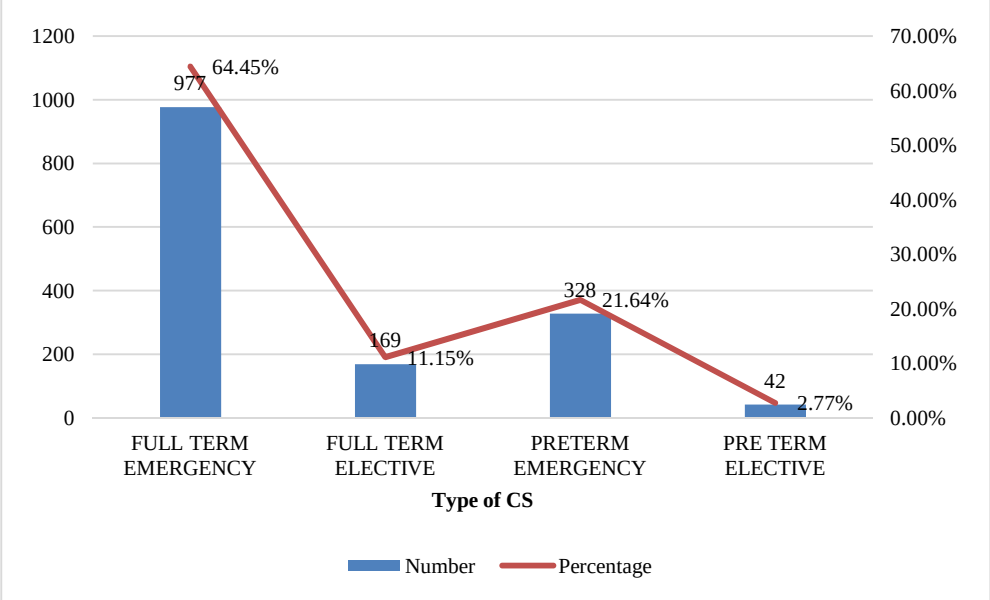


Table 10: Stage of delivery

STAGE OF DELIVERY		
Type Stage of LABOR	**No of CASES n =1516**	**PERCENTAGE**
First stage	**112**	**74.01%**
Second stage	**207**	**13.65%**
Before onset of labor	**187**	**12.34%**
Total	**1516**	**100%**

1122 cases were taken up in the first stage of labour, 207 ceasarean section were done in the second stage of labor,187 cases were taken up prior labor onset.

Graph 11: Stage of delivery

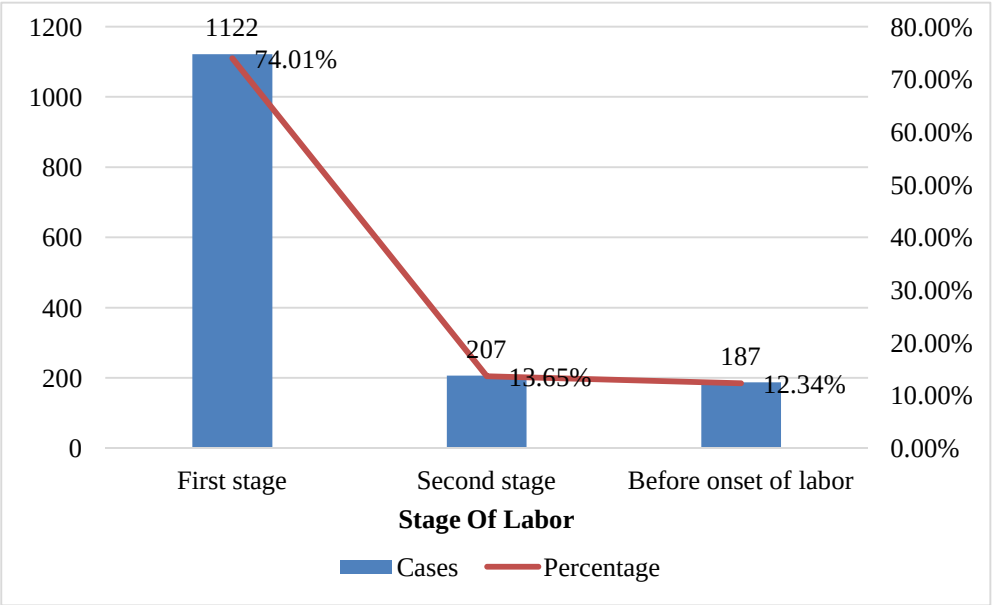


Table 11: Indications of cesarean section

Indication of Primary Cesarean Section		
INDICATIONS	**NUMBER n=1516**	**PERCENTAGE**
Fetal distress	**459**	**30.28%**
Mal presentation	**163**	**10.75%**
Antepartum haemorrhage	**6**	**0.40%**
Non progress of labor	**125**	**8.25%**
Obstructed labor	**7**	**0.46%**
Deep transverse arrest, persistent occipitoposterior	**22**	**1.45%**
Cephalo pelvic disproportion	**99**	**6.53%**
Intra uterine growth with doppler changes	**42**	**2.77%**
Precious pregnancy with infertility	**21**	**1.39%**
Placenta Previa	**28**	**1.85%**
Abruptio placenta	**37**	**2.44%**
CDMR	**57**	**3.76%**
Severe oligohydramnios	**56**	**3.69%**
Previous traumatic delivery	**4**	**0.26%**
severe pre eclamsia &eclampsia	**134**	**8.84%**
Fetal macrosomia	**41**	**2.70%**
Failure of induction	**86**	**5.67%**
Thick Meconium stained liquor	**70**	**4.62%**
Twin gestation	**19**	**1.25%**
BOH	**11**	**0.73%**
Cervical dystocia	**5**	**0.33%**
others	**24**	**1.58%**
Total	**1516**	**100%**

The most common indication was Fetal Distress 459 cases, there were 163 cases of Mal-Presentation, 134 cases of severe Preclampsia &Eclampsia,41 cases of fetal macrosomia.

Table 12: Intra operative findings &complications

INTRA OPERATIVE FINDINGS&COMPLICATIONS		
FINDINGS	**No. of CASES (1516)**	**PERCENTAGE**
Thick MSL	**263**	**17.35%**
Placenta previa	**31**	**2.04%**
Extension of incision	**17**	**1.12%**
Retro placental clots	**35**	**2.31%**
Blood stained liquor	**26**	**1.72%**
PPH	**41**	**2.70%**
Thinned out lower segment	**54**	**3.56%**
Bladder injury	**2**	**0.13%**
Bowel injury	**1**	**0.07%**
Couvalaires uterus	**5**	**0.33%**
Uterine anomaly	**11**	**0.73%**
Multiple fibroid,fibroid	**7,16**	**1.06%**
Ovarian cyst	**4**	**0.26%**
Others	**12**	**0.79%**
TOTAL	**525**	**34.63%**

The most common intraoperative finding was that of thick meconium stsined liquor,54 cases had a thinned out lower segment,17 cases had an extension of incision,11 cases had an uterine anomaly,23 cases had fibroid uterus, with 7 multiple fibroids and 16 solitary ones.PPH was recorded in 41 cases.

Table13: Postoperative Complications

Post-operative Complications		
POST-OPERATIVE COMPLICATIONS	**No of CASES N=1516**	**PERCENTAGE**
Abdominal Distension	**80**	**5.28%**
Wound gape	**62**	**4.09%**
Fever	**6**	**0.40%**
Urinary Tract Infection	**10**	**0.66%**
URTI	**9**	**0.59%**
Anesthesia related complication Conversion of spinal to General	**3**	**0.20%**
Total	**150**	**9.89%**

The most common post operative complication was abdominal distension with 80 cases. we had 62 cases of wound gape.10 cases of UTI,9 Cases of URTI

Graph 12: Post operative complications

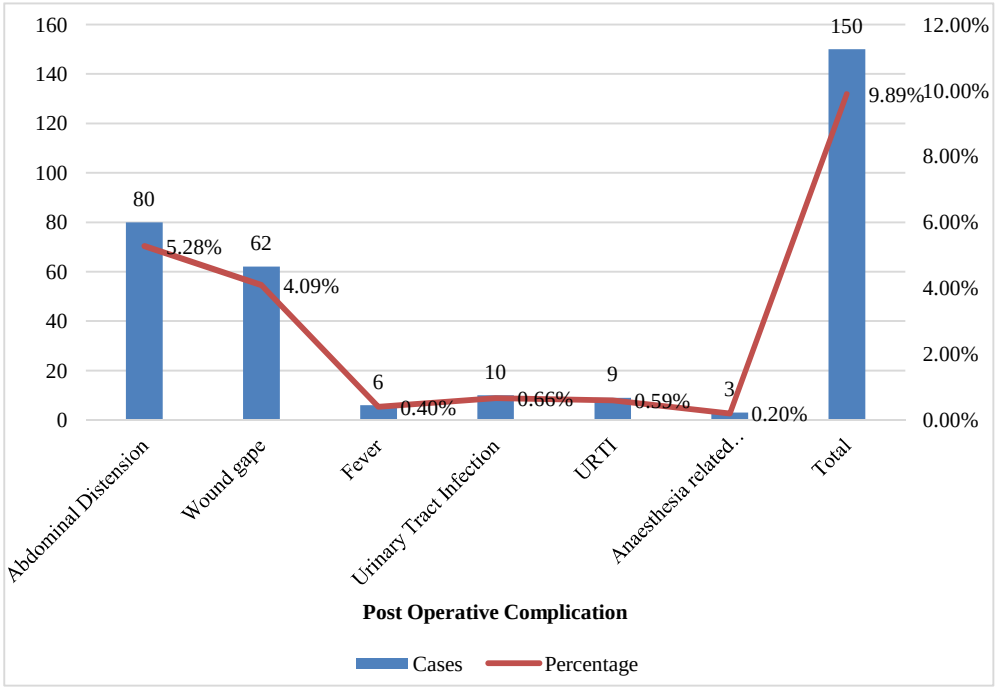


Table 14: Extended Operative procedures

EXTENDED OPERATIVE PROCEDURE		
OPERATIVE PROCEDURE	**NUMBER, N =1516**	**PERCENTAGE**
Uterine Extension	**17**	**1.10%**
Compression Sutures	**15**	**0.97%**
Internal iliac artery ligation	**5**	**0.32%**
Cystectomy	**3**	**0.19%**
Cesarean myomectomy	**23**	**1.49%**
Peripartum hysterectomy	**6**	**0.39%**

17 cases had an uterine extension and required reemphasizing,15 cases required a compression suture,5 cases required an internal iliac artery ligation,23 cesarean myomectomies were performed.6 peripartum hysterectomies were done.

Table 15: Outcome of Birth

OUTCOME OF BIRTH		
OUTCOME OF BIRTH	**No of CASES N=1539**	**PERCENTAGE**
LIVE BIRTH	**1520**	**98.77%**
FRESH STIL BIRTH	**12**	**0.78%**
MACERATED STILL BIRTH	**7**	**0.45%**
TOTAL	**1539**	**100.00%**

There were 1520 live births,12 fresh still births,7Macerated Still Birth.

Graph 13: Outcome of Birth

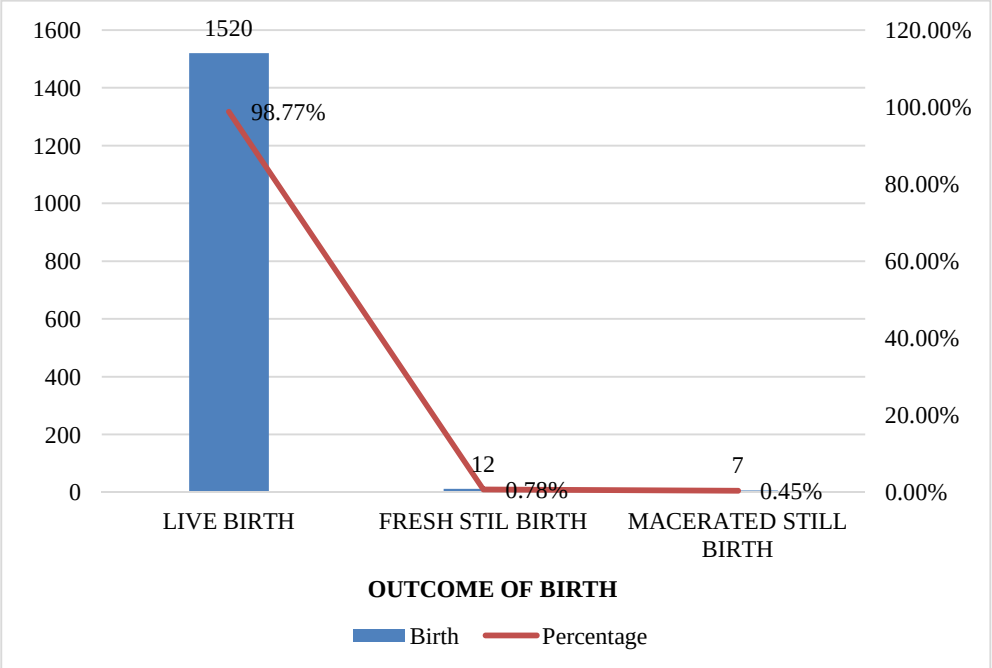


Table16: Birth weight Distribution

BIRTH WEIGHT DISTRIBUTION		
BIRTH WEIGHT	**NUMBER, N =1539**	**PERCENTAGE**
0.7 - 1.0	**31**	**2.01%**
1.0 - 1.5	**91**	**5.91%**
1.5 - 2.0	**161**	**10.46%**
2.0 - 2.5	**297**	**19.30%**
2.5 - 3.0	**553**	**35.93%**
3.0 - 3.5	**326**	**21.18%**
≥ 3.5	**80**	**5.20%**
Total	**1539**	**100%**

553 babies had a birth weight between 2.5 to 3 kg,80 babies had a birth weight of ≥ 3.5 kg

31 babies were between 700 grams to less than 1kg.161 babies had a birth weight between 1.5 to 2 kg.

Graph 14:Birth weight distribution

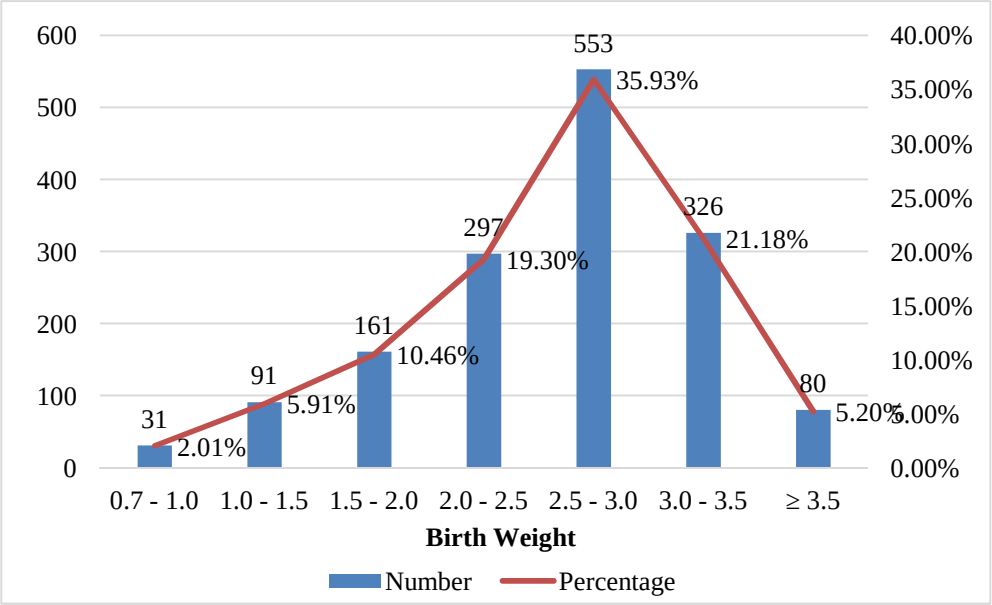


Table 17: APGAR score at 1 minute

APSGAR SCORE AT 1 MINUTE		
APSGAR SCORE AT 1 MINUTE	**NUMBER, N =1539**	**PERCENTAGE**
0	**19**	**1.23%**
1	**1**	**0.06%**
2	**1**	**0.06%**
4	**21**	**1.36%**
5	**88**	**5.72%**
6	**337**	**21.90%**
7	**654**	**42.50%**
8	**371**	**24.11%**
9	**47**	**3.05%**
Total	**1539**	**100%**

19 cases had an APGAR score of 0,371 cases had an APGAR of 8,47 cases had a score of 9,654 cases had a score of 7

Graph 15: APGAR at 1 minute.

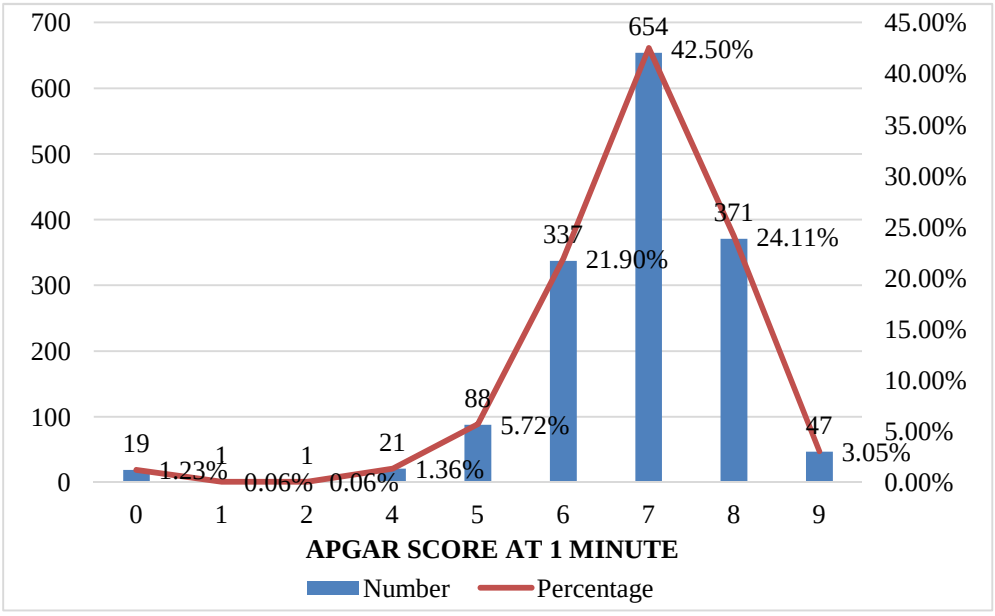


Table 18: APGAR at 5 minutes

APSGAR SCORE AT 1 MINUTE	NUMBER, N =1539	PERCENTAGE
0	22	1.43%
3	1	0.06%
4	7	0.45%
5	24	1.56%
6	98	6.37%
7	251	16.31%
8	698	45.35%
9	396	25.73%
10	42	2.60%
Total	1539	100%

698 cases had an APGAR of 8 after 5 minutes, 396 cases had a score of 9,42cases had a score of 10.

Graph 16 : APGAR at 5 minutes

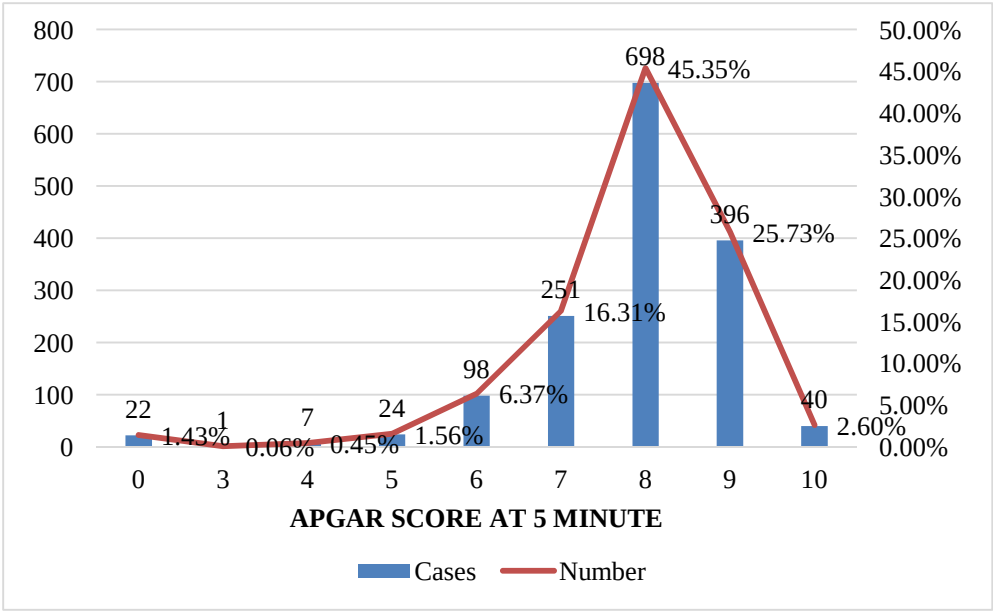


Table 19: Cause for NICU admission

CAUSE FOR NICU ADMISSION		
CAUSE FOR NICU ADMISSION	**NUMBER, N =1539**	**PERCENTAGE**
INFECTION	**4**	**0.26%**
CONGENITAL ANOMALY	**7**	**0.45%**
BIRTH ASPHYXIA	**33**	**2.14%**
CONVULSIONS	**2**	**0.13%**
LOW BIRTH WEIGHT & PREMATURITY	**254**	**16.50%**
MECONIUM ASPIRATION	**1**	**0.06%**
MECONIUM ASPIRATION+LBW	**1**	**0.06%**
RESPIRATORY DISTRESS +LBW	**47**	**3.05%**
JAUNDICE	**152**	**9.88%**
HYPOGLYCEMIA	**4**	**0.26%**
Total	**505**	**32.81%**

The leading cause for admission to NICU was low birth weight &prematurity with 254 cases being admitted in view of the same,152 cases were admitted in view of jaundice.4 cases were admitted for hypoglycemia.47 cases had low birth weight and respiratory distress.

Graph17: Cause for NICU admission

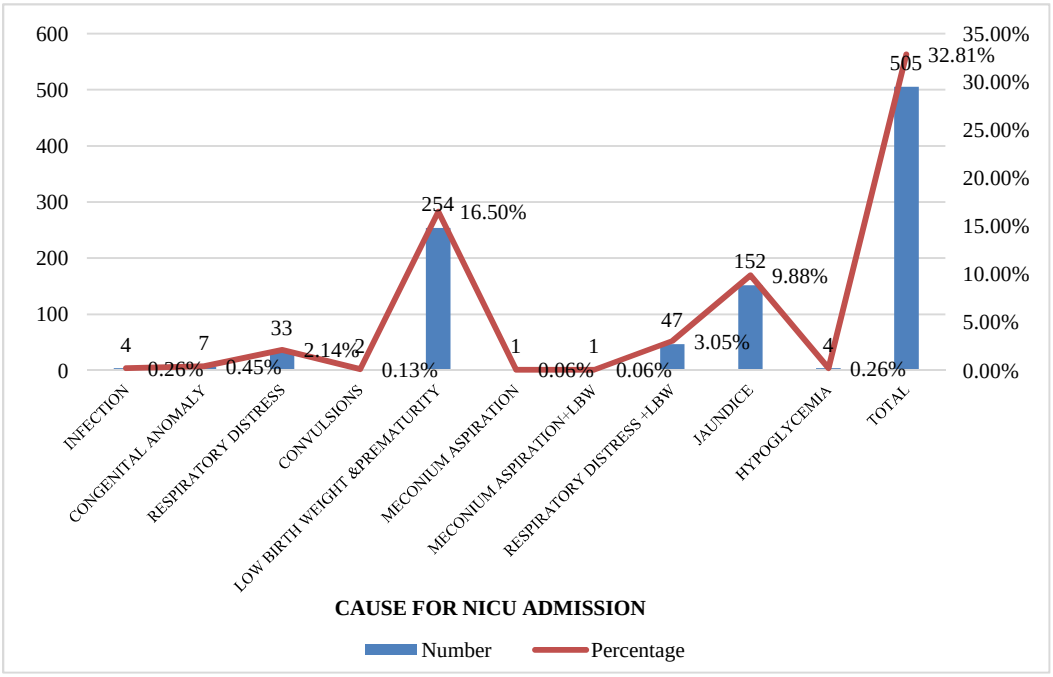
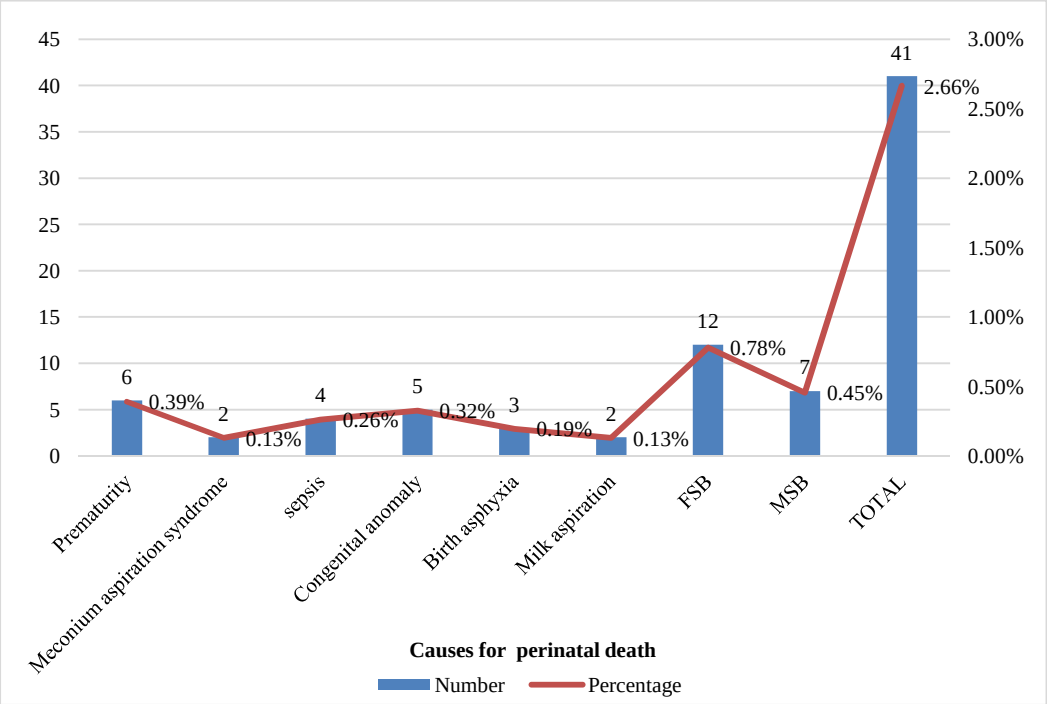


Table 20: Cause for perinatal death

CAUSE FOR PERINATAL DEATH		
CAUSE FOR PERINATAL DEATH	**NUMBER, N =1539**	**PERCENTAGE**
Prematurity	**6**	**0.39%**
Meconium aspiration syndrome	**2**	**0.13%**
Sepsis	**4**	**0.26%**
Congenital anomaly	**5**	**0.32%**
Birth asphyxia	**3**	**0.19%**
Milk aspiration	**2**	**0.13%**
TOTAL	**22**	**1.42%**

There were 6 cases of death which were attributed to premaurity, 2 meconium aspiration syndrome, 5 had a congenital anomaly, 3 cases had birth asphyxia.

Graph 18: Perinatal deaths.



DISCUSSION

In the consensus conference held by the World Health Organisation in Brazil in 1986, it was concluded that there is no justification for any region to have a caesarean section rate higher than 10–15%, for the attainment of best maternal and fetal outcome[1]. Over the past three decades, published evidence on the benefits and risks of caesarean section has accumulated, along with significant improvements in clinical obstetric care and practices due to technological innovations and in the methodologies to assess the evidences and issue recommendations, health care professionals, scientists, epidemiologists and policy-makers have increasingly expressed the need to revise the 1985 recommended rate [32, 33]. However, determining the adequate caesarean section rate at the population level – i.e. the minimum rate for medically indicated caesarean section, while avoiding medically unnecessary caesarean sections- is a multifaceted challenge.

This one year cross sectional study was conducted during the period of 1stJanuary 2017 to 31st December 2017 in the labour room of KLES Dr. Prabhakar Kore Hospital and Medical Research Centre, Belagavi. A total of 1516pregnant women fulfilling the inclusion criteria were included in the study.

INCIDENCE OF PRIMARY CESAREAN SECTION

In the current study, over all caesarean section rate was 48.51%. KLE is the largest referral centre in Belagavi District and receives several referrals from the peripheries which are poorly equipped, which explains the high caesarean section rate. It has been hypothesized that the increased caesarean section rates might be due to the caesareans being performed at a lower threshold of abnormality detection

among the health care providers, but this doesn't hold true as many of the patients are referred late.[36]

A five year audit from a large teaching hospital in Kolkata showed a caesarean section rate of 49.9%[33] and another study by Srividya et al showed caesarean section rate of 50% [12].The rate of primary caesarean section was 54.9% in the current study, the results are similar to the study conducted by Suhasini et al, where the rate of primary caesarean section was 53.9%.[37] Whereas it was lower than the rate of primary caesarean section in a study conducted in Gujarat, where it was as high as 65.92%.[38] The trend of C-section deliveries analysed from 1992-93 to 2005-06 shows that there has been an upward trend in C-section rates in India.[39]

DEMOGRAPHIC CHARACTERISTICS

Average age of the patients undergoing primary caesarean section in the current study was24.5 years, which is comparable with the studies conducted by Srividya et al & Arpita et al where the mean age at delivery was 24.6 years [12,23].There were234 (15.44%)cases whose age was less than 20 years, this may be attributed to social factors like early marriage ,lack of education resulting in increased fertility in early ages In a study conducted by Pahari et al, maximum caesarean section rate was seen in the age group of 18 -35 years.[34]Incidence of elderly gravid as in the current study was found to be 124 (8.18%).pregnancy beyond 30 years of age is considered as high risk pregnancy because of hypertension , DM & congenital malformations that will increase the rate of primary caesarean section in this group.

1228 (81%) of the women in the current study were literates,80 (5.8%) were illiterates. 98 (6.46%)had done their graduation. This was similar to a study conducted to assess the etiological factors of caesarean delivery in Gujarat where 5% of the

women were illetrates[35].1291 (85.16%) of the women were home makers where as 13.15%were employed, which is similar to the study conducted by Srividya et al, where 13%of the women were employed.[9]

980 (65%)of the cases in the current study were registered at KLE s Dr. Prabhakar Kore hospital and had atleast 3 antenatal visits at KLE.0.13%of the cases were not registered in any hospital and these findings are similar to the study conducted by Srividya et al where 0.43%of the women were unregistered and not taken ANC visits.

24.27%of the women in the current study were BPL card holders issued by the government of India, similar results were observed in the study conducted bySrividya et al, where 26%of the women were below poverty line.[9]

1233(81.33%)of the cases in the current study were primigravidas where as 208 (13.72%)of the women had a prior vaginal delivery,55(3.63%)of the patients had previous 2 vaginal deliveries, 13(0.86%)of the women had prior 3 vaginal deliveries, whereas 5(0.46%) of the patients had more 4 or more vaginal deliveries, which is comparable to the study findings of Jain et al where 72.4%of the women were primigravidas,17.2%had one prior vaginal delivery,7.9%had 2prior vaginal deliveries.2%of the women had previous 3 vaginal delivery and 0.5%of them had a parity of 4.[12]

- 1305 (86.08%)of the cases were taken up on an emergency basis,211(13.91%)of the cases were taken up electively.977(64.5%)cases were full term emergency LSCS,169(11.15%)cases were full term elective LSCS,328(21.64%) cases were preterm emergency LSCS, 42(2.77%)were pre term elective LSCS. This was comparable to the study by Jain et al were there

were 79.3%emergency LSCSand20.7% were elective LSCS. An elective procedure is always better than an emergency procedure. complications noted are much lower in elective procedure as compared to an emergency LSCS.[12]The overall cesarean rates can be reduced by encouraging all antenatal women to attend ANC clinics, so that those with high risk factors can be identified earlier for better monitoring of labor and Elective LSCS if at all required.

1122(74.01%) of the cases were taken up in the first stage of labor ,207(13.65) cases were taken up in the second stage of labor,187(12.34%)cases were taken up prior the onset of labor. This was comparable to a study conducted by t shobha et al where 92%of the sections were taken in the first stage &8% were taken up in the second stage of labor. Second stage sections are associated with more complications and poorer perinatal outcome.[15]Carefull assessment of the pelvis, correct estimation of fetal weight, early referral, plotting of partograph accurately can help in the reduction of second stage sections.

PRIMARY CESAREAN SECTION INDICATION WISE STRATIFICATION

The array of indications for caesarean section was varied. In some cases more than one indication was recorded but as far as the classification was concerned only the principal indication was considered. The most common indication in the current study was fetal distress which accounted for 30.34% (459)of the cases, which was similar to the study conducted by Patil et al where it was 35%.

It was a common indication in both the multipara and primipara. In a study conducted by Shruthee et al, fetal distress was the commonest indication in both multipra and primipara.[41]

Over the period of a year fetal distress continued to be the leading contributor of the caesareans and no change was seen as observed by Arpita et al where there were 452 cases of fetal distress which were taken up for caesarean section.[12,41]

In our hospital electronic foetal monitoringis used in the diagnosis of fetal distress. Many Randomized controlled trials have demonstrated that electronic foetal monitoring can result in higher caesarean delivery rates without improving neonatal outcomes. Many gestational and other antepartum factors are known to influence and overestimate the fetal response in a CTG[42]. As per the recommendations of WHO, the foetal heart rate should be monitored by intermittent auscultation during the first stage of labourfor every 15 min and for every 5 min in the second stage of labour[1]. The EFM should be used in selected patient's likes of those undergoing induction of labour, Foetal Growth Restriction (FGR), Gestational diabetes mellitus (GDM), severe pre eclampsia etc. However, due to the risk profile of the patients managed at our institute, the majority of patients have electronic foetal monitoring during labour. Improving foetal monitoring during labour and access to estimation of foetal scalp blood ph which gives a peek into the in utero environment may potentially reduce the caesarean delivery rate.

There were 70 cases (4.48%)which were taken up for caesarean section where meconium stained liquor in the first stage of labor was the indication, in a study conducted by Jain et al 22%of the cases were taken up for caesarean section in view of thick meconium stained liquor.

The next most common indication for caesarean section in the current study was that of Malpresentation, with breech being the most common of all the Malpresentations. This was the leading indication in the study conducted by Jain et

alwhere in it was 34.3%. This can be attributed to the adoption of our institutional policy of not allowing vaginal beech delivery ,especially post Hannah trial.[43]Though ECV (external cephalic version) has been suggested as an intervention to reduce high CS rate at 37 weeks gestation but it has its own drawbacks and requires skill,it is not routinely practiced in our institute.

The next contributor to caesarean section was that of non-progress of labor. There were 125(8.24%)cases of non-progress of labor ,comparable to the study findings of Arpita et al where there were 144 cases of non-progress of labor .It was comparatively higher than the findings of Jain et al, where non progress of labor contributed to 4.1% of CS, but this was only in the first stage, but these results were lower as compared to the findings of Goonwardene[44].

In the study conducted by barber et al arrest of labour formed 34 %of the indications for caesarean section[45].77 of them were because of non-progress of labour in the first stage and the rest cases were in the second stage. Around 50 cases failed to progress after initiation of labour post induction due to various reasons.

10 cases were taken up due to non-progress of labour with prolonged PROM.14 babies had a birth weight of greater than 3.5 kg in the nulliparous age group implying probable mis judgement of the pelvis and underlying CPD.

Non progress of labour may also be targeted as an indication to reduce caesarean section rates. Skilled pelvic examination to exclude Cephalopelvic Disproportion (CPD),proper use of the partogram to monitor and manage the labour progress, judicious administration of oxytocin to augment the labour, are the aspects which need a revision.

Around 7 cases resulted in obstruction of labour in the current study and had to be taken up for caesarean section .4 of the were of parity of 3 and above.16 cases were taken up for deep transverse arrest and 6 were persistantoccipito posterior cases, which were taken up for cesaraen section .It was similar to the study findings of Jain et al & Arpita et al where there were 6 cases of persistant occipitoposterior,19 cases of Deep transverse Arrest[12,23].5 cases in the current study were taken up for caesarean in view of cervical dystocia. All these contribute to the arrest of labor in different stages.

There were 134 cases(8.5%) for which the indication of caesarean section was severe pre eclampsia and Eclampsia in the current study.90 cases were given a short trial of labour and the rest were taken up even before the onset of labour due to severe uncontrolled hypertension with imminent signs. This was similar to a study conducted by Shrivastav et alwhere in 9.4 cases contributed to this category.[46]

86 cases (5.67%) were taken up due to failure of induction, this was lower compared to the study conducted by Jain et al where 12% of the cases were taken up for failure of induction. Induction for post datism is done in our institute at 41 completed weeks.

There were 99 cases(6.53%) of CPD in the current study, which is similar to a study conducted by Nahar et al where there were 6%of cases of CPD[47], it was 4%in the study conducted by Deepti et al[46].In a study conducted by Jain et al[12] only 0.9%of the cases were taken up for caesarean section for CPD. Clinical pelvimetry and assessment of pelvis in the active stage of labour , training the staff and post graduates in the assessment of the pelvis, can help in the reduction of caesarean sections contributed by this chunk.

There were 37 cases (2.44%) which were taken up for abruption placenta and 28(1.84%) were taken up for placenta previa, 6 cases were taken up for unexplained antepartum haemorrhage in the current study. In the study conducted by Deepti et al, incidence of abruption placenta was 2.8% and placentaprevia was 0.6%[46],where as in a study conducted by Patil et al it was 3 to 4%[37].

42 cases(2.77%) were taken up for caesarean section for IUGR with Umbilical artery Doppler changes .12 cases were taken up electively for caesarean and the rest were given a short trial of labour. There were 29 cases with increased resistance of umbilical artery Doppler,7 cases with absent diastolic flow,6 cases with reversal of umbilical artery flow Doppler.5%of the cases in the study conducted by Deepti et al were taken up for IUGR[46].

There were 21 cases which insisted on caesarean section in view of infertility treatment and had inhibitions to deliver vaginally. Which is higher as compared to the study by Jain et al where in it was an indication for 0.7%of the cases[12] ,this can be attributed to the fact that it was a government set up where asour institute has a separate wing for infertility and assisted reproductive techniques, & this explains all the more high rate. 11(0.7%) of the cases were taken up in view of a previous bad obstetric outcome. In a study conducted by Deepti et al 3.4%of the cases were taken up in view of a previous poor obstetric outcome[46]

Cesarean delivery on maternal request is defined ascesarean delivery performed on request of the mother in the absence of any medical or obstetric indications[48,49]. The reasons behind this phenomenon are complex, involve social and cultural aspects. The most commonly cited reasons are the fear of labor pain,

uncertainty of outcome, fear of emergency interventions such as forceps, fetal distress in labor, future sexual dysfunction, stress incontinence or pelvic organ prolapse.[50]

In the current study the rate of caesarean section at maternal request was 3.6%, which is higher as compared to the study conducted in Kolar where it was 2.5%[51],but still lower than the study conducted by Barber et al where in it was 5%[45]. Proper education of the patient and personal involvement of the treating obstetrician in counseling the patient and her relatives can reduce cesarean delivery for maternal request.

Four caesarean sections were done due to previous traumatic delivery. In the current study3.5% of the cases had severe oligohydramnios/anhydramnios and were taken up for caesarean section. Amniotic fluid disorders particularly oligohydramnios where 4.6% culminating to caesarean section in the study conducted by Deeptiet al[46], whereas in the study done by Patil et al the incidence was 8% of total indications of caesarean section.[40]

In the current study 2.7% of the caesarean section were taken up for fetalmacrosomia this was low as compared to the study conducted by Barber et al where in it was 4%.[45]

In the current study 19 cases were taken up in view of twin gestation, contributing 1.2 % of the cases ,this was low as compared to the study conducted by Barber et al were in it formed 7%of the indications for caesarean section[45].but comparable to the study conducted by Deeptiet al where it formed 1%of the indication[46].

In the current study there were 7 cases which were taken up in view of previous myomectomy, 3 cases were taken up for caesarean section in view of cervical fibroid, 2 cases had herpes simplex active lesions,1 case was taken up in view of impending chorioamnionitis, 2 cases were taken up in view of mother being RVD positive, 1 case was taken up in view of Severe Coarctation of aorta,1 case was taken up in view of uterine prolapse with thick unfavourable cervix, 1 case was taken up in view of anterior vaginal wall varices, 1 case had athick transverse vaginal septum and 2 cases were taken up in view of triplets.

INTRAOPERATIVE FINDINGS AND COMPLICATIONS.

The most common intra operative finding was that of thick meconium stained liquor which was found in 263(17.35%) cases. 31(2.04%) cases had placenta previa,35(2.31%) cases had retroplacental clots,26(1.72%)cases had a blood stained liquor.

The most common intraoperative complication was that of PPH contributing to 41(2.70%)of the cases

15 required compression sutures and 5 required internal iliac artery ligation to control the bleeding, 6 cases required peripartum hysterectomy due to uncontrolled haemorrhage.2 cases had a bladder injury and required surgeons assistance,1 case had bowel injury for which repair was done.5 cases had couvalaire changes of uterus.11 cases had some uterine anomaly, 4 cases had an accompanying ovarian cyst,out these 2 cases had a cystectomy.5 cases had a fimbrial cyst,23 cases had fibroid uterus and myomectomy was done for the cases, Extension of the uterine incision was seen in 17 of the cases.54 cases had a thinned out lower segment.

In an observational study during 2003 of complications of cesarean section, Intraoperative surgical complications occur in 12 to 15% of cesarean deliveries ,uterine vessel injuries/broad ligament hematoma/lateral wall extension amounting for 4.8 to 10.15% and blood loss greater than 1000ml about 7.3 to 9.2% are the most frequent complications .Others are bladder lacerations in 0.5 to 0.8% and hysterectomy in 0.2% cases[52].In a study conducted by Jain et al 182 cases had thick meconium stained liquor which was detected intra-operatively. 32 cases were of placenta praevia and 17 cases developed postpartum hemorrhage and one B lynch suture was taken. 12 cases had extension of uterine incision and 32 cases had a thinned out lower segment. Septate uterus was found in 3 cases whereas multiple fibroid was found in 3 cases. Out of 2 cases, 1 case had simple ovarian cyst and right ovarian cystectomy was performed and other case had bilateral enlarged ovaries suggestive of polycystic ovaries.[12]

The most common postoperative finding was that of abdominal distension in 80 (5.28%) cases and wound gaping in 62(4.09%) cases.3 (0.20%)cases had to be converted to general anaesthesia, 9 (0.59%)cases had an upper respiratory tract infection, 10(0.66%) cases had a urinary tract infection, 6 cases had a fever in the post-operative period. This was similar to the findings of Jain et al were there were 5 %of the cases had developed abdominal distension and 4.08 % cases had a wound gape. There were 27 cases of fever and 19 cases of urinary tract infection[12].Prophylactic antibiotic administration, strict asepsis, regular fumigation of the operation theatres, proper supervision of trainees and post graduate students, regular cultures from the operation theatres and change of the broad spectrum antibiotic from time to time all can help in the reduction of wound gapes.

2 maternal deaths were recorded in the current study.1 case was taken up in view of failed induction and had postpartum haemorrhage in the post-operative period, which was taken up re-exploration and peripartum hysterectomy was done in view of uncontrolled haemorrhage and she later on succumbed to DIC and shock after 1 week.

Another case was taken up for caesarean section in view of severe pre-eclampsia with HELLP. The patient went against medical advice only to readmit after 17 days were in she was already in multi organ failure and succumbed a day later.

Cesarean section has a mortality rate <1%, in many developing countries it is 10-20 times greater with cesarean section compared to vaginal delivery. No significant difference in maternal mortality was found between elective cesarean delivery and planned vaginal delivery[53]

FETAL OUTCOMES

In the current study there were 1515 live births.16 of them were fresh still births,8 of them were macerated still births.2.01 %cases were in the birth weight of 0.7-01 kg, 5.91%of the babies were between 1-1.5 kg. Mean birth weight was 2.57 kgs with a standard deviation of 0.69. Maximum birth weight noted in the study was 4.5 kg.

The mean APGAR score noted at one minute was 6.6 with a standard deviation of 1.48 and APGAR noted at the end of 5 minutes was 7.6 with a standard deviation of 1.72.

This was similar to the study findings of Mookambigai et al were in the APGAR was around 8.[54]

A total of 505 babies were admitted to the NICU. The leading cause for the NICU admission was low birth weight.254 babies were admitted for low birth weight & prematurity, 152 cases were admitted for jaundice,80 cases had birth asphyxia (respiratory distress),4 cases were admitted in view of infection,7 cases were admitted in view of major congenital anomaly. Over all there 46 cases which had anomalies in the entire study group but only 7 of them required admission for the same.4 babies were admitted in view of hypoglycaemia.

A total of 41 perinatal deaths were noted in the study.12 fresh still births and 7 macerated still births. There were 2 cases of death reported due to milk aspiration,2 cases of death due to meconium aspiration, 4 cases of death due to sepsis, 6 cases of death due to prematurity, 3 cases of death due to birth asphyxia and 5 cases of death due to congenital anomalies.

Among the anomalous babies,1 was a case of congenital musculoskeletal dysplasia. There were 2 non immune hydropsfetalis, 1 immune hydropsfetalis and 1 was a case of dandywalker syndrome.

These findings were similar in the study conducted by Jain et al. Most common cause for early neonatal death was prematurity 19 cases, followed by meconium aspiration syndrome 7 cases. Sepsis accounted for 6 cases and there were 4 neonatal deaths due to congenital anomaly.[32]

CONCLUSION

- The overall rate of cesarean section is 48.5%, with primary cesareans forming 54.9% of the total cesarean sections. Our data concurs with the other studies that reveal a steadily rising primary cesarean delivery rate in various institutes across various countries.
- The indications for cesarean section have been undergoing a gradual change over the last few decades, besides the obstetric causes like labor dystocia, fetal mal presentation, multiple gestation, suspected macrosomia, non-reassuring fetal heart rate tracing, several other medical, social, ethical, economic and medico legal factors play a role in the rising trend of cesarean section. Not only does cesarean delivery increases the risk of maternal complications in the index pregnancy, including intra operative complication's, but also has serious implications for future gestation. The most effective approach to reducing overall morbidities related to cesarean delivery is to avoid the first caesarean. This mandates the need of target driven restrictions on the primary cesarean deliveries
- The overall cesarean rates can be reduced by encouraging all antenatal women to attend ANC clinics, so that those with high risk factors can be identified earlier for better monitoring of labor and Elective LSCS if at all required.
- Safe reduction of the rate of primary cesarean deliveries will require different approaches for each &every indication. Individualization of the indications, careful evaluation, following standardized guidelines, practice of evidence based obstetrics & frequent audits in the institution can help us limit the cesarean section rates.

SUMMARY

The present one year cross sectional study was conducted from 1st January 2017 to 31st December 2017 in the labour room of KLES Dr. Prabhakar Kore Hospital and Medical Research Centre, Belgaum.

Cesarean section has traditionally been performed when a vaginal delivery would put the mother or baby's life at risk. Cesarean section rates has risen worldwide in the last decades. (44.61%) was the caesarean rate in 2016 in our institute.

Development of modern surgical procedures has contributed to reduction of complications associated with cesarean section. Complications still occur, and most are due to the surgical procedure. Long term risks increases with the number of cesarean deliveries in the woman.

- The rate of cesarean section is 48.5%.and the rate of primary cesarean section is 54.5%,our data concurs with the other studies that reveals a steadily rising primary cesarean delivery rate in various institutes across various countries.
- Most common indication being fetal distress followed by Mal -presentation, closely followed by Non progress of labour, CPD, failure of induction, severe Pre Eclampsia & Eclampsia.
- 35% of the cases were admitted to KLE hospital for the first time
- 86% of the cesarean sections were done on an emergency basis and 14%were taken up electively.
- Anemia was the most common antenatal complication.
- Most common intra operative finding is that of thick meconium stained liqour, followed by PPH.

- Additional operative procedures like B lynch, Hayman stitch and stepwise devascularization, were required in cases of PPH.
- 6 peripartum hysterectomies were done during the period of 1 year
- Most common post operative complication was that of abdominal distension followed by wound gaping.
- 2 maternal deaths were reported in the study period.
- The most common neonatal morbidity which was observed was that of low birth weight &prematurity followed by jaundice and respiratory distress
- The most common cause of perinatal mortality was attributed to prematurity.

While there is sound reason to believe that cesarean section has been employed too frequently during the last two or three decades, the operation clearly changes the outcome favourably. The increased rate of cesarean deliveries can partly be explained with increased use of technical, medical equipment.

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ANNEXURE I – WAIVER OF CONSENT

To,

Dr Ganga Pilli

Chairman

JNMC Institutional Ethics Committee

on Human Subjects Research,

J.N. Medical College, Belagavi.

THROUGH PROPER CHANNEL

Subject: Waiver of consent for the Study.

Respected Madam

I wish to inform you that proposed project, "**A ONE YEAR CROSS SECTIONAL STUDY OF PRIMARY CESAREAN SECTION AT KLE DR PRABHAKAR KORE CHARITABLE HOSPITAL"** is a project wherein consent is not needed as the data will be collected from the medical records.

Kindly grant waiver of consent for the same.

Thanking you

Yours Sincerely

ANNEXURE II – PROFORMA

DATA COLLECTION INSTRUMENT

SOCIODEMOGRAPHIC DATA

Subject Information: DOA: DOD:

(1). Name: (2).IP NO

(3). Age:

(a). =<20 years
(b).21-25years
(c).26-30years
(d).31-35years
(e).>=36years

(4). Address :

(5). Contact Number

Mother:a.Illiterate
b. Literate
c. Schooling- a. Years of schooling
d. Graduate and above
e. Don't know

(7). Occupation-a.Housewife
b. Laborer
c. Agriculture
d. Office work
e. Other if, specify_____

(8). Religion - a.Hindu b.Christian c.Jain
d. Muslim e.Sikh f.Other _____

(9). Socio Economic Status

If Urban

Modified Kuppuswamy Scale

Score	-	Socio Economic status
a.26-29		Upper
b.16-25		Upper-Middle
c.11-15		Lower-middle
d.05-10		Lower Middle
e.<05		Lower

If Rural

Modified BG Prasad (May 2016)

a.≥ 6277	I
b.3139-6276	II
c.1883-3138	III
d.942-1882	IV
e. Less than 942	V

(10).BPL card holder a. Yes b. No c. don't know

(11).Type of Case:

a.Referred
b.Direct Admission – Registered / UnRegistered
c.Inpatient

(12)**REASONS FOR SEEKING CARE**

a) Labor pains: YES/NO
b) Prolonged labor: YES/NO
c) Ruptured membranes: YES/NO

d)Eclampsia warning symptoms: YES/NO
- i. Headache
- ii. Visual disturbance
- iii. Chest pain
- iv. Shortness of breath
- v. Abdominal pain
- vi. High blood pressure

e) Any other maternal health problems: YES/NO
f) Reduced or no fetal movements: YES/NO

Present Pregnancy

(13).Total no of Ante natal visits: ☐

(14).Any History of Hospital admission: a. YES b. NO c. dont know

If Yes Specify Cause _____

Days of admission ☐

Result _____

(15). Obstetric History

Score | G | P | L | A |

(16). Married life years (17)☐ Consanguinity ☐

a.YES

IF YES, THEN i. 1*
ii.2*
iii.3*

b.NO

Yrs	(18). Previous Pregnancies								
	Duration of Pregnancy (in months)	Method of delivery(Vaginal-1, Assisted-2, Caesarean 3)	Outcome (Stillbirth-1, Live birth-2, MTP-3, Ectopic-4)	Place of delivery (Home-1, Hospital-2)	Weight of Newborn in kg(small-1, normali-2, don't know-3)	Sex of Newborn (male 1, female-2)	Alive (yes-1, no-2)	Age of child in years	Maternal complicatio n(Anemia-1, APH-2, PIH-3, Others-4, Nil-5)

(19) Menstrual History:

LMP D DM MY Y ☐☐☐☐☐☐

EDD ☐☐☐☐☐☐

CEDD - D DM MY Y ☐☐☐☐☐☐

if yes 1st Trimester scan

2nd Trimester scan Wks Days ☐☐☐ ☐

Period of Gestation

Previous Menstrual Cycles 1.Regular ☐

2. Irregular ☐

(20) Past History :

a. Known case of Hypertension
b. Known case of Diabetes mellitus
c. Known case of Cardiac illness
d. Known case of Tuberculosis
e. Known case of Asthma
f. Known case of Epilepsy
g. History of blood transfusion
h. Known case of Thyroid disorder
i. Any Known case of medical disorder

Examination and investigation

Mother: (21) .General Physical Examination

Weightkg ☐
Height cm ☐

(22).Systolic Blood pressure mmHg ☐
(23).Diastolic Blood pressuremmHg ☐
(24).Pulse Rate beats per minute ☐
(25).Temperature °F ☐
(26).Pallor a. Yes b.NO
(27).Icterus a. Yes b.NO
(28).Edema a. Yes b.NO
(29).Respiratory System: ☐
Normal a.Yes b.NO c. If no then specify findings.....
(30).Cardiovascular System: ☐
Normal a.Yes b.NO c. If no then specify findings.....
(31).Per abdomen: Uterus size ☐ a.20 weeks
b.24 weeks
c. 32weeks
d. 36weeks
e. Term
(32).Tender a. Yes b. No ☐
(33).Presentation ☐
a.Vertex b.breech c.shoulder d.face e.other
Per vagina findings from records:

Details of delivery:

(34).Mode of Delivery: ☐
a.Cesarean
b.Vaginal Birth
(35).Period of gestation:
a.<32 weeks
b.32 -37 weeks
c.37-38 weeks
d.39-40 weeks
e.41 weeks to 41 weeks 6 day
f.42 weeks
g.>42 weeks
(36).Type of Cesarean Section: ☐
a.Full Term Emergency
b.Full Term Elective
c.Pre Term Emergency
d.Pre Term Elective

(37).Classification according to Robsons: ☐
a.Nulliparous, single cephalic,>37 weeks in spontaneous labor
b.Nulliparous ,singlecephalic,>37 weeks induced or CS before labor
c.Multiparous (excluding previous CS),single cephalic , >37 weeks in spontaneous labor
d. Multiparous (excluding previous CS),single cephalic, >37 weeks or CS before labor
e.PreviousCS,single cephalic,>37 weeks
f.All nulliparous breeches
g.All multiparous breeches (including previous CS)
h.All multiple pregnancies (including previous CS)
I.All abnormal lies (including previous CS)
j.All single cephalic ,<36 weeks (including previous CS)

(38).Previous vaginal delivery: ☐
a.0
b.1
c.2
d.3
e.4

(39).Ante Natal Complication: ☐
a.Anemia
b.Abruptio Placenta
c.PlacentaPrevia
d.Eclampsia
ePreeclampsia
f.Mal-presentation
g.Oligohydramnios
h.others

(40).Indication for cesarean section: ☐
Fibroid in lower uterine segment

1. Previous traumatic delivery
2. Fetal distress
3. Failure ofn induction
4. Maternal request
5. Mal-presentation 1.breech 2.transverse lie 3.unstable lie 4.first twin with malpresentation
6. Fetal macrosomia
7. HIV positive mother
8. Eclampsia
9. Severe pre eclampsia
10. Abruptio Placenta
11. PlacentaPrevia
12. SevereOligohydramnios
13. Non-reassuringfoetal trace
14. Meconium stained liquor
15. Obstructedlabour
16. Non progression of labour
17. Deep transverse arrest
18. Cephalopelvic Disproportion
19. Precious pregnancy
20. Cervical Dystocia
21. contracted Pelvis
22. twins
23. others

(41).Stage Of Delivery:
a.First stage b.Second stage
(42).Duration of Surgery:
(43).Intra Operative findings: ☐
a.Thick Meconium Stained liquor
b.PlacentaPrevia
c.Extension of Uterine Incision
d.Retroplacental clots
e.Blood stained liquor
f.Excessive Blood Loss/PPH
g.Thinned out lower segment
h.Bladder Injury/Laceration
i.Couvalaires uterus
j.Bandl's ring
k.Septate uterus or uterine anomaly
l.Bowel Injury
m.Multiple fibroid
n.Ovarian cyst
o.Any Other Specify
(44).Any blood transfusion: YES /NO
a.PCV
b.FFP
c.RDP
d.SDP
(45).Post-operative complications: ☐
a.Abdominal distension
b.Wound gape
c.Fever
d.UTI
e.Respiratory complications
f.Paralytic ileus
g.Venous Thromboembolism
h.Anesthesia related complication
i.hematoma –abdominal/pelvic
j.PPH
k.serious maternal morbidity or perpartum hysterectomy

(46).Blood loss in ml:
(47).Outcome of Pregnancy ☐
a.Live Birth
b.Fresh Still Birth
c.Macerated Still Birth
(48).Baby's Weight at Birth: Kg
(49).Baby's Gender: Male /Female
(50).Did Baby Have Congenital Anomaly: Yes/No
Specify
(51).Did Baby Have Any Birth Injury: Yes/No
(52).Was The Baby Admitted to NICU for Complications: Yes/No
(53).Cause of Admission: ☐
a.Infection/Sepsis
b.Meconium Aspiration
c.Congenital anomaly

d.Respiratory Distress
e.Jaundice
f.Convulsions
g.Low birth weight

(54).Condition Of Baby At Discharge: stable/unstable

(55).If Baby Died, Cause Of Death:

a.Prematurity
b.Low Birth Weight
c.Sepsis
d.Birth Asphyxia
e.Congenital anomaly
f.Meconium Aspiration Syndrome

(56). Investigation:

i.Hemoglobin — At admission in labor room ☐ gm%
Repeat Hbgm% ☐

ii.Blood Group

A	
B	
AB	
O	

Rh

+ve	
-ve	

iii.HIV — a.Positive ☐ b.Negative

iv.HBS Ag — a.Positive ☐ b.Negative

v.TSH ☐ µIU/ml
vi.DIPSI ☐ mg/dl
vii.RBS ☐ mg/dl

Special Investigation

Condition at discharge:

Follow up:

Signature and name of the investigator:

ANNEXURE III – ETHICAL CLEARANCE LETTER

K.L.E.UNIVERSITY'S
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELAGAVI-590010 (KARNATAKA-INDIA)
(Accredited 'A' Grade by NAAC)

Website: http//www.jnmc.edu
E-Mail : dome@jnmc.edu

Phone: (+ 91-(0)831 Office : 2471350
Principal: 2471701
Fax No. +91 (0)831 – 2470759

Ref: MDC/DOME/71 **Date: 17/10/2016**

To,

Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"A ONE YEAR CROSS SECTIONAL STUDY OF PRIMARY CESAREAN SECTION AT KLE DR. PRABHAKAR KORE CHARITABLE HOSPITAL",** is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee on Human Subjects Research.

(Dr. Arathi Darshan)
Member Secretary
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

(Dr. Ganga Pilli)
Chairman,
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

ANNEXURE IV – KEY TO MASTER CHART

Y	Yes
N	No
V	Vaginal delivery
S	Spontaneous
LSCS	Lower segment caesarean section.
NPL	Non Progress of Labour
CPD	Cephalopelvic disproportion
TMSL	Thick Meconium Stained Liquor
FT	Fetal Tachycardia
FD	Fetal distress
SD	Scar Dehiscence
PROM	Premature rupture of membrane.
FM	Fetal Macrosomia
EFW	Expected fetal weight
DTA	Deep transverse arrest
CDMR	Cesarean delivery at maternal request
DOPP	Doppler