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Original research article

Maternal mortality and morbidity in patients receiving elective or emergency cesarean sections: a prospective cohort study

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Abstract

Background and Objectives: As the availability of obstetric care is improving, there is growing global concern regarding the increasing rates at which caesarean sections are being performed. In the event of life-threatening difficulties after childbirth, a cesarean section is surgically performed. The use of this surgical technique has been saving lives for quite some time. There is cause for alarm regarding the rising caesarean rates.

Methods: Kakatiya Medical College in Warangal, Telangana conducted the current prospective research on 180 patients and their infants having elective and emergency caesarean sections between May 2021 to April 2022. The patients who were carrying their babies to term had extensive medical histories recorded.

Results: It was noticed more maternal complications in emergency caesarean section group than in elective caesarean section. Neonatal complications are more common in Emergency C-section accounting for about 36 (30%) newborns.

Conclusion: Caesarean section rate can be reduced by combined efforts at all levels and by encouraging hospital vaginal deliveries of all the primigravida, grand-multiparous pregnant women and those who had previous caesarean section, provided adequate fetal monitoring and operative facilities are available.

Keywords: Cesarean section, perinatal, emergency, elective, complications

Introduction

A fetus is born through caesarean section when incisions are made in the mother's abdominal wall and uterine wall. In the event of uterine rupture or an abdominal pregnancy, the evacuation of the fetus from the abdominal cavity is not included in this description. This definition also rules out vaginal caesarean sections and hysterectomies in which transvaginal access to the fetus was acquired by incisions made to the anterior lip of the cervix and the lower uterine region. It's possible to date the Caesarean section to the dawn of contemporary birth technologies [1, 2].

Improvements in antibiotics, anesthetics and blood transfusion services in the 20th century have greatly improved the overall safety of surgical procedures. A similar argument may be made for caesarean section, which has joined the ranks of other contemporary obstetric operations in becoming a de facto standard practice thanks to its success in lowering maternal morbidity and death [3]. The number of babies being born through cesarean section is on the rise in many nations. Because to cultural shifts toward a more "modern" view of childbirth, the caesarean birth rate has increased to 60% in certain countries like Brazil and Taiwan. The percentage of U.S. births that were cesarean sections increased from 4.5 percent in 1970 to 31.8 percent in 2007. The rate of growth has remained consistent. The number of cesarean sections performed in the United States dropped between 1989 and 1996. This was caused, in major part, by an uptick in vaginal births after a previous caesarean and, to a lesser degree, a little decline in the original caesarean rate. The incidence of cesarean sections in Iran increased from 35% in 2000 to 40% in 2005. WHO recommends limiting cesarean sections to 10–15% of births to ensure the health of both mothers and babies [4, 5].

The rate of cesarean sections ranges from 10 to 15 percent in India. Nonetheless, the number of cesarean sections has risen in recent years and the percentage of cesarean sections performed in institutional settings has reached as high as 30% [6]. There seems to be a "caesarean temptation" or a desire to make cesarean sections the standard method of giving birth. The cesarean section is no longer an unusual last-ditch effort. In certain societies, cesarean sections are becoming the standard for giving birth. One possible reason for the need of a C-section is impatience on the side of either the patient or her doctor. An examination of 11 doctors from the same institution revealed that the caesarean section rate ranged

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from 19.1% to 42.3% based on the doctors' perspectives and decisions. The range in caesarean section rates across providers and hospitals is substantially narrower for high-risk patients. When it comes to maternal and fetal death, different caesarean sections have different risks. Certainly, it's higher in the case of an emergency c-section [6-8].

Epidural analgesia has been linked to a 12-fold increase in the likelihood of a cesarean section, hence our suggestion stems from those findings. Maternal mortality rates are lowest in industrialized nations. There are now persistent initiatives to reduce maternal and infant mortality. There has been a documented rise in the number of caesarean sections and many of the reasons given for doing them are motivated entirely by a desire to protect the baby. A rise in the rate of caesarean section is to be anticipated in light of the rising focus on the fetal state throughout pregnancy and labor, the improved availability of laboratory information, and the advancements in the technology used for monitoring the fetus internally. So there should be a sweet spot for the caesarean section rate where the hazards to the mother are minimal and the benefits to the child are maximized [9, 10].

Methods

This prospective research included 180 mothers and their babies who had caesarean deliveries at Kakatiya Medical College in Warangal, Telangana between May 2021 to April 2022. Patients who were carrying their babies to full term had extensive medical histories recorded.

Inclusion criteria

- All caesarean section patients and their infants have been included

Exclusion criteria

- Pregnancy and Childbirth: Normal Vaginal Delivery.
- Having a natural birth after a caesarean section is possible (VBAC).

The patients who were carrying their babies to term had extensive medical histories recorded. Study procedures were described, and informed permission was obtained. The patient was examined, and all pertinent information was gathered. The postoperative period of 7 days was evaluated with respect to the specifics of the caesarean section's justification, the operation's specifics, the mother's health, and the perinatal result. Patients agreed to participate in this research after receiving explanations of the procedures involved and having their informed permission obtained. The mean and standard deviation for continuous data, and the number and percentage distribution for categorical data, are shown. The 5% significance threshold is used for this analysis.

Results

This was a comparative research between two different groups. Group A consists of women who chose to have a caesarean section, while Group B consists of women who needed to have one.

Table 1: Caesarean section age distribution

Age in years	Elective C-S	Emergency C-S	Total
16-22	45	55	100
23-30	20	15	35
31-35	10	10	20
36 and above	5	10	15
Total	90	90	180

In Group A, fifty percent of patients are between the ages of 18 and 24 years old, whereas in Group B, sixty-one point one percent of patients are between the ages of 16 and 22 years old.

Table 2: Scheduled vs. available cases

Booked/Unbooked	Elective C-S	Emergency C-S	Total
Booked	80	85	165
Unbooked	10	05	15
Total	90	90	180

Just 165 of the 180 patients who had a C-section were scheduled to have it. Five unscheduled patients had emergency C-sections out of a total of ten.

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Table 3: Time during Pregnancy

Gestation age	Elective C-S	Emergency C-S	Total
32-36	20	20	40
37-39	60	50	110
40 and above	10	20	30
Total	90	90	180

A history of LSCS is the single most important predictor of future LSCS. Both Group A (20 patients) and B (22 patients) had prior LSCS (Emergency C-S). The above chart shows that patients who have had a previous LSCS are more prevalent in the Elective C-S group than in the Emergency C-S group.

Table 4: Results from a Study of Patients' Body Mass Index Distribution

BMI	Elective C-S	Emergency C-S	Total
<18.5	0	0	0
18.5-24.9	35	33	68
24.9-29.9	25	27	52
30-40	8	7	15
>40	2	3	05
Total	90	90	90
Mean ± SD	25.99	26.10	25.99

Group A (ninety patients) had a body mass index (BMI) between 24.9 and 29.9, but Group B (thirty-three patients) did not. Those who were overweight were more likely to have an elective C-S rather than an emergency one. Group B contained 52 patients with a body mass index (BMI) between 30 and 40 kg/m2, whereas Group A had just 15.

Table 5: Fetal weights of babies born through C-sections

Birth weight	Elective C-S	Emergency C-S	Total
<1.5	0	0	0
1.5-2.5	30	40	70
2.5-3.5	50	45	75
>3.5	10	5	15
Total	90	90	180
Mean ± SD	2.90	2.69	2.80

The infants who were born through C-section are listed in Table 5 below by their birth weight. There were 119 babies in Group A, who weighed 2.5kg or more, compared to 97 in Group B. There was a rise in ANC among the Elective Group, which is a positive sign.

Table 6: Caesarean section births had a lower Apgar score

Apgar score	Elective C-S	Emergency C-S	Total
<7	15	20	35
>7	75	70	145
Total	90	90	180

25 of the 35 infants who had elective C-sections had an Apgar score of 7 at 1 minute, but none of the newborns who had emergency C-sections achieved this level. In spite of fetal distress being the most prevalent rationale for emergency caesarean section, the current research shows that there is no difference in Apgar score between elective and emergency caesarean procedure, suggesting that obstetricians are proficient.

Discussion

Patients who had cesarean sections were analyzed for their rates of maternal and newborn death and complications. India's estimated C-section rates range from 7.1% in 1998 to 16.7% in 2006. Births were induced in 18-23% of cases. Non-use of prenatal and delivery care services, as well as the patient's socioeconomic status, are strongly linked to maternal and newborn problems throughout the perinatal period. These problems arose more often in individuals who were not scheduled to be seen.

When comparing booked and unbooked moms, the pregnancy results for the former are far more favorable. Given that Traditional Birth Attendants, Lady Health Visitors, and General Practitioners in India's nursing facilities often perform home births for the poor, this is logical. If a patient has one or both of these risk factors and has previously had a trial of labor elsewhere, only then will they be sent to the teaching hospital. So, it is not surprising that there was a significant rate of cesarean sections among these high-risk, unscheduled deliveries [10, 11].

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Elective caesarean sections performed between 37 and 38 weeks of pregnancy increase the risk of complications and the expense of admissions to neonatal intensive care units in underdeveloped countries. Elective caesarean section should not be recommended before to 39 weeks of gestation, since this is too early for the fetal lungs to develop normally. Elective caesarean birth is linked to improved fetal outcomes between 39 and 40 weeks of gestation, as opposed to 37 and 38 weeks [12].

There is substantial evidence linking obesity to an increased likelihood of needing a C-section. Many confounding variables, including maternal age, gestational diabetes, preeclampsia, and macrosomia, play significant roles in this connection. A higher body mass index (BMI) or degree of obesity has been consistently linked to an increased incidence of Caesarean section, one of many negative perinatal outcomes found in obese women. The choice to have a Caesarean section during the second stage of labor was also shown to be linked to higher body mass index. As compared to women of a normal weight, those with an overweight status are handled differently during labor. This variation in care helps to explain why individuals with larger body mass indexes tend to have more cesarean sections [13, 14].

A research was conducted to determine the most common causes of both planned and unplanned caesarean deliveries. The most common reasons for an elective C-section were a prior C-section, breech presentation, fetomaternal disproportion, or a pregnancy resulting from *in vitro* fertilization or embryo transfer. Although preeclampsia, vaginal bleeding/abruption of the placentae, breech presentation, and secondary inertia of the uterus were the most common causes of emergency caesarean sections, they were not the only ones. According to another research, caesarean sections were performed as emergencies 82.07% of the time and electively 17.92% of the time. Cleft palates and cephalopelvic disproportion were common reasons for repeat elective caesarean procedures [15, 16].

Increased rates of fresh stillbirths, neonatal deaths, and severe newborn morbidity were seen in regions with high rates of emergency caesarean deliveries, and this association persisted after controlling for other characteristics. Low rates of fresh stillbirths and newborn deaths were seen in areas with high rates of elective caesarean section. Birth asphyxia due to prolonged labor is a leading cause of perinatal mortality and severe neonatal morbidity, and since most emergency caesarean deliveries were performed for dystocia and fetal distress, it is possible that the interventions were administered too late to prevent or lessen the severity of the resulting complications. It is essential to closely monitor labor, look for signs of difficulties early, and decide on a caesarean section as soon as possible [16, 17].

The test is typically administered between 1 and 5 minutes after delivery, and it may be administered again if the score is and stays low. Most people would consider a score of 7 or above to be average, a score of 4-6 to be below average, and a score of 3 or below to be severely low. A poor score on the one-minute test may indicate that the newborn needs medical treatment, but it is not always indicative of long-term issues, especially if the neonate improves by the five-minute test stage. Risk of permanent brain damage increases if the newborn's Apgar score stays below 3 at later stages, such as 10 or 30 minutes. The chance of cerebral palsy is also slightly, but noticeably higher. Yet the Apgar test was not intended to provide long-term health forecasts; its only function is to assess swiftly whether a baby need emergency medical attention. Evaluations of neonatal outcomes after cesarean section have focused mostly on the occurrence of problems during the newborn period. Respiratory distress syndrome is a typical side effect. A history of caesarean section has been identified as a significant contributor to the development of respiratory distress syndrome [16-18].

For quite some time, this particular operation has made the difference between life and death for many people. The growth in the number of cesarean sections performed raises alarm. Age, parity, numerous pregnancies, maternal weight gain, and birth weight are all variables that increase the likelihood of a cesarean section. Malpresentation, maternal distresses like heart problems, bad obstetric history, habitual intrauterine death of the fetus, and older primigravida are all examples of situations in which a caesarean section is medically necessary. Besides from these demographic and medical factors, the mother request and the physician factor are playing key roles in the rising caesarean section rates [18, 19].

Patients prefer caesarean sections over regular vaginal births because of the reduced discomfort and shorter recovery time associated with them. Women in India increasingly want to get cesarean sections so that they might give birth on a certain, fortunate day. Women with full ANC are more likely to have caesarean births, which goes counter to our hypothesis about the correlation between the two. One possible explanation for this discrepancy is that women who are more likely to have difficulties after childbirth are the ones who choose for complete ANC.

Conclusion

Global caesarean rates are worrying as obstetric treatment becomes more accessible. Birth complications need caesarean section. Pregnancy and delivery issues cause cesarean births. Treatment-seeking pregnant women had more caesareans. This contradicts our idea, but it may be because the women who sought therapy had major concerns that were not addressed after treatment. All levels of government should support hospital vaginal deliveries of primigravida, grand-multiparous, and previous caesarean pregnant women if fetal monitoring and operational facilities are available. The government should enhance health facilities to provide prenatal and delivery care to all pregnant women.

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