



Maternal and Perinatal Outcome of Repeat Caesarean Sections in Shaheed Suhrawardy Medical College Hospital

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Abstract: *Background:* The rising rates of caesarean sections globally have led to increased focus on the risks associated with repeat caesarean sections (RCS), including maternal and perinatal complications. This study evaluates RCS's maternal and neonatal outcomes to inform better healthcare practices. *Methods:* This prospective, cross-sectional, analytic study was conducted at Shaheed Suhrawardy Medical College Hospital (ShSMCH), Dhaka, from July to December 2011. A total of 100 cases with gestational ages between 28 and 42 weeks and a history of one or more previous caesarean sections were selected. Data were analyzed regarding demographic profiles, clinical indications, and outcomes. *Results:* Among 1260 deliveries during the study period, 57.14% were caesarean sections, with a primary caesarean rate of 60% and repeat caesarean rate of 40%. The most common age group undergoing RCS was 20–30 years (52%), followed by 31–35 years (35%). Multigravida women accounted for 80% of RCS cases. The leading indications for emergency RCS included previous caesarean sections with fetal distress, cephalopelvic disproportion (CPD), malpresentation, placenta praevia, and suspected impending uterine rupture. Elective RCS accounted for 70% of cases, while emergency RCS made up 25%. Scar rupture necessitated laparotomy in 2% of cases, and 3% of patients achieved vaginal delivery. Maternal morbidity was observed in 15% of cases, although no maternal deaths occurred. For neonatal outcomes, 95% of neonates survived, 2% were fresh stillbirths, and 3% experienced early neonatal death. *Conclusion:* The study highlights a high caesarean section rate at ShSMCH, with previous caesarean history being the most frequent indication.

Keywords: Repeat Caesarean Section, Maternal Morbidity, Perinatal Outcome, Fetal Distress, Placenta Praevia, Cephalopelvic Disproportion.

Article at a glance:

Study Purpose: Evaluate maternal and perinatal outcomes linked to repeat caesarean sections (RCS).

Key findings: RCS made up 40% of all caesareans (57.14% overall rate). Perinatal mortality reached 5%, with complications like birth asphyxia, prematurity, and uterine rupture often tied to inadequate antenatal care.

Newer findings: The study emphasizes the need for enhanced antenatal care, trial of labor after caesarean, and improved neonatal management to reduce repeat caesarean rates and associated complications.

Abbreviations: RCS: Repeat Caesarean Sections, PPH: Postpartum Hemorrhage, BMI: Body Mass Index.



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Original Research Article

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INTRODUCTION

Modern obstetric care focuses on prioritizing the health and safety of both mother and baby through careful management of obstetric challenges. Caesarean section (CS) has become a

crucial intervention in achieving this goal by minimizing risks to maternal and fetal health.¹ Over the past two decades, there has been a significant global rise in caesarean section rates, although these rates vary widely across different countries and

institutions.² In developed nations, such as England and Wales, approximately 15% of births are by caesarean, while in Canada, the figure is around 20%, and in the United States, it exceeds 25%. In contrast, caesarean rates in countries like Singapore, Karachi, and Dhaka are 12.3%, 16.3%, and 22.9%, respectively.³ The increase in caesarean section rates has been notably significant in both developed and developing countries, with repeat caesarean sections now constituting one of the most common indications for the procedure. Globally, repeat caesarean sections make up a substantial proportion of caesarean deliveries, ranging from 35% in the United States to 23% in Norway, with the lowest being 18% in Hungary.⁴ In Bangladesh, the caesarean section rate has risen sharply, from 25.46% in 1999 to 44.79% in 2000, according to a study on obstetrics and gynecology. At Shaheed Suhrawardy Medical College Hospital (SSMCH) in 1997, 80% of caesarean sections were emergency procedures, with the remaining 20% being elective. Similarly, at Bangabandhu Sheikh Mujib Medical University (BSMMU) in 2004, elective caesarean sections accounted for 53% of cases, while emergency caesareans made up 47%.⁵ This variation in elective and emergency caesarean section rates is influenced not only by geographical location but also by institutional practices and the availability of advanced fetal monitoring technologies. Western countries, with sophisticated monitoring systems such as cardiotocography, fetal pH sampling, and Doppler ultrasound, often report higher rates of elective caesarean sections due to the early detection of fetal distress. In contrast, in developing countries, the rates may be lower, partly due to a greater emphasis on attempting vaginal delivery after a previous caesarean section.⁶ Repeat caesarean sections are a significant consideration in modern obstetrics, especially in settings like teaching institutions in India, where they account for 24-33% of all caesarean deliveries. The higher rates of repeat caesarean sections in some countries can be attributed to a lower primary caesarean rate and a greater likelihood of vaginal deliveries after a previous caesarean.⁷ The rising caesarean section rates globally are partly the result of the liberalization of primary caesarean sections, which began in the 1980s with improvements in the safety of the procedure. By 1985, nearly 40% of caesarean sections were performed due to the history of a previous caesarean, as many

obstetricians became increasingly reluctant to risk a vaginal delivery after a prior caesarean. Given the growing prevalence of repeat caesarean sections, efforts to reduce these rates are necessary, as such procedures now account for a significant proportion of all deliveries. A study by Mayer and Gleishene in 1988 demonstrated that institutional caesarean rates could be reduced from 17.5% to 11.6% in just two years through voluntary cooperation and the implementation of an agreed-upon staff policy.⁸ The rising caesarean section rates also means an increasing number of pregnancies following caesarean section with all risks to both mother and foetus. Obstetricians should gain necessary experience to tackle the difficulties associated with these pregnancies

OBJECTIVE

This study aims to evaluate the maternal and perinatal outcomes associated with repeat caesarean sections (RCS), focusing on incidence, patient demographics, causes, mode of delivery, and preoperative challenges, as well as associated morbidity and mortality.

METHODS

Study Design

This was a prospective observational study aimed at assessing the maternal and perinatal outcomes of repeat caesarean sections. The study was designed to gather data on various clinical parameters related to repeat caesarean sections, including demographic information, indications for surgery, and both maternal and neonatal outcomes.

Place of Study

The study was conducted at the Department of Obstetrics and Gynaecology, Shaheed Suhrawardy Medical College Hospital, Dhaka, a tertiary-level healthcare facility with a large obstetric population, making it an appropriate setting for this research.

Study Period

The data for this study were collected over six months, from July 2011 to December 2011, allowing for an extensive review of cases during that time frame.

Method of Estimating Sampling

A purposive sampling technique was employed for this study. Pregnant women who met the inclusion criteria, specifically those with a history of one or more previous caesarean sections, were selected for inclusion. A pre-designed questionnaire was used to gather information on relevant clinical variables, and all eligible cases were included to ensure comprehensive data collection.

Sample Size and Sampling Technique

The study included a total of 100 cases, selected using a purposive sampling approach. Purposive sampling was chosen to ensure that the sample consisted of pregnant women with the specific characteristics needed to address the research questions, i.e., women with a history of one or more previous caesarean sections. These 100 cases met the inclusion criteria and were included in the final analysis.

Inclusion Criteria

Gestational age between 28 weeks and 42 weeks (i.e., 32 weeks onward to 40 weeks). A history of one or more previous caesarean sections. These criteria were selected to focus specifically on women undergoing repeat caesarean sections and to evaluate the maternal and perinatal outcomes associated with this group of patients.

Exclusion Criteria

Patients who were undergoing caesarean sections for the first time were excluded from the study. This was done to isolate the outcomes of

repeat caesarean sections and eliminate the influence of first-time caesarean deliveries, which may present different clinical challenges and outcomes.

Data Collection Equipment

Data were collected using a pre-designed structured questionnaire that was specifically developed for the study. The questionnaire was designed to capture comprehensive information, including demographic details, clinical indications for repeat caesarean sections, details of the pregnancy, mode of delivery, as well as maternal and neonatal outcomes. The data were collected prospectively during the study period from patient records and clinical assessments.

Data Collection and Analysis

Once collected, the data were systematically analyzed to identify trends and correlations between maternal characteristics, clinical indications, and the outcomes of repeat caesarean sections. The analysis aimed to assess maternal morbidity and mortality, neonatal outcomes, and any significant complications related to repeat caesarean deliveries. The findings were compared with existing literature to identify any regional differences and contribute to the overall understanding of repeat caesarean section outcomes. This methodology ensured a robust data collection process and allowed for a thorough assessment of maternal and neonatal outcomes in the context of repeat caesarean sections at Shaheed Suhrawardy Medical College Hospital.

RESULTS

Table 1: Baseline Characteristics of Study Participants

Variables	Categories	Number of Patients (n=100)	Percentage
Age (years)	<20	2	2%
	21–30	52	52%
	31–35	35	35%
	36–40	8	8%
	>40	3	3%
Socioeconomic Class	Upper (>10,000/month)	60	60%
	Middle (5,000–10,000/month)	25	25%
	Lower (<5,000/month)	15	15%
Parity	Multigravida	80	80%
	Grand Multigravida	20	20%
	Illiterate	1	1%
	Only write name	2	2%

Education Level	Below SSC	25	25%
	HSC	48	48%
	Graduate	20	20%
	Master Degree	4	4%
Height	Below 5'	34	34%
	5'	31	31%
	5'1"	15	15%
	5'2"	19	19%
	5'3"	9	9%
	5'4"	2	2%
Antenatal Check-Up	Regular	55	55%
	Irregular	35	35%
	None	10	10%

The table 1 summarizes the demographic, socioeconomic, and clinical characteristics of the 100 pregnant women included in the study. It provides data on age distribution, socioeconomic status, parity, education level, height, and antenatal check-up status, which are crucial for

understanding the background of the participants undergoing repeat caesarean sections. The majority of participants were aged 21–30 years, from upper socioeconomic class, and had regular antenatal check-ups. Most were multigravida, had education up to HSC level, and had a height of 5 feet or below.

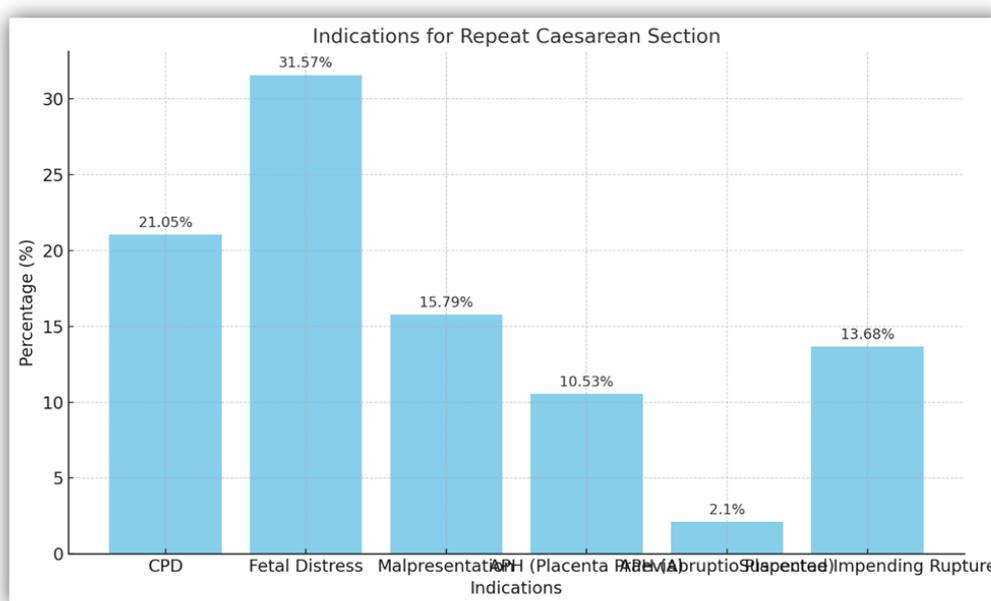


Figure 1: Indications of repeat caesarean section

Figure 1 represents the indications for a repeat caesarean section, with the data levels shown on top of each bar. The highest percentage is

for fetal distress (31.57%), followed by CPD (21.05%) and malpresentation (15.79%).

Table 2: Past Reproductive and Surgical History of Study Participants

Category	Subcategory	Number of Patients (n=100)	Percentage
Past Reproductive History	Miscarriage	7	7%
	Intrauterine death	5	5%
	Fresh stillbirth	5	5%
	Preterm delivery	8	8%
	Pregnancy-induced hypertension	10	10%
	Antepartum haemorrhage	4	4%
	Primary infertility	4	4%
	Secondary infertility	2	2%
	Diabetes mellitus	6	6%
	Chronic hypertension	5	5%
	No significant history	44	44%
Past Surgical History	Primary Caesarean Section		
	Elective	35	35%
	Emergency	65	65%
	Repeat Caesarean Section		
	Elective	70	70%
	Emergency	30	30%

Table 2 combines the past reproductive and surgical histories of the study participants. It shows that 56% of cases had significant past reproductive or medical history, with the most common conditions being pregnancy-induced hypertension

and preterm delivery. Regarding past surgical history, the majority of primary caesarean sections were emergency cases (65%), while most repeat caesarean sections were elective (70%).

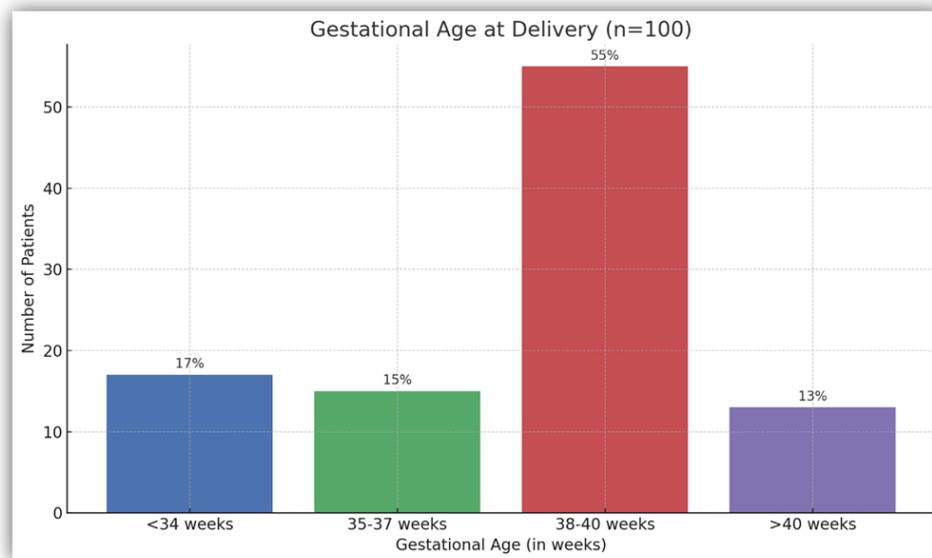


Figure 2: Gestational age at delivery (n=100)

The figure 2 illustrates the distribution of gestational age at delivery among 100 patients. The most common gestational age at delivery falls between 38 to 40 weeks, accounting for 55 patients

(55%), indicating a predominant occurrence of deliveries at full-term. Preterm deliveries are captured in two categories: less than 34 weeks (17 patients, 17%) and 35 to 37 weeks (15 patients, 15%),

together representing 32% of the sample. Post-term deliveries, occurring over 40 weeks, account for 13 patients (13%). This distribution suggests that the majority of deliveries occur at full-term, with a smaller proportion of preterm and post-term

deliveries. The labeling of percentages above each bar provides a clear visualization of the data, emphasizing the predominance of full-term deliveries within the studied population.

Table 3: Post-operative and Antepartum Complications of Study Participants

Category	Subcategory	Number of Patients (n=100)	Percentage
Post-operative Complications	Wound infection	14	14%
	Urinary tract infection	8	8%
	Paralytic ileus	1	1%
	Endometritis	2	2%
	Post-partum hemorrhage	5	5%
Antepartum Complications	Chronic abdominal pain	35	35%
	Scar tenderness	18	18%
	Urinary tract infections	8	8%
	Bladder tenesmus	10	10%
	Placenta praevia	10	10%
	Impending rupture	16	16%
	Scar rupture	4	4%

Table 3 summarizes both post-operative and antepartum complications observed in the study participants. Post-operative complications were noted in 30% of cases, with wound infection being the most common (14%). Antepartum

complications were prevalent, particularly chronic abdominal pain (35%) and scar tenderness (18%). These complications highlight the risks and challenges associated with repeat caesarean sections.

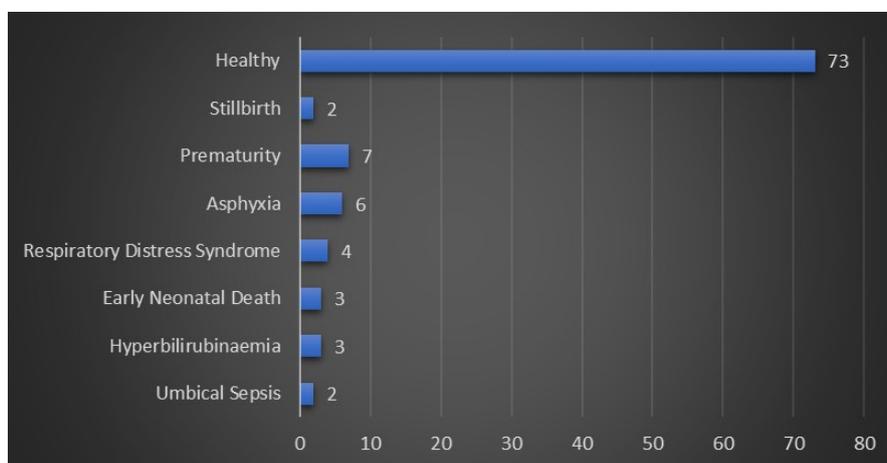


Figure-3: Fetal outcome of repeat caesarean section (n=100).

Figure-3 shows that 73 babies were healthy, 2 babies were stillbirth, 7 babies were premature, 6 babies were asphyxiated, 4 babies suffered from

respiratory distress syndrome, 3 babies died, 3 suffered from hyperbilirubinaemia and 2 babies suffered from umbilical sepsis.

Table 4: Comparison of Peroperative and Postoperative Complications in Study Cases (n=95)

Complications		Type of Complications	Frequency	Percentage
Perioperative (n=18)	Complications	Primary haemorrhage	15	15.46%
		Bladder injury	2	2.06%
		Caesarean hysterectomy	1	1.03%
Post-operative (n=24)	Complications	Post-partum haemorrhage	6	6.12%
		Urinary tract infection	3	3.06%
		Wound infection	8	8.16%
		Wound haematoma	1	1.02%
		Wound dehiscence	3	3.06%
		Paralytic ileus	1	1.02%
		Puerperial sepsis	1	1.02%
Chest infection	1	1.02%		

Table 4 presented in the table highlight the occurrence of both peroperative and postoperative complications among 97 study cases. Perioperative complications occurred in 18.56% of the patients, with primary haemorrhage being the most frequent (15.46%). This finding underscores the risk of haemorrhagic complications during surgical interventions, which necessitates vigilant intraoperative monitoring and effective surgical techniques to manage and mitigate bleeding risks. Bladder injury (2.06%) and caesarean hysterectomy (1.03%) were less common, indicating a relatively low incidence of significant organ damage or severe complications requiring more extensive surgical management. However, their presence emphasizes the importance of surgical precision, especially in emergency settings where rapid decisions are critical. Postoperative complications were more prevalent, affecting 24.48% of the patients, indicating that complications are more common after surgery rather than during the procedure itself. Wound-related issues were particularly notable, with wound infections (8.16%) being the most frequent postoperative complication, followed by wound dehiscence (3.06%) and wound haematoma (1.02%). These findings suggest the need for careful postoperative wound care,

infection control practices, and possibly the use of prophylactic antibiotics to minimize the risk of infections and improve recovery outcomes. Postpartum haemorrhage was also a notable complication postoperatively, affecting 6.12% of the patients, emphasizing the continued risk of bleeding after delivery. The presence of urinary tract infections (3.06%) indicates the need for aseptic techniques and appropriate catheter management. Other complications, such as paralytic ileus, puerperal sepsis, and chest infections, each accounted for 1.02% of cases, highlighting the diverse spectrum of postoperative risks. These findings underscore the need for comprehensive postoperative monitoring, including respiratory, gastrointestinal, and infectious surveillance, to ensure early detection and intervention. Overall, the analysis suggests that while surgical procedures carry inherent risks, a significant portion of complications may arise in the postoperative period. Effective preoperative planning, meticulous surgical techniques, and proactive postoperative management are essential to minimize these risks and improve maternal health outcomes in emergency caesarean section cases.

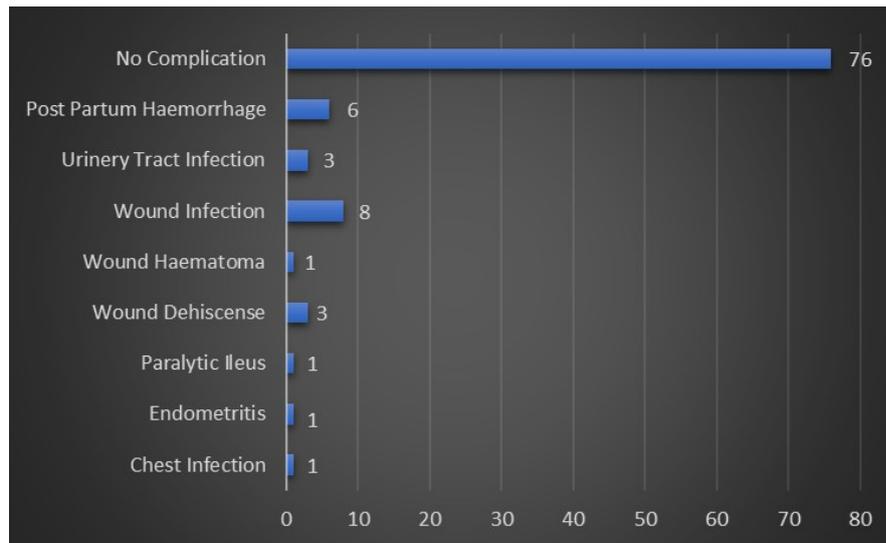


Figure-4: Maternal outcome in repeat caesarean section (n=100).

Figure-4 shows that in 76 cases there were no complications, PPH developed in 6 cases, UTI in 3 cases, Wound infection in 8 cases, Wound haematoma in 1 case, Wound dehiscence in 3 cases, paralytic ileus in 1 case, puerperal sepsis in 1 case and chest infection developed in 1 case.

DISCUSSION

The study highlights the significant role of Caesarean sections (CS) in modern obstetric care, focusing on trends, risk factors, and outcomes. Globally, the prevalence of CS has been rising, with rates in the United States climbing from 5-6% in the 1960s to over 25% currently, and some areas even reporting rates above 70%. Similarly, in England, CS rates doubled from 11% in 1989 to over 22% in 2001. In the current study, the incidence of CS was 57.14%, with primary CS accounting for 60% and repeat CS for 40%. This increase can be attributed to the hospital serving a high volume of high-risk emergency cases with insufficient or no antenatal care. Late presentations after being handled by untrained birth attendants often lead to infection, anemia, and dehydration, necessitating surgical intervention. The demographic analysis showed that the majority (52%) of the patients were between 21-30 years, consistent with the peak reproductive age. A notable finding was the high incidence (80%) of CS in multigravida women, many of whom had previous CS, and 20% were grand multipara. Additionally, short maternal height (≤ 5 feet) was associated with a higher risk of cephalopelvic disproportion. Most patients (55%) had regular antenatal check-ups, while 10% lacked any, indicating a gap in prenatal care awareness

and access. Socioeconomic and educational factors also played a role, with a significant portion of the study's patients coming from middle and lower socioeconomic backgrounds. This study is consistent with other study findings. A study reported a caesarean section rate of 35 per cent in women aged 35 years or older compared with a rate of 52 per cent in women aged 20- 30 years. This apparent difference in age incidence from western countries were due to early age at marriage and childbearing in our country. In Bangladesh, 70-80 percent of girls are married before 18 years and 33 percent of those below 19 years are mothers of two children, 35 percent of patients in the age range of 31-35 years. This higher age incidence in these cases might be due to advice to delay pregnancy after caesarean sections due to adverse effects of quick pregnancy or healing of uterine wounds.⁹ Perinatal complications were closely linked to prior obstetric history. Perinatal mortality was observed in 5% of cases, primarily due to fresh stillbirths related to scar rupture and neonatal deaths caused by prematurity and birth asphyxia. The perinatal mortality rate (PNMR) was 50/1000, highlighting the impact of timely and effective perinatal care. Morbidities like birth asphyxia (6%), prematurity (7%), and respiratory distress syndrome (4%) were predominant, often associated with complications like impending uterine rupture, which required emergency surgical intervention. Othe study reported that perinatal mortality decreased from 19.5 in 1986 to 10.3 in 1991 and neonatal mortality rate declined from 10.3 in 1986 to 3.8 in 1991 in patients with history of previous caesarean sections, as these patents were managed by high-

risk pregnancy where modern neonatal care facilities were available.¹⁰ The study underscores that the rising CS rates are often a response to managing high-risk pregnancies and ensuring better perinatal outcomes, particularly in the context of fetal distress or inadequate prenatal care. However, the findings emphasize the importance of careful decision-making, antenatal monitoring, and specialized neonatal care to minimize maternal and perinatal morbidity and mortality while avoiding unnecessary surgical interventions.

CONCLUSION

In conclusion, the study highlights the significant rise in Caesarean section rates, with an incidence of 57.14% in the tertiary hospital setting. A majority of the cases involved women aged 20-30 years, predominantly multiparous, and from middle to lower socioeconomic backgrounds, many of whom had inadequate antenatal care. The study emphasises the increased risk of complications, both antepartum and postoperative, particularly in women with a history of two previous Caesarean sections. Fetal outcomes were generally favorable with a 95% survival rate, while maternal morbidity was noted in 15% of cases without any maternal deaths. The findings underscore the importance of careful patient evaluation, highlighting the need to promote the trial of labor after one Caesarean section when appropriate. This could help mitigate the rising rates of Caesarean deliveries, ensuring safer outcomes for both mothers and infants. The study calls for increased efforts to support vaginal childbirth, recognizing it as a safer option for many women, which could help to lower the growing reliance on Caesarean sections.

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