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Original Article

Factors and Outcomes of Emergency Caesarean Sections Among the Patients Admitted to Dhaka Medical College Hospital

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Nahid Sattar[1*], Zahirun Nessa[2], Lita Rani Pramanik[3], Rokeia Akter[4], Sadia Dora[5], Fatema Akter[6]

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*Corresponding Author

ABSTRACT

Introduction: *Caesarean section is a critical intervention in modern obstetric practice, aimed at reducing maternal and neonatal morbidity and mortality. This study explores the factors contributing to emergency caesarean sections, their indications, and associated outcomes in a tertiary care setting.* ***Methods & Materials:*** *This descriptive, cross-sectional study was conducted at the Department of Obstetrics and Gynecology, Dhaka Medical College Hospital, over two months (May 2022–October 2022). A total of 100 cases of emergency caesarean sections were selected using purposive sampling. Data on sociodemographic factors, antenatal care, indications, operative techniques, complications, and outcomes were analyzed.* ***Results:*** *Total 100 pregnant women were selected who underwent emergency caesarean sections were included in the study. The leading indications were fetal distress (18%), previous caesarean section (15%), and severe eclampsia or eclampsia (11%). Most patients (92%) were aged 20–34 years, and 58% belonged to the lower socioeconomic class. Inadequate antenatal visits were noted in 75% of cases. Spinal anesthesia was used in 84% of procedures, while 97% of surgeries employed the Pfannenstiel incision. Postoperative complications occurred in 55% of cases, with hemorrhage (20%) and infection (16%) being predominant. Neonatal complications were observed in 41%, primarily prematurity (10%) and neonatal jaundice (7%). Maternal mortality was absent, and 65% of patients were discharged within one week of surgery.* ***Conclusions:*** *The high rate of emergency caesarean sections reflects inadequate antenatal care, low socioeconomic status, and delayed referrals. Strengthening antenatal services and improving timely identification of high-risk pregnancies could reduce emergency interventions and improve maternal and neonatal outcomes.*

Keywords: *emergency caesarean section, maternal morbidity, neonatal outcome, antenatal care, fetal distress*

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1. *Associate Professor, Department of Obs & Gynae, Mymensingh Medical College Hospital, Mymensingh, Bangladesh*
2. *Associate Professor, Department of Obs & Gynae, Shahid Syed Nazrul Islam Medical College Hospital, Kishoreganj, Bangladesh*
3. *Senior Consultant, Department of Obs & Gynae, Shahid Syed Nazrul Islam Medical College Hospital, Kishoreganj, Bangladesh*
4. *Junior Consultant, Department of Obs & Gynae, Upazila Health Complex, Trishal, Mymensingh, Bangladesh*
5. *Resident Surgeon, Department of Obs & Gynae, Shahid Syed Nazrul Islam Medical College Hospital, Kishoreganj, Bangladesh*
6. *Registrar, Department of Obs & Gynae, Shahid Syed Nazrul Islam Medical College Hospital, Kishoreganj, Bangladesh*

INTRODUCTION

The primary objective of modern obstetric care focuses on ensuring maternal and infant health by effectively managing complications. Caesarean section (C-section) is crucial for mitigating risks in emergency situations, particularly by improving fetal outcomes in high-risk cases. Advances in antepartum and intrapartum monitoring enable early identification of at-risk fetuses, allowing timely decisions for abdominal delivery [1].

Emergency C-sections address immediate threats to maternal or fetal health. Common maternal indications include antepartum hemorrhage, eclampsia, prolonged or obstructed labor, failed inductions, instrumental delivery failures, cord prolapse, uterine rupture, fetal acidosis, and bradycardia. Dystocia warrants a C-section only after membrane rupture and lack of progress. Clinical signs like maternal tachycardia or suprapubic tenderness may also prompt urgent intervention [2]. Fetal distress accounts for 10% of emergency C-sections and demands prompt action, ideally within 30 minutes, although delays up to 75 minutes may compromise outcomes [3]. Uterine scar rupture rates are low (6–12%) but may reach 21% following a lower-segment C-section [4]. Additionally, chromosomal abnormalities in undiagnosed fetuses elevate emergency C-section rates, underscoring the importance of prenatal genetic screening to reduce unnecessary procedures and maternal morbidity [5].

Advances in surgical techniques, anesthesia, antibiotics, and blood transfusion have improved C-section safety, making it a life-saving intervention [6]. However, maternal mortality remains a significant concern, particularly in Bangladesh,

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where three women die hourly from pregnancy-related complications [7].

This study aims to investigate the factors responsible for emergency caesarean sections and assess their outcomes, to identify strategies to reduce the overall rate of caesarean deliveries [8]. By understanding these factors and their implications, we hope to contribute to the development of more effective strategies for improving maternal and fetal health outcomes, particularly in hospitals like Dhaka Medical College Hospital.

METHODS

Study Design and Settings

This descriptive, cross-sectional, hospital-based study was conducted in the Department of Obstetrics and Gynecology at Dhaka Medical College Hospital, a major tertiary healthcare facility in Bangladesh. The study aimed to evaluate the factors contributing to emergency caesarean sections and their outcomes. Data were collected over two months, from May 2022 to October 2022. A total of 100 pregnant women who met the inclusion criteria and underwent emergency caesarean sections were included in the study. Participants were selected using purposive consecutive sampling, including all eligible patients who underwent emergency caesarean sections during the study period.

Inclusion Criteria:

- Pregnant women who underwent emergency caesarean section during the study period.

Exclusion Criteria:

- Pregnant women who underwent elective caesarean section.

Data Collection Method

Data were collected over a period of three months, using a structured questionnaire designed specifically for this study. The questionnaire was prepared to capture comprehensive information, including history, examination findings, treatment details, and investigation results Data were gathered through direct interviews with the patients, along with information obtained from their medical records, including history, clinical examination findings, treatment sheets, and investigation reports.

Variables and Observations:

The study aimed to assess several key factors, including the incidence of emergency caesarean sections, their indications, the maternal and fetal outcomes, and factors such as age, parity, socioeconomic status, and prenatal care. Detailed information was collected on the following:

- **Obstetric History:** Age, parity, number of antenatal visits, history of systemic diseases (e.g., diabetes, hypertensive disorders, urinary tract infections), previous pregnancy outcomes, and any history of premature rupture of membranes or prolonged labor.
- **Clinical Examination:** General examination (height, weight, anemia, edema, pulse, blood pressure), abdominal examination (fundal height, fetal presentation, engagement, fetal heart auscultation), and vaginal examination (cervical dilation, effacement, position, station of the presenting part, and adequacy of the pelvis).
- **Labor and Delivery Characteristics:** Timing of labor onset, rupture of membranes, presentation, fetal heart rate, uterine contractions, and color of amniotic fluid.
- **Investigations:** Hemoglobin levels, blood group and Rh typing, and other relevant lab results. Not all investigations were carried out due to resource limitations.
- **Operative Findings and Postoperative Complications:** Any complications during the surgery, as well as the postoperative recovery and puerperal period, were recorded. Observations included pulse, blood pressure, temperature, uterine involution, wound inspection, and patient complaints.
- **Neonatal Examination:** Maturity assessment by gestational age, appearance, and the identification of any congenital abnormalities.

Pelvic Evaluation:

Clinical pelvimetry was performed on all primigravid patients. A trial of labor was given to patients with suspected mild cephalopelvic disproportion (CPD), and those who failed to progress to a successful vaginal delivery were subsequently delivered via emergency caesarean section.

Blood Management:

In cases of repeat caesarean sections, one to two bags of blood were kept available in the operating theater to manage any potential hemorrhagic complications.

Data Analysis:

Data were analyzed using descriptive statistical methods. Frequencies and percentages were used to summarize the demographic, clinical, and obstetric characteristics of the participants. Variables such as maternal age, gravidity, socioeconomic status, indications for emergency caesarean section, and postoperative complications were described using tabular presentations.

All analyses were performed using SPSS software (version 25), and findings were presented in tables and figures for clarity and ease of interpretation.

Ethical Considerations

This study adhered to the ethical principles outlined in the Declaration of Helsinki for medical research involving human subjects. Approval for the research was obtained from the Institutional Review Board of Dhaka Medical College Hospital.

Participation in the study was voluntary, and informed consent was obtained from all participants before data collection. Patients were assured of their right to withdraw from the study at any stage without any impact on the care they received. Confidentiality was strictly maintained, with all data anonymized to prevent the identification of individual participants.

The study ensured that no additional risks or procedures were imposed on the participants beyond the standard medical care they received. The research team remained vigilant to minimize

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any potential discomfort or inconvenience to the patients. Findings were presented in a manner that upheld the dignity and privacy of all participants, to contribute to the improvement of maternal and neonatal healthcare practices.

RESULTS

Total 100 pregnant women were selected who underwent emergency caesarean sections were included in the study. The findings underscore the need for improved antenatal care and timely identification of high-risk pregnancies to reduce the reliance on emergency surgical interventions.

Table I presents the distribution of cases according to the primary indications for emergency caesarean section. Fetal distress was identified as the most frequent indication, accounting for 18 (18%) of cases. Previous caesarean section ranked as the second most common indication at 15 (15%), followed by severe eclampsia or eclampsia 11 (11%) and prolonged labour 12 (12%). Other notable indications included obstructed labour 10 (10%), antepartum hemorrhage 9 (9%), and malpresentation 8 (8%). Less frequent causes such as failed trial of labour 7 (7%), failed induction of labour 6 (6%), and failed instrumental delivery (forceps/ventouse) 4 (4%) were also observed.

These findings highlight the diverse and critical factors necessitating emergency surgical intervention in obstetrics. They emphasize the importance of adequate prenatal monitoring and timely management of obstetric complications to mitigate risks associated with such emergencies.

Table – I: Distribution of Cases Based on Indications for Emergency Caesarean Section (*n*=100)

Indication	Number of Cases	Percentage (%)
Fetal Distress	18	18%
Previous Caesarean Section	15	15%
Severe Eclampsia/Eclampsia	11	11%
Prolonged Labour	12	12%
Obstructed Labour	10	10%
Antepartum Hemorrhage	9	9%
Malpresentation	8	8%
Failed Trial of Labour	7	7%
Failed Induction of Labour	6	6%
Failed Forceps/Ventouse Delivery	4	4%
Total	100	100

Table II outlines the age distribution of patients who underwent emergency caesarean sections. The majority of cases 37 (37%) occurred in the 25–29 years age group, followed by 30 (30%) in the 20–24 years group. A smaller proportion of cases (25%) involved women aged 30–34 years, while only 7 (7%) were aged 35 years and above. Patients younger than 20 years represented the smallest group, comprising just 1 (1%) of the total cases.

This distribution suggests that the reproductive age groups most commonly affected by the need for emergency caesarean sections are between 20 and 34 years, which aligns with the peak childbearing years. These findings underline the importance of targeted antenatal care and risk assessment for women in these age groups to reduce emergency interventions.

Table – II: Age Distribution of Patients Undergoing Emergency Caesarean Section

Age Group (Years)	Number of Cases	Percentage (%)
<20	1	1%
20–24	30	30%
25–29	37	37%
30–34	25	25%
35+	7	7%
Total	100	100

Table 3 highlights the socioeconomic distribution of patients who underwent emergency caesarean sections. The majority of the patients 58 (58%) belonged to the lower socioeconomic class, followed by 30 (30%) from the middle class, while only 12 (12%) were from the upper socioeconomic class.

These findings suggest a significant association between lower socioeconomic status and the increased likelihood of requiring emergency caesarean sections. Limited access to quality antenatal care, poor nutritional status, and delayed presentation to healthcare facilities may contribute to this trend in lower-income groups. Conversely, higher socioeconomic groups, with better access to healthcare, may benefit from timely elective interventions, reducing the need for emergency procedures.

Table – III: Socioeconomic Status of Patients (*n*=100)

Class	Number of Cases	Percentage (%)
Lower Class	58	58%
Middle Class	30	30%
Upper Class	12	12%
Total	100	100

Table IV illustrates the gravidity distribution among patients undergoing emergency caesarean sections. The data reveals that a majority of 52 (52%) of the cases involved women in their third pregnancy or beyond. Women in their second pregnancy accounted for 30 (30%) of cases, while those experiencing their first pregnancy made up 18 (18%.)

This distribution indicates that the likelihood of emergency caesarean section increases with higher gravidity. This trend may be attributed to factors such as previous obstetric complications, scarring from earlier caesarean deliveries, or the cumulative impact of conditions like pregnancy-induced hypertension or uterine atony in multiparous women. Identifying high-risk gravidity groups through effective antenatal care can aid in timely decision-making to reduce adverse outcomes.

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Table – IV: Gravidity Distribution of Patients (*n*=100)

Gravida	Number of Cases	Percentage (%)
1st Pregnancy	18	18%
2nd Pregnancy	30	30%
3rd and Above	52	52%
Total	100	100

Table 5 summarizes the postoperative complications observed among patients undergoing emergency caesarean section. The findings show that 55% of the cases experienced some form of complication, while 45 (45%) reported no complications.

Among the complications, **hemorrhage** was the most common 20 (20%), potentially caused by surgical incision or uterine atony, and was managed with interventions such as hemostasis, blood transfusion, and oxytocin administration. Other notable complications included **headache** 6 (6%), **anemia** 4 (4%), and **postoperative rise in blood pressure** 4 (4%). Cases of **puerperal pyrexia** 3 (3%) and **urinary tract infection** 2 (2%) were also reported.

These findings highlight the importance of vigilant postoperative care and timely management of complications to improve maternal outcomes after emergency caesarean sections. Identifying at-risk patients and implementing targeted interventions can further reduce complication rates.

Table – V: Postoperative Complications (*n*=100)

Complication	Number of Cases	Percentage (%)
Hemorrhage	20	20%
Puerperal Pyrexia	3	3%
Urinary Tract Infection	2	2%
Anemia	4	4%
Headache	6	6%
Postoperative Rise in BP	4	4%
No Complications	45	45%
Total	100	100

Table VI provides an overview of the neonatal outcomes observed after emergency caesarean sections. The findings reveal that 41% of neonates experienced complications, while 59 (59%) were delivered without any issues.

Among the complications, **prematurity** was the most frequently observed 10 (10%), often resulting from maternal conditions necessitating early delivery. **Neonatal jaundice 7** (7%) and **birth asphyxia 6** (6%) were also notable, indicating the potential challenges faced during and after delivery. More severe outcomes included **perinatal death** 8 (8%), **neonatal death 3** (3%), and **congenital anomalies 2** (2%), underscoring the risks associated with emergency caesarean sections.

The results emphasize the need for enhanced prenatal care and timely interventions to mitigate adverse neonatal outcomes. Early identification and management of high-risk pregnancies could improve both maternal and neonatal prognoses.

Table – VI: Neonatal Outcome (*n*=100)

Neonatal Condition	Number of Cases	Percentage (%)
Neonatal Jaundice	7	7%
Prematurity	10	10%
Neonatal Infection	5	5%
Birth Asphyxia	6	6%
Perinatal Death	8	8%
Congenital Anomaly	2	2%
Neonatal Death	3	3%
No Complications	59	59%
Total	100	100

Table VII presents the distribution of hospital stay durations among patients undergoing emergency caesarean sections.

The majority of patients 65 (**65%**) were discharged within 7–8 days of the procedure, reflecting relatively uncomplicated recoveries for most cases. However, 20 (**20%)** of patients required extended stays of 9–12 days, likely due to postoperative complications or the need for additional medical care. A smaller proportion 15 (**15%**) stayed in the hospital for more than 12 days, indicating more severe complications or underlying conditions necessitating prolonged monitoring and treatment.

These findings highlight the importance of effective postoperative management and follow-up to ensure timely recovery and to address complications promptly.

Table VII: Length of Hospital Stay (*n*=100)

Duration (Days)	Number of Cases	Percentage (%)
7–8 Days	65	65%
9–12 Days	20	20%
>12 Days	15	15%
Total	100	100%

DISCUSSION

Caesarean section is a critical obstetric procedure aimed at ensuring maternal and fetal safety in cases of obstetric complications. Recent advances in anesthesia, surgical techniques, aseptic precautions, and the availability of blood transfusion facilities have significantly liberalized and expanded its use. This study examined the incidence, indications, and outcomes of emergency caesarean sections in a tertiary care hospital, providing valuable insights into the contributing factors and associated risks [9].

The rate of emergency caesarean sections in this study was 70 (70%), which aligns with global trends showing a predominance of emergency procedures over elective ones. However, this rate was slightly lower than the findings of the Federal Medical Centre in Makurdi, where emergency caesarean sections accounted for 84 (84%) of all caesarean deliveries. The higher proportion of emergency cases highlights the need for timely recognition and management of high-risk pregnancies to reduce the need for emergency procedures [10].

The primary indication for emergency caesarean sections in this study was fetal distress 18 (18%), followed by previous caesarean sections 15 (15%) and severe eclampsia or eclampsia 11 (11%). These findings are consistent with those

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reported in similar studies conducted in other settings, such as Kaziba Hospital in rural Zaire, where the major indications included mechanical obstruction 30 (30%) and previous caesarean section 20 (20%). This underscores the universal nature of certain obstetric complications necessitating emergency surgical intervention [11].

The age distribution of mothers undergoing emergency caesarean sections revealed that the majority 92 (92%) were between 20 and 34 years old, consistent with findings from studies conducted in the UK and East Africa [12]. This reflects the reproductive age group most commonly presenting with obstetric complications. A smaller proportion 7.4 (7.4%) of cases involved women aged over 35 years, emphasizing the increased risks associated with advanced maternal age [13].

Socioeconomic status and education were significant factors influencing the rate of emergency caesarean sections. Over half of 58 (58%) of the patients were from lower socioeconomic backgrounds, and 71 (71%) had an education level of SSC or below. This finding suggests that limited access to healthcare, inadequate antenatal care, and poor health literacy contribute to delayed identification of high-risk pregnancies, necessitating emergency interventions. Improved antenatal care and educational outreach programs targeting low-income populations could mitigate these risks.

The gravidity distribution showed a progressive increase in the rate of emergency caesarean sections with higher parity, with the majority 52 (52%) being third or higher gravida. This is likely attributable to cumulative obstetric complications in multiparous women, such as pregnancy-induced hypertension, obstructed labor, and previous caesarean scars, as reported in similar studies [14].

An important finding of this study was the impact of inadequate antenatal care on emergency caesarean section rates. Among the patients, 75 (75%) had inadequate antenatal visits, and 9 (9%) had none. Proper antenatal care enables early detection and management of high-risk pregnancies, potentially reducing the need for emergency procedures.

In terms of anesthetic techniques, spinal anesthesia was used in 84 (84%) of cases, while general anesthesia was used in 16%. Spinal anesthesia is preferred due to its association with better maternal and neonatal outcomes, as evidenced by studies from Lagos University. General anesthesia was reserved for emergencies involving coagulopathy, severe bleeding, or patient-specific conditions. This practice reflects global trends favoring regional anesthesia for caesarean sections [15].

Postoperative complications were noted in 55 (55%) of cases, with hemorrhage 20 (20%) being the most common. Other complications included infections 16 (16%), anemia (4%), and puerperal pyrexia 3 (3%). These findings are higher than reported rates in developed settings, such as Sioux Valley Hospital, highlighting the challenges of resource-constrained environments. Proper intraoperative management and postoperative care are essential to mitigate these complications.

Neonatal outcomes were suboptimal, with 41 (41%) of babies experiencing complications, including prematurity 10 (10%), neonatal jaundice 7 (7%), and neonatal infections 5 (5%). Despite these findings, the neonatal complication rates in this study were better than those reported in other low-resource settings, such as Ethiopia, where stillbirths and neonatal deaths were higher. This emphasizes the need for improved neonatal care and timely surgical interventions [16].

Most patients 65 (65%) were discharged within one week of surgery, reflecting adequate recovery in uncomplicated cases. However, 35 (35%) required extended hospital stays due to maternal or neonatal complications. Efficient perioperative care and early discharge practices, as reported in studies from the USA, could optimize resource utilization without compromising patient safety [17].

This study highlights the multifactorial nature of emergency caesarean sections and underscores the importance of strengthening antenatal care, enhancing maternal education, and ensuring timely referral and management of high-risk pregnancies. While advances in surgical and anesthetic practices have improved outcomes, further efforts are needed to address disparities in access to care and reduce the burden of emergency interventions.

Conclusion

The study underscores the multifaceted challenges associated with emergency caesarean sections at a tertiary care hospital in Bangladesh. Key contributing factors, such as inadequate antenatal care, low socioeconomic status, and delayed identification of high-risk pregnancies, highlight areas needing urgent attention. While advances in surgical techniques and anesthesia have mitigated maternal mortality, the high rates of maternal and neonatal complications, including hemorrhage, prematurity, and neonatal jaundice, emphasize the need for enhanced perioperative care and resource allocation.

Improving access to quality antenatal services, fostering educational outreach, and ensuring timely referrals are critical to reducing emergency interventions. These measures, coupled with a robust focus on early detection and management of complications, can significantly enhance maternal and neonatal outcomes, ensuring safer childbirth experiences. This study contributes valuable insights for healthcare policymakers and practitioners to develop targeted strategies for addressing these persistent challenges in obstetric care.

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REFERENCES

1. *Ginekol Pol. Comparison of indications for cesarean section. 2004 Dec;75(12):926-31.*
2. *BMJ. Caesarean section for fetal distress. 2001 Jun;322:1316-7.*
3. *BMJ. Standard time to emergency cesarean section can be lengthened. 2004 Mar.*
4. *PR Health Sci J. High incidence of emergency cesarean section. 2001 Dec;20(4):347-9.*
5. *J Obstet Gynaecol India. Intrapartum fetal distress. 2005 Mar-Apr;55(2):115-7.*
6. *Tatnum SS, Rao KB, Arulkumaran S. Changing trends in cesarean section. In: Obstetrics and Gynaecology for Postgraduates. 2nd ed. Hyderabad, India: Orient Longman; 1999. Vol. 1:150-1.*
7. *Azim AKMA, Salauddin AKM, Bari MA. A study of MCH service among the slum dwellers of Dhaka City. Bangladesh J Obstet Gynaecol. 2000;15(1):10-4.*

ISSN: 2617-0817 E-ISSN: 2789-5912

8. *Med Trop (Mars). Maternal and infant prognosis of emergency cesarean. 2003;63(4-5):351-7.*
9. *World Health Organization. Maternal health and safe motherhood program. Division of Family Planning. Annex-2. WHO/FHE/MSM/94. 1994.*
10. *Niger J Med. Emergency cesarean section at the Federal Medical Centre Makurdi, North Central Nigeria. 2007 Oct-Dec;16(4):372-4.*
11. *Tidsskr Nor Laegeforen. Increasing use of cesarean section, even in developing countries. 1996 Jan 10;116(1):67-71.*
12. *Petrou S, Kupek E, Vause S, Marsh M. Clinical, provider, and sociodemographic determinants of the number of antenatal visits in England and Wales. Soc Sci Med. 2001 Apr;52(7):1123-34.*
13. *Tadesse E, Adane M, Abiyou M. Cesarean section deliveries at Tikur Anbessa Teaching Hospital, Ethiopia. East Afr Med J. 1999 Sep;73(9):619-22.*
14. *Shorten A, Lewis DE, Shorten B. Trial of labour versus elective repeat cesarean section: a cost-effectiveness analysis. Aust Health Rev. 1998;1:8-28.*
15. *Niger Postgrad Med J. Spinal and general anaesthesia for emergency cesarean section: effects on neonatal Apgar score and maternal haematocrit. 2006 Mar;10(1):51-5.*
16. *William J, Watson MD, Robert J, George MD, Welter S, Day D. The Journal of Reproductive Medicine. 1997;42:267-70.*
17. *Dey N, Hatai SK. A study of cesarean section cases with special reference to maternal and neonatal outcome. J Indian Med Assoc. 1992;90(6):149-51.*