

## Original Research Article

## Indications and Outcomes of Maternal and Neonatal Health among Emergency Cesarean Section- a Retrospective Study

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**Abstract: Introduction:** The rate of cesarean sections is rising globally, with varying indications and outcomes. This study aims to analyze the indications and outcomes of emergency cesarean sections in a Bangladeshi context, focusing on maternal and neonatal health. **Methods:** This retrospective observational study was conducted at Netrokona Medical College, Bangladesh, from July 2021 to June 2022. It included 100 cases of emergency cesarean sections, excluding elective cases and those with incomplete records. Data on maternal age, gravidity, socioeconomic status, gestational age, BMI, indications for cesarean section, and maternal and neonatal outcomes were collected and analyzed. **Result:** The majority of cesarean sections were performed on women aged 21-30 (67%). The most common indication was a previous cesarean section (42%), followed by fetal distress (16%) and placenta previa (11%). Maternal outcomes showed 82% of women had no complications, with fever (12%) and excessive blood loss (8%) being the most common issues. Neonatal outcomes were generally positive, with 97% having APGAR scores  $\geq 7$ . The gender distribution was 59% male and 41% female, and most neonates had normal or healthy birth weights. **Conclusion:** The study highlights a high prevalence of emergency cesarean sections among younger women, primarily due to previous cesarean sections. While maternal and neonatal outcomes were largely favorable, the presence of postoperative complications indicates the need for enhanced care. These findings underscore the importance of careful assessment in emergency cesarean sections and postoperative monitoring, particularly in resource-limited settings like Bangladesh.

**Keywords:** Emergency Cesarean, Maternal, Neonatal, Indications.

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## INTRODUCTION

Cesarean section (CS), a critical surgical intervention in obstetrics, has witnessed a significant global surge in its rates, posing substantial public health concerns. This rise is notably evident in South Asian countries, including Bangladesh. A systematic review by Dhakal-Rai *et al.*, (2022) highlights the increasing trend of CS rates in South Asia, with fetal distress, previous CS, and antepartum hemorrhage, including placenta previa/abruption, being the primary medical indications [1]. The global CS rates have escalated from 12% in 2000 to 21% in 2015, surpassing the World Health

Organization's recommended threshold of 10-15%, beyond which no reduction in maternal or neonatal mortality is observed [2]. In Bangladesh, this trend mirrors the global pattern, reflecting a multifaceted interplay of socio-economic, cultural, and healthcare factors. The rising trend in CS rates, particularly in developing countries, is influenced by various factors, including increased maternal age, higher education levels, urban residency, and economic status [3-6]. These factors, coupled with a preference for CS in private hospitals and increasing numbers of private healthcare facilities, contribute significantly to the rising CS rates [1]. CS is generally performed when vaginal

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delivery presents risks to the mother or fetus. The procedure, initially a life-saving measure, has now become a subject of concern due to its over-utilization. The reasons for opting for CS are multifaceted, ranging from medical necessities to non-medical factors like maternal request influenced by previous childbirth experiences or cultural beliefs [2]. In the context of emergency CS, the indications are often more acute, encompassing conditions like fetal distress, labor dystocia, and cephalopelvic disproportion [7]. These emergency situations necessitate a rapid response to mitigate risks to maternal and neonatal health. The decision to perform a CS, especially in an emergency, is complex and multifactorial. It involves considerations of both maternal and fetal health, with the primary objective being the safe delivery of the baby while ensuring the mother's well-being [8–10]. The increasing rates of CS, particularly in emergency situations, highlight the need for a deeper understanding of the underlying causes and implications of this trend [2]. Common medical indications for emergency CS include fetal distress, failure to progress in labor, and placenta previa, among others. Adiyake (2019) notes that emergency CS is indicated in scenarios posing immediate threats to the life of the woman or fetus, such as cord prolapse, antepartum hemorrhage, and uterine rupture [7]. The decision for emergency CS is often made in the context of rapidly evolving clinical scenarios, where timely intervention is crucial for preventing adverse outcomes [11]. The complexity of these decisions is compounded by the need to balance the risks and benefits of emergency CS against those of continued labor or alternative interventions. This underscores the importance of understanding the specific indications for emergency CS and their outcomes, which can inform clinical decision-making and policy development [7]. The aim of this study is to analyze the indications and outcomes of emergency cesarean sections in a retrospective manner from Netrokona Medical College, Bangladesh. The findings of this study are expected to provide insights into the prevalent practices, decision-making processes, and outcomes associated with emergency CS, thereby informing future healthcare policies and practices in maternal and neonatal care. This study aims to fill a critical gap in the literature by providing detailed data on emergency CS in a Bangladeshi context, which can be instrumental in guiding future research and healthcare interventions.

## METHODS

This retrospective observational study was conducted at the Department of Obstetrics and Gynecology, Netrokona Medical College, Netrokona, Bangladesh. The study period spanned one year, from July 2021 to June 2022. The study involved a comprehensive review of hospital records for a total of 100 cases of emergency cesarean section. The study's inclusion criteria were defined as all recorded instances

of emergency cesarean sections performed during the specified period. The study's inclusion criteria were defined as all recorded instances of emergency cesarean sections performed during the specified period. Cases of elective cesarean section and those with incomplete hospital records were excluded from the study. Ethical approval regarding the study was obtained from the institutional ethical review committee. All collected data was entered into an SPSS database and analyzed using SPSS V.25.

## RESULTS

**Table 1: Distribution of participants by baseline characteristics (n=100)**

Variable	n	%
<b>Age</b>		
<21	5	5.00%
21-30	67	67.00%
>30	28	28.00%
<b>Gravida</b>		
0	8	8.00%
1-2	48	48.00%
3-4	36	36.00%
>4	8	8.00%
<b>Socioeconomic Status</b>		
Low Socioeconomic Class	18	18.00%
Middle Class	46	46.00%
Upper Class	36	36.00%
<b>Gestational Age</b>		
35-36 weeks	28	28.00%
37-38 weeks	62	62.00%
>38 weeks	10	10.00%
<b>BMI</b>		
Underweight	23	23.00%
Normal Weight	42	42.00%
Overweight	31	31.00%
Obese	3	3.00%
Morbidly obese	1	1.00%

In this study of 100 emergency cesarean section cases at Netrokona Medical College, the majority of patients were in the 21-30 age group (67%), with a smaller proportion over 30 years (28%) and under 21 years (5%). Gravidity was most commonly 1-2 (48%), followed by 3-4 (36%), with fewer cases in the 0 and >4 categories (8% each). The participants were fairly evenly distributed across socioeconomic classes, with the middle class being the most represented (46%), followed by the upper (36%) and lower classes (18%). Regarding gestational age, most cesarean sections occurred at 37-38 weeks (62%), with 28% at 35-36 weeks and 10% beyond 38 weeks. The BMI distribution showed 42% of participants with normal weight, 31% overweight, 23% underweight, and a small percentage classified as obese (3%) or morbidly obese (1%).

**Table 2: Distribution of participants by indication of emergency cesarean section (n=100)**

Indication of Emergency CS	n	%
Previous CS	42	42.00%
Fetal Distress	16	16.00%
Placenta Previa	11	11.00%
Breech Presentation	8	8.00%
Prolonged and Obstructed labor	7	7.00%
Multiple Gestation	7	7.00%
Preeclampsia	5	5.00%
Antepartum hemorrhage	4	4.00%

The analysis of indications for emergency cesarean sections among the 100 participants revealed that the most common reason was a history of previous cesarean section (CS), accounting for 42% of the cases. Fetal distress was the second most frequent indication, present in 16% of the cases. Placenta previa was

identified in 11% of the participants, while breech presentation was noted in 8%. Prolonged and obstructed labor, as well as multiple gestation, each accounted for 7% of the emergency CS cases. Preeclampsia and antepartum hemorrhage were less common, comprising 5% and 4% of the cases, respectively.

**Table 3: Distribution of participants by maternal outcome (n=100)**

Maternal Outcome	n	%
Postpartum hemorrhage	7	7.00%
Uterine rupture	2	2.00%
Surgical site wound infection	3	3.00%
Excessive blood loss	8	8.00%
Fever	12	12.00%
No complications	82	82.00%

The study's assessment of maternal outcomes in 100 emergency cesarean section cases revealed that the majority of participants (82%) experienced no complications post-surgery. However, there were instances of various complications. Fever was the most common complication, occurring in 12% of the cases.

Excessive blood loss was noted in 8% of the participants, while postpartum hemorrhage was observed in 7%. Surgical site wound infections were present in 3% of the cases, and uterine rupture was the least common complication, occurring in 2% of the participants.

**Table 4: Distribution of participants by neonatal outcome (n=100)**

Neonatal Outcome	n	%
<b>Gender</b>		
Male	59	59.00%
Female	41	41.00%
<b>Birth Weight</b>		
Low birth weight	4	4.00%
Normal birth weight	54	54.00%
Healthy birth weight	42	42.00%
<b>5-Min APGAR Score</b>		
<7	3	3.00%
≥7	97	97.00%

In the study of 100 emergency cesarean section cases, the neonatal outcomes were as follows: 59% of the neonates were male, and 41% were female. Regarding birth weight, 4% of the neonates were classified as having low birth weight, while the majority had normal (54%) or healthy (42%) birth weights. The 5-minute APGAR scores, an important indicator of neonatal well-being, showed that the vast majority of neonates (97%) had scores of 7 or higher, suggesting generally favorable immediate post-birth conditions. Only 3% of the neonates had APGAR scores below 7.

## DISCUSSION

The high prevalence of emergency cesarean sections among women aged 21-30 years (67%) in our study is a reflection of the demographic trends in Bangladesh, where younger women are increasingly undergoing cesarean deliveries. This trend, consistent with global patterns as noted by Smith *et al.*, may be influenced by a variety of factors including changes in obstetric practices and increased access to cesarean delivery in urban areas of Bangladesh [12]. The implications of this trend are significant, as it suggests a

shift in birthing practices and possibly an increased reliance on surgical interventions in younger, potentially healthier populations. The distribution of cesarean sections across different socioeconomic classes in our study, with a higher representation from the middle class, is particularly relevant in the Bangladeshi context. As Rahman *et al.*, observed, socioeconomic status plays a crucial role in healthcare access and decision-making [13]. In Bangladesh, where healthcare disparities are prevalent, the higher cesarean rates in middle and upper socioeconomic classes could be indicative of better access to healthcare facilities or a preference for cesarean sections in these groups. This raises questions about healthcare equity and the need for balanced, informed decision-making in obstetric care across all socioeconomic strata. The high incidence of emergency cesarean sections due to previous CS (42%) in our study is noteworthy and reflects a global challenge in obstetric care. A study by Guise *et al.*, (2018) in *Obstetrics & Gynecology* highlighted the increasing trend of repeat cesarean deliveries, underscoring the need for careful evaluation of the risks and benefits of primary cesarean sections [14]. Fetal distress (16%) and placenta previa (11%) as indications for emergency CS in our study are consistent with the findings of Zhang *et al.*, in the *Journal of Maternal-Fetal & Neonatal Medicine*, which reported these as common indications for emergency cesarean sections worldwide [15]. The maternal and neonatal outcomes in our study, particularly the high rate of uncomplicated recoveries (82%) and favorable APGAR scores (97%  $\geq 7$ ), are encouraging, and are similar to other studies [16]. These outcomes suggest that, despite the challenges, emergency cesarean sections in Bangladesh are generally successful in ensuring maternal and neonatal safety. However, the presence of postoperative complications such as fever and excessive blood loss, similar to findings by Patel *et al.*, (2019), indicates areas where further improvements in postoperative care are needed [17]. In the context of Bangladesh, where healthcare resources may be limited, these findings underscore the importance of enhancing postoperative care and monitoring to reduce the incidence of such complications. The gender distribution of neonates and the predominance of normal and healthy birth weights in our study are positive indicators of neonatal health. These findings align with global patterns reported by Chawanpaiboon *et al.*, (2019) and suggest effective prenatal care and obstetric management in Bangladesh [18]. However, the challenges of ensuring such outcomes across all regions and socioeconomic groups in Bangladesh remain, particularly in rural or underserved areas. In conclusion, our study's findings reflect both the successes and challenges of emergency cesarean section practices in Bangladesh. While there are positive indicators of maternal and neonatal health, the trends in cesarean section rates, particularly among younger women and repeat cesareans, highlight areas for policy focus and healthcare improvement. These findings call for a balanced approach to cesarean sections, emphasizing the need for standardized

guidelines, informed decision-making, and enhanced postoperative care, especially in a diverse and evolving healthcare landscape like that of Bangladesh.

### **Limitations of the Study**

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

## **CONCLUSION**

The predominance of cesarean sections among women aged 21-30 and the high incidence of repeat cesareans due to previous CS highlight emerging trends in obstetric care. These findings underscore the need for careful evaluation of cesarean indications, especially considering the potential long-term implications for maternal health. The study also reveals a substantial representation of cesarean sections across different socioeconomic classes, indicating a broader acceptance and accessibility of this procedure in varying economic strata. However, this also brings to light concerns about healthcare equity and the necessity for balanced and informed decision-making in obstetric care across all socioeconomic groups. Maternal and neonatal outcomes, predominantly positive in our study, reflect the effectiveness of current obstetric practices in emergency settings. The high rate of uncomplicated recoveries and favorable APGAR scores are encouraging, yet the presence of postoperative complications in a minority of cases points towards areas where healthcare services can be further improved. This is particularly relevant in resource-limited settings, where enhancing postoperative care and monitoring could significantly reduce the incidence of complications. In conclusion, our study contributes valuable data to the existing literature on emergency cesarean sections in Bangladesh, highlighting both the achievements and areas for improvement in maternal and neonatal healthcare. It calls for ongoing efforts to optimize cesarean section practices, ensuring they are guided by clinical necessity and balanced risk assessment, and are accessible to women across all segments of society. Future policies and healthcare interventions should focus on standardizing cesarean practices, improving postoperative care, and ensuring equitable access to quality obstetric care for all women in Bangladesh.

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