

Indications of Emergency Caesarean Section in Kurmitola General Hospital

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Abstract

Background: Caesarean section rates continue to rise worldwide, and emergency caesarean delivery is typically undertaken to avert serious maternal or fetal complications. The spectrum of indications leading to emergency caesarean section varies across countries and institutions, and local data from Bangladeshi tertiary hospitals remain limited. This study aimed to determine the common indications for emergency caesarean section among women managed at Kurmitola General Hospital, Dhaka. **Methods:** This cross-sectional observational study was conducted in the Department of Obstetrics and Gynaecology, Kurmitola General Hospital, from July 2019 to December 2019. One hundred women with a singleton pregnancy beyond 28 weeks who underwent emergency caesarean section were enrolled by purposive sampling. Data were collected using a pre-tested, observation-based questionnaire and analysed using SPSS version 23. **Results:** The highest proportion of mothers (62%) were aged 21-25 years, with a mean age of 24.63 ± 5.31 years. Forty-three percent were primigravida, and 54% had a gestational age of 37 weeks or more. Among fetal indications, fetal distress was the leading cause (22%), followed by severe intrauterine growth restriction (5%) and cord prolapse (1%). Among maternal indications, obstructed labour or failure to progress accounted for 21% of cases, malpresentation and pregnancy-induced hypertension each accounted for 13%, antepartum haemorrhage for 11%, previous caesarean section with scar tenderness for 9%, failed induction for 7%, and primary dysfunctional labour and cephalopelvic disproportion each for 4%. **Conclusion:** Fetal distress was the single most important indication for emergency caesarean section, while obstructed labour, pregnancy-induced hypertension and antepartum haemorrhage represented the principal maternal indications at this tertiary care center.

Keywords: Caesarean section, emergency, indications, fetal distress, obstructed labour.

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INTRODUCTION

Caesarean section (CS) has become the most frequently performed major abdominal operation among women of reproductive age worldwide, and its rate continues to rise across almost every region and healthcare setting [1]. What was once reserved for genuinely life-threatening obstetric emergencies has, over the past few decades, been increasingly described as a “caesarean birth epidemic” [2], reflecting a shift in obstetric practice that extends well beyond fluctuations in medical need. The World Health Organization has long maintained that no population-based caesarean rate

exceeding roughly ten to fifteen percent of live births can be justified on clinical grounds, since rates above this threshold do not translate into further improvements in maternal or perinatal outcomes [3].

Despite this guidance, caesarean rates have climbed steadily in both high-income and low- and middle-income countries [4], driven by a heterogeneous mix of clinical, institutional and social determinants that differ considerably from one setting to another [5]. Countries such as the Dominican Republic and Brazil report rates in excess of fifty percent, while several European nations, the United States and New Zealand

report rates between twenty-five and thirty-five percent, figures that far exceed the WHO-recommended ceiling [1]. This global escalation is not without consequence; caesarean delivery carries a measurably higher burden of maternal morbidity, longer recovery and greater healthcare expenditure compared with vaginal birth, concerns that have renewed scientific interest in understanding exactly why the operation is being performed with such frequency [4].

Bangladesh mirrors this global trajectory. National surveillance data show that the caesarean rate rose from a mere four percent in 2004 to twenty-three percent by 2014, a rate that now sits above both the national target and the WHO ceiling [6]. Caesarean section remains, fundamentally, a delivery of the fetus through an abdominal and uterine incision, and it is broadly classified as elective or emergency according to whether the operation is planned in advance or undertaken to address an evolving obstetric or fetal complication. Approximately twenty million caesarean deliveries are now performed each year worldwide, making it the most common abdominal surgical procedure among adult women [7,8]. In resource-limited settings such as Bangladesh, India and Pakistan, caesarean utilisation is markedly skewed by socioeconomic status, with wealthier women receiving the procedure far more often than clinically indicated while the poorest quintile is frequently under-served, a disparity that itself contributes to preventable maternal and neonatal morbidity [9].

The clinical indications that drive this trend have also evolved. Contemporary obstetric practice attributes the bulk of caesarean deliveries to a relatively narrow set of recurring indications, namely fetal distress, malpresentation, obstructed or prolonged labour, and various maternal complications such as hypertensive disorders and antepartum haemorrhage [10]; a uterus scarred by a previous caesarean section has itself become one of the most frequently cited indications in many countries [11]. However, the relative weight of each of these indications varies substantially by country, institution and level of care, and local data from tertiary-care hospitals in Bangladesh remain scarce. Kurmitola General Hospital, one of the largest tertiary referral centers in Dhaka, routinely manages a heavy caseload of complicated pregnancies referred from peripheral facilities, yet the specific pattern of indications leading to emergency caesarean section at this center has not been systematically documented. Establishing this pattern is essential for guiding clinical decision-making, anticipating resource needs, and informing strategies aimed at curbing avoidable caesarean deliveries. The present study was therefore designed to determine the common indications for emergency caesarean section among women managed at Kurmitola General Hospital.

MATERIALS AND METHODS

This was a cross-sectional observational study conducted in the Department of Obstetrics and Gynaecology, Kurmitola General Hospital, Dhaka, over a six-month period from July 2019 to December 2019. The study population comprised all women who were admitted to the department and who underwent emergency caesarean section during the study period. Using the standard sample-size formula for a single proportion (Z^2pq/d^2), with a reported national caesarean section prevalence of 24% [12], a 95% confidence level and an allowable error of 5%, the calculated minimum sample size was 280. Owing to time constraints, however, 100 women who fulfilled the eligibility criteria were finally enrolled using purposive sampling.

Sample Selection

Inclusion criteria:

- Women with a singleton pregnancy beyond 28 weeks of gestation
- Women admitted specifically for caesarean section

Exclusion criteria:

- Pregnancy complicated by fetal congenital anomalies
- Mother with a pre-existing psychological illness
- Multiple pregnancy

Data Collection Procedure

Data were collected by the principal investigator using a pre-tested, peer-reviewed, observation-based structured questionnaire prepared prior to the commencement of the study. Each participant underwent a detailed interview covering sociodemographic and obstetric history, followed by a thorough general physical, obstetric and pelvic examination. Fetal well-being was assessed through maternal perception of fetal movement, intermittent auscultation of the fetal heart rate, cardiotocography, ultrasonography and, where indicated, Doppler studies; the presence of thick meconium-stained liquor on per-vaginal examination was also recorded. Clinical, biochemical and surgical information relevant to the indication for caesarean section was extracted from case records, investigation reports and imaging studies, and cross-checked against bedside findings to ensure accuracy, reliability and internal consistency. Expert opinion was sought from consultants in the Departments of Obstetrics and Gynaecology and Medicine whenever diagnostic clarification was required.

Indication of Caesarean Section

For the purpose of analysis, indications for emergency caesarean section were grouped into fetal and maternal categories, following the broad classificatory pattern used in earlier institution-based audits of caesarean indications [13] (Table 1). Table 1 summarises

indications reported for elective and emergency caesarean sections from a comparable tertiary hospital dataset, which was used as a reference framework for

categorising the indications recorded in the present study.

Table 1: Reference classification of indications for elective and emergency caesarean sections used to guide categorisation of study indications [13]

Indications for emergency caesarean section	Proportion (per 100 CS)
Presumed fetal compromise	44.20%
Prolonged labour	29.70%
Maternal compromise (e.g. severe pre-eclampsia)	7.70%
Fetal malpresentation	15.90%
Prematurity	2.30%
Uterine rupture	0.20%
Breech / transverse lie	21.40%
Uterine factor (uterine incision, $\geq$ previous CS)	16.00%
Narrow pelvis	2.90%
Psychosocial (fear of childbirth / maternal request)	38.50%
Maternal disease	8.20%
Multiple pregnancy	2.60%
Fetal factor (fetal disease, macrosomia)	3.10%
Previous sphincter injury	7.30%

Values represent a reference classification framework adapted from a comparable institution-based dataset [13] and were used solely to guide the categorisation of indications recorded in the present study; they do not represent findings from the present study population.

Ethical Consideration

The study protocol was reviewed and approved by the concerned institutional ethical review committee prior to commencement. The purpose, procedure, and potential risks and benefits of the study were explained to each participant in a language she could understand, and written informed consent was obtained from all participants before enrolment. Confidentiality of participant information was strictly maintained throughout data collection, analysis and reporting, and no personal identifiers were used in the study database or in the subsequent presentation of results.

Statistical Analysis

All collected data were checked, edited and compiled before entry, and analysis was carried out using the Statistical Package for Social Sciences (SPSS), version 23. Continuous variables such as maternal age were summarised as mean $\pm$ standard deviation with corresponding ranges, while categorical variables, including sociodemographic characteristics, obstetric profile and individual indications for caesarean section, were expressed as frequencies and percentages; given the descriptive cross-sectional nature of the study, findings

were primarily reported through frequency distribution rather than inferential hypothesis testing, and a p-value of 0.05 or less was taken as the threshold of statistical significance wherever comparative analysis was applicable.

RESULTS

A total of 100 women who underwent emergency caesarean section during the study period were included in the analysis. The sociodemographic characteristics of the study participants are summarised in Table 2. The majority of mothers (62%) were aged between 21 and 25 years, followed by 19% aged 20 years or younger; 14%, 4% and 1% belonged to the 26-30, 31-35 and above-35-year age groups respectively. The mean age of the participants was 24.63 ± 5.31 years, with an age range of 17 to 38 years. Regarding educational attainment, 46% had completed primary-level education and 37% had completed education up to secondary school certificate level, while 3% and 2% had completed higher secondary and graduate-level education respectively; 12% of mothers were illiterate or could only sign their name. With respect to occupation, the majority (69%) were housewives, while 11%, 8%, 6%, 5% and 1% were farmers, day labourers, service holders, students, and engaged in other occupations respectively. Household income data showed that 57% of families belonged to the middle-income class, 38% to the poor class and 5% to the affluent class.

Table 2: Distribution of mothers according to sociodemographic characteristics (n=100)

Sociodemographic characteristics		Frequency (%)
Age group (in years)	≤20	19
	21–25	62
	26–30	14
	31–35	4
	>35	1
	Mean age ± SD (years)	24.63 ± 5.31
	Age range (years)	17–38
Educational status	Nil / only can sign	12
	Primary	46
	SSC	37
	HSC	3
	Graduate	2
Occupational status	Housewife	69
	Farmer	11
	Day labourer	8
	Service holder	6
	Student	5
	Others	1
Household income	Poor class	38
	Middle class	57
	Affluent	5

The obstetric profile of the study participants is presented in Table 3. Primigravidae constituted the largest group (43%), followed by women in their second pregnancy (32%); 14% and 11% were in their third and fourth-or-higher pregnancies respectively. Nearly half of the participants (48%) had no previous live child, while 29% had one child and 23% had two to three children.

Regarding gestational age, more than half of the participants (54%) were at or beyond 37 weeks of gestation, 38% were between 33 and less than 37 weeks, and 9% were at 32 weeks or earlier. Antenatal care attendance was irregular in the majority of participants (67%), while only 20% attended antenatal care regularly and 13% had received no antenatal care at all.

Table 3: Distribution of mothers according to obstetric profile (n=100)

Obstetric profile		Frequency (%)
Gravidity	Primigravida	43
	2nd pregnancy	32
	3rd pregnancy	14
	≥4th pregnancy	11
Parity	No child	48
	One child	29
	2–3 children	23
	≥4 children	0
Gestational age (weeks)	≤32	9
	33–<37	38
	≥37	54
ANC visit	Regular	20
	Irregular	67
	None	13

Pre-existing maternal medical illness among the study participants is illustrated in Figure 1. Hypertensive disease was the most common pre-existing condition,

present in 17% of mothers, followed by infectious diseases in 6%, haematological diseases in 3% and endocrine disease in 1%.

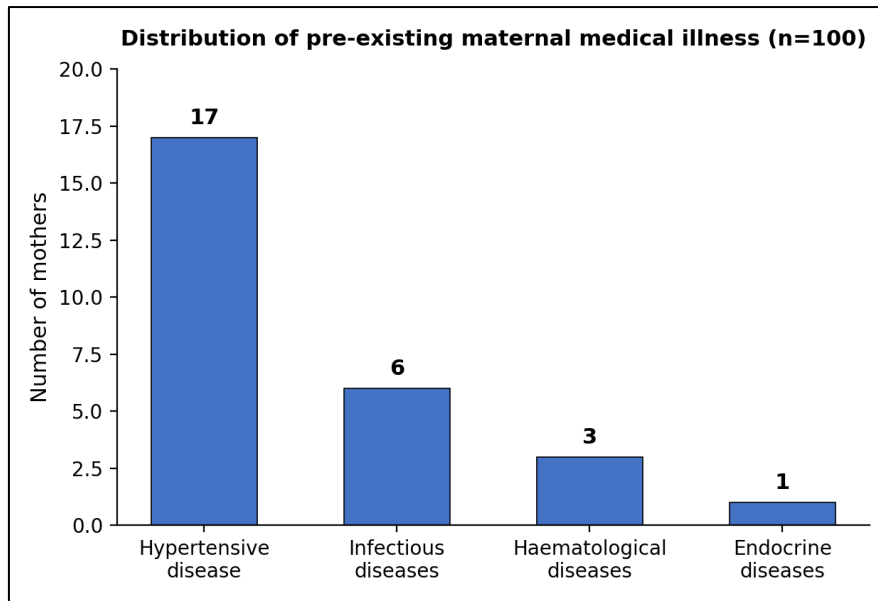


Figure 1: Distribution of pre-existing maternal medical illness among study participants (n=100)

The distribution of indications for emergency caesarean section is presented in Table 4. Fetal distress was the leading indication, accounting for 22% of cases, followed by severe intrauterine growth restriction in 5% and cord prolapse in 1%. Among maternal indications, obstructed labour or failure to progress of labour was the most common, present in 21% of cases. Malpresentation

and pregnancy-induced hypertension each accounted for 13% of cases, while antepartum haemorrhage accounted for 11%. Previous caesarean section with scar tenderness was recorded in 9% of cases and failed induction of labour in 7%, while primary dysfunctional labour and cephalopelvic disproportion each accounted for 4% of cases.

Table 4: Distribution of indications for emergency caesarean section (n=100)

Indications of emergency caesarean section	Frequency (%)
Fetal distress	22
Obstructed labour / failure to progress	21
Malpresentation	13
Pregnancy-induced hypertension (PIH)	13
Antepartum haemorrhage (APH)	11
Previous caesarean section with scar tenderness	9
Failed induction	7
Severe intrauterine growth restriction (IUGR)	5
Primary dysfunctional labour	4
Cephalopelvic disproportion	4
Cord prolapse	1

DISCUSSION

The findings of this study confirm that the recent global escalation in caesarean section rates cannot be attributed solely to a genuine increase in medical risk or obstetric indications [14]. Rather, a combination of evolutionary and environmental influences appears to be reshaping obstetric practice more broadly; rapid urbanisation, declining levels of physical activity and the rising prevalence of obesity and associated metabolic disorders have altered maternal risk profiles over recent decades, while changing reproductive patterns such as delayed childbearing and smaller family size have further contributed to this transition [15,16]. Against this backdrop, the World Health Organization continues to maintain that a population-based caesarean rate

exceeding ten to fifteen percent cannot be justified purely on clinical grounds [3]. In the present study, the observed caesarean rate at Kurmitola General Hospital was considerably higher than this threshold; however, because the hospital functions as a tertiary referral center that receives a disproportionate share of complicated pregnancies from peripheral facilities, the true population-level caesarean rate for the catchment area it serves is likely to be substantially lower. This pattern, in which tertiary centers report inflated caesarean rates relative to the general population, has been documented in other resource-limited settings with comparable referral structures [17]. It is worth noting that the WHO itself has acknowledged that no robust empirical evidence supports a single universal target rate, and now recommends that caesarean section be performed only

when clinically indicated rather than in pursuit of a numerical threshold [18].

The mean maternal age in this cohort was 24.63 ± 5.31 years, a figure broadly consistent with the young reproductive age structure reported in other low-resource obstetric populations [9]. Although primigravidae are conventionally regarded as being at higher risk of caesarean delivery, the present study found a comparatively high proportion of caesarean sections among multigravid women, a pattern that likely reflects the high parity common among women in this region and is consistent with findings from other studies conducted in similar settings in Bangladesh [6].

Fetal distress emerged as the single leading indication for emergency caesarean section, accounting for 22% of cases. Fetal distress remains one of the most consistently reported indications for caesarean delivery across obstetric populations, and its diagnosis in the present study was supported by fetal heart rate monitoring, cardiotocography, ultrasonography, Doppler assessment and the presence of thick meconium-stained liquor on vaginal examination [19]. The increasing availability of such monitoring technology, including in peripheral and semi-urban facilities, may partly explain the prominence of this indication, since fetal compromise that would previously have gone undetected is now more readily identified and acted upon.

Obstructed labour or failure to progress was the second most frequent indication, present in 21% of cases, a finding that reflects a well-recognised problem in Bangladesh arising from mismanagement by traditional birth attendants, injudicious use of oxytocic agents, and induction of labour with prostaglandins without adequate prior assessment [9]. Previous caesarean section accounted for a further 9% of cases; given the well-documented safety of a trial of labour after a single previous caesarean delivery, even among grand multiparous women, wider implementation of trial of labour after caesarean section could meaningfully reduce the repeat caesarean burden without increasing maternal risk [20]. Malpresentation, largely attributable to breech presentation, accounted for 13% of cases; because vaginal breech delivery carries a recognised risk of fetal and maternal morbidity when case selection is suboptimal, many obstetricians now favour caesarean delivery for breech presentation even though a well-selected trial of vaginal breech delivery does not itself increase adverse outcomes, a trend that appears to be reflected in the pattern observed here [10]. Cephalopelvic disproportion was the least frequently recorded indication, although a more aggressive antenatal diagnostic approach could plausibly raise its relative contribution in future cohorts [5].

Pregnancy-induced hypertension was identified in 13% of cases, underscoring the importance of regular

antenatal care in the early detection and management of hypertensive disorders of pregnancy, which are independently associated with an elevated risk of both caesarean delivery and preterm birth [4]. Antepartum haemorrhage, present in 11% of cases, remained an important indication for emergency caesarean section, reflecting its role as a life-saving intervention in cases of placenta praevia, where any delay in delivery poses a definitive risk to both mother and fetus [7]. Because emergency caesarean delivery is more frequently associated with maternal and neonatal complications than elective procedures, timely recognition of these indications and prompt surgical intervention remain central to improving outcomes in this setting [18].

Limitations and Recommendations

This study was limited by its cross-sectional, single-center design, relatively short study duration and small sample size, which restrict the generalisability of the findings. Multicenter studies conducted across divisional and tertiary hospitals throughout Bangladesh, with a longer study period and a multidisciplinary research approach, are recommended to generate more precise and nationally representative data on indications for emergency caesarean section.

CONCLUSION

This study demonstrates that fetal distress is the most important fetal indication for emergency caesarean section among women managed at Kurmitola General Hospital, while obstructed labour, pregnancy-induced hypertension and antepartum haemorrhage represent the principal maternal indications. These findings highlight the continued importance of accurate fetal surveillance and vigilant antenatal monitoring for hypertensive and haemorrhagic complications in reducing avoidable emergency caesarean deliveries. Strengthening antenatal care coverage, improving intrapartum monitoring capacity, and promoting judicious use of induction agents at peripheral facilities may help address the modifiable contributors to this pattern.

REFERENCES

1. Betran AP, Ye J, Moller AB, Zhang J, Gulmezoglu AM, Torloni MR. The increasing trend in caesarean section rates: global, regional and national estimates 1990-2014. *PLoS One*. 2016;11(2):e0148343.
2. Porreco RP, Thorp JA. The cesarean birth epidemic: trends, causes, and solutions. *Am J Obstet Gynecol*. 1996;175:369-374.
3. World Health Organization. Appropriate technology for birth. *Lancet*. 1985;2:436-437.
4. Mehta A, Apers L, Verstraelen H, Temmerman M. Trends in CS rates at a maternity hospital in Mumbai, India. *J Health Popul Nutr*. 2001;19(4):306-312.
5. Naymi RS, Rehan N. Prevalence and determinants of CS in a teaching hospital of Pakistan. *J Obstet Gynaecol*. 2000;20:479-483.

6. Das SR. Rising trend to caesarean section in Bangladesh: an upcoming health hazard to women. Faridpur Med Coll J. 2017;12(2):53.
7. Howard B. The rising caesarean delivery rate in America. Obstet Gynecol (Am Coll Obstet Gynecol). 2011;118(3):156-172.
8. Hordofa G, Ashenafi S. Caesarean section and associated factors at Mizan Aman General Hospital, Southwest Ethiopia. J Gynecol Obstet. 2014;2(3):37-41.
9. Litorp H, Mgya A, Kidanto HL, Johnsdottir S, Essen B. "What about the mother"? Women's and caregivers' perspectives on caesarean birth in a low-resource setting with rising caesarean section rates. Midwifery. 2015;31:713-720.
10. Mac Dorman MF, Menacker F, Declercq E. Cesarean birth in the United States: epidemiology, trends, and outcomes. Clin Perinatol. 2008;35:293-307.
11. Stjernholm YV, Petersson K, Eneroth E. Changed indications for cesarean sections. Acta Obstet Gynecol Scand. 2010;89:49-53.
12. Bailey P, Lobis S, Maine D, Fortney J. Monitoring emergency obstetric care: a handbook. Geneva: World Health Organization; 2009.
13. Häger RME, Daltveit AK, Hofoss D, Nilsen ST, Kolaas T, Øian P, *et al*, Complications of cesarean deliveries: rates and risk factors. Am J Obstet Gynecol. 2004;190(2):428-434.
14. Qin C, Zhou M, Callaghan WM, Posner SF, Zhang J, Berg CJ, *et al*, Clinical indications and determinants of the rise of caesarean section in three hospitals in rural China. Matern Child Health J. 2012;16(7):1484-1490.
15. Tang CH, Wang HI. Risk-adjusted caesarean section rate for the assessment of physician performance in Taiwan: a population based study. BMC Public Health. 2006;6:246.
16. Sreevidya S, Sathiyasekaran BW. High caesarean rates in Madras (India): a population-based cross sectional study. BJOG. 2003;110(2):106-111.
17. Sowmya M, Dutta I. Comparative study of neonatal outcome in caesarean section done in referred cases vs elective caesarean delivery in a rural medical college hospital. J Evol Med Dent Sci. 2014;24:13993-13998.
18. Hall MH. Variation in caesarean section rate: maternal mortality higher after c-section. BMJ. 1994;308:654-655.
19. Parer JT, Livingston EG. What is fetal distress? Am J Obstet Gynecol. 1990;162(6):1421-1425.
20. Kugler E, Shoham-Vardi I. The safety of a trial of labour after caesarean section in a grand multiparous population. Arch Gynecol Obstet. 2008;277:339-344.