

RESEARCH LETTER

A clinical audit of Caesarean Section rates at Bangladesh Medical University according to the Robson's Ten Group classification system



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Not available

Caesarean Section (CS) is one of the most frequently performed obstetric procedures worldwide, with rates increasing from approximately 7% in 1990 to over 21% in recent years [1]. The World Health Organization has suggested that population-level CS rates between 10–15% are associated with optimal maternal and neonatal outcomes [2]. However, unnecessary CS increases maternal morbidity, prolongs hospital stay, and raises the risk of complications in subsequent pregnancies.

In Bangladesh, CS rates have risen substantially over the past two decades. According to the Bangladesh Demographic and Health Survey 2022, 83% of births in private health facilities are delivered by CS compared with 36% in public facilities [3]. This trend highlights the importance of standardized audit tools such as Robson's ten-group classification to identify key contributors and guide clinical practice [4]. In addition, Vaginal birth after caesarean is a safe and appropriate option for most women with a prior caesarean delivery when careful selection and adequate facilities are ensured [5]. This retrospective clinical audit was conducted at Bangladesh Medical University, Dhaka, including all deliveries from January 2023 to December 2025.

A total of 2,405 delivery records were identified. Records with missing key variables (parity, gestational age, onset of labour, fetal presentation, number of fetuses, or previous CS status) were excluded. Only 11 patient records were found to be incomplete, therefore discarded.

Data were retrospectively extracted from registers and case records using a structured form. Variables collected included maternal demographics, obstetric history, labour details, fetal presentation, delivery mode, and gestational age assessment methods were captured.

The Robson's Ten Group Classification System, introduced by Dr. Michael S. Robson in 2001 and adopted by WHO in 2014, provides a standardized framework for auditing CS practices. It categorizes all women admitted for delivery into ten groups based on parity, gestational age, onset of labor, fetal presentation, number of fetuses, and history of caesarean section. Groups 1–4 classify term, single, cephalic pregnancies in nulliparous and multiparous women, distinguishing spontaneous labour from induction or pre-labour caesarean. Group 5 includes women with a previous caesarean at term, single, cephalic. Groups 6 and 7 cover breech presentations in nulliparous and multiparous women, respectively. Group 8 encompasses multiple pregnancies, Group 9 abnormal lies, and Group 10 preterm single cephalic pregnancies, with or without prior caesarean. This system enables consistent analysis and comparison of caesarean rates across populations.

Data were entered into Excel, checked, and descriptively analyzed. Results were reported as frequencies, percentages, proportions using Robson's standard table. The audit findings were presented to the departmental committee, leading to recommendations for practice improvement. A re-audit was scheduled after implementing corrective measures to complete the cycle.

Of the 2,405 deliveries, 1,671 (69.4%) were caesarean sections. As shown in Table 1, Group 5 (previous CS, singleton, cephalic, ≥ 37 weeks) contributed the largest proportion of caesarean sections (65.6% of all CS). Groups 2 and 4 (nulliparous and multiparous women undergoing induction or pre-labour CS) together contributed a substantial proportion of caesarean sections. Although Groups 6–10 had very high CS rates, their overall contribution was small due to fewer cases.

Key messages

Among 2,405 deliveries at Bangladesh Medical University, the caesarean section rate was 69.4%. Women with a previous caesarean section (Robson Group 5) accounted for 65.6% of all caesarean deliveries, while nulliparous women undergoing induction or pre-labour caesarean (Group 2) and multiparous women without previous caesarean undergoing similar interventions (Group 4) contributed a further substantial proportion. These findings indicate that repeat caesarean sections and primary caesarean decisions are the main contributors of the high institutional caesarean rate.

Table 1 Clinical audit with Robsons reporting table according to the World Health Organization Caesarean Section (CS) (n=2405)

Group	No. of CS in group	No. of women in group	Group size (%)	Group CS rate (%)	Absolute group contribution to overall CS rate (%)	Relative group contribution to overall CS rate (%)
a	b	c	d=c/N*100	e=b/c*100	f=b/N*100	g=b/M*100
Nulliparous, single cephalic, >37 weeks, spontaneous labour)	5	90	3.7	5.5	0.2	0.3
Nulliparous, single cephalic, >37 weeks, induced or pre-labor CS	312	679	28.2	45.9	12.9	18.6
Multiparous (excluding previous CS), single cephalic, >37weeks, spontaneous labor.	5	123	5.1	4.0	0.2	0.3
Multiparous (excluding previous CS), single cephalic, >37weeks, induced or pre-labor CS.	140	304	12.6	46.0	5.8	8.3
Multiparous with at least one previous uterine scar, single cephalic, >37 weeks.	1097	1097	45.6	100	45.6	65.6
All nulliparous with breech presentation	13	13	0.5	100	0.5	0.7
All multiparous with breech presentation.	21	21	0.8	100	0.8	1.2
All multiple gestations.	24	24	1	100	1	1.4
All transverse or oblique malpresentations.	5	5	0.2	100	0.2	0.3
All single cephalic preterm gestations (<36 weeks).	49	49	2.0	100	2.0	2.9
Total	1,671 (M)	2,405 (N)	100%	69.4%	69.4%	100%

The audit demonstrates that the high institutional CS rate of 69.4% is largely attributable to repeat CS among women with a previous caesarean and primary CS among nulliparous women. This pattern underscores the critical influence of both historical obstetric decisions and current labour management practices on overall institutional CS rates.

The predominance of Group 5 (previous CS, singleton, cephalic, ≥ 37 weeks) highlights that vaginal birth after caesarean is not being practiced in this setting. The absence of trial of labour after caesarean suggests a reliance on elective repeat CS without standardized protocols for case selection. This raises important concerns about missed opportunities to reduce CS rates through safe vaginal birth after caesarean practices, which are supported by international guidelines when appropriate maternal and fetal conditions are met. Institutional adoption of clear vaginal birth after caesarean protocols, coupled with staff training and patient counseling, could significantly reduce the contribution of Group 5 to the overall CS burden [2, 6, 7].

The substantial contribution from Groups 2 (nulliparous, singleton, cephalic, ≥ 37 weeks, induced labour or CS before labour) and Group 4 (multiparous without previous CS, singleton, cephalic, ≥ 37 weeks, induced labour or CS before labour) emphasizes the importance of decisions surrounding primary CS. Evidence suggests that labour management practices—particularly the accurate diagnosis of labour progression, judicious use of induction, and adherence to standardized definitions of labour dystocia—play a pivotal role in determining CS rates. Overdiagnosis of “failure to progress” or inappropriate induction protocols may inflate primary CS rates, thereby putting into the cycle of repeat CS in subsequent pregnancies [1, 2].

By contrast, smaller groups such as malpresentation (Group 6) and preterm births (Group 10), though associated with high CS rates, contribute minimally to the overall institutional burden. These cases are clinically expected to require surgical delivery in many instances, and their impact on the aggregate CS rate is proportionally limited [8].

Taken together, the findings suggest that institutional CS reduction strategies should prioritize two domains: firstly promoting safe vaginal birth after caesarean through standardized trial of labour after caesarean protocols to address the disproportionate contribution of Group 5 [7]. Secondly optimizing labour management and induction practices to reduce unnecessary primary CS in Groups 2 and 4.

Such targeted interventions, supported by evidence-based guidelines and robust documentation, could meaningfully lower the institutional CS rate while maintaining maternal and neonatal safety.

This audit was retrospective and relied on routinely recorded clinical data, which limited the ability to explore detailed clinical indications and decision-making processes for caesarean section. Being a single-centre study, the findings may not be generalizable to all healthcare settings in Bangladesh, particularly primary or private facilities. Additionally, as a descriptive clinical audit, causal relationships could not be established.

Reducing unnecessary primary caesarean sections and promoting safe vaginal birth after caesarean are key strategies to optimize CS rates in tertiary care settings.

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Author contributions

Conception and design of the research: NNN, RR. *Analysing the data, drafting the manuscript and revising it critically for important intellectual content:* RR, FI, FN, AA. *Final approval of the version to be published:* FI. *Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved:* RR.

Conflict of interest

We do not have any conflicts of interest.

Data availability statement

We confirm that the data supporting the findings of the study will be shared upon reasonable request.

AI disclosure

All scientific content, interpretations and conclusions are solely written by the authors. AI tools are used to assist in improving sentence flow and language clarity only.

Supplementary file

None

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