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TO EXAMINE THE DISTRIBUTION OF CAESAREAN DELIVERIES USING THE ROBSON TEN GROUP CLASSIFICATION SYSTEM (RTGCS)

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ABSTRACT

Background: Caesarean section is a major surgery that comes with risks for both mothers and babies, both in the short and long term. Over the past few decades, the number of caesarean births has increased dramatically around the world. According to the World Health Organization, the global rate is now 25.7%, which is much higher than the recommended maximum of 15%. Many of these surgeries are done without a clear medical reason—sometimes just because the mother requests it. This shows the need for better education, monitoring, and understanding around caesarean births. One helpful tool for this is the Robson Ten Group Classification System (RTGCS). It's a widely used method that groups pregnant women based on certain

characteristics, helping hospitals and health systems see which groups are having the most caesareans and why. This can guide efforts to safely lower unnecessary caesarean rates and improve outcomes for mothers and babies.

Objective: To examine the distribution of caesarean deliveries using the Robson Ten Group Classification System (RTGCS)

Duration and place of study: This study was done from January 2024 to January 2025 at Karachi Metropolitan University / Abbasi Shaheed Hospital Karachi

Methodology: The Robson Ten Group Classification was applied in this cross-sectional study of 500 patients aged 18-35 years who delivered by caesarean section after 28 weeks of gestation. Data was obtained and analyzed with SPSS considering parameters of age and parity after ethical approval. Fetal distress was identified by abnormal heart rates, and chi-square testing indicated statistical significance ($p < 0.05$).

Results: There was a total of 500 patients included in this study. The mean age calculated was 30.1 years with a variation of 2.7 years. The average gestational age calculated was 38.4 weeks. The patients were aged between 18 years and 35 years. Majority of the participants were aged between 28 years to 35 years. Majority of the patients were multiparous. Robson group V was the group contributing the highest to the C-Section rate (60%) followed by Robson group II.

Conclusion: In summary, Robson Group V (women with a previous caesarean section and a singleton term cephalic-presentation pregnancy) was the leading contributor to the caesarean section rate within our study, followed by Group II (nulliparous women with induced labour or previous caesarean section before labour).

INTRODUCTION

Caesarean section is a major surgical procedure that can lead to unavoidable complications at the time of delivery [1]. As a major procedure, it poses short- and long-term risks to both mothers and babies [2]. Caesarean deliveries have increased astronomically in the last decades worldwide. According to a World Health Organization (WHO) report, the global caesarean rate is 25.7%, of which Asia represents 27.3%, Latin America 29.2%, Europe 19.0%. These rates have generated serious public health concerns [3]. In response to this trend, the WHO recommends that caesarean section rates must not exceed 15%, as evidence suggests that rates over this level do not lead to additional reductions in maternal or newborn mortality and morbidity [4].

The causes of the global increasing rates of caesarean sections are continuing controversies. A high percentage of the procedures are done without a medical indication, and requested by the mother [5], as evidenced by research. The lack of a classification system for caesarean sections that is recognized globally has made it difficult to gain a full understanding of the underlying causes. But the Robson categorization system is overall considered to be a useful instrument for comparing caesarean rates between different situations [6].

The Robson Ten Group Classification System (RTGCS) is an organized and effective approach to caesarean section rate monitoring and analysis. The approach stratifies pregnancy into ten groups based on important obstetric characteristics such as type of pregnancy, gestational age, prior obstetric history, fetal presentation, and labor and delivery course [7, 8]. A South African study using the RTGCS revealed that the following groups contributed to the overall caesarean section rate: Group 1 (27.4%), Group 2 (7.9%), Group 3 (15.2%), Group 4 (6.1%), Group 5 (17.2%), Group 6 (0.9%), Group 7 (0.5%), Group 8 (1.6%), Group 9 (0%), and Group 10 (23.4%) [9].

. The objective of this research is to determine whether specific groups of obstetric patients are contributing disproportionately to the high rate of caesarean sections. By applying the Robson classification system, we can analyze the distribution of caesarean deliveries across defined patient categories. This approach enables the identification of key groups driving the elevated rates, allowing for targeted interventions. Ultimately, such efforts could help reduce unnecessary caesarean deliveries and enhance outcomes for both mothers and newborns.

METHODOLOGY

This is a cross-sectional analysis which was conducted at the Department of Obstetrics and Gynecology of our hospital. There was a total of 500 participants in this study. All the participants were multiparous and nulliparous patients. The patients were aged between 18 years and 35 years. Moreover, the study included patients with cephalic or breech presentations who were admitted for elective or emergency caesarean section after 28 weeks of gestation.

Exclusion criteria: Those patients who delivered their babies through vaginal delivery, whether spontaneous or assisted, were not a part of this study.

The sample was computed using the WHO sample size calculator with a 95% confidence interval, a population proportion of 0.016, and an absolute precision of 0.008. Ethical approval was sought prior to commencing the trial. Patients were included in the study based on inclusion criteria, and demographic information including name, age, gender, and address was recorded. The participants were then classified according to the Robson Ten Group Classification System, and the caesarean section rate was calculated. Fetal distress was identified with abnormal fetal heart rate patterns like bradycardia, tachycardia, repeated varied decelerations, and late

decelerations. Information regarding each participant was documented on a specially designed proforma and later confirmed by a consultant.

Data was entered and analyzed using SPSS version 16. Each Robson Ten Group frequency was calculated, and age and gestational age were tabulated using mean and standard deviation. Effect modifiers such as age, gestational age, and parity were controlled through stratification. Following stratification, the chi-square test was applied, a p-value of ≤ 0.05 showing statistical significance.

RESULTS

There was a total of 500 patients included in this study. The mean age calculated was 30.1 years with a variation of 2.7 years. The average gestational age calculated was 38.4 weeks. The patients were aged between 18 years and 35 years. Majority of the participants were aged between 28 years to 35 years. The distribution of patients according to their demographics is mentioned in table number 1.

Table No. 1:

Demographics	N	%
Age (yrs)		
• **18-27**	65	13
• **28-35**	435	87
Gestational age (weeks)		
• **28-39**	395	79
• **>39**	105	21

Majority of the patients were multiparous. Table number 2 below shows the distribution.

Table No. 2:

	N	%
Nulliparous	185	37
Multiparous	315	63

Robson group V was the group contributing the highest to the C-Section rate (60%) followed by Robson group II. Table number 3 shows the results.

Table No. 3:

Robson group	N	%
Group I	10	2
Group II	105	21
Group III	4	0.8
Group IV	26	5.2
Group V	300	60
Group VI	14	2.8
Group VII	9	1.8
Group VIII	10	2
Group IX	6	1.2
Group X	16	3.2

Table 4: Robson ten group classification system (TGCS).

Groups	Description
1	Nulliparous, single cephalic, ≥37 weeks, in spontaneous labour.
2	Nulliparous, single cephalic, ≥37 weeks, induced or caesarean section (CS) before labour.
3	Multiparous (excluding previous CS), single cephalic, ≥37 weeks, in spontaneous labour.
4	Multiparous (excluding previous CS), single cephalic, >37 weeks, induced or CS before labour.
5	Previous CS, single cephalic, ≥ 37 weeks.
6	All nulliparous breeches.
7	All multiparous breeches (including previous CS).
8	All multiple pregnancies (including previous CS).
9	All abnormal lies (including previous CS).
10	All single cephalic, <37 weeks (including previous CS).

DISCUSSION

Caesarean section rates are rising around the world, but we still don't fully understand all the reasons why. One major challenge is the lack of a standard way to track and compare caesarean rates between hospitals or regions. The Robson Classification System helps by sorting pregnant women into groups based on things like whether they've given birth before, had a previous caesarean, how far along the pregnancy is, how labour starts, the baby's position, and whether it's a single or multiple pregnancy. While the system doesn't explain why a caesarean was done, it is widely used and very useful for showing which groups of women are contributing most to the overall caesarean rate. This information can help healthcare providers focus their efforts on reducing unnecessary caesareans and improving care for mothers and babies.
The research involved 500 women aged between 18 and 35 years with a gestational age of over 28 weeks who had been admitted for elective or emergency caesarean section. Robson Group V (women with one or more previous caesarean section and a term, singleton, cephalic-presentation pregnancy) had the largest percentage of caesarean deliveries at 60% (n=300), followed by Robson Group II (women with induced labour or caesarean section before labour) at 21% (n=105).

Our results are in line with earlier studies, for example, Kelly et al.'s study of five provinces' births by the Robson classification [11]. In every region, Robson Group 5 (previous caesarean and term, singleton, cephalic pregnancy) contributed most to caesarean rates (76.1%-89.9%), followed by Group 2 (nulliparous women with induced labour or caesarean before labour) at 34.4%-44.6% and Group 1 (spontaneous labour) at 14.5%-20.3%. Our results agree with studies conducted in most regions of Pakistan, where Robson Group 5 has been found to be the prime reason for the elevated rate of caesarean sections [12]. In the cross-sectional study conducted by Kazmi et al., the highest contribution towards the total rate of caesarean sections was made by Group 5 (women with a prior caesarean section), followed by Group 1, and then Group 2 [13].

In most studies, the second highest contributing group has been Group 2, i.e., nulliparous women at term who had experienced induced labour or a preceding caesarean section before onset of labour [14-18]. Caesarean sections in this group might be due to requests from the mother, which are often driven by apprehension of labour pain, anxiety about mechanical delivery or emergency caesarean, and anxiety regarding perineal traumas. These rates may be lowered through good prenatal counselling, pain management options such as Entonox or epidurals, and support from the partner in labour. Yet our findings are different from Yadav RG et al., who reported that Groups 1 and 3 covered 60% of the whole obstetric population [19].

Our findings differed from those at Nishtar Hospital, where Group 10 (caesarean sections before term) was more common due to more complicated pregnancies [20]. In general, the Robson classification method is increasingly being used around the world to measure caesarean rates. Despite these drawbacks, it is simple to use and interpret, and suggested improvements could make it even more useful. It aids in identifying areas for intervention and can be used by healthcare organizations as part of quality improvement initiatives to decrease needless caesarean sections.

CONCLUSION

In summary, Robson Group V (women with a previous caesarean section and a singleton term cephalic-presentation pregnancy) was the leading contributor to the caesarean section rate within our study, followed by Group II (nulliparous women with induced labour or previous caesarean section before labour). Based on the results of our study, we recommend two key interventions to help reduce the caesarean section rate. First, promoting and supporting Vaginal Birth After Caesarean (VBAC) in women with a previous caesarean section, where medically appropriate, should be prioritized. Since Robson Group V contributed the most to the overall caesarean rate, encouraging VBAC through proper counselling, careful selection, and adherence to clinical safety guidelines could significantly reduce repeat caesarean deliveries. Second, efforts should focus on improving labour management in nulliparous women, especially those in Robson Group II who underwent induction or caesarean before labour. This includes limiting inductions without medical indication, providing comprehensive antenatal education to address fears related to childbirth, and ensuring access to effective pain management and continuous labour support. Implementing these strategies may help prevent unnecessary caesarean sections and improve outcomes for both mothers and newborns.

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Conflict of interest

The authors had no conflict related to the interest in the execution of this study.

Permission

Prior to initiating the study, approval from the ethical committee was obtained to ensure adherence to ethical standards and guidelines.

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