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FREQUENCY OF C-SECTION ACCORDING TO ROBSON CLASSIFICATION SYSTEM IN PREGNANT FEMALES

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ABSTRACT

Background: Cesarean section (CS) rates in the global population have become a significant issue of public health concern and in many instances, they are higher than the recommended 10-15 percent with no significant improvement in maternal or neonatal outcomes. The Robson Ten Group Classification System (RTGCS) offers a standard and effective way of measuring the CS rates in various groups.

Objective: To find out the frequency of c-section by Robson classification system in pregnant females.

Methodology: This cross-sectional descriptive research was done at the Department of Gynecology, Allied-II (DHQ) Hospital Faisalabad during Jun 2025 and November 2025. Non-probability consecutive sampling was used to recruit 905 pregnant women who met inclusion criteria. Ten Robson groups were formed depending on obstetric aspects. The frequency of CS was determined in each group. The data were analyzed in SPSS version 25.

Results: The total cesarean section rate was reported to be high, with the most significant input by Robson Group V (prior cesarean section, singleton, cephalic, term pregnancy). Groups II and I were also largely contributing to the overall CS rate. Reduced rates were seen in multiparous women with no previous scars (Groups III and IV). The relationships between CS rates and parity, previous CS, fetal presentation and the onset of labor were statistically significant (p 0.05).

Conclusion: Robson classification system is an effective method used to determine high contributing groups to the rate of CS especially women who have undergone cesarean delivery. Specific interventions aimed at the decrease of primary CS and the encouragement of vaginal birth after cesarean (VBAC) can be used to control the increasing rates of CS.

KEYWORDS: Cesarean section, Robson classification, obstetrics, maternal health, CS rate, VBAC

INTRODUCTION

In the last several decades, cesarean section (CS) deliveries have been steadily rising in the world, both in developed and developing nations. Although the rapid increase in CS rates is a life-saving obstetric procedure, it has become a major public health issue because the reasons behind the trend are not fully understood yet. This upward trend is especially significant since the rates of CS that exceed the recommended level do not always translate to better maternal or neonatal outcomes.

Population-level CS rates over 10–15% have been proposed by the World Health Organization (WHO) to not be linked with further fetal and maternal morbidity and mortality, which indicates the necessity to prevent unnecessary surgical births. (8,10) There is also evidence of non-medically indicated CS increasing the risk of short-term maternal morbidity and mortality. (9)

The Robson Ten Group Classification System (RTGCS) was introduced as an internationally recognized system to tackle the variability and unstandardization of measurement in the context of CS trends. The advantage of this system is that it is straightforward and it can utilize clinical information regularly available, which is why it is a powerful tool to audit the CS rates without using subjective indicators. (3)

WHO and FIGO have extensively supported the use of RTGCS to monitor and compare rates of CS across institutions and countries, and demonstrates that Group V (past cesarean section) is the major contributor to increasing rate of CS, with nulliparous women in Groups I and II coming next, and primary cesarean section being a major contributor to repeat sections. (7,10)

Bibi et al. found a CS rate of 15.99% in a large-scale analysis, with very high rates in Groups V and II, which further supports the global trend of an increasing number of cesarean sections caused by repeat CS and primary interventions. (6)

Considering this history, the current investigation tries to assess the incidence of cesarean section based on the Robson classification system within a tertiary care environment. It will aid in determining the most contributing groups, enhance clinical decision-making, and assist in evidence-based strategies to minimize the unnecessary cesarean births and guarantee maternal and fetal safety.

Objective

To establish frequency of c-section as per Robson classification system among the pregnant females.

METHODOLOGY

The study was a cross-sectional descriptive study carried out in the Department of Gynecology, Allied-II (DHQ) Hospital Faisalabad during June 2025 and November 2025. The WHO sample size calculator was used to calculate a total sample size of 905 pregnant women with a 95% confidence level and a margin of error of 0.835% level. The subjects were chosen using non-probability consecutive sampling. All the eligible pregnant women were classified into ten Robson groups according to obstetric factors such as parity, previous cesarean section, gestational age, fetal presentation, number of fetus, and onset of labor. The mode of delivery (cesarean section or vaginal delivery) was the main outcome variable, and the frequency of CS was computed in each Robson group.

Inclusion criteria

Any pregnant women who come to delivery and who are categorized under Robson system. Women whose gestational age is 24-40 weeks (according to the latest menstrual or early ultrasound). These were both nulliparous and multiparous women, primigravida and women with previous pregnancies, Cases with cephalic or breech presentation, singleton pregnancy and multiple pregnancy and any fetal lie (longitudinal, oblique or transverse) were included.

Exclusion criteria

Women that had uterine rupture laparotomy and those who delivered prior to viability were excluded.

Data collection procedure

Data collection was started after receiving permission of the Institutional Ethical Review Committee and CPSP. All the participants had informed written consent in the form of a letter after being informed of the goals of the study and confidentiality. Gynecology department patients were recruited as eligible and evaluated using the detailed history and clinical examination as well as reviewing the medical records. Standardized criteria were used to identify each participant under one of the ten Robson groups. Patients were tracked until delivery and mode of delivery was noted. The pertinent obstetric variables such as parity, gestational age, fetal presentation, number of fetuses, and onset of labor were recorded in a structured proforma. Any data collected were thoroughly checked to determine the completeness and accuracy of the data before analysis.

Data analysis

The data were keyed in, and analyzed in SPSS version 25. Mean and standard deviation were used to summarize the quantitative variables like maternal age, gestational age, and number of previous pregnancies. Categorical variables such as parity, Robson group classification, fetal presentation, fetuses number, onset of labor and cesarean section were expressed as frequencies and percentages. Chi-square test was used to compare the frequency of cesarean section between various Robson groups. Stratification was used to control the effect modifiers which included maternal age, parity, prior cesarean section, gestational age, fetal presentation and labor onset. To determine the effect of their influence on the rates of CS, post-stratification chi-square testing was done. The p-value of 0.05 or below was deemed to be statistically significant.

RESULTS

The study involved 905 pregnant women in order to come up with the frequency of cesarean section based on the Robson Ten Group Classification System. The rate of cesarean section was on the whole higher than the recommended 10-15 by WHO. They were divided into ten Robson groups depending on obstetric features such as parity, gestational age, fetal presentation, onset of labor and prior cesarean section.

Distribution of Study Population by Classification of Robson.

Robson Group	Obstetric Characteristics	Contribution to Total CS (%)
Group I	Nulliparous, term, singleton, cephalic, spontaneous labor	12.4%
Group II	Nulliparous, term, induced / pre-labor CS	18.7%
Group III	Multiparous, no scar, spontaneous labor	6.3%
Group IV	Multiparous, no scar, induced / pre-labor CS	7.1%
Group V	Previous CS, singleton, cephalic, term	**31.8%**
Group VI	Nulliparous, breech	4.2%
Group VII	Multiparous, breech	3.6%
Group VIII	Multiple pregnancy	5.4%
Group IX	Transverse/oblique lie	2.9%
Group X	Preterm singleton, cephalic	7.6%

The best contribution to CS was in Group V (31.8) with Group II (18.7) and Group I (12.4) coming in second and third respectively.

Total Cesarean Section Rate

Outcome	Frequency (n)	Percentage (%)
Cesarean Section	412	45.5%
Vaginal Delivery	493	54.5%
Total	**905**	**100%**

Overall CS rate = 45.5%

Relationship between Obstetric Factors and Cesarean Section.

Risk Factor	CS Frequency (%)	p-value
Previous Cesarean Section	78.2%	≤ 0.001
Fetal Malpresentation (breech/transverse)	69.5%	≤ 0.001
Induced Labor	52.3%	0.012
Spontaneous Labor	38.6%	Reference
Multiparity without scar	29.4%	≤ 0.001

Interpretation

The outcomes of this research show that the cesarean section incidence is still high at 45.5 and this is significantly high as compared to the recommended level of the WHO. Robson Group V (previously cesarean section) was the highest contributor of the total CS burden with almost a third of all cesarean section births. This brings out the focus of repeat cesarean section being the most significant factor behind the trend.

Groups II and I (both induced and spontaneous labor, nulliparous women) were also significant, which means that primary cesarean section is rather high. On the contrary, multiparous females who did not have a uterine scar in the past experienced comparatively lower rates of CS indicating that vaginal delivery is very possible in such group of people.

There was a statistically significant correlation between cesarean section and the major obstetric variables such as a previous cesarean section, fetal malpresentation and induction of labor ($p \leq 0.05$). These results can be compared to

the findings of other internationally published materials indexed in PubMed and SCIE journals that consistently include Robson Group V as the primary factor in the increase in the rates of cesarean sections worldwide.

DISCUSSION

The results of the current study prove that the rate of cesarean sections (CS) increases at an alarming rate, which is similar to the global and regional trends provided in the modern literature and whose increase is not always accompanied by a corresponding beneficial change in either maternal or neonatal outcomes.[1,2,9]

Robson Group V became the leading factor in the total CS rate, highlighting the effects of cesarean births on repeat births. This is in line with the findings of Bibi et al., who have noted that a history of previous cesarean section is a significant predictor of repeat CS, which can be significantly decreased with strategies targeting the reduction of unnecessary primary cesarean sections.[6]

Similar results have been reported by Khan et al., and Tontus et al., who have indicated that even small decreases in primary CS among low-risk women may make a significant impact on the overall rates of cesarean section at the population level.[4,5,11,18]

The growing role of Robson Groups I and II in the current study is an indication of an emerging trend of primary cesarean section among nulliparous women. Some of the possible contributing factors are high rates of labor induction, liberal interpretation of non-reassuring patterns of fetal heart rate, longer labor diagnosis, and elective cesarean delivery. These are in line with Angolile et al. who found a worldwide tendency toward increased medical intervention in the delivery process, with little or no improvement in the outcomes.[2] These results are consistent with the findings in several countries that have utilized the Robson classification system.[7,11]

The nulliparous women have been consistently found to be a priority group to reduce the rates of cesarean sections.[9,12,18]. The inappropriate induction of labour and the lack of compliance with evidence based labour progression guidelines have been strongly linked to high rates of cesarean sections in this group.[10,11,18]. Enhancement of compliance with standardised labour management procedures

Conversely, the comparatively lower CS rates in multiparous women who did not have uterine scars before confirm that vaginal delivery is a safe and viable choice in this population. International evidence on high rates of successful vaginal birth in multiparous women appropriately managed supports this finding and could play a significant role in managing overall rates of cesarean section.[14,15,17]

In general, the Robson Ten Group Classification System came out as a useful audit and monitoring tool in the current study. The Robson classification, as its name implies, offers a solid system of tracking trends across time and examining targeted interventions that can help maximize cesarean section rates without compromising maternal and neonatal health, as has been previously demonstrated.[3,11] Consistent with the findings of earlier studies, the Robson classification offers a well-structured framework to monitor trends over time and conduct comparison across institutions and regions to implement evidence-based strategies.[3,11]

CONCLUSION

This paper will show that the rate of cesarean sections is above the desired levels with Robson Group V being the key player. The results highlight the importance of minimizing primary cesarean sections, especially in women who have never delivered a child, to avoid a series of repeat cesareans in subsequent births. The Robson classification system is a useful and practical instrument to track and audit CS rates, as it helps healthcare providers to single out high-risk groups and apply specific strategies.

The emphasis should be put on promoting the use of evidence-based clinical decision-making, promoting vaginal birth after cesarean (VBAC) when it is adequate, and reducing the number of unnecessary interventions. The enhanced patient counseling and following of the uniform labor management policies can also contribute to the growth of the CS trend. Research in the future ought to investigate the intervention-oriented methods of maximizing the delivery outcomes without jeopardizing the maternal and neonatal safety.

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