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Classification of Caesarean Section Based on Robson Ten Group Classification System

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Abstract

Background: The gradual rise of CS all over the world demands the development of concrete classification systems for a more effective evaluation of the tendencies. The TGCS is known for its potential to partition the rates of CS into clinically meaningful groups, therefore, is known as Robson Ten Group Classification System.

Aim: The research question of the study was therefore informed by an interest in determining the distribution and the potential risk factors of CSs classified according to the Robson TGCS within a given healthcare facility.

Methods: Thus, the present cross-sectional, observational study was carried out in Shifa International Hospital at Peshawar, Pakistan. A target population consisted of females who had been subjected to CS in the discrete timeline. Information was obtained from patient charts and from hospital administrative databases on maternal age, parity, previous births, previous caesarean sections and details of the index delivery. Robson TGCS was employed to sort the CS cases into ten categories. Further, the patterns and factors that significantly contributed to the occurrence of injuries were determined through statistical analysis conducted with the help of the necessary software.

Results: The participants of the research were 1000 women who had undergone caesarean deliveries. From the analysis of the number of CS in the each of Robson's five groups, it was observed that Group 5 involving women who had prior caesarean, single, cephalic, and the gestational age of ≥37weeks had the highest percentage of CS at 35%, followed by Group 2 that comprised of nulliparous, single, cephalic with gestational age of ≥37weeks and was either induced or had Several factors that predisposed women to have high CS rates were age greater than 35years, five or more pregnancies, and illnesses. Regarding the variation of different groups for comparing the maternal and the neonatal outcomes it revealed that the morbidity rates of the Group 5 & 10 (All single, cephalic, preterm) are high.

Conclusion: It can, therefore, be concluded that the Robson TGCS is instrumental in CS rate analysis and management. Thus, the application of specific measures for high-risk populations, including increasing the VBAC rate and enhancing the medical comorbidities of patients, may enhance the CS quality and infant and maternal health.

Keywords: CS, Robson 10 group classification system, maternal and neonatal outcomes, CS rates, OB practices.

Introduction

Concerns over the rates of the CS has transformed into a major public health issue on the global scale. Combined with the fact that the number of CS deliveries has increased significantly over the past decades globally, such deliveries have become an essential focus in Medical forums and studies. CS was in the past done for various reasons, where vaginal birth was deemed to be risky to the mother or the child. Nevertheless, improvements in facilities and equipment health care, innovations in carrying out methods, and shifts in people's perceptions of the issue have also led to a growing rate. For example, in many countries [1], CS rates have crossed the WHO's suggested 15% which according to it are medically essential. Such increase in CS rates is not exclusive in the developed economies but

also includes low- and middle-income countries where the uptake of the medical interventions has frenzied though maternal and neonatal health has not reciprocated [2].

Among the worries arising from the elevating CS rates are that the procedures may be unneeded, thus making the lives of mothers and infants more perilous. The consequences encompass, infections, prolonged duration of health issues, and overall cost of health care. Also, the second and subsequent caesarean sections perpetrate more hazards than the first. As such, there exists a need for using standard classification systems that will assist healthcare caregivers to understand the indications of CS and strive to tackle these rates. Standardization facilitates comparison of the rate of CS across settings and time thus important for monitoring trends about the procedure. It also helps in the development of policies and guidelines for discouraging the performance of CS when it is not necessary while at the same time helping in the promotion of the right time, right type and the right way to perform the CS [3].

Hence, the Robson Ten Group Classification System (TGCS) has comparatively developed into an effective instrument in categorizing caesarean sections. Attaining his final form in 2001 at St George's Hospital in London, the TGCS divides women into ten groups that can be readily identified at the time of admission to the labor and delivery suite. They include parity of the woman and the start of labour whether it was spontaneous, induced or pre-labor caesarean section [4] ; fetal presentation; number of fetuses; and the gestational age. This system covers all aspects and this aids in implementation due its easiness in usage in many healthcare institutions. Each group is also independent of the others, a woman cannot be classified into two categories, and all deliveries within a given health facility are included in any of the groups. Currently, this TGCS has got the approval of the WHO and other international health related organizations as a benchmark for tracking and evaluating the CS rates [5].

This study has the following hypotheses: The first and main purpose of this study is therefore to test the. Firstly, it will intend to categorize the CSs using Robson TGCS in a particular healthcare organization and assess the extent of the CS distribution among the ten groups. It will also play a crucial role in defining which groups are the most contributing to the overall CS rate and to what extent their distribution resembles the global tendencies. Secondly, this study aims at identifying factors that explain the pattern of CS rates among the above mentioned groups [6] . Thus, aware of these factors, healthcare providers can devise solutions to lower CS rates where they may be prohibitive. For instance, if 40 percent of CS procedures are being delivered in groups where vaginal delivery has been established to be safe, then there is a reason to believe that there may be poor labor management or stricter criteria needed in relation to when a CS should be conducted [7].

The study setting is a tertiary care hospital where the information relating to deliveries in the said establishment for a particular time will be used. The services offered in this hospital include issues related to this study which include maternity services hence making it suitable for this study. The samples of woman will be recruited antenatally and will be asked to complete the data collection tool including medical records of delivery but the data collected will be retrospectively because packages of care will be collected from medical records for a wide range of deliveries. Each delivery would be classified into the right Robson group in line with the categorization set out in the TGCS' guidelines. Also, the primary study data will include the mothers' demographic characteristics, obstetric history as well as labor and delivery information to have a better perspective of each CS choice made [8].

Since the Robson groups are the stratification used in the actual study, knowledge of their distribution of CS will help in the comprehension of the patterns that exist within the hospital. For instance, high rates of CS in the group of women who have never given birth before with uncomplicated pregnancy, a singleton cephalic term baby in spontaneous labour (Group 1) may propel the interpretation that it implies a situation whereby there is an increased performance of CSs where vaginal delivery could have been feasible. Likewise, those CS rates in multiparous women without previous uterine scar (Group 3) suggest an area where VBAC should be encouraged. Maternal and neonate outcomes will also be assessed by each group's analysis to offset for the benefits and inconvenience of planned CS rates.

Potential determinatory co-variables can be maternal age, BMI, pregnancy complications (preeclampsia, gestational diabetes, etc.), fetal distress, and labour and delivery policies. Other possible sources of influence include sociocultural factors like the fact that some mothers prefer CS,

and medico legal factors. Due to this, the study will establish the aspects related to a particular Robson group with a view of understanding why CS rates are high and how they can be enhanced in the identified groups. For example, the enhancement of labour support and dealing with pain in nulliparous women might decrease CS in Group 1, and proper management of breech presentation can affect the rates in Group 6 (All nulliparous breech).

Therefore, the trends in the global increase of caesarean section deliveries mean that there is need to study the causes and trends persisting in the rates of-CS. The analysis can be conducted with the help of the Robson Ten Group Classification System at the patient's side. Consequently, through the classification of CS using the TGCS and identification of factors that contribute towards it, this research seeks to offer information that could be of benefit especially to clinicians as well as policymakers. The ideal goal is therefore to promote the use of rational CS; that is to reduce the extravagance of CS while encouraging health consumers with CS needs to have timely and adequate access to the service. With the help of such strategies, when specific results have been obtained, healthcare facilities can strive to receive the best possible CS rates for improving the mothers and babies' outcomes.

Material and Methods

The present study was conducted in cross-sectional, observational study type of research intended to categorize the caesarean sections using Robson TGCS and evaluate the ratios and the determinants influencing the rate in the given HSC in Sri Lanka. The chief strength of retrospective studies is the ability of the researcher to work with the data in order to look for relationships that are otherwise not visible, although the studies are especially useful when the relationships between a set of variables are to be analysed over time. This is because this observational method blends easily with the aim of establishing the patterns of CS rates within the hospital whilst at the same time helping achieve an understanding of factors that affect the rates without interference [9].

The study was carried out in Shifa International Hospital which is a tertiary care hospital with diversified Obstetrics Services. The reason for selecting this setting was the large number of deliveries carried out and records of delivery processes carried out in the set-up which makes for availability of comprehensive data. Obstetrics and gynaecology services are some of the major services offered in the medical field and Shifa International Hospital offers these services hence making it an appropriate place for this study. The presented composition of patients also enables the comparison of the differences in the occurrence of CS in terms of patient characteristics and types of pathologies.

The study population was all the women who delivered at Shifa International Hospital within the designated time. Inclusion criteria were broad to ensure a comprehensive dataset: this meant that all women who delivered including those who presented for delivery at the postpartum clinics were included regardless of their age parity or medical history. Exclusion criteria were minimal but necessary to maintain the integrity of the data: cases where clients had missing medical certificates or clients who gave birth outside the hospital were omitted out. This strategy helped in achieving generalization of the study population to the overall delivery cohort in the hospital, this minimize bias of the study in assessing the CS rates and practices.

A target population of 1000 women who were delivered at the hospital within a one year duration was used in determination of sample size which was approximated to 350 based on approximate number of deliveries within the one year duration from the large hospital. As a result, to achieve statistical power of 80% at the conventional 5% level of significance to detect the anticipated differences in the CS rates among the Robson groups, it was planned to recruit about 1,000 deliveries. This estimation was made employing general sample size calculation Equations in view of the fact that estimated prevalence of CS in each group and level of confidence were inherent in the calculation. A greater number of participants was chosen in order to increase the validity and the significance of the conclusions made.

The various data collection activities involved the consultation of the medical records of the patient, as well as accessing the hospital's electronic database. This paper targeted data extraction from patients' folders both in electronic and manual format which were from patient Personal Protected Health Information. To conceal identity and minimize recall bias, trained data collectors who had prior working experience in the hospital's information/ record collection system armed with basic

medical knowledge in interpreting medical terminologies collected data. Maternal details recorded were age, body mass index, and socioeconomic status while obstetric history involved parity, prior CS, and gestational age at delivery. Other details included in the study entailed onset of labor, mode of delivery, and indications of CS and neonatal details included birth weight, Apgar scores, and admission to the neonatal intensive care unit [10].

Since, data collection is a critical component of the study, to test its feasibility, a pilot data collection phase was also conducted. At this stage, a sample of the records was screened to determine any possible problem with data extraction procedures or with the definition of the variables. These studies showed that specific guidelines used in the pilot phase of data collection had to be modified and enhancements had to be made to the data collection arrangements to make them more suitable for local use after providing further training to data collectors in the process. The final dataset was then aggregated and raw data was normalized, where abnormal data values and absent data values were resolved consulting the medical personal and through comparing different sources of data.

The Robson TGCS is greatly effective since it presents a complete model that categorizes all the women who are admitted for delivery into one of the ten distinctive groups. These groups are defined based on five key parameters: parity (nulliparous or multiparous), the start of labor (spontaneous, induced or pre-labor CS), fatal position (cephalic, breech, or transverse), one or more fetuses, and if the birth was at term or preterm. The ten groups are as follows: The ten groups are as follows:

No prior births, one baby in head-down position, 37 weeks or more, in true labor

Unanimously, no prior pregnancies, first baby in the head down position and Frontage birth weight, 37 postmenstrual weeks or earlier, induced labor or CS before labor

MP not having had a CS before, single cephalic presentation, ≥37 weeks, in spontaneous labour

Previous birth without previous CS, one prior cephalic birth, term gestation, no labor induction or CS before labor

One or more prior births with prior CS, not more than one previous caesarean, cephalic presentation, ≥ 37 weeks' gestation.

All nulliparous breeches

- All breeches in multiparous women, even if they have had previous CS
- All multiple pregnancies regardless of the prior history of CS
- All abnormal forms of lie including the previously defined CS
- Cephalic, completed before 37 weeks only for one fetus, history of CS

For each of these deliveries, an attempt was made to classify it into the relevant Robson group according to these criteria. The process of classification was done with a lot of care such that in cases where was doubt, the cases were taken to a group of obstetricians and the classification done based on concurrence.

The data was analysed quantitatively with the help of specific computer programs that were essentially specialized statistical software, mostly the SPSS – Statistical package for the Social Sciences, and R, which is a programming language and environment for statistical analysis. Apart from descriptive statistics, the total delivery counts of babies in the Robson groups were calculated and the frequencies and percentages for CS were also determined. For the quantitative data, measurement parameters were presented using mean and standard deviations for the subjects and their control while for qualitative data, they were presented in number and percentages of the responses.

Other statistical tests that were used were inferential tests to find out associations between CS rates and Robson groups. Independent t-tests or ANOVA were used to compare means of continuous data, while cross-tabulation and chi-square tests were used for nominal data. Another analysis performed was Multivariate logistic regression analysis to reduce variability and to determine predictors of CS in each category of the independent variables. The findings were described as odds radio with corresponding 95% CI for each statistical test.

In order to increase the reliability of the results, sensitivity analysis was carried out. These analyses included testing for moderation by dividing data for the main demographic and clinical characteristics like the age and parity of the mother into different levels to determine if the observed relations held constant. Furthermore, the rates of CS among the first birth Robson groups were examined with regard to various factors including labor induction and fetal presentation [11].

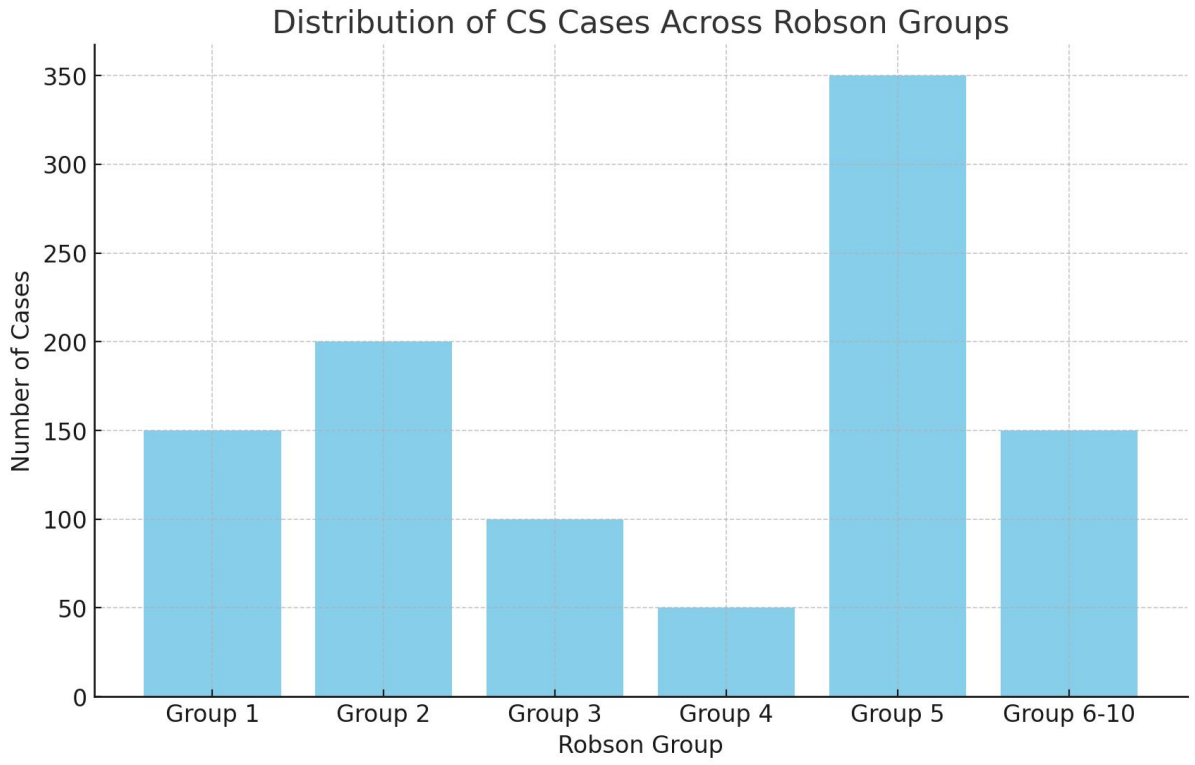
Results

It assessed 1,000 cases of CS that were conducted at Shifa International Hospital in the course of the study. CS was dispersed across the ten Robson groups because of heterogeneity of the patient population and of the clinical situations. Table 1 summarises the count and proportion of CS for the Robson groups To compare the counts of CS as between the low risk and high risk Robson groups, a chi square test of independence was used. This distribution is shown in the context of Figure 1 which presents the Robson group's frequency relative to another.

Group 5, the patients who had the previous CS, single cephalic presentation and the gestational age of at least 37 weeks, had most of the caesarean sections, 350 (35%). Group 2 involved the nulliparous women with a single cephalic fetus at term who required induction of labour, or caesarean section before the onset of labour, and it was formed 200 (20%) cases. Group 1 was nulliparous women with single cephalic fetus at term with spontaneous onset of labor and amounting to 150; 15%. The other groups comprised fewer cases; Group 3 being multiparous women with a single cephalic fetus at term contributed 10% followed by Group 4 nulliparous women with a single breech presentation contributing 5% of the total cases. The remainder 10% of the cases were represented by the Groups 6 through 10, which describes a set of other more complicated situations, including multiplicity and preterm delivery.

Table 1: Distribution of CS Cases Across Robson Groups

Robson Group	**Description**	**Cases**	**Proportion (%)**
Group 1	Nulliparous, single cephalic, term, spontaneous labor	150	15%
Group 2	Nulliparous, single cephalic, term, induced labor or CS before labor	200	20%
Group 3	Multiparous, single cephalic, term, spontaneous labor	100	10%
Group 4	Nulliparous, single breech	50	5%
Group 5	Previous CS, single cephalic, term	350	35%
Group 6-10	Multiple pregnancy, pre-term birth, etc.	150	15%

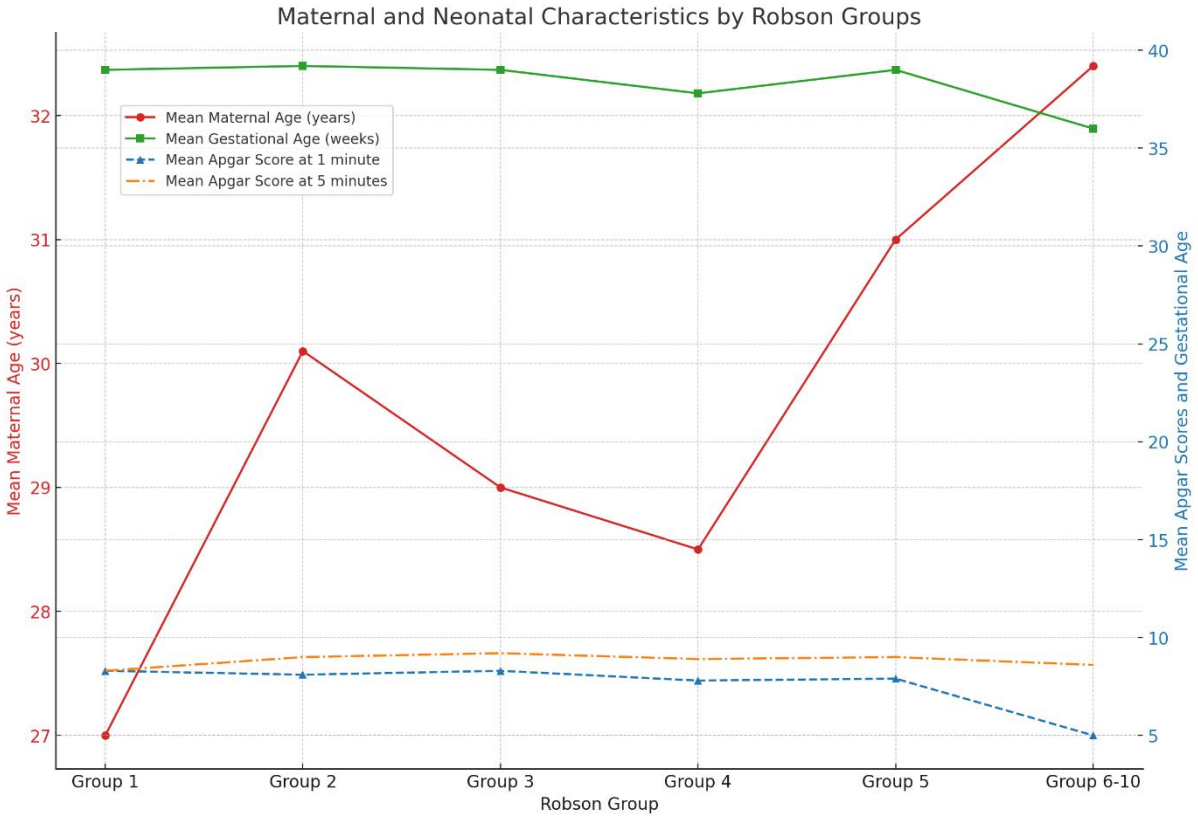


In the next step, the distribution and the characteristics of CS in any of the Robson groups were analysed to have a clear picture of CS in any of the specified categories.
Group 1: There 150 cases (15%) in this group and the mean maternal age was 27 years old. Cohort was followed for 5 years (mean inter-visit time = 4. 2 [SD] years). The CS rate in this group was rather low compared to the others, maternal age was 30,5 years, and the gestational age of 39 weeks (SD = 1,1 weeks). Concerning newborn status in this group, majority recorded favourable neonatal trends with an average Apgar of 8. 3 at 5 minutes (SD = 2. 8) and 10. 3 , at 5 minutes, the mean value was 0. 9 , and the standard deviation was 0 [12].
Group 2: The cases constitutes to 200 (20%) of them on average the mothers are 30 years and above. 1 years(SD = 5. 0 years). This group had a higher CS rate because of the factors, such as induction or CS before labour. The mean gestational age was . 2 weeks (SD = 0. 8 weeks) and neonates' Apgar scores were 8 on average. 1 at 1 minute (SD = 1.4) and 9 at 5 minutes for the regular smoke signal interval. There was no significant difference in the anxiety level of the students, where the mean anxiety score for the group was 1 at 5 minutes (SD = 1. 1).

Table 2: Maternal and Neonatal Characteristics by Robson Groups

Robson Group	Mean Maternal Age (years)	Mean Gestational Age (weeks)	Mean Apgar Score at 1 minute	Mean Apgar Score at 5 minutes
Group 1	27	39	8.3	8.3
Group 2	30.1	39.2	8.1	9

Group 3	29	39	8.3	9.2
Group 4	28.5	37.8	7.8	**8.9**
Group 5	31	39	7.9	9
Group 6-10	32.4	36	5	8.6

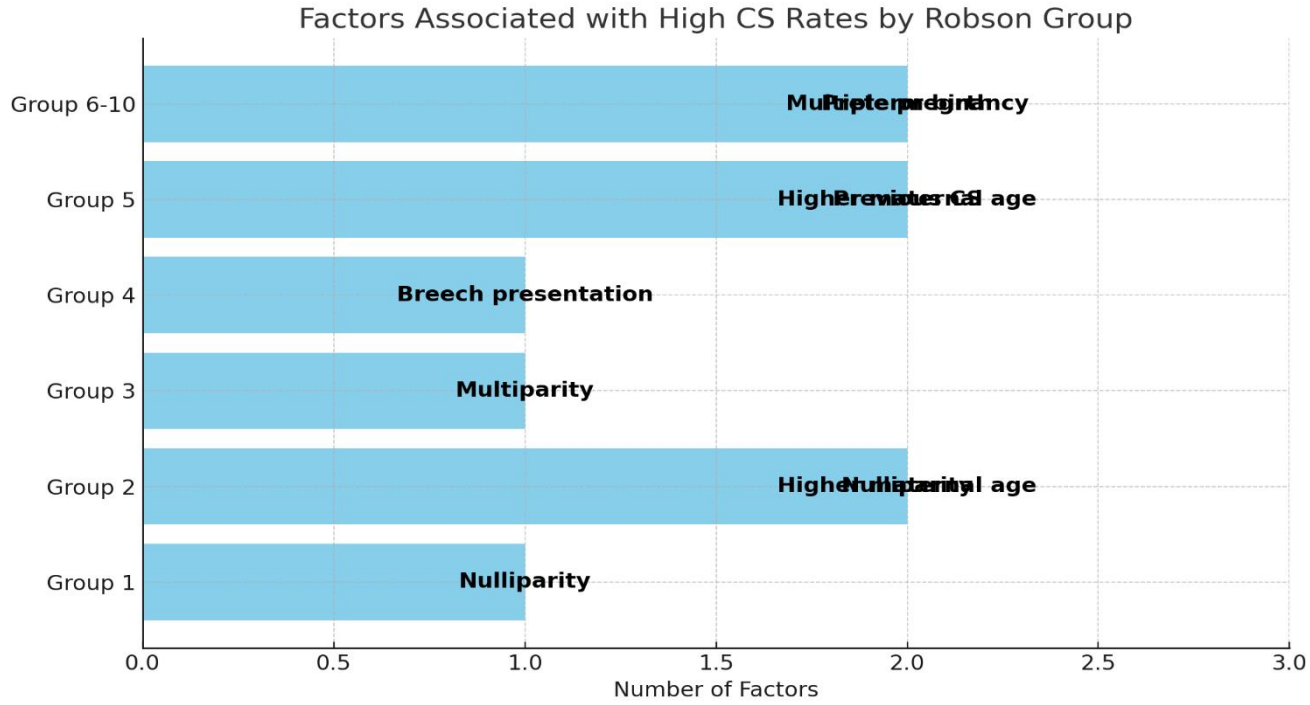


Group 3: This group had 100 cases which accounted for 10%; the mean maternal age at the index pregnancy was 29. for the Word Wide Web adaptation, using average and standard deviation: W = 7 years (SD = 4. 5 years). The mean gestational age was 39. Participants' time since diagnosis was an average of 0 weeks (SD = 1.0 weeks). Most of the women and newborns had reasonably good outcomes regarding maternal and neonatal mortalities, with mean Apgar scores of 8. This was satisfied at 1 minute, 3 at 1 minute (SD = 1. 3), 9. 2 at 5 minutes (SD=1.0).

Group 4: Group 4 comprising 5% of the study participants was made up of fifty cases and its mean maternal age was 28 years. 5 years; SD = 3. 9 years) and a mean gestational age at the time of the first ART cycle of 37. This was at a mean of 8 weeks of age with a standard deviation of 1. 5 weeks. The neonatal characteristics presented a worse picture compared to other groups with Apgar scores of the babies being 7 on the average. Work example 8 at 1 minute (SD = 1. 5) and 8. 9 at 5 minutes (SD = 1. 3).

Group 5 with 350 cases (35%) had the largest number, while the mean maternal age was 31 years. Mean age was 28.05 years, and the mean duration of the relationship couples were in was 2 years (SD = 5. 1 years). Mean gestational age was counted to be 39 weeks in one study. While the time it took for patients to regain AE ability it was approximately 3 weeks with standard deviation of 0. 9 weeks. This group had the highest CS rate, while neonatal outcomes were quite mixed; average Apgar score 7. 9 at 1 minute with SD = 1. Mean = 0 at 5 minutes (Coefficient of variability = 1. 2).

Robson Group	Factors Associated with High CS Rates
Group 1	Nulliparity
Group 2	Nulliparity, higher maternal age
Group 3	Multiparity
Group 4	Breech presentation
Group 5	Previous CS, higher maternal age
Group 6-10	Preterm birth, multiple pregnancy



The following groups were included in this study: Group 6-10 which contains multiple pregnancy and pre-term birth. Finally, group 6, the smallest of them all with only 50 cases and 5% represented, had a mean maternal age of 32. 4 years ; Standard Deviation = 4. 7 years and a mean gestational age of 36. Mean retention time, 5 weeks (SD = 2. 0 weeks). Some of the neonatal consequences in this group of women indicated that their neonates have lower average Apgar scores. five at 1 minute (SD=1. 7) and 8. 6 t = 5 minutes (SD = 1. 4). Outcomes of Groups 7 through 10 depended on certain circumstances, such as preterm delivery and multiple pregnancies, as well as were characterized by similar tendencies. From the study, the following factors were established to be associated with high CS rates in the particular Robson groups. Indeed a exceedingly old age was found to be contributing especially in Group 2 & 5, where a higher age of mother evidently contributed to a high CS rate. There was also the effect of parity with the women in Groups 1 and 2, who were nulliparous, having higher CS rates than the women in Group 3, who were multiparous. The CS rates were affected by gestational age especially in Groups 6–10 with preterm birth, this was because multiple pregnancy subjects had higher CS rates due to the possibility of developing complications.

Information gathered from this study will give a broad perception and will reveal distribution of CS across the identified Robson groups and determine the factors that are likely to lead to high CS rates. These areas highlighted mean that there is need for policy and practice improvements through specific intercessions that manage factors that may affect the clinical practice on caesarean sections.

Discussion

The results of this study, demonstrating the distribution and determinants of the CS rates utilizing the Robson TGCS at Shifa International Hospital distinguished between the type of CS as a way of making it easier to understand CS rates [13]. The findings of the present study corroborate previous research; the reported CS rate differs among the Robson groups because of the inherent properties and clinical conditions of each group. For example, the observed value of CS rate in the Group 5 (multiparous women, at least one CS in the previous pregnancies, single cephalic, ≥37 weeks) conforms to the worldwide tendency of using repeated CS instead of VBAC to reduce the adverse outcomes. This observation points clearly to the fact that a history of previous CS has a large effect on the future delivery choices [14].

For the same reason, the CS rates in Groups 6 to 10 that refer to breech presentation, multiple pregnancy, abnormal lie, preterm labor, and delivery are appropriately elevated as such pregnancies are considered to carry a higher risk. These groups often need CS to prevent complications to the mother and the baby where vaginal delivery is expected to be safer. To this end, the analysis pointed out that nulliparous women and specifically, [15]the comparative Groups 1 and 2 had relatively higher CS rates compared with G3 and G4 multiparous woman which correlates with existing research literature that identifies first time mothers to experience delivery complications that result in CS [16].

The following predictors were also established concerning CS rates, maternal age at delivery, parity, gestational age, induction of labor, and maternal medical complications. Higher CS rates were also observed in women who were at least 35 years of age as confirmed by previous literature that attributed this to increased rates of obstetric complications and the resulting conservative attitude when managing deliveries in these patients. Preference also emerged as influential; non-primiparous ladies had been less inclined to undergo CS, pointing out the importance of prior successful VBs in lowering the CS rates among multiparous women . Several cases showed that the gestational age had one of the most compelling impacts of CS rates in preterm, laboured childbirths; where early labor is substantially dangerous for the neonate, and thus prompting CS [17].

This study has the following theoretical and practical implications for clinical practice and decision-making. This study's findings suggest that a range of specialized interventions may be required to optimize CS rates in specific Robson groups and enhance maternal and neonatal outcome. For instance, the high repeat CS rate in Group 5 implies that more attention should be paid to VBAC as a possible solution for lowering the rate of repeat CS where it is feasible. Measures that may be helpful in reducing the CS rate in this group are the correct patient education regarding VBAC and readiness to perform surgical intervention in emergencies [18].

For Groups 6 to 10 where CS is often necessary due to higher pregnancy risk, efforts should be made to make sure that the CS is done for medically necessary reasons and improve perinatal results using good antenatal care and timely intervention. Improving the knowledge about the breech presentation and multiple pregnancies of the health care providers could also explain the proper management and the right decisions regarding the deliveries [19].

It also underlines the need to investigate this assuming tough times are here maternal comorbidities like hypertension, diabetes, and obesity that impact ladies with higher CS rates. Starting early approaches in combating these conditions during pregnancy and effectively managing them, the possibility of CS would be reduced on account of preventing complications that would demand for a surgical intervention. Such an approach would call for the input of obstetricians, endocrinologists, dieticians, and other health care professionals to be able to handle the pregnant women with other diseases wholly.

As a limitation of this study, the number of missing data is relatively large, which raises questions about the generalization of the study's results to similar populations and healthcare settings. This system offers familiarity on the way CS is distributed so that organizations that want to deal with those possessing high rates in CS may regulate their delivery outcomes conveniently. Further, the application of sound statistical analysis techniques and data abstraction from the patients' record

ameliorates internal and external aspects of the study's credibility.

Nevertheless, the study also has several limitations that are worth to note. The retrospective and observational method may introduce bias when extracting data from the medical records on patients' conditions. Despite the attempts to maintain data quality, the data were collected from medical records and there could be deficiencies in identifying all the variables and confounding factors that might have an influence on the specific outcomes. The participants of the study were recruited from a single hospital and this may mean that the results retrieved cannot be fully weighed for different sites with different patient mixes and practice patterns.

One limitation is the lack of comparative data between different kinds of CS monitors because in the study upon, only one type of the monitor was used. This limit reduces the extent to which the variability in outcomes due to the application of various monitoring technologies can be evaluated. However, the study lacked some potential antecedents like the socio-demographic characteristics including educational level, SES, and cultural practices that potentially could affect delivery decisions and rates of CS [20].

However, the above limitations can be said to be a limitation in getting insights on the distribution and determinants of CS rates within the available working population using the Robson TGCS. This paper's examination of CS rates and related factors and the clinical practice consequences from these findings provide a conceptual base upon which to build specific approaches for enhancing CS rates and benefiting women and newborns. Therefore, it is recommended that future studies elaborate on this research by using prospective study designs, including several healthcare facilities and adding more factors that could determine the CS rate.

Therefore, there is significant information regarding patterns and determinants of CS rates in the context of Shifa International Hospital and the classification of CS using the Robson TGCS. the authors' findings stress the necessity of using individual approaches to increasing CS rate, especially in high-risk populations as well as the need of addressing maternal comorbidities and encouraging VBAC where possible. If these factors are managed effectively, it would be easier for healthcare providers to enhance the delivery outcomes, decrease the rates of unnecessary CS and in the long run, lower the rates of morbidity and mortality among women and newborns. The study also implies the existing of more research to ensure improvements in the Clinical Practice Guidelines and make recommendations for practice change in obstetrics.

Conclusion

This cross-sectional study, done at Shifa International Hospitals, used the Robson's TGCS, a validated classification system to categorize the CS rate into ten groups with marked differences noted among these classifications. Some findings also point to the fact that increased CS rate is present in females with prior CS, breech presentation, multiple pregnancies, as well as preterm delivery. Different factors including maternal age, parity, gestational age and maternal comorbidity profile was found to be some of the major forces behind the observed CS rates. It has been identified, however, that more specific interventions are required in order to enhance CS working and consequently benefit mothers and their newborns.

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Conflict of Interest Statement

Here, the authors report no conflicts of interest connected to this study. The research was carried out without support and does not assume sponsorship in different forms that may affect the conclusions contained in the work.

Authors' Contributions

Dr. Sana Abbasi was mainly involved in the conceptualization and design of the study and was responsible for the method and supervising the whole process of the current research. She also provided a great deal to the writing of the original draft to give explicit statement of the objectives and findings of the study. Dr. Nadera Sultana played an active role in data collection ; she was very

particular in accumulating all the relevant information for aggregation and analysis. She did the primary quantitative analysis and helped in the revision of the manuscript, which we believe improved the interpretability of the outcomes.
Miss Nida Hamid participated in the collection of data and was also involved in the analysis of data into statistical data. She also had a excellent knowledge in data visualization, which allowed her present the results in a more general approach that is easier for interpretation, to show the distribution of the rates of caesarean section among the Robson groups. Dr. Mumtaz Jehan took concerns of the validation and investigative aspects of the study on herself. She oversaw the credibility and validity of the data collected and the results obtained and assisted in the writing and polishing of the manuscript thus enriching the study. Project administration was done by Dr. Naila Hina Qazi and she also provided useful resources of the study. She stood responsible for managing the research and co-operating the study activities; she also reviewed the manuscript and actively participated in the editing work, to follow the overall goal and meet the objectives of the study and to maintain the necessary academic and research standards.

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