ANALYSIS OF C-SECTION RATE USING ROBSON 10 GROUP CLASSIFICATION SYSTEM.

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ABSTRACT
BACKGROUND: The rates of Cesarean section C-section have garnered growing attention as a result of their influence on the health outcomes of both mothers and newborns. The Robson 10 Group Classification System provides a structured framework for the classification and comparison of cesarean section rates, taking into account obstetric features and delivery outcomes. **OBJECTIVE:** The objective of this study was to examine the rates of cesarean section C-section in relation to the Robson 10 Group Classification System. **METHODS:** A varied group of pregnant persons was used to gather data pertaining to several characteristics including parity, fetal presentation, and gestational period, commencement of labor, prior cesarean sections, Apgar scores, newborn weight, and mother age. The use of the Robson 10 Group Classification System included the categorization of deliveries into various groups, taking into account obstetric risk factors and delivery outcomes. The distribution of these factors was shown using descriptive statistics.**RESULTS:** The study disclosed notable percentage of deliveries that fell within distinct Robson Group groupings. The study revealed significant observations, such as a substantial percentage of nulliparous women opting for induced labor or pre-labor C-sections 12.7%, as well as a predominance of singleton pregnancies 87.3%. A total of 79.2% of newborns had Apgar scores over 7. The majority of pregnancies, accounting for 74.1% of cases, typically spanned a duration of 37 to 40 weeks. Additionally, it was observed that cesarean section rates prior to the onset of labor were recorded at 50%.**CONCLUSION:** The examination of maternal and obstetric variables in relation to the rates of cesarean section C-section offers significant insights into the outcomes of childbirth. This study highlights the need of individualized obstetric treatment in order to maximize health outcomes for both mothers and newborns.
KEYWORDS: C- Setion Rate, Robson 10 Group Classification System, maternal and obstetric characteristics, delivery outcome.

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INTRODUCTION

Over the last several decades, there has been a gradual increase in the rates of Cesarean section C-section procedures globally, which has raised concerns among healthcare professionals, researchers, and policymakers [1]. The growing incidence of cesarean sections has prompted inquiries about its suitability, safety, and possible ramifications for the health of both mothers and newborns [2]. The World Health Organization WHO has issued a recommendation in light of the increasing rates, suggesting that the optimum range for cesarean section C-section procedures should be between 10% and 15% in order to achieve the most favourable results for both mothers and newborns [3], 4. Nevertheless, in several countries, the rate of cesarean sections has exceeded this established threshold, intensifying the need to comprehend the fundamental causes that contribute to these patterns [5, 6].

Caesarean sections, while undeniably beneficial in certain medical circumstances, are linked to both immediate and prolonged hazards for both maternal and neonatal populations [7]. The aforementioned hazards include surgical complications, extended periods of recuperation, possible impacts on breastfeeding, and escalated healthcare expenditures [8]. Moreover, when there is a lack of medical grounds, the prevalence of high rates of cesarean sections may suggest excessive use or

unwarranted treatments, hence prompting questions over the suitability and caliber of maternal healthcare [9].

The Robson 10 Group Classification System, which was created by Michael Robson in 2001, offers a unique methodology for the classification and examination of cesarean section rates [10]. This categorization approach offers vital insights into comprehending the factors contributing to variances in cesarean section rates across diverse demographics and healthcare settings by categorizing all births into 10 separate categories based on obstetric features [11]. The use of this categorization system allows healthcare establishments and policymakers to assess and contrast the rates of cesarean section procedures across various populations, so facilitating a more comprehensive comprehension of the elements that contribute to the frequency of cesarean sections [12].

Numerous research endeavors have been undertaken to examine the increasing prevalence of cesarean section deliveries throughout various demographic groups and healthcare environments 3, [13]. Several studies have been conducted to ascertain the clinical variables that contribute to the heightened occurrence of certain conditions, including advanced maternal age, repeated pregnancies, and fetal malpresentation [3, 14, 15]. Previous research has investigated many non-clinical factors, such as mother preference, healthcare professional behaviors, hospital norms, and the legislative framework surrounding medical practice [16]. The aforementioned research have yielded significant insights on the determinants of cesarean section C-section rates [17]. However, it is important to note that the findings have often shown inconsistencies and have been contingent upon unique contexts, hence posing difficulties in formulating universally applicable conclusions.

Furthermore, prior scholarly investigations have mostly used a univariate methodology, examining each determinant individually, so neglecting the intricate nature and interaction of several variables that contribute to elevated incidence of cesarean sections [17]. In order to mitigate this constraint, our research will use a thorough methodology by including the Robson 10 Group Classification System [18]. By classifying births into distinct and non-overlapping categories according to pertinent obstetric factors, a more comprehensive understanding of the underlying factors contributing to the rising rates of cesarean sections across different demographic subsets may be achieved, enhancing the strength and applicability of our study [19].

Despite the substantial corpus of material pertaining to cesarean section rates, there are still numerous crucial lacunae within this domain that require more investigation and resolution [19]. One primary issue is the absence of uniformity in the implementation of C-section categorization systems, resulting in disparities in reported rates and impeding meaningful comparisons across various areas and nations [20]. The Robson 10 Group Classification System provides a standardized and universally recognized framework, so permitting more significant cross-national comparisons and aiding in the detection of regional and global patterns [21].

Furthermore, a considerable body of existing research has mostly concentrated on high-income nations that possess robust healthcare infrastructures, so possibly neglecting the distinctive obstacles encountered by countries with lower and middle-income levels LMICs [21]. The significance of comprehending the factors contributing to elevated rates of cesarean sections in low- and middle-income countries LMICs is underscored by the fact that a substantial proportion of maternal and newborn mortalities transpire in these regions [22]. The objective of our research is to bridge this existing knowledge gap by integrating data from many locations, including both high-income nations and low- and middle-income countries LMICs, in order to provide a more thorough and all-encompassing examination [22].

In addition, prior studies have often overlooked the examination of the viewpoints and inclinations of pregnant women, healthcare practitioners, and other relevant parties in relation to cesarean sections [23]. Gaining insight into the societal and cultural elements that impact the process of decision-making pertaining to delivery is crucial in order to develop focused interventions aimed at diminishing the occurrence of needless cesarean sections, all while maintaining the safety of both the mother and the newborn [24]. The objective of our research is to integrate qualitative data by means of conducting interviews and surveys, so enhancing the analysis by including the viewpoints of those who are directly engaged in the process.

Overall, this study piece aims to provide a scholarly contribution to the current initiatives in comprehending and tackling the worldwide issue of increasing incidence of cesarean sections. Our objective is to get useful insights into the variables that contribute to the occurrence of C-sections and advocate for evidence-based approaches in obstetric care via the utilization of the Robson 10 Group Classification System. This study aims to promote a healthcare setting that emphasizes the welfare of women and infants, by advocating for the cautious and appropriate use of C-sections to achieve birthing outcomes that are safe and optimum.

Method and Material:

Study Design: The present study used a cross-sectional research design and was carried out at the Women and Children Hospital located in Rajjar, Charsadda. The objective of the study was to examine the prevalence of caesarean section procedures among a cohort of obstetric patients throughout the period spanning from January 2023 to June 2023.

Study Population: The research included all obstetric patients who had a caesarean section during the designated timeframe, yielding a cumulative sample size of 332 individuals. The exclusions included surgical procedures conducted for uterine ruptures and deliveries occurring prior to the 24-week gestation period 18 cases, as well as instances where medical records were unavailable.

Data Collection: Data from the medical records of the individuals involved in the study was collected using a standardized form. The accompanying variables were gathered for the purpose of analysis.

Period of Gestation: The duration of gestation was determined by either the date of the previous

menstrual period or a dating scan, and afterwards classified into three distinct groups: less than 37 weeks, 37 to 40 weeks, and more than 40 weeks.

Labor Onset: The initiation of labor was classified into two categories: spontaneous start or induction, with caesarean sections being conducted prior to the commencement of labor.

Fetal Presentation: The classification of fetal presentation included three categories: cephalic, breech, and transverse.

Number of Fetuses: The patients were categorized into two groups: those with singleton pregnancies and those with multiple pregnancies.

Parity: The patients were categorized into two groups depending on their parity status: primigravida referring to their first pregnancy and multigravida indicating many pregnancies.

History of Previous Caesarean Sections: The patients were further classified into subcategories depending on their history of caesarean sections, namely whether they had no prior caesarean surgery, one prior caesarean section, or several prior caesarean sections.

Birth Weight: The classification of birth weight was divided into three distinct categories: below 2.5 kg, between 2.5 and 4 kg, and over 4 kg.

Apgar Score: The Apgar score at birth was classified into two categories: below 7.5 and over 7.5.

Age of Patient: The age of the patient was classified into three distinct categories: those under the age of 20, individuals between the ages of 20 and 35, and individuals above the age of 35.

Data Analysis:

The data that was gathered was inputted into IBM SPSS Statistics version 20 for the purpose of analysis. The patients were classified into 10 categories using the Robson Classification System, taking into account the aforementioned criteria. The objective of the analysis was to investigate and ascertain the distribution of patients across different categories, as well as evaluate the variables that influence the rates of caesarean sections in the study population.

Ethical Considerations: Prior to initiating the trial, the researchers acquired ethical permission from the appropriate institutional review board. The research procedure was conducted with rigorous adherence to patient confidentiality and data protection protocols.

Limitations: Although attempts were made to ensure a thorough sample, the possibility for selection bias may have been introduced due to the removal of individuals without medical records. Furthermore, it is important to acknowledge that the results of the research may possess limitations in terms of their applicability, since they may only pertain to the particular environment and population who were examined, thus potentially lacking generalizability to other settings.

Results

The table 1 provides an overview of the essential maternal and obstetric features within the research cohort. The study encompasses information pertaining to various factors, namely "Parity" specifically nulliparous and multiparous individuals, "Foetal Presentation" including cephalic, breech, and transverse presentations, "Period of Gestation" categorized as less than 37 weeks, 37-40 weeks, and more than 40 weeks, "Onset of Labor" differentiating between spontaneous onset, induced onset, and Caesarean section prior to the onset of labor, and "Previous Caesarean Section" with subcategories of none, 1, and more than 1 previous C-sections. In the study, it was observed that 58.4% of the female participants had experienced multiple pregnancies, 58.7% had a cephalic presentation of the fetus, and 74.1% had a gestational period lasting between 37 and 40 weeks. The occurrence of spontaneous labor was seen in 33.1% of instances, although 63.9% of women did not have a history of prior cesarean sections. The provided data offers significant insights into the demographic distribution and obstetric patterns seen within the research group.

Table 1: Distribution of Maternal and Obstetric Characteristics in the Study Population

Parameters	Details	Frequency	Percentages
Parity	Nulliparous	138	41.6%
	Multiparous	194	58.4%
Foetal Presentation	Cephalic	195	58.7%
	Breech	81	24.4%
	Transverse	56	16.9%
Period of Gestation	Less than 37 Weeks	44	13.3%
	37-40 Weeks	246	74.1%
	More than 40 Weeks	42	12.7%
Onset of Labor	Spontaneous Labor	110	33.1%
	Induced Labor	56	16.9%
	Caesarean section before labor	166	50%
Previous Caesarean Section	None	212	63.9%
	1	66	19.9%
	More than 1	54	16.3%

The table 2 provides important demographic characteristics of the study population, such as the classification of "Fetuses" into Singleton and Multiple Pregnancy, the categorization of "Apgar Score of Baby" as Less than or Equal to 7 and More than 7, the classification of "Weight of the baby" into Less than 2.5 kg, 2.5 to 4 kg, and More than 4 kg, and the categorization of "Age of patient" as Less than 20 Years, 20-35 Years, and More than 35 Years. One of the key results of the study reveals that the majority of pregnancies, namely 87.3%, were classified as singletons, indicating that they included the development of a single fetus. Conversely, a smaller proportion of pregnancies, accounting for 12.7%, were categorized as multiple pregnancies, indicating the presence of more than one fetus. The majority of infants 79.2% had Apgar scores above 7, while a significant proportion 81% had birth weights ranging from 2.5 to 4 kg. Regarding the age distribution of patients, a significant proportion 57.5% were found to be between the ages of 20 and 35. Conversely, a smaller percentage of patients were below the age of 20 7.8% or over the age of 35 34.6%. The provided data offers a succinct summary of notable attributes observed in the research cohort, including variables such as the number of fetuses, the health status of newborns, the weight at birth, and the age of the patients.

Table 2: Distribution of Key Parameters in the Study Population

Parameters	Details	Frequency	Percentages
Fetuses	Singleton	290	87.3%
	Multiple Pregnancy	42	12.7%
Apgar Score of Baby	Less than or Equal to 7	69	20.8%
	More than 7	263	79.2%
Weight of the baby	Less than 2.5 kg	23	6.9%
	2.5 to 4 Kg	269	81%
	More than 4 Kg	40	12%
Age of patient	Less than 20 Years	26	7.8%
	20-35 Years	191	57.5%
	More than 35 Years	115	34.6%

The table 3 illustrates several Robson Groupings, which are categorized according to obstetric risk factors and delivery outcomes. Each grouping is accompanied by its respective frequency and percentage. The categories include a range of circumstances, including nulliparous women who experience spontaneous labor beyond 37 weeks of gestation, nulliparous women who receive induction or cesarean section prior to the onset of labor after 37 weeks of gestation, and multiparous women with a history of cesarean section who deliver after 37 weeks of gestation. Furthermore, the table includes instances pertaining to breech presentations, multiple pregnancies, aberrant fetal positions, and single cephalic presentations occurring prior to 37 weeks of gestation. This succinct summary offers helpful perspectives on the distribution of these risk variables and their influence on delivery outcomes.

Table 3: Distribution of Robson Grouping in the Study Population

Robson Grouping	Frequency	Percentages
1. Nulliparous, Single cephalic, >37 weeks, in spontaneous labor	23	6.9%
2. Nulliparous, single cephalic, >37 weeks, induced or CS before labor	42	12.7%
3. Multiparous, Excluding previous CS, Single Cephalic, >37 weeks, Spontaneous labor	10	3%
4. Multiparous Excluding previous CS, Single Cephalic, >37 weeks, Induced or CS before labor.	35	10.5%
5. Previous CS, Single Cephalic, > 37 Weeks	67	20.2%
6. Previous CS, Single Cephalic, > 37 Weeks	33	9.9%
7. All multiparous breeches including previous CS	31	9.3%
8. All multiple pregnancies including previous CS	42	12.7%
9. All abnormal lies including previous CS	37	11.1%
10. All single cephalic <37 Weeks	12	3.6%

DISCUSSION
The data presented give a thorough analysis of the key maternal and obstetric characteristics observed in the study sample. The research rigorously investigates several aspects like parity, fetal appearance, gestational duration, labor initiation, and prior cesarean deliveries. The present study provides a complete analysis that offers useful

insights into the demographic distribution and obstetric trends seen within the cohort.

A noteworthy feature of the research group is the considerable percentage of multiparous people 58.4%, perhaps indicating geographical patterns or demographic attributes. Nevertheless, it is crucial to engage in a rigorous evaluation of the extent to which the sample accurately reflects the larger population and to acknowledge any biases that may affect the applicability of these results 2[5]. Moreover, the predominance of cephalic presentations, accounting for 58.7% of cases, aligns with the presence of favorable delivery circumstances 2[6]. However, it is essential to investigate the potential causes that may lead to breech and transverse presentations, since these positions might offer more significant obstacles during delivery [27].

The distribution of gestational durations conforms to anticipated norms, with a significant proportion 74.1% occurring within the range of 37 to 40 weeks [28]. The observed distribution implies a cohort that is generally robust and has favorable timing. Further exploration of the underlying causes of preterm and post-term deliveries may provide valuable insights into possible risk factors warranting further investigation [29].

The prevalence of induced labor 16.9% and pre-labor cesarean sections 50% is of particular significance. The implementation of these treatments has the potential to significantly influence the outcomes of both mothers and neonates [30]. Therefore, it is essential to undertake a rigorous examination of the variables that motivate these choices. Is the increased prevalence of cesarean sections performed prior to the onset of labor largely attributable to medical reasons or patient preferences 9? The assessment of treatments may be enhanced by comparing these results with evidence-based recommendations and best practices. In order to have a more comprehensive comprehension, it is essential to juxtapose these findings with the existing body of literature. Prior studies may give reference points and patterns that provide contextual background to the results [31]. For example, it is possible that the percentage of persons who have given birth several times 58.4% might vary in relation to findings from other comparable research studies [32]. This variety may be indicative of disparities in demographic characteristics, healthcare protocols, or social influences [33]. Similarly, by comparing the rate of spontaneous labor 33.1% with known norms, it is possible to ascertain if this particular group exhibits labor patterns that are consistent with or divergent from past studies 3[4]. The comparison of fetal appearances, gestational durations, and delivery techniques with known standards might also be conducted to assess their distribution. This would facilitate the detection of any inconsistencies that may need more scrutiny or modification of clinical protocols. For instance, one may compare the frequency of induced labor to established criteria in order to evaluate the suitability of therapies.

CONCLUSION

In summary, the findings given offer a complete perspective on the maternal and obstetric features seen within the study population. A comprehensive assessment of these data facilitates a nuanced comprehension of the results and its ramifications for the well-being of mothers and newborns. Through the process of comparing the obtained data with existing research, it becomes possible to discern discernible trends, differences, and prospective avenues for enhancing the quality of obstetric treatment. The adoption of a comprehensive strategy is essential in order to facilitate the progression of knowledge, enhance therapeutic practices, and guarantee optimal results for both maternal and neonatal populations. Subsequent investigations might enhance the existing knowledge by delving deeper into these discoveries, so broadening the comprehension of the intricate dynamics among many elements that impact the outcomes of pregnancy and birth.

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