

TRENDS AND DETERMINANTS OF THE RATE OF CESAREAN SECTION IN THE LABOUR ROOM AT A TERTIARY CARE SETUP

Rida Amjad¹, Zara Naveed², Sobia Zafar³, Nida Hameed⁴, Ahsan Kamal⁵, Robina Farrukh⁶

¹Department of Obstetrics and Gynaecology, SIMS / Services Hospital, Lahore, ridaamjad933@gmail.com

²Department of Obstetrics and Gynaecology, Danyal Naveed Hospital Lalamusa Tehsil Kharian Pakistan, drzaranaveed@gmail.com

³Department of Obstetrics And Gynaecology, SIMS / Services Hospital, Lahore, drsobiaxubair@hotmail.com

⁴Department Of Obstetrics and Gynaecology, WAPDA Teaching Hospital, Lahore, dr.nidahameed@gmail.com

⁵CMH Lahore Medical College & IOD, ahsankamal2304@gmail.com

⁶Professor of Obstetrics And Gynaecology, SIMS/Services Hospital, Lahore, robinafarukh@gmail.com

*Corresponding Author: Rida Amjad, ridaamjad933@gmail.com

ABSTRACT

Background: Cesarean section is an important obstetric intervention when vaginal delivery poses a risk to the mother or fetus.

Objective: To assess the pattern and major determinants of cesarean section among women managed in the labour room of a tertiary care setup and to determine the contribution of different obstetric, maternal, placental, and fetal indications.

Methods: This retrospective observational study was conducted in the Obstetrics and Gynaecology department of Services Hospital Lahore from January 2024 to December 2024. Records of cesarean deliveries performed during the specified study period were reviewed. Data were collected from labour room registers, delivery records, operative notes, and patient files using a structured proforma.

Results: A total of 2,237 cesarean sections were recorded. The major documented categories PG, PREV1, and PREV1 OR MORE accounted for 534 (23.87%), 668 (29.86%), and 784 (35.05%) cases, respectively, together contributing 88.78% of all cesarean sections. Other clinical and obstetric indications accounted for 251 (11.22%) cases. Among specific indications, failure of induction was the most frequent, occurring in 45 (2.01%) cases, followed by intrauterine growth restriction in 43 (1.92%) and placenta accreta in 37 (1.65%). Fetal and pregnancy-related indications accounted for 104 (4.65%) cases, maternal and placental indications for 95 (4.25%), and labor-related indications for 52 (2.32%).

Conclusion: It is concluded that cesarean deliveries were concentrated within a few major recorded categories, while failure of induction, intrauterine growth restriction, and placenta accreta were the leading specific clinical indications.

KEYWORDS: Cesarean section, labour room, tertiary care hospital, previous cesarean section, obstetric indications, fetal factors, maternal factors.

INTRODUCTION

C-section is one of the most common surgical interventions in obstetrics with a significant contribution to the reduction of maternal and neonatal morbidity and mortality in the context of medical indications [1]. In many countries, however, C-section rates have been growing over the past few decades and this has led to concerns about unnecessary surgical procedures, higher health care costs and avoidable maternal and neonatal complications [2]. Cesarean section may be necessary to save the life of a woman in situations like fetal distress, obstructed labor, placenta previa, malpresentation and previous uterine surgery, but its excessive use can lead to hemorrhage, infection, thromboembolism, anesthetic complications, long hospital stay, and complications related to future pregnancies [3]. Cesarean section rates vary widely among countries, hospitals and even among different units in the same health system. This variation is related to several maternal, fetal, obstetric, institutional and healthcare factors. Factors involved are maternal age, parity, previous cesarean section, hypertension in pregnancy, diabetes mellitus, malpresentation of fetus, multiple pregnancy, possible fetal compromise, labor failed to induce, Prolonged labor, obstructed labor, Cephalopelvic disproportion [4]. In addition, non-clinical factors such as medico-legal concerns, patient preference, availability of obstetric services, institutional practices, and differences in clinical decision-making may also contribute to the increasing rate of cesarean delivery [5]. The World Health Organization has emphasized that cesarean section should be performed when medically necessary. Increased cesarean section rates up to about 10% at the population level are correlated with decreases in maternal and neonatal death rates, but there are no further reductions in death rates above that level of cesarean section [6]. The level of cesarean section performed in a single hospital cannot be recommended as a standard by WHO due to the significant differences in obstetric characteristics and risk profile of patients in different healthcare centres, especially in tertiary referral hospitals [7].

This trend has been observed in Pakistan as well. Analysis of national Demographic and Health Survey data showed that the cesarean section rate increased from 2.7% in 1990 to 7.3% in 2006, 14.1% in 2012, and 22.3% in 2017–2018 [3]. A similar study of the Pakistan Demographic and Health Survey data was also found to show that the number of cesarean deliveries in Pakistan had steadily increased during the same period, indicating a significant increase in the number of cesarean sections performed in the country [4]. The increasing rate of cesarean delivery in Pakistan suggests that this trend is a reality and warrants further investigation of the clinical and healthcare related factors driving this trend. The reported incidences from tertiary care hospitals in Pakistan could be significantly higher than national level estimates as complicated pregnancies and high risk referrals are referred to these hospitals. In a study done in Ayub teaching hospital, Abbottabad in 2024, out of 250 deliveries 110 were cesarean sections (44.0%). In the cesarean delivery group, 60.9% and 39.1% of births were emergency and elective cesarean, respectively. Previous cesarean section was the most common indication (48.2%) followed by hypertensive disorders and fetal distress [5]. The rise in cesarean section rate is caused by several factors [8–10]. Clinical determinants include: maternal age, parity, previous cesarean delivery, hypertensive disorders, diabetes mellitus, fetal distress, malpresentation, failed induction, prolonged or obstructed labor, and cephalopelvic disproportion [11]. Other factors such as socioeconomic status, maternal education, place of residence, patient preference, institutional practices and referral patterns could also affect the risk of operative delivery. A recent Pakistani Tertiary care study reported significant association between cesarean delivery and various factors such as education, socioeconomic status, preeclampsia/eclampsia, hypertension, gestational diabetes, and vaginal hemorrhage [12–14].

Objective

1. To determine the cesarean section rate in the labour room at a tertiary care setup.
2. To identify the sociodemographic, obstetric, and fetal factors associated with cesarean section.
3. To analyze the indications for cesarean section and their contribution to the overall cesarean section rate.

METHODOLOGY

This retrospective observational study was conducted in the Obstetrics and Gynaecology department of Services Hospital Lahore from January 2024 to December 2024. All women in the labour room during the study period were included in the study. The overall cesarean section rate was calculated during both vaginal and cesarean delivery. The cesarean delivery indications noted were further analyzed among the cesarean deliveries. Based on available records, a total of 2,237 cesarean sections were found in the study period. The missing information were excluded from the corresponding analysis. A total enumeration technique was employed, this entailed including all eligible deliveries that took place during the study period. A separate sampling procedure was not used as the study was designed to evaluate the entire labour room record for the period involved.

Data Collection Procedure

A structured data collection proforma was used for the retrospective data collection, which was carried out from labour room registers, delivery records, operative notes and patient medical files. Data on maternal sociodemographic, obstetric history, fetal characteristics, pregnancy complications, and mode of delivery were collected, as well as the indications for cesarean section. The total number of deliveries and the total number of cesarean sections performed during the study period was recorded for calculating the cesarean section rate. In women who had cesarean section, the main indication for cesarean section was collected from the annotation of the operating room and obstetric records. The recorded ones were as follows: previous cesarean section, multiple previous cesarean section, placenta accreta, uterine rupture, failed induction of labour, intrauterine growth restriction, multiple pregnancy, severe preeclampsia, cardiac disease, severe oligohydramnios, placental abruption, hand prolapse, absence of diastolic flow, cephalopelvic disproportion, malpresentation, placenta percreta and poor biophysical profile or persistently reduced fetal movements. Every indication was reported as follows: based on the diagnosis documented by the obstetric team that treated the patient. The primary outcome measure was mode of delivery (vaginal delivery or cesarean section). Available records were used to document sociodemographic, obstetric, and fetal variables that were considered to be factors determining cesarean delivery. Obstetric variables were parity, previous cesarean section, number of previous cesarean sections, induction of labor, hypertensive disorders of pregnancy, placental abnormalities, malpresentation, and other pregnancy complications. Fetal factors comprised fetal growth restriction, multiple pregnancy, abnormal fetal surveillance, decreased fetal movements and other noted fetal indicators. The main outcome was the cesarean section rate for all deliveries during the study period. The cesarean section rate was determined by dividing the number of cesarean deliveries by the number of deliveries and then multiplying by 100. Secondary outcomes included the identification of the sociodemographic, obstetric and fetal factors associated with cesarean delivery and the frequency and percentage contribution of each indication to the total cesarean delivery.

Data Analysis

The data were entered and analyzed with SPSS (version 26.0). Qualitative variables were reported as frequencies and percentages and quantitative variables were reported as mean + SD if appropriate. The total number of cesarean section deliveries and total deliveries over the study period was used to determine the overall cesarean section rate. The indicators of the cesarean section were also calculated in terms of percentage and frequency. The Chi-square test or Fisher's exact test was used to determine the association between the cesarean delivery and the sociodemographic, obstetric, and fetal variables. A p value of < 0.05 were deemed to be statistically significant.

RESULTS

Table 1 shows the distribution of the major recorded cesarean section categories among 2,237 cases. PREV1 OR MORE was the most frequent category, accounting for 784 (35.05%) cases, with a 95% confidence interval of 33.10–37.05%. This was followed by PREV1 in 668 (29.86%) cases, with a 95% confidence interval of 28.00–31.79%, and PG in 534 (23.87%) cases, with a 95% confidence interval of 22.15–25.68%. Other clinical and obstetric indications accounted for 251 (11.22%) cases, with a 95% confidence interval of 9.98–12.60%.

Table 1. Distribution of Major Recorded Cesarean Section Categories (n=2,237)

Category	n (%)	95% CI
PG	534 (23.87)	22.15-25.68
PREV1	668 (29.86)	28.00-31.79
PREV1 OR MORE	784 (35.05)	33.10-37.05
Other clinical and obstetric indications	251 (11.22)	9.98-12.60
Total	2,237 (100.00)	-

Table 2 presents the detailed maternal, fetal, placental, and labor-related indications for cesarean section. Maternal and placental indications accounted for 95 (4.25%) cases. Placenta accreta was the most frequent indication in this group, occurring in 37 (1.65%) cases, followed by cardiac disease in 23 (1.03%), severe preeclampsia in 17 (0.76%), and placental abruption in 14 (0.63%) cases. Uterine rupture and placenta percreta were each recorded in 2 (0.09%) cases.

Table 2. Detailed Maternal, Fetal, Placental, and Labor-Related Indications for Cesarean Section (n=2,237)

Group	Indication	n (%)
Maternal/placental	Placenta accreta	37 (1.65)
	Cardiac disease	23 (1.03)
	Severe preeclampsia	17 (0.76)
	Placental abruption	14 (0.63)
	Uterine rupture	2 (0.09)
	Placenta percreta	2 (0.09)
	Subtotal	95 (4.25)
Fetal/pregnancy-related	IUGR	43 (1.92)
	Multiple pregnancy	25 (1.12)
	Malpresentation	22 (0.98)
	Poor BPP/persistently reduced fetal movements	6 (0.27)
	Severe oligohydramnios	5 (0.22)
	Absent diastolic flow	3 (0.13)
	Subtotal	104 (4.65)
Labor-related	Failure of induction	45 (2.01)
	CPD	5 (0.22)
	Head prolapse	2 (0.09)
	Subtotal	52 (2.32)
	Total other indications	251 (11.22)

Table 3 summarizes the grouped distribution of cesarean section indications. The major recorded categories, including PG, PREV1, and PREV1 OR MORE, accounted for 1,986 (88.78%) cases, with a 95% confidence interval of 87.40–90.02%. Among the other indication groups, fetal and pregnancy-related factors represented the largest proportion, accounting for 104 (4.65%) cases with a 95% confidence interval of 3.85–5.60%.

Table 3. Grouped Distribution of Cesarean Section Indications (n=2,237)

Indication Group	n (%)	95% CI
Major recorded categories (PG, PREV1, PREV1 OR MORE)	1,986 (88.78)	87.40-90.02
Maternal and placental indications	95 (4.25)	3.49-5.16
Fetal and pregnancy-related indications	104 (4.65)	3.85-5.60
Labor-related indications	52 (2.32)	1.78-3.04
Total	2,237 (100.00)	-

Table 4 presents the ranked distribution and cumulative contribution of the different cesarean section categories. PREV1 OR MORE ranked first and contributed 784 (35.05%) cases. PREV1 ranked second with 668 (29.86%) cases, increasing the cumulative contribution to 64.91%. PG ranked third with 534 (23.87%) cases, bringing the cumulative contribution of the first three categories to 88.78%. Failure of induction ranked fourth, accounting for 45 (2.01%) cases and increasing the cumulative proportion to 90.79%. IUGR ranked fifth with 43 (1.92%) cases,

while placenta accreta ranked sixth with 37 (1.65%) cases. Together, the first six categories accounted for 94.37% of all cesarean sections.

Table 4. Ranked Distribution and Cumulative Contribution of Cesarean Section Categories (n=2,237)

Rank	Category/Indication	n (%)	Cumulative %
1	PREV1 OR MORE	784 (35.05)	35.05
2	PREV1	668 (29.86)	64.91
3	PG	534 (23.87)	88.78
4	Failure of induction	45 (2.01)	90.79
5	IUGR	43 (1.92)	92.71
6	Placenta accreta	37 (1.65)	94.37
7	Multiple pregnancy	25 (1.12)	95.49
8	Cardiac disease	23 (1.03)	96.51
9	Malpresentation	22 (0.98)	97.50
10	Severe preeclampsia	17 (0.76)	98.26
11	Placental abruption	14 (0.63)	98.88
12	Poor BPP/persistently reduced fetal movements	6 (0.27)	99.15
13	Severe oligohydramnios	5 (0.22)	99.37
14	CPD	5 (0.22)	99.60
15	Absent diastolic flow	3 (0.13)	99.73
16	Uterine rupture	2 (0.09)	99.82
17	Hand prolapse	2 (0.09)	99.91
18	Placenta percreta	2 (0.09)	100.00
	Total	2,237 (100.00)	100.00

Figure 1. Distribution of Major Cesarean Section Categories

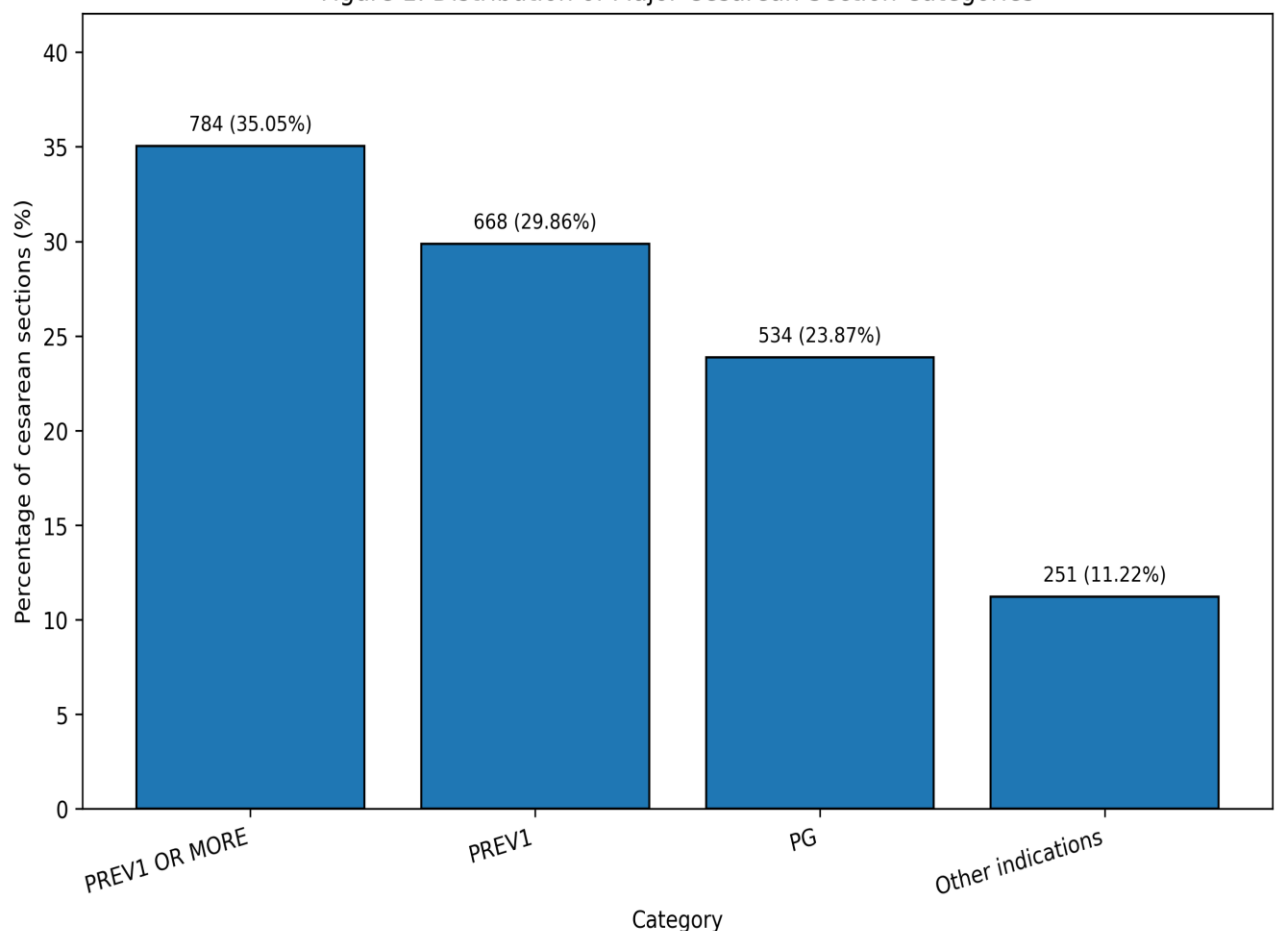


Figure 1. Distribution of major cesarean section categories.

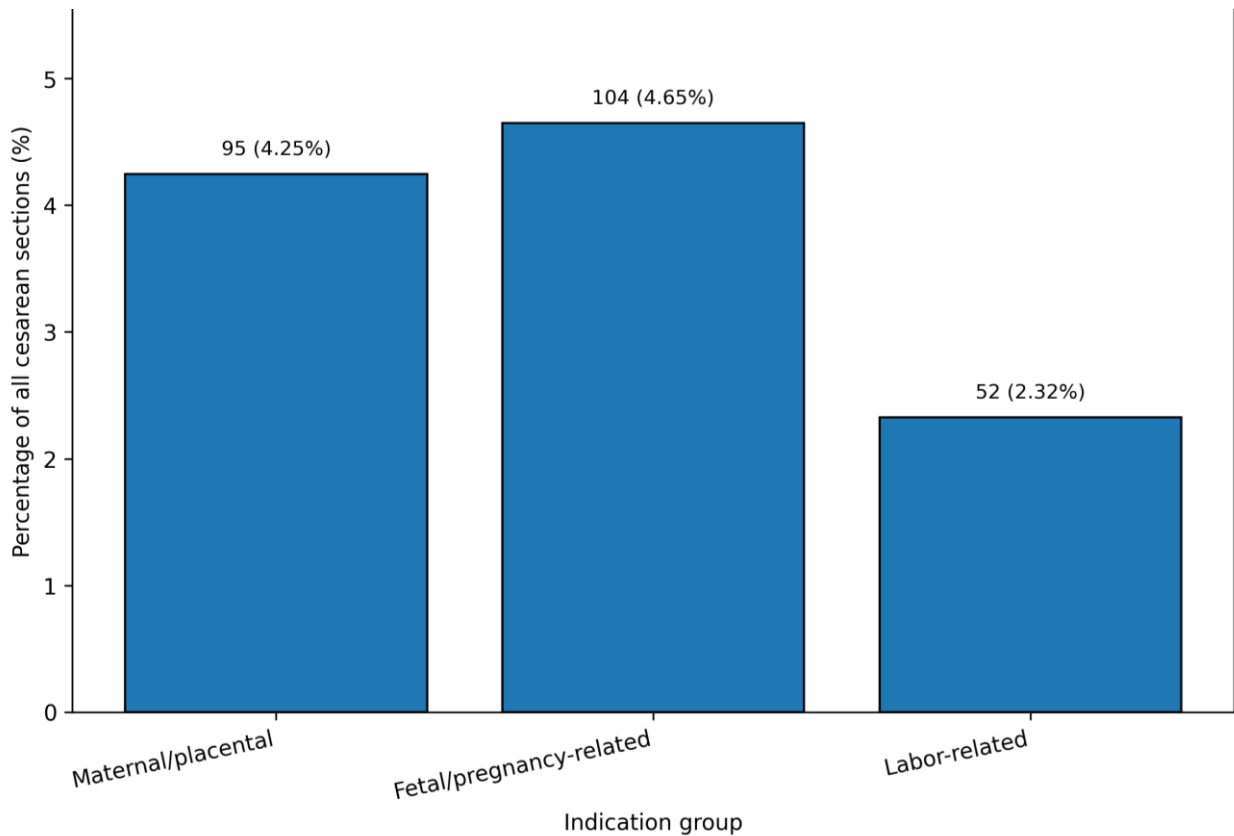


Figure 2. Grouped clinical indications for cesarean section

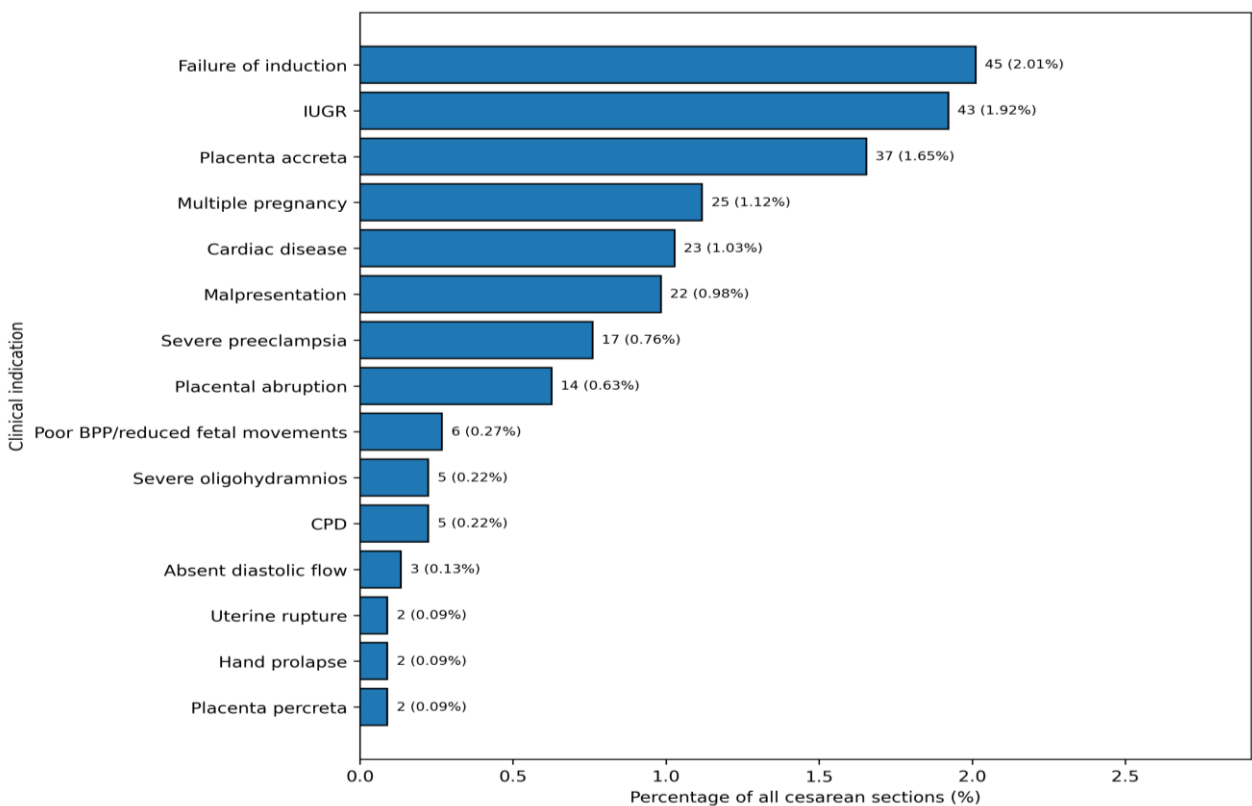


Figure 3. Specific clinical and obstetric indications for cesarean section.

DISCUSSION

The present study analyzed and recorded the trend and signs of C section in 2237 women admitted in labour room of a tertiary care centre. The results found that a few categories of recorded cesarean deliveries accounted for the majority of cesarean deliveries. There were 1,986 (88.78%) cases of the three major categories (PG, PREV1, and PREV1 OR MORE) and 251 (11.22%) cases of other maternal, fetal, placental, and labor-related indications. Such

a clustering in the few categories emphasizes the need to consider the dominant groups when strategies are designed to optimize the use of cesarean sections. Over the past decades, there has been a great rise in the rate of cesarean section across the globe. Analysed data indicates that about 21.1% of birth deliveries worldwide were conducted through cesarean section and suggested that this figure may be as high as 28.5% in the year 2030 [15]. Pakistan is not an exception to the rising trend of cesarean delivery also. The analysis of the Pakistan Demographic and Health Survey data reveals that the proportion of women delivered by cesarean section increased from 2.7% in 1990-1991 to 15.8% in 2012-2013; particularly, the use of cesarean section was high among the educated, economically well-off and urban women [2]. The findings reveal that the burden of cesarean delivery is important at global and within the Pakistan context.

In the present study, PREV1 OR MORE accounted for 784 (35.05%) cases and PREV1 for another 668 (29.86%). These were more or less broadly defined as per the specific definition in the labour room records but their substantial proportions imply that the proportion of cesarean deliveries that were attributable to previous obstetric or cesarean history was also a significant part of the cesarean workload. In a recent tertiary care level study in Pakistan, previous cesarean section was also observed as the most common indication with 48.2% of cesarean deliveries [16-18]. In another Study carried out in a tertiary hospital in Peshawar previous cesarean section was responsible for 15.2% of cesarean deliveries [4]. Some discrepancies among studies may be due to different referral patterns, institutional protocols, availability of trial of labor following cesarean, patient characteristics and/or the proportion of women who had repeat cesarean deliveries. Failure of induction was the most common clinical indications in the current study with 45 cases (2.01%). An important cause of operative delivery is failure to progress into active labour which can eventually result in a caesarean section for maternal or foetal reasons. It was also found in the Peshawar study that failed induction was risk factor of cesarean section, 5.7% [4] of the cases. This may be due to differences in induction protocols, patient selection, cervical status at induction or to the manner of recording indications in the present study [19].

The second most common specific indication was IUGR and led to 43 (1.92%) cesarean deliveries. Other fetal and pregnancy related indications were multiple pregnancy (25, 1.12%), malpresentation (22, 0.98%), poor biophysical profile or persistently reduced fetal movements (6, 0.27%), severe oligohydramnios (5, 0.22%) and absent diastolic flow (3, 0.13%). Indications that were fetal and pregnancy related were the cause of a combined 104 (4.65%) cesarean deliveries. The results show that fetal condition and antenatal monitoring influenced clinical decisions related to operative delivery, especially if the continuation of pregnancy and/or labor was deemed potentially unsafe. The maternal and placental factors explained 95 (4.25%) cases. The most common condition within this group was placenta accreta (37 cases, or 1.65%), followed by cardiac disease (23 cases, or 1.03%), severe preeclampsia (17 cases, or 0.76%) and placental abruption (14 cases, or 0.63%). Uterine rupture and placenta percreta were each a rare occurrence (2 cases, 0.09%). These are uncommon but clinically significant conditions which can lead to significant maternal and foetal morbidity and often require urgent operative intervention. The World Health Organization (WHO) highlights that cesarean section is a life-saving procedure, when medically indicated, but does not prescribe a hospital-level target rate. The rate at hospital setting should be treated with caution and should be interpreted based on population characteristics and risk factors, especially in tertiary referral centers where more complicated and high-risk pregnancies are admitted [20]. Thus, the distribution seen in the present study must be viewed in the context of a tertiary care center, where more women may have had uterine surgery or complications before becoming pregnant, fetal compromise, or other reasons for operative delivery [21,22].

There were some limitations of the present study. It was based on retrospective hospital records and the accuracy of the results was dependent on the completeness and uniformity of documentation. Relevant sociodemographic and obstetric data was not collected for comparison between cesarean and vaginal delivery. Therefore, no statistical independent determinants of cesarean section could be determined. Further, the precise clinical definition of the categories recorded, PG, PREV1, and PREV1 OR MORE should be given prior to final publication in order to enable proper interpretation and comparison with other studies. Most importantly, the total number of all deliveries over the course of the study period was not available in the data provided; thus, the overall cesarean section rate could not be calculated. This denominator is essential to serve the primary goal of the calculation of the cesarean section rate in the labour room.

CONCLUSION

The conclusion that can be drawn is that the majority of the cesarean sections that were performed in the tertiary care labour room were recorded in a few broad categories; namely PREV1 OR MORE, PREV1 and PG. Failure to induce, IUGR, and placenta accreta were the most common specific clinical indications. The results will be helpful in understanding the obstetric and foetal factors associated with cesarean section in a tertiary care centre. These findings emphasize the importance of evidence-based obstetric care, regular review of cesarean section rates, and targeted interventions and quality improvement efforts to optimize the use of cesarean section and enhance maternal and fetal outcomes. Appropriate promotion of vaginal delivery among eligible women, careful consideration of indications for cesarean section and standardisation of documentation can be helpful to reduce unnecessary procedures but still keep mother and foetus safe.

REFERENCES

1. Qureshi FU, Sohail S, Jabeen S, Iqbal F. Patterns And Determinants Of Caesarean Section Rates According To Modified Robsons Criteria: A Descriptive Study From A Tertiary Care Hospital. *JRMC*. 2025 Jun. 30;29(2). <https://doi.org/10.37939/jrmc.v29i2.2800>
2. Rana MS, Mazumder S, Khan MTF, Khan MMH, Rahman MM. Trends and determinants of caesarean section in South Asian countries: Bangladesh, Nepal, and Pakistan. *PLoS One*. 2024 Dec 5;19(12):e0311082. doi: 10.1371/journal.pone.0311082. PMID: 39637169; PMCID: PMC11620693.
3. Shaikh, E. M., Kulsoom, S. ., Fatima, S. ., & Zuberi, B. F. . (2022). To evaluate rising caesarean section rate and factors contributing to it by using Modified Robson's Criteria at a tertiary care hospital. *Pakistan Journal of Medical Sciences*, 38(7). <https://doi.org/10.12669/pjms.38.7.5983>
4. Betran AP, Ye J, Moller AB, Souza JP, Zhang J. Trends and projections of caesarean section rates: global and regional estimates. *BMJ Glob Health*. 2021;6:e005671. doi:10.1136/bmjgh-2021-005671.
5. World Health Organization. WHO statement on caesarean section rates. Geneva: World Health Organization; 2015.
6. Rahman MM, Haider MR, Moinuddin M, Rahman AE, Ahmed S, Khan MM. Trends and determinants of caesarean section in South Asian countries: Bangladesh, Nepal, and Pakistan. [Journal details to be formatted according to the final source record].
7. Nazir S, et al. Trends of caesarean section deliveries in Pakistan: secondary data analysis from Demographic and Health Surveys, 1990–2018. *BMC Pregnancy Childbirth*. 2020;20.
8. Jadoon I, Khattak M, Mughal KS, Mughal US, Khan M, Abdulsamad SA, et al. Rising cesarean section rates in Pakistan: analyzing frequency and key risk factors in a tertiary-care hospital. *Cureus*. 2024;16:e72333. doi:10.7759/cureus.72333.
9. Chaudhri R, Hanif K, Humaira Bilquis, Ezra Reza T, Uzma Q, Khan A, et al. ANALYSIS OF CAESAREAN SECTION RATES USING THE ROBSON'S TEN GROUP CLASSIFICATION SYSTEM (TGCS) AT TERTIARY LEVEL HEALTHCARE FACILITIES IN RAWALPINDI, PAKISTAN: A CROSS-SECTIONAL STUDY. *J Ayub Med Coll Abbottabad* [Internet]. 2025 Mar. 15 [cited 2026 Sep. 12];37(1):63-8. Available from: <https://demo.ayubmed.edu.pk/index.php/jamc/article/view/13094>
10. Malik N, Kapoor B, Singh R, et al. (November 08, 2024) Cesarean Section Trends and Associated Factors at a Tertiary Care Center in India: A Retrospective Study. *Cureus* 16(11): e73308. DOI 10.7759/cureus.73308
11. Puramban P, Ravula PC, Aziz N. Maternal request caesarean sections: fear tops the list. *Int J Reprod Contracept Obstet Gynecol*. 2024;13:125-9. doi:10.18203/2320-1770.ijrcog20234090.
12. Bablad A. Cesarean section in primiparous women: a retrospective study. *J South Asian Feder Obst Gynae*. 2021;13:15-7. doi:10.5005/jp-journals-10006-1864.
13. Ballu A, Asha M. Analytical study on indications of primary cesarean section in tertiary care hospital. *Int J Reprod Contracept Obstet Gynecol*. 2019;8. doi:10.18203/2320-1770.IJRCOG20193531.
14. Pandey AK, Raushan MR, Gautam D, Neogi SB. Alarming trends of cesarean section-time to rethink: evidence from a large-scale cross-sectional sample survey in India. *J Med Internet Res*. 2023;25:e41892. doi:10.2196/41892.
15. Ganai N, Rather R, Khan S. Cesarean section rate and pattern of indications in a tertiary care maternity hospital in Kashmir: a cross-sectional analytical study. *Int J Adv Community Med*. 2019;2:17-9. doi:10.33545/COMED.2019.V2.I1A.04.
16. Jenabi E, Khazaei S, Bashirian S, Aghababaei S, Matinnia N. Reasons for elective cesarean section on maternal request: a systematic review. *J Matern Fetal Neonatal Med*. 2020;33:3867-72. doi:10.1080/14767058.2019.1587407.
17. Kamil A, Perveen K, Al-Tannir MA. Factors associated with cesarean deliveries at Women Specialized Hospital Riyadh, King Fahd Medical City, Kingdom of Saudi Arabia. *J Egypt Public Health Assoc*. 2011;86:73-6. doi:10.1097/01.EPX.0000399178.79516.a3.
18. Tarimo CS, Mahande MJ, Obure J. Prevalence and risk factors for caesarean delivery following labor induction at a tertiary hospital in North Tanzania: a retrospective cohort study (2000-2015). *BMC Pregnancy Childbirth*. 2020;20:173. doi:10.1186/s12884-020-02861-8.
19. Nair RV, Sowbharnika CP, Seetha PM. A clinical study on indications for caesarean section among primigravida in a tertiary care centre. *Obs Rev J Obstet Gynecol*. 2019;5:119-24. doi:10.17511/joog.2019.i02.06.
20. Geidam AD, Audu BM, Kawuwa BM, Obed JY. Rising trend and indications of caesarean section at the University of Maiduguri Teaching Hospital, Nigeria. *Ann Afr Med*. 2009;8:127-32. doi:10.4103/1596-3519.56242.
21. Silver RM. Abnormal placentation: placenta previa, vasa previa, and placenta accreta. *Obstet Gynecol*. 2015;126:654-68. doi:10.1097/AOG.0000000000001005.
22. Ferrari AP, Almeida MA, Carvalhaes MA, Parada CM. Effects of elective cesarean sections on perinatal outcomes and care practices. *Rev Bras Saude Mater Infant*. 2020;30:879-88. doi:10.1590/1806-93042020000300012.
- 23.
- 24.