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# Primary Cesarean Section: A Gateway to Repeat Surgery

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## ABSTRACT

The rising rate of Cesarean Sections (CS) is a significant concern globally. While C-sections are lifesaving in many cases, an increasing number of unnecessary procedures pose risks to both mothers and babies. It has been found that the most common indication of CS is previous CS. **Objective:** To assess the indications and the factors leading to primary CS. **Methods:** The study was conducted at a tertiary care hospital of Pakistan employing non-probability consecutive sampling. A detailed history of participants revolving around their first CS was taken including indication and the associated demographics. All the information was entered on a specific proforma. Data analysis was conducted using SPSS software version 26.0. The primary outcome variable was the indication for primary cesarean section, while the secondary variables included factors contributing to the procedure. **Results:** A total of 264 women who had CS for at least one of their pregnancy were considered. The vast majority (n=195, 73.9%) were primigravida, had 4-6 antenatal visits (n=174, 65.9%) and underwent CS at term (180, 68.2%). There were more emergency CS (n=140.53%) performed at private clinics/hospitals (n=201. 57.4%). Regarding the indications of primary CS, the most prevalent was failed progress of labour, followed by oligohydramnios, breech presentation/transverse lie, fetal distress, reduced fetal movements and maternal request. **Conclusion:** It is need of time to scrutinize the indications of primary CS and to adopt potential strategies to minimize its number with the aim to lower overall CS rate.

## INTRODUCTION

Cesarean Section (CS) has been an integral constituent of Obstetrics over the last so many decades. It is the surgical procedure frequently employed to salvage the lives of mothers and fetuses [1]. Its fetal indications comprise a long list, including failure to progress in labour, malpresentation,abnormal fetal heart rate, oligo-hydramnios, macrosomia, cord prolapse [2]. The maternal indications include previous CS, medical disorder like hypertension or cardiac disease, placenta previa, infections like HIV or active genital Herpes Simplex virus. The proven role of C section delivery in dealing with the complicated childbirth and saving the lives of mothers as well as babies is of no doubt. However, the rise in the CS rates over the last few years has raised many concerns. In 1985, a panel of experts of WHO concluded the remarks that 'there is no justification for any region to have a Caesarean section rate higher than 10–15% [3]. Nevertheless, the whole globe is witnessing the continuous rise in the rates of CS and it has become a matter of concern for the health experts as well as the expecting mothers. In year 2000, estimated CS rate was 12% [4]. The worldwide current estimated CS rate is 21.1% [5]. It is relatively higher in developed countries (27.2%), lower in less developed countries (24.2%) and lowest in least developed countries (8.2%)[6]. Is has been predicted that by year 2030, CS rate will reach 28.5% with more than 38 million deliveries ending up in CS [7]. In Pakistan, a tremendous rise has been observed in CS rate from 3.2% in 1990 to 19.6% in 2018 [8]. The increasing trend of CS rate has prompted health professionals to investigate the various indications of CS. Some indications like malpresentation, previous C section, abnormal fetal heart rate, oligohydramnios, macrosomia, cord prolapse and hypertensive disorders are quite justifiable on medical grounds [9]. Certain demographic

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features like socio-economic status, education level and occupation are also linked to high CS rate [10]. An important factor contributing to continuously rising CS rate is the medicalization of the childbirth procedure [11]. Instead of being a physiological process, delivery has been commercialized by the mal-practicing doctors who opt for CS for their own convenience and time saving along with financial benefits. The use of social media has also played a pivotal role in this rising trend of CS. The expecting mothers watch the videos of normal delivery, becoming horrified by the pains of labour process, and resort directly to C section, thus contributing to high C section rate [12]. The unawareness of expecting mothers regarding Caesarean delivery complications also make them vulnerable for CS as this procedure is related to baby safety by the doctors, which is infact not always the case. An overview of the common indications of CS reveals that the most common indication is previous CS [13]. The ascending trend of CS can be turned to descending trend by critically reviewing the indications of primary CS. By doing so, non-genuine indications can be brought under the audit process, with the hope that that primary CS are performed only for authentic and legitimate reasons. The extensive online search revealed paucity of such studies in Pakistan. It prompted us to assess the indications and the circumstances or factors leading to primary CS.

By collecting and reviewing such data, initiatives can be taken to pare down the incidence of primary CS and thus minimizing the most common indication of repeat CS.

## METHODS

This retrospective descriptive study was conducted in the Obstetrics Department of Nishtar Hospital, Multan, Pakistan, from November 2024 to February 2025, after receiving ethical approval from the Institutional Review Board of Nishtar Medical University (Ref. No. 18991/NMU). A non-probability consecutive sampling technique was employed, and the sample size was calculated to be 264 using the formula

$n = Z^2 \times p \times (1-p) / d^2$

Where:

Confidence level = 95% (Z = 1.96)

Proportion (p) [14] = 22% (0.22)

Margin of error (d) = 5% (0.05)

Women with a history of cesarean section (CS) between 28 and 40 weeks of gestation during any pregnancy in the last 5 years, who had documented discharge records specifying the indication and procedure of the CS, were included after providing informed consent. Exclusion criteria included women with a history of myomectomy prior to CS or CS performed before 28 weeks of gestation. Primary CS was defined as a cesarean section performed on a gravid woman with no prior CS history. Data were collected using a structured proforma through participant interviews and verification of discharge cards. Variables assessed included maternal age at the time of primary CS, socio-economic status (classified as low, middle, or high based on residence ownership and monthly income), gravidity, gestational age (categorized as very preterm: 28–34 weeks, preterm: 34–36 weeks, and term: 37–40 weeks), and the number of antenatal visits (1–3, 4–6, 7–9). The nature of the CS was categorized as either emergency (unplanned due to maternal or fetal risk) or elective (planned before labor), and the healthcare facility was identified as public or private sector. The surgeon's qualification was recorded as either a graduate (MBBS without specialization) or consultant gynecologist (with postgraduate specialization in Obstetrics and Gynecology). The primary outcome was the indication for primary CS, while secondary variables included maternal and obstetric factors. BMI data at the time of surgery could not be included due to the retrospective design. Data were analyzed using SPSS version 26.0, with frequencies and percentages reported for categorical variables, and means with standard deviations for numerical variables. A p-value of ≤ 0.05 was considered statistically significant.

## RESULTS

A total of 264 women who had CS for at least one of their pregnancy were considered. The vast majority (n=252, 95.45%) was in the age range of 15-35 years. Those having 4-6 antenatal visits (n=174, 65.9%) had the maximum chance of CS. Most of them (n=195, 73.9%) were primigravida and a large bulk of them (180, 68.2%) had their CS at term. There were more cases (n=140; 53%) of emergency CS. A great preponderance (n=201; 57.4%) was performed at private clinics/hospitals.

**Table 1:** Demographics Regarding Primary Caesarean Section (n=264)

| Variables | Subgroups | Frequency (%)/ Mean ± SD | p-Value |
|---|---|---|---|
| Maternal Age at the Time of Surgery | 15-25 Years | 125 (47.34) | *0.0369 |
| | 25-35 Years | 127 (48.11) | |
| | 35-45 Years | 12 (4.55) | |
| | Mean ± SD | 26.63 ± 4.88 | |
| Socio-Economic Status | Low | 201(76.1) | - |
| | Middle | 60 (22.7) | |
| | High | 03 (0.1) | |
| Number of Antenatal Visits | 1-3 | 52 (19.7) | 0.080 |
| | 4-6 | 174 (65.9) | |
| | 7-9 | 38 (14.4) | |
| | Mean ± SD | 5.04 ± 2.57 | |
| Gravidity at the Time of CS | Primigravida | 195 (73.9) | *0.030 |
| | Multigravida | 69 (26.1) | |
| | Mean ± SD | 1.27 ± 0.495 | |
| Gestational Age | 28-34 Weeks | 10 (3.7) | *0.001 |
| | 35-36 Weeks | 74 (28.1) | |
| | 37-40 Weeks | 180 (68.2) | |
| | Mean ± SD | 37.66 ± 2.54 | |

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| | | | |
|---|---|---|---|
| Nature of CS | Emergency | 140 (53) | *0.001 |
| | Elective | 124 (47) | |
| Designation of Surgeon | Graduate Doctor | 114 (43.2) | *0.001 |
| | Consultant Gynecologist | 150 (56.8) | |
| Place of Surgery | Government Hospital | 149 (42.5) | *0.001 |
| | Private Hospital | 201 (57.4) | |

Note: *Indicates Statistically Significant p-Value.

Regarding the indications of primary CS, the most prevalent is failed progress of labour, followed by oligohydramnios, breech presentation/transverse lie, fetal distress, reduced fetal movements and maternal request. The other indications included hypertension, failed induction of labour, bad obstetrical history, placenta previa and twin pregnancy.

**Table 2:** Indications of Primary Caesarean Section (n=264)

| Indication of primary CS | Frequency (%) |
|---|---|
| Failed progress of labour | 65 (24.6) |
| Oligohydramnios | 43 (16.3) |
| Breech presentation/ transverse lie | 26 (9.8) |
| Cephalopelvic disproportion | 9 (3.4) |
| Fetal distress/ meconium | 19 (7.2) |
| Reduced fetal movements | 18 (6.8) |
| Maternal request | 17 (6.4) |
| Hypertension | 13 (4.9) |
| Failed induction of labour | 11 (4.2) |
| Bad obstetrical history | 13 (4.9) |
| Placenta previa | 15 (5.7) |
| Twin pregnancy | 15 (5.7) |

## DISCUSSION

Though the CS is considered a safe mode of delivery for the fetus at institutions where logistics and skill are available, it's not the same at all health facilities where safe conduct of CS along with management of complications is still in jeopardy. Also this mode of confinement has its own implications ranging from short term health issues to increased morbidity and even mortality in some cases [14, 15]. In this study, 264 women who had at least one CS for any of their pregnancy were recruited. Regarding the indications of primary CS, the most frequent is failed progress of labour which was reported by 24.6%. These results are quite close to that reported by Saraya *et al.*, (22.5%) in Saudi Arabia [16]. However, this is high when compared with the study conducted by Kanji *et al.* in Pakistan in 2018, where 12.9% had CS for failed progress of labour [16, 17]. Kanji studied the CS performed at a government hospital. The high rate in this study might be due to the fact that we included all cases whether done at government or private health facility. The failed progress of labour is the favourite indication by the obstetricians of private sector as they opt for early CS for their own convenience and mostly do not fulfill the criteria of failure to progress in labour especially in the light of new labour care guide. Also the overall CS rate is increasing with each passing year. There is need of institutional protocol change to allow sufficient time for slow progress in the first and second stage according to labour care guide. It will definitely reduce the rate of cesarean delivery in nulliparous women. In this study, 43 (16.3%) CS were performed for the indication of oligohydramnios. Kanji *et al.*, found reduced liquor as the indication in 0.4% and Saraya *et al.*, in 0.5% of the cases [16, 17]. The resultant figure in this study is comparatively very high. It can be explained by the fact that 57.4% of these procedures were performed at private hospitals, again reflecting the commercialization of the parturition procedure. Lack of proper antenatal care can also be a contributory factor as improper control of hypertension along with timely non-detection and mismanagement of liquor abnormality can be a reason for this high figure. Also less resort to induction of labour for minor liquor abnormalities can be an explanation, which again is in the hand of obstetrician. Proper counselling along with proper monitoring of labour induction can help in reducing the number of CS for this indication. The next common indication (7.2%) was fetal distress with or without meconium-stained liquor. It is close to that concluded by Idris *et al.*, (5.9 %) [18]. Kanji *et al.*, also reached the same result (8.2%) [17]. Fetal distress proved by abnormal cardiotocography or fetal blood sampling is the most authentic indication of CS. This study revealed that 9.8% had CS for breech presentation. Aftab *et al.*, conducted a study in Pakistan regarding indications of primary CS and found breech presentation as an indication in 4% of the cases [19]. The explanation of higher rate in our study is that the art of breech vaginal delivery is vanishing with the passage of time. The obstetricians of today are not competent for this delivery. Also the fear of litigation in case of any morbidity or mortality hinders the doctors from risk taking attitude. Same applies to twin vaginal delivery as this study cases have this indication in 5.7%. Maternal request accounted for 6.4% of the cases. It approximates that estimated by Trahan MJ (5.4%) [20]. The fear of pain associated with vaginal delivery, the risk of fetal compromise and the fright of pelvic area damage are the myths for this indication of CS. Proper education of antenatal mothers regarding benefits of normal vaginal delivery can help to narrow down this inciation of CS. Another absolute indication in this study was placenta previa and twin pregnancy with non-cephalic first twin (each 5.7%). Both these indications were counted as 2% by Saraya *et al.*, [16]. The analysis of demographics in the study highlights important trends related to primary CS. There is high proportion of primigravida women undergoing Primary CS (73.9%). This aligns with Birla's study in India, which reported a 65% prevalence of primary

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CS among primigravida women [21]. Emergency CS at private hospitals were seen outnumbering elective CS at public hospitals. The study suggests that most women attended moderate antenatal care visits. This would have contributed to high CS rate due to lack of proper antenatal education and diagnosis of complications. This study has certain limitations. The retrospective design doubts the authenticity of certain subjective findings like fetal distress and failed progress of labour. As the participants were the patients attending a government hospital for free medical care, so most of them belonged to low socio-economic status. Thus it was not representative of whole population. Also the indications would have been classified according to Robson Ten Group Classification System which is an internationally accepted standard for analyzing and comparing cesarean section rates. This system enhances audit and benchmarking by identifying which groups contribute most to the CS rate, allowing targeted interventions to reduce unnecessary procedures.

## CONCLUSIONS

The primary CS is the most common indication for repeat CS. Considering the high CS rates in the developing nations, like Pakistan, this study contributed to research on maternal health by offering a deeper understanding of the indications of primary CS in the developing world. Regular evaluation of these indications can help ensure appropriate use and avoid unnecessary procedures. Continued audit and adherence to standardized guidelines are essential to optimize maternal and neonatal outcomes.

## Authors Contribution

Conceptualization: ST

Methodology: FS

Formal analysis: AUT, SAR

Writing, review and editing: ST

All authors have read and agreed to the published version of the manuscript.

## Conflicts of Interest

All the authors declare no conflict of interest.

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