

Original Article

TRENDS IN CAESAREAN SECTION RATE AND ITS DETERMINANTS IN DISTRICT HOSPITAL GUJRANWALA

Fazeela Shahzad¹, Nudrat Sohail², Zulekha Nasim³, Irfan Qayyum⁴, Shumaila Yaseen⁵, Uzma Altaf⁶

ABSTRACT

Background: C-section are showing increasing trend worldwide. This study aimed to measure the rate and various indications of Cesarean sections in DHQ-Teaching hospital, Gujranwala.

Material & Methods: This was a cross-sectional descriptive study retrospective data was collected from hospital records. The mode of delivery and basic demographics of the patients who underwent elective and emergency cesarean section were noted down. Clinical indications were recorded. Data was analyzed in SPSS version 21.0

Results: A total of 7159 pregnant women, booked and un-booked were admitted for delivery out of which 4038 (56.4%) patients had a vaginal delivery and 3121(43.6%) underwent cesarean section. Among Cesarean sections, 67.7 % (n=2112) were emergency cesarean sections and 32.3 % (n=1009) were elective cesarean sections. The top six indicators for cesarean sections were previous multiple Cesarean sections 49.8 % (n=1554), fetal distress 14.8% (n=462), failure to progress of labor 8.6 % (n=269), cephalo pelvic disproportion (CPD) 7.8 % (n=244), breech presentation 3.6% (n=112) and pregnancy-induced hypertension (PIH) 2.7% (n=84).

Conclusion: The rate of cesarean section was 43.6% in Gujranwala. Most of the cesarean sections were emergency cesarean sections with fetal distress as a major risk factor.

Keywords: Trends; caesarean section; rate; determinants; hospital.

doi: <https://doi.org/10.51127/JAMDCV06I01OA04>

How to cite this:

Shahzad F, Sohail N, Nasim Z, Qayyum I, Yaseen S, Altaf U. Trends in Caesarean Section Rate and Its Determinants in a District Hospital of Pakistan. JAMDC. 2024; 6(1): 23-28

doi: <https://doi.org/10.51127/JAMDCV06I01OA04>

INTRODUCTION

For the last few decades, there has been concern regarding the global rise in cesarean section, particularly in Latin America, Eastern Asia, and Western Asia¹⁻². It is generally thought that Caesarean section rates in Asia are lower, though some countries have been facing

an unexpected and unjustified rise. China has the highest rate of Cesarean section in Asia without a single specific reason. Cesarean section rates climbed rapidly during the early 20th century in China, to a maximum reported rate of 46.2%, among primipara up to 49.6 % reported in early 2010³.

The alarming rise of cesarean section rates worldwide has been one of the most debated matters in maternity care. Cesarean section is a major surgical procedure and like every surgical procedure, carries a significant associated risk of maternal morbidity and mortality. Guidelines must be established and implemented for Caesarean section and it should be performed in the presence of definite and clearly defined medical indications only⁵.

¹Asst. Prof., OBS & Gynae, AIMC, Lahore.

²Prof., OBS & Gynae, LGH/ PGMI, Lahore.

³Asst. Prof., OBS & Gynae, IMDC, Sialkot.

⁴Assoc. Prof., Ophthalmology, GMC Gujranwala.

⁵Senior Registrar, OBS & Gynae GMC Gujranwala.

⁶Senior Registrar OBS & Gynae AIMC, Lahore.

Date of Submission: 06-02-2024

Date of Review: 09-02-2024

Date of Acceptance: 27-02-2024

Many obstetricians consider elective cesarean section delivery as quite simple, effortless, legally secure, and psychologically well-tolerated procedures by patients with less risk of pelvic floor and urinary complications. In some clinical situations “ambiguous clinical indication” is observed when there is no single clearly defined indication for the C section and the final decision is determined by the individual attitudes of the clinician⁶.

Controversy over the rate of cesarean section in low and middle-income countries and its determinants also exist. In today’s era, cesarean section accounts for almost 15– 25% of all deliveries in developed countries, with associated maternal mortality of less than 1:10,000⁷.

Controversy over the rate of cesarean section in low and middle-income countries and its determinants also exist. In today’s era, cesarean section accounts for almost 15-25% of all deliveries in developed countries, with associated maternal mortality of less than 1:10,000⁷.

MATERIAL AND METHODS

This is a descriptive cross-sectional study conducted over 12 months in Gujranwala Medical College, District headquarters, Teaching hospital, Gujranwala from 1st Jan 2020 to 31st Dec 2020. This study included a total of 7159 pregnant females who presented in DHQ hospital either for delivery, the trial of labor, emergency, or elective Caesarean section. All pregnant women between the ages of 20 to 40 years were included in the study, both booked and unbooked. Pregnant women having gestation less than 28 weeks were excluded.

After admission, a detailed evaluation of patients was done for assessment of the mode of delivery, and for patients who were booked, their plan of delivery was re-evaluated. The mode of delivery and basic demographics of the patients who underwent elective and emergency cesarean section (n=3121) were noted down. Baseline investigations were carried out including blood group, Rh factor,

complete blood counts, Hepatitis B and C serology, and random blood sugar levels along with urine complete analysis. Specific investigations like Biophysical profiles, Doppler scans, and other serological tests were done according to the needs of individual patients. The plan of delivery was made after consultation with a consultant available around the clock in the department. CTG and an ultrasound machine remain available in the emergency for fetal monitoring. Clinical indications were recorded. The chi-square test was applied to find out the frequency of various causes of operative birth. Data was analyzed in SPSS version: 21.0.

RESULTS

A total of 7159 pregnant women, booked and un-booked were hospitalized for delivery. Out of these 4038 (56.4%) pregnant women had a vaginal birth and 3121(43.6%) underwent cesarean section. Among Cesarean births, 67.7% (n=2112) were emergency and 32.3% (n=1009) were elective cesarean births. Principal indications for operative births were past multiple Cesarean sections 49.8% (n=1554), the passage of meconium and non-reactive CTG 14.8% (n=462), dysfunctional labor 8.6% (n=269), cephalopelvic disproportion 7.8% (n=244), breech presentation 3.6% (n=112) and gestational hypertension and pre-eclampsia 2.7% (n=84).

Table 1: Demographic variables of pregnant women

Variables	Frequency	%age
Age		
< 30 years	2778	89%
> 30 years	343	11%
Gravidity		
Primigravida	775	24.8%
G2 and G3	1508	48.3%
>More than G3	838	26.8%

Table II: Various indications of Cesarean sections

Indication	Frequency	(%age)
History of 2 or more Cesarean births	1554	(49.7%)
Meconium passage & Non-reactive CTG	462	(14.8%)
Dysfunctional labour	269	(8.6%)
Cephalopelvic disproportion	244	(7.8%)
Breech presentation	112	(3.6%)
Uncontrolled Gestational hypertension	84	(2.6%)
Previous 1 C-section & Postdate pregnancy	75	(2.4%)
IUGR with reduced AFI	71	(2.2%)
Low lying Placenta	47	(1.5%)
Obstructed labor	46	(1.4%)
Third-trimester APH	41	(1.3%)
Precious Pregnancy	34	(1.08%)
Eclampsia	31	(0.9%)
Multiple gestations	26	(0.8%)
Miscellaneous indications	25	(0.8%)
a. Mal presentation	13	
b. Gestational diabetes	05	
c. In-utero fetal demise	03	
d. Ruptured membranes	02	
e. Morbidly adherent Placenta	02	

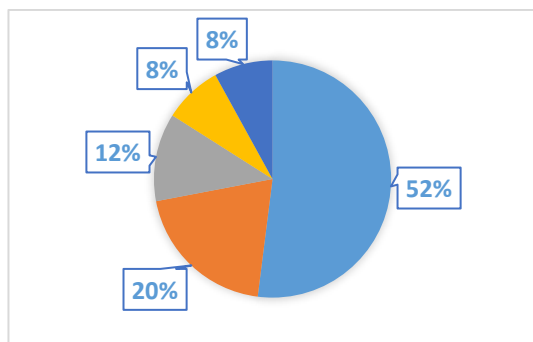


Chart 01: Miscellaneous Indications

DISCUSSION

During the 12-month study period, the rate of Cesarean section came out to be 43.6 per 100 deliveries which is much higher than recommended rate by WHO. The primary reason in the background of this high prevalence of operative delivery is that this hospital receives referred cases from five surrounding divisions and the majority of the cases are complicated, in risk factors, or have already been given a long trial of labor, so far rescuing of the life of the baby and the mother is by done Cesarean section.

Statistics collected from 169 countries of the world give an estimation that 16 million births occurred through C-section in the year 2000 and 29.7 million in the year 2015⁷.

Non-clinical interventions to reduce unnecessary caesarean sections rate⁸. It is important to launch of awareness program to reduce the C-section rate⁹. The international healthcare community and WHO have considered the rate of 10% and 15% to be ideal for cesarean births¹⁰. In the USA it was 33% in 2011, the more alarming situation is in countries like Brazil where the rate has gone up to 55%¹¹. Pakistan being a developing country is also facing a similar kind of alarming increase in caesarean section rate¹².

Cesarean birth is advocated when vaginal delivery might create any hazard to the mother or baby. C-sections are also carried out for individual and social reasons¹². It is recommended to encourage counseling during antenatal care to identify the reasons for the maternal request for Cesarean section, address her worries about labor and provide information, and encourage vaginal delivery¹³. Elective Cesarean births at 38 weeks have shown an increased risk of some hazards in the newborn¹⁴. That is the reason, elective Cesarean births are not planned before 39 weeks of gestation until and unless there is any medical indication to do so¹⁵.

We need to plan strategies and local protocols to avoid operative delivery in Primipara. Almost half of the patients in the study (49.7%) underwent C-sections because of previous C-

sections, which is quite alarming and needs consideration by Health organizations. So, from these results, we come to know that the Cesarean section rate is becoming far more common in this area, inheriting along with its higher maternal morbidity and mortality, especially hazards of morbidly adherent placenta, uterine rupture, and Obstetric hysterectomy. Private maternity centers and the private sector are some of the known and established factors behind the rising cesarean section rate¹⁶⁻¹⁷.

The second common indication of the rising rate of Cesarean section in our study is the passage of meconium along with CTG changes. Facilities provided to the department for fetal monitoring in labor especially in complicated high-risk cases that have already got a trial of labor by trained or untrained birth attendants before coming to the hospital, do not fulfill the standard requirements and to save the life of the baby, doctors have to resort to Cesarean section earlier. Another factor could be that many patients are given a trial of labor, improper dose of prostaglandins and oxytocin then are referred to DHQ hospital with evident fetal distress either in the form of passage of meconium, hyperstimulation of uterus or CTG changes showing fetal compromise.

Another common indication of operative birth is dysfunctional labor in 8.6% and CPD in 7.8%. The reason behind this may be aggressive management of labor, lack of one-to-one monitoring of labor, improper use of oxytocin, and increasing use of prostaglandins for induction of labor which ends up in Cesarean delivery. CPD may be an overdiagnosis in our setup in Primigravida and demand for repeat Cesarean sections in subsequent pregnancies. To minimize these reasons, a proper audit is required every year. 112 Cesarean sections in our study were done for breech presentation. Although breech delivery has not proven any significant fetal morbidity as compared to elective Cesarean section because of prevailing medical litigations and patient's over-concerns, doctors

do not succeed in getting consent for vaginal breech delivery.

We also have a lack of good NICU facilities. 2.6% of sections were for uncontrolled gestational hypertension, most of which were admitted with uncontrolled hypertension in the third trimester and symptoms of imminent eclampsia, in that situation to expedite delivery and avoid other complications of hypertension, emergency Cesarean section is the only option left behind. 2.2% Cesarean sections were done for fetal growth retardation and reduced liquor where hypertension was not present to cause placental insufficiency and to rule out antiphospholipid syndrome hospital resources were not available. 2.4% of sections were for postdate pregnancy with the previous one Cesarean section. Most patients do not have dating scans to avoid mistaken calculation of postdate pregnancy so doctors have to rely on probable LMP or recent scans and have to go for elective Cesarean section. Over enthusiastic approach towards postdate pregnancy is also because patients are not compliant with follow-up and wait for spontaneous labor after the due date. 47 Cesarean sections were done for placenta praevia and 41 for APH which are now increasing further in number in our hospital with the passage of time as an increased number of skilled and trained staff now available since this hospital is now recognized as a teaching hospital. Blood bank services, ICU, and anesthesia services are also built up with the efforts of principal and hospital administration.

A total of 46 sections were done for obstructed labor and the majority of the cases were of neglected labor or mismanaged labor by untrained persons from the periphery. This is one of the prevalent issues in our country where more than two-thirds of deliveries are conducted outside health centers by untrained birth attendants and no proper data is available for associated morbidity. Thirty-four Cesarean sections were done for precious pregnancy and 26 for multiple gestation. Multiple gestations are emerging as usual indications due to a lot of advances in assisted reproductive techniques

and injudicious use of ovulation induction methods, in the private sector especially. A total of 31 Cesarean sections were done for eclampsia although, since the establishment of this public sector hospital decades ago, no facilities were available in this hospital to manage an eclamptic woman with standardized care, and all cases having a diagnosis of Eclampsia with pregnancy were referred to tertiary level health care centers of nearby cities. Twenty-five cesarean sections were done for miscellaneous indications like gestational diabetes, pre-labor rupture of membranes, fetal demise, and placenta accreta diagnosed antenatally. The World Health Organization statement published in 2015 about C-section rate clearly emphasizes that “every effort should be made to provide Caesarean section to women in need, rather than striving to achieve a specific rate”^{18,19}. Multiple dynamics are influencing rises in cesarean delivery rates²⁰.

CONCLUSION

The rate of cesarean section was 43.6% in Gujranwala. Most of the cesarean sections were emergency cesarean sections with fetal distress as a major risk factor.

AUTHOR’S CONTRIBUTION:

FS: Conception, Literature Search and Study Design, Data Collection and Processing, Data Analysis and/or Interpretation, Drafting of Manuscript, Critical Review

NS: Drafting of Manuscript, Critical Review

ZN: Data Analysis and/or Interpretation

IQ: Data Collection & Processing, Data Analysis and/or Interpretation

SY: Data Collection & Processing, Critical Review

UA: Drafting of Manuscript

REFERENCES

1. Betran AP, Ye J, Moller AB, Souza JP, Zhang J. Trends and projections of cesarean section rates: global and regional estimates. *BMJ global health*. 2021 Jun 1;6(6): e005671. <https://doi.org/10.1136/bmjgh-2021-005671>
2. Umar BU, Haque M. Growing concern over rising cesarean section rates: is it a problem for low-and middle-income countries only? *ADV HUM BIOL*. 2022 May 1;12(2):93-100. DOI: 10.4103/aihb.aihb_148_21.
3. Cheng Y, Su S, Wu S. Changes in cesarean section rates and its indications among primiparous women during each implementation phase of Chinese two-child policy: a retrospective study. *Chin Med J*. 2022 Sep 20;135(18):2264-6. doi: 10.1097/CM9.0000000000002422.
4. Nagy S, Papp Z. Global approach of the cesarean section rates. *J Perinat Med*. 2021 Jan 26;49(1):1-4. <https://doi.org/10.1515/jpm-2020-0463>.
5. Keag OE, Norman JE, Stock SJ. Long-term risks and benefits associated with cesarean delivery for mother, baby, and subsequent pregnancies: Systematic review and meta-analysis. *PLoS med*. 2018 Jan 23;15(1): e1002494 <https://doi.org/10.1371/journal.pmed.1002494>
6. Panda S, Begley C, Daly D. Clinicians’ views of factors influencing decision-making for cesarean section: A systematic review and meta-synthesis of qualitative, quantitative and mixed methods studies. *PloS one*. 2018 Jul 27;13(7): e0200941. <https://doi.org/10.1371/journal.pone.0200941>
7. Boerma T, Ronsmans C, Melesse DY, Barros AJ, Barros FC, Juan L, Moller AB, Say L, Hosseinpoor AR, Yi M, Neto DD. Global epidemiology of use of and disparities in cesarean sections. *The Lancet*. 2018 Oct 13;392(10155):1341-8 doi: [https://doi.org/10.1016/S0140-6736\(18\)31928-7](https://doi.org/10.1016/S0140-6736(18)31928-7).
8. Chen I, Opiyo N, Tavender E, Mortazhejri S, Rader T, Petkovic J, Yogasingam S, Taljaard M, Agarwal S, Laopaiboon M, Wasiak J. Non-clinical interventions for reducing unnecessary caesarean section. *CDSR*. 2018(9). <https://doi.org/10.1002/14651858.CD005528.pub3>
9. Molina G, Weiser TG, Lipsitz SR, Esquivel MM, Uribe-Leitz T, Azad T, Shah N, Semrau K, Berry WR, Gawande AA, Haynes AB. Relationship between cesarean delivery rate

- and maternal and neonatal mortality. *JAMA*. 2015 Dec 1;314(21):2263-70. doi:10.1001/jama.2015.15553.
10. World Health Organization. WHO recommends non-clinical interventions to reduce unnecessary caesarean sections? World Health Organization; 2018.
 11. Negrini R, da Silva Ferreira RD, Albino RS, Daltro CA. Reducing caesarean rates in a public maternity hospital by implementing a plan of action: a quality improvement report. *BMJ Open Quality*. 2020 May 1;9(2): e000791. <https://doi.org/10.1136/bmjopen-2019-000791>
 12. Kanji Z, Simonovich SD, Najmi N, Bishop-Royse J. Examining clinical indications for cesarean section in a university hospital in Karachi, Pakistan. *JAM*. 2019;6(1):14-25.
 13. Smith V, Gallagher L, Carroll M, Hannon K, Begley C. Antenatal and intrapartum interventions for reducing caesarean section, promoting vaginal birth, and reducing fear of childbirth: an overview of systematic reviews. *PLoS One*. 2019 Oct 24;14(10): e0224313. <https://doi.org/10.1371/journal.pone.0224313>.
 14. Prediger B, Polus S, Mathes T, Bühn S, Louwen F, Neugebauer EA, Pieper D. (Update of a) systematic review on the impact of elective early term (< 39th gestational week) caesarean sections on maternal and neonatal health-a protocol. *Systematic Reviews*. 2018 Dec; 7:1. <https://doi.org/10.1186/s13643-018-0787-5>
 15. Pirjani R, Afrakhteh M, Sepidarkish M, Nariman S, Shirazi M, Moini A, Hosseini L. 'Elective caesarean section at 38–39 weeks gestation compared to > 39 weeks on neonatal outcomes: a prospective cohort study. *BMC pregnancy and childbirth*. 2018 Dec; 18:1-5. <https://doi.org/10.1186/s12884-018-1785-2>.
 16. McCall SJ, Semaan A, Altijani N, Opondo C, Abdel-Fattah M, Kabakian-Khasholian T. Trends, wealth inequalities and the role of the private sector in caesarean section in the Middle East and North Africa: A repeat cross-sectional analysis of population-based surveys. *PloS one*. 2021 Nov 16;16(11): e0259791. <https://doi.org/10.1371/journal.pone.0259791>.
 17. Bhatia M, Dwivedi LK, Banerjee K, Dixit P. An epidemic of avoidable caesarean deliveries in the private sector in India: Is physician-induced demand at play? *Social Science & Medicine*. 2020 Nov 1; 265:113511. doi: <https://doi.org/10.1016/j.socscimed.2020.113511>.
 18. Rudey EL, do Carmo Leal M, Rego G. Cesarean section rates in Brazil: Trend analysis using the Robson classification system. *Medicine*. 2020 Apr 1;99(17): e19880. DOI: 10.1097/MD.00000000000019880
 19. Chen I, Opiyo N, Tavender E, Mortazhejri S, Rader T, Petkovic J, Yogasingam S, Taljaard M, Agarwal S, Laopaiboon M, Wasiak J. Non-clinical interventions for reducing unnecessary caesarean section. *CDSR* 2018(9). <https://doi.org/10.1002/14651858.CD005528.pub3>
Opiyo N, Kingdon C, Oladapo OT, Souza JP, Vogel JP, Bonet M, Bucagu M, Portela A, McConville F, Downe S, Gülmezoglu AM. Non-clinical interventions to reduce unnecessary caesarean sections: WHO recommendations. *Bulletin of the WHO*. 2020 Jan 1;98(1):66. doi: 10.2471/BLT.19.236729.