

# Robson Classification in Cesarean Section in Chhattisgarh, India

Neha Thakur<sup>1</sup>✉, Archana Kennedyrajan<sup>2</sup>, Neha Aggrawal<sup>3</sup>, Lalita P Nekkati<sup>4</sup>

Received on: 13 June 2024; Accepted on: 06 July 2024; Published on: 23 October 2024

## ABSTRACT

**Background:** Cesarean sections are becoming more commonplace worldwide. The World Health Organization (WHO) advised utilizing the Robson categorization system to assess and monitor the frequency of cesarean procedures overtime, both within and between healthcare facilities.

**Aims and objectives:** To determine the pattern of obstetric women population. To find which proportion of women have a high CS rate will help us to target specific groups of women for the reduction of overall CS.

**Materials and methods:** This investigation was observational. From September 2022 to August 2023, all cesarean deliveries at Government Medical College, Mahasamund, Chhattisgarh, India, having a gestational age of more than 28 weeks, were included. After using Robson's TGCS, data were entered, examined, and shown as percentages.

**Results:** A total of 3,573 deliveries happened in the study period. Approximately 41.26% of births were cesarean. Women who are nulliparous (46.36%) outnumber those who are multiparous (23.55%). The main relative contributors to the 80.18% overall CS rate were groups I, II, and V. Group VI had a breech, nulliparous CS rate of 82.86%, group IX had a high CS rate of 100%, and group V had a prior CS rate of 94.75%.

**Conclusion:** The findings show that group V had a high CS rate; therefore, steps must be taken to decrease CS in groups I and II, since a reduction in CS in group I would subsequently result in a reduction in group V's group size. These measures include shared decision-making, equality of care, induction of labor and close monitoring, vaginal birth after cesarean section (VBACS) in selected women under supervised conditions, respectful maternity care, positive pregnancy experience, one-to-one intrapartum care, and appropriate regular training of staff involved in the care of pregnant women.

**Keywords:** Cesarean section, Induction of labor, Robson classification, Vaginal birth after cesarean section.

*Journal of South Asian Federation of Obstetrics and Gynaecology* (2024): 10.5005/jp-journals-10006-2484

## INTRODUCTION

"Cesarean section rates are rising grossly making it a major public health concern" this was the sentence mentioned in the WHO Robson implementation manual.<sup>1</sup> There are many factors involved in this rising cesarean section trend. Moreover, the increasing rate of cesarean section leads to an increase in the incidence of more complicated conditions like placenta accrete spectrum which is associated with life-threatening complications to the mother and fetus.

Currently, cesarean procedures account for more than one in five deliveries (21%) around the world, according to new evidence that was just provided by the WHO. Based on the data, it is anticipated that this proportion will rise over the next 10 years, with over a third (29%) of all deliveries expected to be delivered using cesarean section by 2030.<sup>2,3</sup>

When we see the scenario in India, according to the NHFS 5 (2019–2021) survey report, the cesarean section rate was 21.5% which was a 4.3% increase from the previous NHFS 4 (2015–2016) of 17.2%.<sup>2</sup> The investigation also revealed that the rate of cesarean sections was higher in urban than rural areas. The proportion of cesarean section births in private healthcare facilities (47.4%) was higher than the proportion of cesarean section births in public healthcare facilities (14.3%).<sup>2</sup>

According to an April 2015 WHO statement, population-level cesarean procedures over 10% do not reduce mother and infant mortality. Under the "LaQshya" "labor room and maternity OT quality improvement initiative, all public health facilities have cesarean section audits. To ensure cesarean sections are performed

<sup>1–4</sup>Department of Obstetrics and Gynecology, Government Medical College, Mahasamund, Chhattisgarh, India

**Corresponding Author:** Neha Thakur, Department of Obstetrics and Gynecology, Government Medical College, Mahasamund, Chhattisgarh, India, Phone: +91 8085559897, e-mail: neha051988@gmail.com

**How to cite this article:** Thakur N, Kennedyrajan A, Aggrawal N, *et al.* Robson Classification In Cesarean Section in Chhattisgarh, India. *J South Asian Feder Obst Gynae* 2024;16(5):533–536.

**Source of support:** Nil

**Conflict of interest:** None

selectively when necessary. This audit form includes Robson classification.

The Robson classification system is suggested by WHO as a worldwide benchmark for evaluating, tracking, and contrasting the rates of cesarean sections overtime within and between hospitals.<sup>1</sup> The Robson classification system must be put into practice in order to recognize the group of women who contribute most to the CS rate. Only then can efforts be directed toward reducing the rate of cesarean sections specifically toward that group of women.<sup>4</sup>

## AIMS AND OBJECTIVES

The purpose of this investigation was to apply the Robson classification system in order to find patterns in the rate of cesarean

sections and to pinpoint the specific categories of women who are primarily responsible for the rising rates.<sup>5,6</sup>

## Objectives

The primary objective was it would provide us with baseline information regarding the cesarean section rate and pattern of women population in this particular area of India. Secondary, we expect that the information we get from this study will support policymakers in developing plans to lower the CS rate.<sup>7</sup>

## MATERIALS AND METHODS

### Study Design

Observational study done in Government Medical College, Mahasamund, Chhattisgarh for a duration of 1 year from September 2022 to August 2023.

### Sample Size

A total of 3,473 deliveries that happened in the 1-year time frame was included.

### Inclusion Criteria

The investigation included all pregnant patients who were hospitalized in the labor and delivery units at a gestational age greater than 28 weeks.

### Data Collection

Data on parity, gestational age, induced or spontaneous labor onset, presentation, multiple pregnancies, mode of delivery, and prior deliveries were gathered from the hospitalized prenatal women's case file for every delivery. The ladies were categorized using all of these factors in accordance with the "Robson Ten Group Classification scheme, as shown below:

- Group I: Nulliparous females with a single cephalic pregnancy going into spontaneous labor at 37 weeks gestation.
- Group II: Nulliparous females with a single cephalic pregnancy,  $\geq 37$  weeks gestation, who either had CS deliver their" baby before labor or had labor-induced.
- Group III: Women who are multiparous and have never had a cesarean section, one cephalic pregnancy, and spontaneous labor at 37 weeks gestation.
- Group IV: Multiparous women who had never had a CS previously, had "a single cephalic pregnancy, were  $\geq 37$  weeks gestation, had labor induced, or had a CS delivery prior to labor.
- Group V: Every multiparous woman with a single" cephalic pregnancy that is  $\geq 37$  weeks gestation and at least one prior CS
- Group VI: Every nulliparous woman who has had one breech pregnancy.
- Group VII: Including those who have had prior CSs, "all multiparous women with a single breech pregnancy.
- Group VIII: All pregnant women, including those who have had prior CS(s).
- Group IX: All women, comprising those who have had prior CS(s), who have had a single pregnancy with a transverse or oblique lie.
- Group X: Every" woman carrying a single cephalic pregnancy.

### Statistical Analysis

The SPSS software version 25 was utilized, while Microsoft Excel was used to enter the variables. "Relative CS rates to the total number

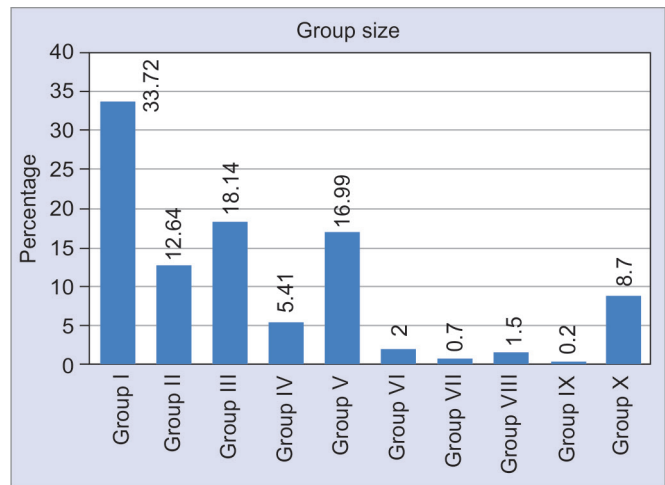


Fig. 1: Relative size of each group

of C-sections absolute CS rates to the total number of deliveries in each group, and" percentages for each group size were computed and noted.<sup>8,9</sup>

## RESULTS

A total of 3,573 deliveries occurred out of which 2,040 patients underwent cesarean section with an overall cesarean section rate of 41.26%.

Figure 1 shows the group size of each women population, the highest contribution was by groups I and II (46.36%) which are mainly singleton, nulliparous, cephalic, and term women. Groups III and IV together make up 23.55% (multiparous, cephalic, singleton, term, and without a previous scar). Approximately 16.99% of group V (prior CS, singleton term cephalic pregnancy) were represented. Approximately 2.7% came from groups VI and VII (single, breech presentation). Just 1.5% of the women in group VIII—multiple pregnancies—and 0.2% of the women in group IX—abnormally lied. Approximately 8.7% of the women were in group X, which is preterm, cephalic, and singleton pregnancies.<sup>10,11</sup>

Among the group cesarean section size, the CS rate was greatest in group V, which means 94.75% of women who are in group V had undergone C-sections. Approximately 100% of women in group IX had cesarean section. Among the Nulliparous women, those who belong to group I, 32.71% had undergone C-section and among group II, it was 47.15%. Group VI had a group CS rate of 82.86% and in Group VII it was 58.33%.

According to the group's absolute contribution to the overall C-section rate, group V (16.1%) made the largest contribution, followed by group I (11.03%), group II (5.96%), group X (2.67%), group III (1.76%), and group VI (1.67%) (Table 1).

## DISCUSSION

In the current study, the CS was 41.26%. This was far higher than the 10% population-level WHO suggested standard. The high percentage of cesarean section led us to initiate a cesarean section audit in order to identify the cause of the enormous cesarean section burden on our facility.

Group I and group II together make up 46.36% of the obstetric population in this setting. Robson's guideline suggested a value of 35–42%.<sup>1</sup> Meanwhile, group III and group IV contribute to 23.55%

**Table 1:** The Robson classification report table

	Number of CS	Total women in each group	Group size (%)*	Group CS size (%)**	Absolute contribution to overall CS rate (%)***	Relative contribution to overall CS rate (%)****
Group I	383	1,171	33.72	32.71	11.03	26.73
Group II	207	439	12.64	47.15	5.96	14.45
Group III	61	630	18.14	9.68	1.76	4.26
Group IV	34	188	5.41	18.09	0.98	2.37
Group V	559	590	16.99	94.75	16.1	39
Group VI	58	70	2	82.86	1.67	4.04
Group VII	14	24	0.7	58.33	0.4	0.98
Group VIII	17	52	1.5	32.69	0.49	1.19
Group IX	7	7	0.2	100	0.2	0.49
Group X	93	302	8.7	30.8	2.67	6.49
Total	2,040	3,473	100	41.26	41.26	100

\*Group size (%) =  $n$  of women in the group/total  $N$  women delivered in the hospital  $\times 100$ ; \*\*Group CS rate (%) =  $n$  of CS in the group/total  $N$  of women in the group  $\times 100$ ; \*\*\*Absolute contribution (%) =  $n$  of CS in the group/total  $N$  of women delivered in the hospital  $\times 100$ ; \*\*\*\*Relative contribution (%) =  $n$  of CS in the group/total  $N$  of CS in the hospital  $\times 100$

of the obstetric population in the current setting and Robson's guideline suggests that they usually represent about 30% of women.<sup>1</sup> The obstetric population we studied had a great number of nullipara compared with multiparous women. Most of the studies had groups I and II as the significant contributor to group size.

The current study's size of group V was 16.99%, indicating that there has been a high CS rate in previous years, primarily in groups I and II. The Robson's rule suggests that in a context with a low CS rate, it should ideally be less than 10%. To reduce the number of cesarean sections in groups I and II, more emphasis should be placed on these groups in an effort to reduce group V.

As a tertiary referral center, our hospital specializes in managing high-risk pregnancies, such as those involving pre-eclampsia, fetal growth restriction, and different medical problems that complicate pregnancy. In cases when it is beneficial for both the mother and the fetus, we may recommend a pre-labor, preterm cesarean section. Group X represents 8.7% of the obstetric population and has a 30.8% CS rate.<sup>12,13</sup>

Groups VI and VII represent 2.7% of the study population, which is within the range suggested by Robson of 3–4%. The size of multiple pregnancies (group VIII) is 1.5% same as that suggested by Robson.

The CS rate of Group I is 32.71% but Robson's guideline suggests that values of 10% are achievable. This high increase in percentage is due to many factors such as our hospital setting is a tertiary care referral center managing many referred cases from lower centers which are not in a condition to undergo vaginal delivery without morbidity to mother and the baby, there is a lack of shared decision making, women undergoing cesarean section are not aware of the long-term complication, not able to provide adequate intrapartum care.

The CS rate in group II is 47.15% which was more than the guideline suggest value of 20–35%. This report shows that the Nulliparous women are not given the choice of induction of labor or otherwise induction of labor was done but it's going into failure. Measures to be made to address this situation involve effective training of staff involved in intrapartum care of women and educating the women regarding induction of labor during the antenatal period.

The CS rate in group III normally should not exceed 3%, but in our investigation, it was 9.68%. The CS rate of group IV was 18.09%,

Robson suggests a value of less than 15%. The main increase in CS rate in both groups was simultaneous tubal sterilization that can be done along with the procedure.

Group V's CS rate was 94.75%. The primary source of the CS rate is this group. Reduce the rate of CS in groups I and II by offering vaginal birth after cesarean section (VBACS) to certain women.<sup>14</sup>

In the obstetric population under study, the respective contributions of groups I, II, and V to the overall CS rate was 80.18%. These three categories should be the primary targets of the CS rate reduction strategies, with group I receiving particular focus. This requires respectful maternity care, a positive pregnancy experience approach, one-to-one care during the intrapartum period, shared decision-making, explaining the pros and cons of the cesarean section including long-term complication, annual training of staff involved in the care of pregnant women, and timely referral of the women to higher center.<sup>15–17</sup>

## CONCLUSION

The investigation found that by employing the Robson ten-group classification systems, we were able to determine each group's individual contribution to the total CS rate in addition to the CS rate particular to each group. The three most influential groups in terms of relative contributions to the total CS rate were 1, 2, and 5. Therefore, a thorough analysis of the variables influencing the CS rate in these groups needs to be done, and the causes should be fixed to lower the CS rate. Shared decision-making is one of the important sections that should be addressed in all healthcare facilities which could reduce most of the unnecessary cesarean section.

## Ethical Approval

This study is ethically approved by the Institutional Ethical Committee.

## ORCID

Neha Thakur  <https://orcid.org/0000-0002-7075-4903>

## REFERENCES

1. Robson classification: Implementation manual. Geneva: World Health Organization; 2017. Available from: <https://www.who.int/news/item/30-11-2017-the-robson-classification-implementation-manual>.

2. National Family Health Survey (NFHS-5) 2019–2021, compendium of fact sheets India and 14 states/UTs (phase-2) Ministry of Health & Family Welfare, Government of India. Available from: [https://main.mohfw.gov.in/sites/default/files/NFHS-5\\_Phase-II\\_0.pdf](https://main.mohfw.gov.in/sites/default/files/NFHS-5_Phase-II_0.pdf).
3. Cesarean section rates continue to rise, amid growing inequalities in access, World Health Organization, Departmental news -16 June 2021. Available from: <https://www.who.int/news/item/16-06-2021-caesarean-section-rates-continue-to-rise-amid-growing-inequalities-in-access>.
4. Tontus HO, Nebioglu S. Improving the caesarean decision by Robson classification: A population-based study by 5,323,500 livebirth data. *Ann Glob Health* 2020; 86(1):101,1–11. DOI: 10.5334/aogh.2615.
5. Abubeker FA, Gashawbeza B, Gebre TM, et al. Analysis of cesarean section rates using Robson ten group classification system in a tertiary teaching hospital, Addis Ababa, Ethiopia: A cross-sectional study. *BMC Pregnancy Childbirth* 2020;20(1):767. DOI: 10.1186/s12884-020-03474-x.
6. Parveen R, Khakwani M, Naz A, et al. Analysis of cesarean sections using Robson's ten group 414 classification system. *Pak J Med Sci* 2021;37(2):567–571. DOI: 10.12669/pjms.37.2.3823.
7. Kore SS, Shams F, Chilkund J, et al. A retrospective study to analyse the rate of caesarean section according to Robson's 10 group classification in a peripheral hospital in a metropolitan city. *Int J Res Med Sci* 2021;9(8):2389–2392. DOI: 10.18203/2320-6012.ijrms20213086.
8. Mendes YMMB, Rattner D. Cesarean sections in Brazil's teaching hospitals: An analysis using Robson Classification. *Rev Panam Salud Publica* 2021;45(e16). DOI: 10.26633/RPSP.2021.16.
9. Zeitlin J, Durox M, Macfarlane A, et al. Using Robson's ten group classification system for comparing caesarean section rates in Europe: An analysis of routine data from the Euro-Peristat study. *BJOG* 2021;128(9):1444–1453. DOI: 10.1111/1471-0528.16634.
10. Baser A, Sharma S, Kumar S, et al. Indication for cesarean section as per Robson's criteria: An analysis of 5000 consecutive cesarean cases. *J South Asian Feder Obst Gynae* 2021;13(1):22–25. DOI: 10.5005/jp-journals-10006-1861.
11. Jogia A, Mehta KA. Use of the Robson classification to assess cesarean section at a medical college hospital in Gujarat, India. *Asian J Med Sci* 2022;13(8):202–207. DOI: 10.3126/ajms.v13i8.44293.
12. Giaxi P, Gourounti K, Vivilaki V, et al. Implementation of the Robson classification in Greece: A retrospective cross-sectional study. *Healthcare* 2023;11(6):908. DOI: 10.3390/healthcare11060908.
13. Akadri AA, Imaralu JO, Salami OF, et al. Robson classification of caesarean births: Implications for reducing caesarean section rate in a private tertiary hospital in Nigeria. *BMC Pregnancy Childbirth* 2023;23(243). DOI: 10.1186/s12884-023-05557-x.
14. Patil SB, D R. Robson classification: Beyond caesarean rates. *Int J Reprod Contracept Obstet Gynecol* 2023;12(7):2241–2246. DOI: 10.18203/2320-1770.ijrcog20231941.
15. Yadav A, Agrawal R, Chawang KR, et al. Analysis of cesarean section rate using Robson 10 group classification system in a tertiary hospital: An observational study. *Glob J Med Res* 2021;21(E4),13–18. Available from: <https://medicalresearchjournal.org/index.php/GJMR/article/view/2630>.
16. Kabra SL, Madaan R, Maheshwari S, et al. Robson's 10-group classification system analysis of cesarean deliveries performed at a tertiary care teaching institution. *J South Asian Feder Obst Gynae* 2023;15(6):643–646. DOI: 10.5005/jp-journals-10006-2324.
17. Deshmukh P, Panchbudhe SA, Nimbkar AR. A study and analysis of cesarean sections by Robson's ten group classification system. *J South Asian Feder Obst Gynae* 2022;14(4):370–373. DOI: 10.5005/jp-journals-10006-2084.