International Journal of Nutrology
(Official Journal of the ABRAN - Brazilian Association of Nutrology)

ORIGINAL ARTICLE

DOI: 10.54448/ijn26222

Comparison of cesarean section rates and Robson Group 5 proportions before and after non clinical intervention (focus group discussion) at Jombang District Hospital

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E-mail: gilang.dimas93@gmail.com
DOI: https://doi.org/10.54448/ijn26222
Received: 03-17-2026; Revised: 05-28-2026; Accepted: 06-01-2026; Published: 06-09-2026; IJN-id: 26222

Editor: Dr. Durval Ribas Filho, MD, Ph.D.

Abstract

Introduction: Global cesarean section (CS) rates continue rising without corresponding maternal/neonatal mortality reductions. WHO recommends 10-15% ideal rates, yet Indonesia reports 17.6% (Riskesdas 2018) to 36% (BPJS 2019). Jombang District Hospital showed 38.9% CS rate in 2023, predominantly Robson Group 5 (16.9%). **Objective:** To compare CS rates and Robson Group 5 proportions before and after interventions at Jombang District Hospital in 2024, and evaluate management changes for women with prior CS history. **Methods:** Quasi-experimental study compared a pre-intervention period (January-June 2024: n=1,341) and a post-intervention period (July-December 2024: n=1,142) across a total of 2,483 deliveries. Hospital delivery records were analyzed utilizing the Robson classification. Chi-square tests assessed differences in CS proportions with a significance level of $p<0.05$. **Results:** The overall CS rate was 44.8% (1,113/2,483), increasing nonsignificantly from 43.3% to 46.6% (p=0.113). Robson Group 5 CS rates remained persistently high, shifting from 92.0% pre-intervention to 93.5% post-intervention (p=0.624). Vaginal birth after cesarean (VBAC) success was limited to 8-12%. **Conclusion:** Non-clinical focus group discussions among healthcare providers failed to reduce CS rates, highlighting the limitations of single-component interventions. Multifaceted strategies are essential, including mandatory second opinions for elective CS, standardized VBAC protocols, and intensive antenatal education.

Keywords: Cesarean section. Robson classification. VBAC. Focus group discussion. Jombang District Hospital.

Introduction

Cesarean section (CS) is a surgical procedure that can effectively prevent maternal and newborn mortality when utilized for appropriate medical indications. However, global CS rates continue to rise without corresponding reductions in maternal or neonatal mortality. Cesarean section (CS) is one of the most commonly performed obstetric surgical procedures worldwide, and its rate has increased substantially over the past few decades. Although CS can be a lifesaving intervention for both mother and baby when medically indicated, the continued rise in cesarean deliveries beyond recommended levels has become a major public health concern. The World Health Organization suggests that population-based CS rates above 10-

15% are not associated with additional reductions in maternal or neonatal mortality [1].

The World Health Organization (WHO) recommends an ideal CS rate of 10-15% [2]. Despite this, data shows that the rate of CS deliveries in Indonesia is much higher, reaching 17.6% according to Riskesdas 2018 [3] and up to 36% based on BPJS data [4]. Elevated CS rates increase the risks of maternal and perinatal morbidity, which includes placenta accreta spectrum complications in subsequent pregnancies [5].

To better understand and monitor cesarean section trends, the Robson Ten-Group Classification System was introduced and later recommended by WHO as the global standard for assessing, comparing, and auditing CS rates across healthcare facilities. The Robson system classifies all pregnant women into ten mutually exclusive groups based on five obstetric characteristics: parity, previous cesarean section, onset of labor, fetal presentation, number of fetuses, and gestational age [2].

A preliminary study conducted at Jombang District Hospital in 2023 discovered a CS rate of 38.9%, with the largest contribution originating from Robson Group 5 (multiparous women with a previous CS), which accounted for 16.9%. The objective of this study was to compare CS rates and the proportion of Robson Group 5 deliveries before and after interventions at Jombang District Hospital in 2024, as well as to evaluate changes in the management of pregnant women with a history of previous CS.

Therefore, evaluating cesarean section rates and the proportion of Robson Group 5 before and after non-clinical interventions is important for assessing the effectiveness of strategies designed to optimize obstetric care and reduce unnecessary repeat cesarean deliveries.

Methods

This was a quasi-experimental study utilizing annual maternal delivery reports and electronic medical records. The research evaluated a pre-intervention period extending from January to June 2024 and a post-intervention period from July to December 2024. The study population consisted of all pregnant women who delivered at Jombang District Hospital in 2024. The inclusion criteria required a gestational age greater than 20 weeks, a birth weight of more than 500 grams, and delivery occurring at Jombang District Hospital. Cases with a birth weight of less than 500 grams were excluded. A total sampling technique was applied.

The intervention analyzed was a non-clinical Focus Group Discussion (FGD). This intervention was targeted at midwives and the doctors in charge to change decision-making behaviors via education on evidence-based guidelines, clinical audits, and team feedback to promote safe vaginal deliveries and delay elective CS without clear indications.

Before conducting research on patients about evaluating cesarean section rates and the proportion of Robson Group 5 before and after non-clinical interventions is important for assessing the effectiveness of strategies designed to optimize obstetric care and reduce unnecessary repeat cesarean deliveries, first make a declaration of informed consent as approval to participate in this research.

Data processing was executed using Microsoft Office Excel. The deliveries were categorized using the Robson Classification to compare data between the respective periods. A Chi-Square test was utilized to evaluate differences in the proportion of CS occurrences between the pre-intervention and post-intervention periods, with statistical significance defined as $p<0.05$.

This research was conducted in December 2025 after ethical of proposal was approved by the ethics committee of Regional Public Hospital of Jombang with the ethical clearance number 88/KEPK/X/2025.

Results

The total sample comprised 2,483 deliveries in 2024. The pre-intervention cohort (January – June 2024) included 1,341 samples (54.0%), while the post-intervention cohort (July - December 2024) included 1,142 samples (46.0%) (Table 1).

Table 1. Distribution of sample Research Pra and Pasca Intervensi.

Period	Month	n	Percentage (%)
Pra Intervention	Januari – Juni 2024	1.341	54,0%
Pasca Intervention	Juli – Desember 2024	1.142	46,0%
Total		2.483	100%

Source: Own authorship.

Across the entire sample, vaginal deliveries accounted for 1,370 cases (55.2%), and CS procedures accounted for 1,113 cases (44.8%) (Table 2).

Table 2. Distribution of Delivery Methods in 2024.

Delivery Methods	N	Percentage (%)
Pervaginam	1.370	55,2%
Seksio Sesarea	1.113	44,8%
Total	2.483	100%

Source: Own authorship.

The overall CS rate saw a non-significant increase from 43.3% (581 out of 1,341 deliveries) in the pre-intervention period to 46.6% (532 out of 1,142 deliveries) in the post-intervention period (Table 3). Statistical analysis via the Chi-Square test resulted in a p-value of 0.113, meaning there was no statistically significant difference in the proportion of CS occurrences between the periods.

Table 3. Comparative Analysis of SC Rates Pre and Post Intervention.

Period	Seksio Cesarea (SC)	Delivery of Pervaginam	Total	*SC Rate* (%)
Pra Intervensi	581	760	1.341	43,3%
Pasca Intervensi	532	610	1.142	46,6%
Total	1.113	1.370	2.483	44,8%
P value	0.113			

Source: Own authorship.

Within the Robson Group 5 demographic - defined as multiparous women with at least one previous CS scar, a single cephalic pregnancy, and a gestational age of ≥37 weeks - CS rates remained critically high. The pre-intervention CS rate for this group was 92.0% (138 out of 150 cases), which rose to 93.5% (116 out of 124 cases) post-intervention. The VBAC success rate for this population was notably low at 8-12% (Table 4).

Table 4. Comparative Analysis of SC in Robson Group 5.

Period	Total Group 5	Case Sectio Casarea	Non-SC (VBAC)	*SC Rate* Group 5 (%)
Pra Intervensi	150	138	12	92,0%
Pasca Intervensi	124	116	8	93,5%
Total	274	254	20	92,7%
P value	0.624			

Source: Own authorship.

This shift in success post-intervention was not statistically significant (p=0.624). Monthly trend analysis further confirmed fluctuations in the CS rate without any consistent or sustained patterns of decline.

Discussion

The present study assessed cesarean section (CS) rates and the proportion of Robson Group 5 before and after implementation of non-clinical interventions. The findings demonstrate that non-clinical strategies can contribute to reducing unnecessary cesarean deliveries and improving obstetric care practices. The observed changes in overall CS rates and the contribution of Robson Group 5 indicate the potential effectiveness of interventions such as clinical audits, staff training, patient education, feedback mechanisms, and promotion of vaginal birth after cesarean (VBAC) **[6]**. The targeted non-clinical intervention, consisting of educational FGDs for healthcare professionals, proved ineffective at significantly reducing the CS rate at Jombang District Hospital. The CS rate actually increased from 43.3% to 46.6% (p=0.113). This outcome confirms that a single-component intervention limited to provider education - without addressing institutional policies, systemic modifications, or patient involvement - exerts minimal influence on complex, multifactorial clinical practices like determining CS indications **[7]**.

Particularly alarming was the data for Robson Group 5, where the CS rate remained over 92% across both periods. The observed VBAC success rate of 8-12% sits drastically below the international standard of 60-80%. This significant shortfall highlights deeply rooted systemic barriers, which include the provider's fear of complication risks and malpractice litigation, a lack of supportive institutional policies, an absence of standardized VBAC protocols, and the preferences of pregnant women who perceive elective CS as safer and more comfortable **[8,9]**.

Before implementation of the intervention, the overall cesarean section rate was high, and Robson Group 5 constituted a major contributor to the total number of cesarean deliveries. Similar findings have been reported in several international studies, where women with a previous cesarean section accounted for a substantial proportion of repeat CS deliveries **[10]**. This reflects the continuing global concern regarding rising primary cesarean rates, which subsequently increase the size of Group 5 in future pregnancies **[11]**.

Despite these improvements, Group 5 often remains one of the largest contributors to overall CS rates. This may be due to persistent barriers such as fear of uterine rupture, medico-legal concerns, inadequate facilities for emergency obstetric care, and maternal preference for repeat cesarean delivery. Similar challenges have been identified in previous studies, which noted that reducing Group 5 requires not only increasing VBAC rates but also preventing unnecessary primary cesarean sections in low-risk women **[12]**.

As established in global literature, such as the QUARISMA study, single-component interventions are generally insufficient. Effectively modifying deeply ingrained clinical norms necessitates multifaceted interventions **[13]**. The FGD intervention failed because it strictly targeted provider knowledge without providing structural support for emergency response capabilities, mandatory continuous feedback, or

targeted maternal education on the long-term risks of repeat CS.

Conclusion

A single-component non-clinical intervention utilizing focus group discussions among healthcare providers was ineffective in reducing CS rates. Mothers with a history of a previous CS (Robson Group 5) represent the primary contributor to the high CS incidence. Failure to decrease the CS rate underscores that provider education alone is insufficient to enhance VBAC success without holistic systemic support. To achieve a sustainable reduction in CS rates, hospitals must adopt a comprehensive, multifaceted approach that integrates routine clinical audits with individual feedback, mandatory second-opinion policies for elective cases, standardized VBAC clinical pathways, and intensive antenatal patient education.

CRediT

Author contributions: **Conceptualization-** All authors**; Investigation-** All authors; **Methodology-** All authors; **Project administration-** All authors; **Supervision-** All authors; **Writing - original draft-** All authors; **Writing-review & editing-** All authors.

Acknowledgment

The authors would like to express their gratitude to the medical and nursing staff, midwives, all of the team who involved in this study.

Ethical Approval

This research was conducted in December 2025 after ethical of proposal was approved by the ethics committee of Regional Public Hospital of Jombang with the ethical clearance number 88/KEPK/X/2025.

Informed Consent

Not applicable.

Funding

Not applicable.

Data Sharing Statement

The data used in this study are available from the corresponding author upon reasonable request.

Conflict of Interest

The authors declare no conflict of interest.

Similarity Check

It was applied by Ithenticate®.

Application of Artificial Intelligence (AI)

Not applicable.

Peer Review Process

It was performed.

References

1. Strambi, Noemi., et al. Non-Clinical Variables Influencing Cesarean Section Rate According to Robson Classification, Medicina, 2020, 56(4): 180.
2. World Health Organization. WHO statement on caesarean section rates. Geneva: World Health Organization; 2015.
3. Kementerian Kesehatan Republik Indonesia. Hasil utama riset kesehatan dasar (RISKESDAS). Jakarta: Kemenkes RI; 2018.
4. BPJS Kesehatan. Kendalikan Kasus Persalinan Caesar, BPJS Kesehatan Perkuat Koordinasi dengan Tim KMKB [Internet]. Jakarta: BPJS; 2020. Available from: https://www.bpjs-kesehatan.go.id/
5. Touhami O, Allen L, Flores Mendoza H. Placenta accreta spectrum: a non-oncologic challenge for gynecologic oncologists. Int J Gynecol Cancer. 2022;32:788-798.
6. American College of Obstetricians and Gynecologists (ACOG). Vaginal Birth After Cesarean Delivery: Practice Bulletin No. 205. Obstetrics & Gynecology, 2019, 133(2), e110–e127.
7. Chen I, Opiyo N, Tavender E, Mortazhejri S, Rader T, Petkovic J, et al. Non-clinical interventions for reducing unnecessary caesarean section. Cochrane Database Syst Rev. 2018; (9).
8. Zullianti N, et al. Aspects that shape the midwives' perception of vaginal birth after caesarean (VBAC). Ind Midwifery Health Sci J. 2022; 6(2):123-137.
9. Khoe LC, et al. Implementation of Robson classification for caesarean section using health insurance claims: the experience of Indonesia. medRxiv. 2024.
10. Robson M, Murphy M, Byrne F. Quality assurance: the 10-Group Classification System (Robson classification), induction of labor, and cesarean delivery. International Journal of

Gynecology & Obstetrics, 2015;131(S1), S23–S27.

11. Ebadi S, Radaf VE, Mahmood T, Savona-Ventura C, Zaigham M. Caesarean section rates in public vs private hospitals in Europe: a systematic review and meta-analysis using the Robson ten group classification system. Eur J Obstet Gynecol Reprod Biol. 2026 Feb 20;318:114921. doi: 10.1016/j.ejogrb.2025.114921. Epub 2025 Dec 25. PMID: 41506012..
12. Betrán AP, Ye J, Moller AB, Souza JP, Zhang J. Trends and projections of caesarean section rates: global and regional estimates. BMJ Global Health, 2016;1(3), e000411.
13. Chaillet N, Dumont A, Abrahamowicz M, Pasquier JC, Audibert F, Monnier P, et al. A cluster-randomized trial to reduce cesarean delivery rates in Quebec. N Engl J Med. 2015;372(18):1710–1721.