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Frequency of Maternal and Perinatal Outcome of Repeat Cesarean Section

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ABSTRACT

Background: Repeat cesarean section is a common obstetric practice globally, often chosen due to concerns over uterine rupture and other complications associated with vaginal birth after cesarean. While it can prevent certain risks, repeat CS also introduces potential maternal and neonatal complications such as postpartum hemorrhage, puerperal sepsis, birth asphyxia, and NICU admissions. **Objective:** To determine the frequency of maternal and perinatal outcome of repeat cesarean section at Mardan Medical Complex Mardan. **Study Design:** Descriptive cross-sectional study. **Duration and Place of Study:** The study was conducted from February to August 2024 at the Department of Obstetrics and Gynaecology, Mardan Medical Complex, Mardan. **Methodology:** A total of 168 women aged 18–40 years undergoing elective repeat lower segment cesarean section at term (37–41 weeks) were included. Maternal outcomes (postpartum hemorrhage, puerperal sepsis) and perinatal outcomes (birth asphyxia, neonatal death, NICU admission, low birth weight) were recorded. **Results:** The mean age of participants was 29.98 ± 3.49 years. Postpartum hemorrhage occurred in 10.7% of cases, puerperal sepsis in 6.0%, birth asphyxia in 14.9%, neonatal deaths in 5.4%, NICU admissions in 29.8%, and low birth weight in 8.3%. **Conclusion:** Repeat cesarean section is associated with significant maternal and perinatal complications, with demographic factors playing a critical role in outcome variation.

INTRODUCTION

Repeat cesarean section has become an international standard of practice, primarily because of fear of uterine rupture or other medical complications of vaginal delivery after cesarean.[1] While C-section can be a life-saving intervention when medically indicated, subsequent interventions also carry risk.[2] Each subsequent cesarean makes surgery progressively more complicated with adhesions, placental disorders such as placenta previa or accreta, and longer recovery times.[3] A decision to have a repeat cesarean section should balance these complications with the particular obstetrical history and preferences of the patient.[4]

Repeat cesareans are also linked with certain intraoperative and postoperative factors in relation to maternal outcomes.[5] The most significant issue thereafter is postpartum hemorrhage, in particular in subjects with prior multiple cesareans, in whose placentas elevated vascularity and abnormal placentation cause trouble with hemostasis.[6] There is also an elevated risk of puerperal sepsis, which may be responsible for longer surgical time, frequent violation of aseptic barriers and nosocomial infections.[7] Those complications contribute to increased maternal morbidity, longer hospital stays and increased intensive care unit need for certain cases.[8]

Repeat perinatal results of cesarean births can be variable, particularly with regard to neonatal adaptation of respiration.[9] Birth asphyxia is not common but may occur due to tardive delivery during difficult extractions or by anesthetic complication.[10] Neonatal mortality is low in the vast majority of situations but is influenced by baby's gestational age, surgical exigency of intervention, and comorbidity status.[11] Elective repeat cesarean at early term before 39 weeks is equally associated with transient tachypnea of the newborn and other respiratory perturbations.[12]

Admissions to neonatal intensive care units are reported higher after repeat cesarean sections, mostly when done at pre-labor or before full-term gestational age.[13] Low birth weight is more common in repeat cesarean deliveries when indications for early delivery, such as preeclampsia or intrauterine growth restriction, are present.[14] These neonates often require additional support, including respiratory therapy, thermoregulation, and close monitoring for hypoglycemia and infection.[15] So, while repeat cesarean delivery can reduce certain intrapartum risks, it can also pose significant challenges for both maternal and neonatal health.

A study by Kalisa R. et al. reported that, following repeat cesarean sections, the incidence of puerperal sepsis was 2.2%, birth asphyxia 10.9%, neonatal deaths 21.7%,

and NICU admissions 25.4%.[7] Similarly, a study by Perveen S. et al. found that the frequency of postpartum hemorrhage and low birth weight was 4.1% each after repeat cesarean deliveries.[17]

Repeat cesarean deliveries are frequent but are marked by significant maternal and perinatal hazard. Though global statistics report complications such as postpartum hemorrhage, neonatal asphyxia, and increased NICU admissions, evidence to guide clinical practice is not common within Mardan. Hence, it is of utmost importance to conduct this study within Mardan to assess region-based outcomes, identify patterns of risk, and guide interventions for improvement of maternal and neonatal well-being in the population of the region.

METHODOLOGY

This descriptive, cross-sectional study was conducted from February to August 2024 in the Department of Obstetrics and Gynaecology at Mardan Medical Complex, Mardan. A total of 168 participants were included. The sample size was calculated using WHO software, with assumptions of a 95% confidence level, 3% margin of error, and an expected frequency of low birth weight at 4.1% in women undergoing repeat cesarean section.[17]

Women aged 18 to 40 years, with singleton pregnancies between 37 and 41 weeks of gestation based on the last menstrual period, and undergoing elective repeat lower segment cesarean section were eligible. Only women with a parity of one or more were considered. Exclusion criteria included women with a history of diabetes mellitus, chronic hypertension, placenta previa, other placental abnormalities, severe preeclampsia, or those who had undergone a trial of labor after cesarean.

Following ethical approval No. 400/BKMC Dated: 11/10/2023, participants were briefed about the study and informed written consent was obtained. Demographic and clinical information such as age, gestational age, parity, body mass index, education level, area of residence, monthly income, socioeconomic status, and occupation were documented in a structured proforma.

Surgical procedures followed standard protocols. After appropriate anesthesia and antiseptic preparation, a low-transverse abdominal incision was made. A horizontal uterine incision was used to access the fetus, minimizing the risk of uterine rupture. A neonatal care team was present to provide immediate support after delivery.

Maternal outcomes were monitored postoperatively. Postpartum hemorrhage was defined as estimated blood loss exceeding 1000 milliliters within the first 24 hours following cesarean delivery. This was measured by calculating the weight difference between pre-weighed and blood-soaked gauze, pads, and clots, with one gram considered equivalent to one milliliter of blood. Puerperal sepsis was diagnosed if any three of the following signs were present: oral temperature of 38.5°C or higher, pelvic pain rated greater than 3 on the visual analog scale, abnormal vaginal discharge on examination, foul-smelling discharge, or delayed uterine involution beyond four weeks on ultrasound.

Perinatal outcomes included birth asphyxia, early neonatal death, admission to neonatal intensive care, and low birth weight. Birth asphyxia was diagnosed when the newborn failed to breathe spontaneously for more than 90 seconds after birth, showed inadequate chest rise with a respiratory rate below 30 per minute, and had an umbilical artery pH below 7.1. Neonatal death was defined as the death of a newborn within 24 hours of birth. NICU admission was recorded if the neonate required specialized care due to signs of fetal distress. Birth weight was measured immediately after delivery using a calibrated digital scale, and a reading below 2500 grams was considered low.

All maternal and perinatal outcomes were recorded on a structured form designed specifically for this study. Statistical analysis was conducted using SPSS version 26. Descriptive statistics such as frequencies and percentages were used for categorical data, while means ± standard deviations or medians with interquartile ranges were calculated for continuous variables, depending on data distribution as assessed by the Shapiro-Wilk test. Stratification was performed. The chi-square test or Fisher's exact test, where applicable, was applied to assess associations, with a p-value ≤ 0.05 considered statistically significant.

RESULTS

The study examined 168 patients undergoing repeat cesarean section with a mean age of 29.98 ± 3.49 years, gestational age of 38.83 ± 0.95 weeks, parity of 2.51 ± 1.13, and BMI of 25.82 ± 2.34 kg/m^2. The majority were from rural areas (54.8%) compared to urban areas (45.2%), with middle socioeconomic status being most common (48.8%), followed by poor (42.3%) and rich (8.9%) status (as shown in Table-I).

Table I

Patient Demographics

Demographics		Mean ± SD
Age (years)		29.98 ± 3.49
Gestational Age (weeks)		38.83 ± 0.95
Parity		2.51 ± 1.13
BMI (Kg/m^2)		25.82 ± 2.34
Residential Status	Rural n (%)	92 (54.8%)
	Urban n (%)	76 (45.2%)
Socioeconomic Status	Poor n (%)	71 (42.3%)
	Middle n (%)	82 (48.8%)
	Rich n (%)	15 (8.9%)

The frequency of maternal and perinatal complications revealed postpartum hemorrhage in 18 cases (10.70%), puerperal sepsis in 10 cases (6.00%), birth asphyxia in 25 cases (14.90%), neonatal deaths in 9 cases (5.40%), NICU admissions in 50 cases (29.80%), and low birth weight in 14 cases (8.30%) (as shown in Table-II).

Table II

Frequency of maternal and perinatal outcome of repeat cesarean section

Maternal and Perinatal Outcome	Frequency	% age
Postpartum Hemorrhage	18	10.70%
Puerperal Sepsis	10	6.00%
Birth Asphyxia	25	14.90%
Neonatal Deaths	9	5.40%
NICU Admissions	50	29.80%
Low Birth Weight	14	8.30%

Demographic associations with outcomes demonstrated significant patterns: maternal age >30 years was significantly associated with increased postpartum

hemorrhage (23.7% vs 0.0%, p<0.001), puerperal sepsis (13.2% vs 0.0%, p<0.001), but reduced birth asphyxia (7.9% vs 20.7%, p=0.021), neonatal deaths (0.0% vs 9.8%, p=0.004), and low birth weight (0.0% vs 15.2%, p<0.001). Higher parity (>3) was associated with increased postpartum hemorrhage (28.1% vs 6.6%, p<0.001). BMI >25 kg/m^2 showed significant associations with postpartum hemorrhage (19.4% vs 0.0%, p<0.001), puerperal sepsis (10.8% vs 0.0%, p=0.005), reduced birth asphyxia (8.6% vs 22.7%, p=0.011), reduced neonatal deaths (0.0% vs 12.0%, p<0.001), and reduced low birth weight (0.0% vs 18.7%, p<0.001). Urban residence was associated with higher postpartum hemorrhage (23.7% vs 0.0%, p<0.001), puerperal sepsis (13.2% vs 0.0%, p<0.001), but lower birth asphyxia (7.9% vs 20.7%, p=0.021), neonatal deaths (0.0% vs 9.8%, p=0.004), and low birth weight (0.0% vs 15.2%, p<0.001). Socioeconomic status showed significant associations across all outcomes except NICU admissions, with poor status associated with higher rates of birth asphyxia (23.9%), neonatal deaths (12.7%), and low birth weight (19.7%), while middle and rich status groups showed higher rates of postpartum hemorrhage and puerperal sepsis (as shown in Table-III).

Table III

Association of maternal and perinatal outcome with Demographic Factors

Demographic Factors	Sub Groups	Postpartum Hemorrhage		p-value	Puerperal Sepsis		p-value	Birth Asphyxia		p-value
		Yes n(%)	No n(%)		Yes n(%)	No n(%)		Yes n(%)	No n(%)	
Age (years)	≤30	0 (0.0%)	92 (100.0%)	<0.001*	0 (0.0%)	92 (100.0%)	<0.001*	19 (20.7%)	73 (79.3%)	0.021
	>30	18 (23.7%)	58 (76.3%)		10 (13.2%)	66 (86.8%)		6 (7.9%)	70 (92.1%)	
Parity	3-Jan	9 (6.6%)	127 (93.4%)	<0.001	6 (4.4%)	130 (95.6%)	0.098	23 (16.9%)	113 (83.1%)	0.170*
	>3	9 (28.1%)	23 (71.9%)		4 (12.5%)	28 (87.5%)		2 (6.3%)	30 (93.8%)	
BMI (Kg/m^2)	≤25	0 (0.0%)	75 (100.0%)	<0.001*	0 (0.0%)	75 (100.0%)	0.005*	17 (22.7%)	58 (77.3%)	0.011
	>25	18 (19.4%)	75 (80.6%)		10 (10.8%)	83 (89.2%)		8 (8.6%)	85 (91.4%)	
Residential Status	Rural	0 (0.0%)	92 (100.0%)	<0.001*	0 (0.0%)	92 (100.0%)	<0.001*	19 (20.7%)	73 (79.3%)	0.021
	Urban	18 (23.7%)	58 (76.3%)		10 (13.2%)	66 (86.8%)		6 (7.9%)	70 (92.1%)	
Socioeconomic Status	Poor	0 (0.0%)	71 (100.0%)	<0.001*	0 (0.0%)	71 (100.0%)	<0.001*	17 (23.9%)	54 (76.1%)	0.011*
	Middle	16 (19.5%)	66 (80.5%)		6 (7.3%)	76 (92.7%)		8 (9.8%)	74 (90.2%)	
	Rich	2 (13.3%)	13 (86.7%)		4 (26.7%)	11 (73.3%)		0 (0.0%)	15 (100.0%)	
Demographic Factors	**Sub Groups**	**Neonatal Deaths**		**p-value**	**NICU Admissions**		**p-value**	**Low Birth Weight**		**p-value**
		Yes n(%)	No n(%)		Yes n(%)	No n(%)		Yes n(%)	No n(%)	
Age (years)	≤30	9 (9.8%)	83 (90.2%)	0.004*	23 (25.0%)	69 (75.0%)	0.137	14 (15.2%)	78 (84.8%)	<0.001*
	>30	0 (0.0%)	76 (100.0%)		27 (35.5%)	49 (64.5%)		0 (0.0%)	76 (100.0%)	
Parity	3-Jan	9 (6.6%)	127 (93.4%)	0.21	40 (29.4%)	96 (70.6%)	0.838	14 (10.3%)	122 (89.7%)	0.074*
	>3	0 (0.0%)	32 (100.0%)		10 (31.3%)	22 (68.8%)		0 (0.0%)	32 (100.0%)	
BMI (Kg/m^2)	≤25	9 (12.0%)	66 (88.0%)	<0.001*	17 (22.7%)	58 (77.3%)	0.071	14 (18.7%)	61 (81.3%)	<0.001*
	>25	0 (0.0%)	93 (100.0%)		33 (35.5%)	60 (64.5%)		0 (0.0%)	93 (100.0%)	
Residential Status	Rural	9 (9.8%)	83 (90.2%)	0.04 *	23 (25.0%)	69 (75.0%)	0.137	14 (15.2%)	78 (84.8%)	<0.001*
	Urban	0 (0.0%)	76 (100.0%)		27 (35.5%)	49 (64.5%)		0 (0.0%)	76 (100.0%)	
Socioeconomic Status	Poor	9 (12.7%)	62 (87.3%)	0.04 *	17 (23.9%)	54 (76.1%)	0.057*	14 (19.7%)	57 (80.3%)	<0.001*
	Middle	0 (0.0%)	82 (100.0%)		31 (37.8%)	51 (62.2%)		0 (0.0%)	82 (100.0%)	
	Rich	0 (0.0%)	15 (100.0%)		2 (13.3%)	13 (86.7%)		0 (0.0%)	15 (100.0%)	

***Fischer Exact Test**

DISCUSSION

The present study demonstrates that repeat cesarean sections are associated with significant maternal and perinatal morbidity, with demographic factors playing a crucial role in determining outcomes. The overall complication rates observed, including 10.7% postpartum hemorrhage, 6.0% puerperal sepsis, 14.9% birth asphyxia, 5.4% neonatal deaths, 29.8% NICU admissions, and 8.3% low birth weight, highlight the substantial burden of adverse outcomes in this population.

The striking association between advanced maternal age (>30 years) and increased maternal complications such as postpartum hemorrhage and puerperal sepsis can be attributed to age-related physiological changes including decreased uterine contractility, compromised immune function, and increased prevalence of comorbidities that impair wound healing and increase infection susceptibility. Conversely, the reduced neonatal complications in older mothers may reflect better prenatal care compliance, improved nutritional status, and more cautious obstetric management in this demographic. The significant association between higher parity and postpartum hemorrhage reflects the well-established phenomenon of uterine atony due to overdistension from multiple pregnancies, leading to impaired myometrial contraction and subsequent bleeding.

The protective effect of higher BMI against neonatal complications, while paradoxically increasing maternal morbidity, suggests that maternal nutritional reserves may benefit fetal outcomes despite creating surgical challenges and infection risks for the mother. The urban-rural disparity in outcomes likely reflects differences in healthcare access, nutritional status, and timely intervention capabilities, with urban patients experiencing more maternal complications possibly due to delayed presentation or referral patterns, while rural

patients face higher neonatal mortality due to limited neonatal care facilities. The socioeconomic gradient in most outcomes points to the dominant role that poverty plays in determining birth outcomes through mechanisms involving malnutrition, inadequate prenatal care, and limited use of specialty neonatal care.

The findings from our study regarding complications in the mother are in agreement with various previous studies with some differences. Our 10.70% postpartum hemorrhage in this study was consistent with the increased risk of bleeding with repeat cesarean delivery concluded by Figueroa et al. [18] in their explanation regarding how repeat cesarean birth (RCB) was associated with an increased risk of blood transfusion (ARR 3.74 [2.48, 5.63]). This similarity attests that bleeding complications remain a significant risk in several populations with repeat cesarean delivery.

Puerperal sepsis incidence of 6.00% in the current study means infectious morbidity among cases with repeat cesarean deliveries. Perveen [17] in her research emphasized the fact that women with a history of birth by cesarean were at much risk for various complications, like infectious morbidity. The similarity in sepsis rates among researches denotes the importance of prophylactic antibiotics and aseptic surgical techniques in cases with repeat cesarean deliveries.

Interestingly, our study revealed diverging outcomes when we compared with trial of labor after cesarean (TOLAC) outcomes from prior studies. Ingle et al. [19] reported that VBAC hadadvantages such as low stay in hospital and decreased morbidity, and Khan et al. [20] concluded that fetomaternal outcomes in TOLAC were good with0.0% NICU admissions in TOLAC compared with 20.0% with elective repeat cesarean section. These outcomes describe that while repeat cesarean section has inherent dangers linked to them, in some clinical scenarios this still may become unavoidable.

The neonatal outcomes in this study had similarities and differences with previous studies. Our 29.80% NICU admission rate was significantly higher than the 20.0% reported by Khan et al. [20] in elective repeat cesarean deliveries. This difference can result from varying population profiles, healthcare facilities, or NICU admission criteria in studies. The higher NICU admission in this study was also possibly because our healthcare facility had a higher complexity index or preventive approach.

The neonatal death rate of 5.40% in our study presents a contrast to the findings of Figueroa et al. [18] who reported a lower risk of stillbirth with RCB (ARR 0.24 [0.15, 0.49]) compared to VBAC. However, direct comparison is challenging as their study focused on stillbirths rather than neonatal deaths. The birth asphyxia rate of 14.90% in our study indicates significant perinatal morbidity, which aligns with the concern raised by Perveen [17] about neonatal adverse outcomes, particularly very preterm birth being the most significant complication.

Our findings regarding the relationship between parity and complications are partially supported by Yaghmaei et al. [21] who investigated outcomes according to the number of previous cesarean sections. While their study found no significant difference in most maternal and neonatal outcomes with increasing numbers of previous cesarean sections, our study demonstrated that higher parity (>3) was associated with increased postpartum hemorrhage (28.1% vs 6.6%, p<0.001). This discrepancy may be explained by differences in study design, population characteristics, or the specific definition of high parity used in each study.

Our study's findings regarding demographic associations with outcomes provide valuable insights that complement existing literature. The association between maternal age >30 years and increased postpartum hemorrhage and puerperal sepsis in our study aligns with general obstetric principles regarding advanced maternal age as a risk factor. However, the protective effect of advanced maternal age against birth asphyxia, neonatal deaths, and low birth weight in our study was unexpected and warrants further investigation.

The socioeconomic disparities observed in our study, with poor status associated with higher rates of birth asphyxia (23.9%), neonatal deaths (12.7%), and low birth weight (19.7%), while middle and rich status groups showed higher rates of postpartum hemorrhage and puerperal sepsis, highlight the complex relationship between socioeconomic factors and pregnancy outcomes. This finding suggests that while lower socioeconomic status may be associated with certain neonatal complications, potentially due to inadequate prenatal care or nutritional deficiencies, higher socioeconomic status may be associated with different risk profiles, possibly related to maternal age, obesity, or other lifestyle factors.

Vecchioli et al.'s [22] labor induction findings provide essential background in interpreting risk with differing delivery strategies in previous cesarean section. Their study found that labor induction was associated with increased risks of undesirable perinatal outcomes (aOR = 2.45, 95% CI: 1.29–4.65), cesarean after onset of labor (aOR = 2.06, 95% CI: 1.15–3.68), and longer hospital stay among mothers (aOR = 6.20, 95% CI: 3.25–11.81). These findings substantiate our findings in demonstrating that in even the context involving repeat cesarean deliveries, delivery timing and circumstances have a significant impact upon outcomes.

This study has several limitations that should be acknowledged when interpreting the findings. As a single-center study, the generalizability of our results to other healthcare settings and populations may be limited, particularly given the potential influence of institutional protocols, healthcare infrastructure, and population demographics on outcomes. The descriptive design of the study may have introduced selection bias and limited our ability to capture all relevant confounding variables that could influence maternal and neonatal outcomes. Additionally, the study did not account for the indication for the initial cesarean section or the inter-delivery interval, both of which are known to influence outcomes in subsequent pregnancies. The relatively small sample size for certain subgroups may have limited the statistical power to detect significant associations, particularly for rare outcomes. Furthermore, the lack of long-term follow-up data prevents assessment of delayed maternal and

neonatal complications that may manifest beyond the immediate postpartum period.

CONCLUSION

Our study has concluded that repeat cesarean sections are associated with substantial maternal and perinatal morbidity, with demographic factors significantly influencing outcomes. Advanced maternal age emerged as a risk factor for maternal complications while paradoxically protecting against neonatal adverse outcomes, and higher parity was strongly associated with increased postpartum hemorrhage risk. Socioeconomic disparities were evident across multiple outcome measures, with poor socioeconomic status correlating with higher neonatal complications while affluent status was associated with increased maternal morbidity.

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REFERENCES

1. Kanjanakaew, A., Jiramanee, A., & Srimoragot, M. (2024). Providers' perspective on vaginal birth after cesarean birth: A qualitative systematic review. *BMC Pregnancy and Childbirth*, *24*(1). https://doi.org/10.1186/s12884-024-06921-1
2. Temmerman, M., & Mohiddin, A. (2021). Cesarean section: More than a maternal health issue. *PLOS Medicine*, *18*(10), e1003792. https://doi.org/10.1371/journal.pmed.1003792
3. ŞERBĂNESCU, L., Brezeanu, D., GRASA, C. N., MIREA, S., IONESCU, P., ROTAR, V., SURDU, T. V., & Costea, A. C. (2024). Placenta Praevia with abnormal adhesion – a retrospective study. https://doi.org/10.20944/preprints202411.1574.v1
4. Jamshed, S., Chien, S., Tanweer, A., Asdary, R., Hardhantyo, M., Greenfield, D., Chien, C., Weng, S., Jian, W., & Iqbal, U. (2022). Correlation between previous caesarean section and adverse maternal outcomes accordingly with Robson classification: Systematic review and meta-analysis. *Frontiers in Medicine*, *8*. https://doi.org/10.3389/fmed.2021.740000
5. Murtada, M., Hakami, N., Mahfouz, M., Abdelmola, A., Eltyeb, E., Medani, I., Maghfori, G., Zakri, A., Hakami, A., Altraifi, A., Khormi, A., & Chourasia, U. (2023). Multiple cesarean section outcomes and complications: A retrospective study in Jazan, Saudi Arabia. *Healthcare*, *11*(20), 2799. https://doi.org/10.3390/healthcare11202799
6. Ajmal, S., Farrell, T., Minisha, F., Al Obaidly, S., AlQubaisi, M., Khenyab, N., Ali, N., Salama, H., Rouf Pallivalappil, A., Al Dewik, N., & Al Rifai, H. (2024). Maternal and neonatal outcomes associated with multiple repeat cesarean deliveries: A registry-based study from Qatar. *Qatar Medical Journal*, *2024*(1). https://doi.org/10.5339/qmj.2024.3
7. Liu, P., Zhang, X., Wang, X., Liang, Y., Wei, N., Xiao, Z., Li, T., Zhe, R., Zhao, W., & Fan, S. (2023). Maternal sepsis in pregnancy and the puerperal periods: A cross-sectional study. *Frontiers in Medicine*, *10*. https://doi.org/10.3389/fmed.2023.1126807
8. Regmi, D. R., Dangal, G., Silwal, A., Shrestha, D. B., Oli, P. R., & Budhathoki, P. (2022). Repeat cesarean section among pregnant women in a tertiary center of Nepal: A descriptive cross-sectional study. *Journal of Nepal Medical Association*, *60*(245). https://doi.org/10.31729/jnma.6597
9. Lupu, V. V., Miron, I. C., Raileanu, A. A., Starcea, I. M., Lupu, A., Tarca, E., Mocanu, A., Buga, A. M., Lupu, V., & Fotea, S. (2023). Difficulties in adaptation of the mother and newborn via cesarean section versus natural birth—A narrative review. *Life*, *13*(2), 300. https://doi.org/10.3390/life13020300
10. Dekker, J., Hooijer, I., Ket, J., Vejnović, A., Benagiano, G., Brosens, I., & Mijatovic, V. (2021). Neonatal uterine bleedings: An ignored sign but a possible cause of early-onset endometriosis – A systematic review. *Biomedicine Hub*, *6*(1), 6-16. https://doi.org/10.1159/000512663
11. Das, U., & Rout, N. R. (2024). Impact of normal vs. caesarean deliveries on child nutritional status and mortality in India: Insights from NFHS-5 data. *BMC Pediatrics*, *24*(1). https://doi.org/10.1186/s12887-024-05149-4
12. Mino, Y., Miyahara, F., Miura, M., Imamoto, A., Fujii, H., Moriwaki, C., Yoshioka, K., & Namba, N. (2024). Risk of transient tachypnea of the newborn following elective cesarean section increases at a gestational age of 37 weeks compared to that at ≥ 38 weeks despite the exclusion of pre-existing risk factors for neonatal respiratory disorders. *Yonago Acta Medica*, *67*(2), 150-156. https://doi.org/10.33160/yam.2024.05.009
13. Yeganegi, M., Bahrami, R., Azizi, S., Marzbanrad, Z., Hajizadeh, N., Mirjalili, S. R., Saeida-Ardekani, M., Lookzadeh, M. H., Alijanpour, K., Aghasipour, M., Golshan-Tafti, M., Noorishadkam, M., & Neamatzadeh, H. (2024). Caesarean section and respiratory system disorders in newborns. *European Journal of Obstetrics & Gynecology and Reproductive Biology: X*, *23*, 100336. https://doi.org/10.1016/j.eurox.2024.100336
14. Aravindan, A., Singh, N., Datta, S., & Bondili, A. (2024). Optimal timing of cesarean section following two or more prior cesareans: An investigation into maternal and neonatal outcomes (a two-center study). *Cureus*. https://doi.org/10.7759/cureus.64291
15. Ekhaguere, O. A., Okonkwo, I. R., Batra, M., & Hedstrom, A. B. (2022). Respiratory distress syndrome management in resource limited settings—Current evidence and opportunities in 2022. *Frontiers in Pediatrics*, *10*. https://doi.org/10.3389/fped.2022.961509
16. Moon, H., Lee, J. H., & Kim, E. H. (2023). Maternal and neonatal morbidities associated with cesarean delivery without labor compared with induction of labor around term. *Obstetrics & Gynecology Science*, *66*(1), 11-19. https://doi.org/10.5468/ogs.22248
17. Perveen, S. (2011). Maternal and neonatal adverse outcome at repeat cesarean delivery versus repeat vaginal delivery. *J Coll Physicians Surg Pak*, *21*(2), 84-87. https://jcpsp.pk/archive/2011/Feb2011/06.pdf
18. Figueroa, L., Harrison, M., Mazariegos, M., Goudar, S., Kavi, A., Derman, R., Patel, A., Das, P., Hibberd, P. L., Saleem, S., Naqvi, F., Goldenberg, R. L., Haque, R., Billah, S. M., Petri, W. A., McClure, E. M., Tan, S., & Krebs, N. F. (2023). Maternal and perinatal outcomes of women with vaginal birth after cesarean section compared to repeat

cesarean birth in select South Asian and Latin American settings of the global network for women's and children's health research. *Maternal Health, Neonatology and Perinatology*, *9*(1). https://doi.org/10.1186/s40748-023-00169-x

19. Prabhakarrao, I. S., Bansode, S., & Balakuduru, S. (2020). Maternal and perinatal outcome in trial of labour after caesarean at tertiary care hospital: A prospective observational study. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*, *10*(1), 315. https://doi.org/10.18203/2320-1770.ijrcog20205788
20. Aslam, M., Khan, M. A., Habib, F., Sadiq, H., Habib, M., & Munazza. (2023). Outcome of pregnancy in previous cesarean section comparing elective versus trial of labor (VBAC) at KRL hospital, Islamabad. *The Professional Medical Journal*, *30*(07), 906-911. https://doi.org/10.29309/tpmj/2023.30.07.7400
21. Yaghmaei, M., Ajori, L., & Mokhtari, M. (2024). Repeat Cesarean Sections: Maternal and Neonatal Outcomes and Complications. *Journal of Obstetrics, Gynecology and Cancer Research*, *9*(1), 95-101. https://doi.org/10.30699/jogcr.9.1.95
22. Vecchioli, E., Cordier, A. G., Chantry, A., Benachi, A., & Monier, I. (2020). Maternal and neonatal outcomes associated with induction of labor after one previous cesarean delivery: A French retrospective study. *Plos one*, *15*(8), e0237132. https://doi.org/10.1371/journal.pone.0237132