

Elective vs Emergency C-Section Outcomes and Prognosis on Maternal & Neonatal Health

Liyana Mohamad Ali

Government Medical College, Konni, Pathanamthitta, Konni, Pathanamthitta 689691, Kerala, India

Email: [liyanaalu\[at\]gmail.com](mailto:liyanaalu[at]gmail.com)

Abstract: *This study aimed to compare the maternal and neonatal outcomes of elective versus emergency caesarean sections. Using a retrospective analysis of medical records and literature, the research hypothesised that maternal and neonatal morbidity is higher in caesarean sections than in vaginal deliveries, with more complications expected in emergency procedures. The results suggest that emergency caesarean sections are associated with a higher risk of maternal and neonatal morbidity, particularly concerning postoperative complications such as infections and haemorrhage. The findings underscore the need for careful consideration when deciding on the mode of delivery, emphasising the benefits of elective procedures when possible.*

Keywords: Elective CSection, Emergency CSection, Maternal Outcomes, Neonatal Outcomes, Caesarean Section Complications

1. Introduction

This study examines historical and contemporary trends in caesarean section practices, with a focus on reducing maternal and perinatal mortality rates over time. It highlighted the significant variation in indications for CS over many decades, dating back to the 18th century when the procedure aimed to save fetuses in deceased or dying mothers and evolving to the 19th century focus on maternal survival. The importance of investigating maternal and neonatal mortality and morbidity post-caesarean birth is emphasised, with rates observed to be nearly five times higher than vaginal births, particularly concerning risks such as haemorrhage, sepsis, thromboembolism, and amniotic fluid embolism. The study also noted that in subsequent pregnancies, CS increased the risks of placenta previa and adherent placenta, potentially leading to higher rates of haemorrhage and peripartum hysterectomy. The objective of the study was to compare fetal and maternal outcomes in elective versus emergency c-sections and to address whether elective or emergency CS had better prognosis and outcomes.

2. Background

The term "caesarean section" originates from the Latin word "caesarean," which is believed to be associated with the birth of Julius Caesar. In the present day, C-sections are widely practiced around the world and play a crucial role in modern obstetrics. During the 19th century, surgery underwent significant changes due to technological advancements and professional standards. Queen Victoria's use of chloroform and anaesthesia transformed midwifery practice. In the late 20th century, fetal health was prioritised, leading to increased caesarean rates and improved survival rates for both mothers and babies. The analysis will compare the results of elective and emergency CS so as to reduce morbidity and mortality with the help of retrospective case studies and literature reviews done on in order to provide insight into the outcome of such operations on both the mother and the baby for better future obstetric care. It shall also help in assessing current maternal and neonatal outcomes rates and trends in addition to prognosis following different types of this surgery.

3. Literature Review

One of the most intriguing findings in the literature on maternal and neonatal outcomes in elective versus emergency c-section was that CS have become critical in today's childbirth practices to potentially rescue lives. Nonetheless, they pose distinctive hurdles to mothers, infants, and medical professionals.

A pivotal study conducted on Fetal outcome in emergency versus elective CS at Souissi Maternity Hospital, Morocco, concluded that the overall fetal complications rate was higher in emergency caesarean sections than in elective caesarean sections. [1]

The nature of the paradox between elective and emergency CS as they affect the outcome for the mother and the baby calls for a personal risk evaluation framework and shared decision-making between health care providers and expectant women. Unlike being considered to be less harmful and more predictable, some research suggests that elective CS may be linked with higher incidences of maternal complications such as postpartum haemorrhage or surgical site infections. On the other hand, emergency surgery done under more pressing conditions does not always yield poorer results in terms of both maternal and neonatal morbidity/mortality rates [2]. In some cases, the rapid response to emergent situations has led to better fetal outcomes, such as higher Apgar scores and reduced rates of neonatal morbidity, compared to planned caesarean deliveries [3].

Several important research studies have contributed to the understanding of maternal and neonatal outcomes in elective versus emergency c-sections, and the majority of the studies suggest that elective cs has better outcomes. Here are a few notable ones:

A study conducted at Nepal Medical College Teaching Hospitals found that overall complication rates were higher in emergency CS cases compared to elective ones [4]. In a systematic review and meta-analysis done by Xiao-Jing Yang and Shan-Shan Sun The rates of infection, fever, UTI, wound dehiscence, DIC, and infant mortality rates with EmCS were

much higher than those with EICS [5]. A study by Naveen Darnal and Ganesh Dangal found higher rates of both maternal and fetal morbidity, such as post-operative wound infection, postpartum haemorrhage, urinary tract infection, and need for maternal and neonatal ICU admission, significantly higher in emergency Cs than in elective caesarean sections [6]. Similarly, a study conducted by Anshu Sharma, Rajiv Acharya, Yashika Pehal, and Bhawna Sharma concluded that elective caesarean section has a more favourable maternal outcome compared to emergency caesarean section as the former is done under controlled and planned circumstances [7].

These studies have contributed valuable evidence to guide clinical practice and inform decision-making regarding mode

of delivery, particularly in the context of elective versus emergency c-sections, and have helped to improve maternal and neonatal outcomes.

Since most studies focused on short-term complications like postpartum haemorrhage and wound infections, some notable gaps in the previous research conducted on maternal and fetal outcomes following an elective or emergency cs are the lack of information on long-term maternal and neonatal outcomes due to different delivery methods they choose. To improve understanding of how elective or emergency C-sections affect mother and baby, more instigative work is required.

An overview of Caesarean Section

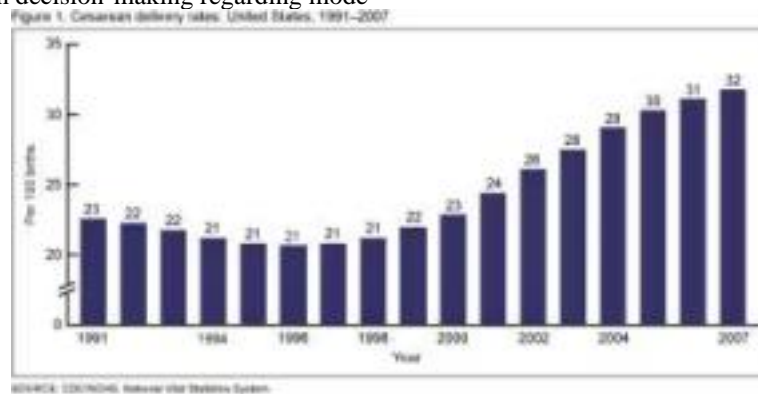


Figure 1: CS rates in the US (1991-2007). [15]

A caesarean section is a procedure by which the fetus is delivered through incisions in the maternal anterior abdominal and uterine walls. The overall U.S. caesarean section rate in 2011 was approximately 33%, which includes both primary and repeat procedures [8].

Although the recommended caesarean section rate is 10 to 15% in a population, the World Health Organisation's health report 2015 reveals the actual caesarean section rate to be 17%, with marked variations across the globe [9].

The work conducted by WHO found that as countries increase their caesarean section rates up to 10%, maternal and neonatal mortality decrease. However, caesarean section rates higher than 10% are not associated with reductions in maternal and newborn mortality rates [10].

ACOG/SMFM guidelines for prevention of primary CS [11]

The American College of Obstetricians and Gynaecologists (ACOG) and the Society for Maternal-Fetal Medicine (SMFM) released joint guidelines for the safe prevention of primary CS. These included permitting prolonged latent-phase labour, considering the start of active-phase labour as cervical dilation of 6 cm rather than 4 cm, allowing multiparous women to push for 2 or more hours and primiparous women for 3 or more hours, and employing techniques to aid vaginal delivery, such as the use of forceps, avoiding excessive weight gain during pregnancy, increasing access to nonmedical interventions during labour, performing an external cephalic version for breech presentation, etc.

Distinction between elective and emergency C-sections [12]

Elective and emergency CS (C-sections) are both surgical procedures used for delivering babies, but they're performed under different circumstances:

An elective C-section is a planned or prearranged procedure that is done to ensure the best quality of obstetrics, anaesthesia, neonatal resuscitation, and nursing services. Performed about 1 week prior to the expected date when maturity of the fetus is certain and with US assessment and amniocentesis for I:S ratio when the maturity is uncertain.

Some of the medical indications for elective cs include previous classical cs or hysterotomy scars, which are delicate and more likely to rupture during late pregnancy and labour; certain maternal medical conditions such as severe heart disease or active genital herpes, etc. Elective CS is recommended at 38 weeks for women taking HAART who have a plasma viral load > 50 copies/mL, which can reduce the risk of vertical transmission by about 50% [12].

The operation can be done in the last week of pregnancy if there is no doubt about the maturity of the fetus. In doubtful maturity, investigations are done to ascertain maturity; otherwise, the operation is withheld till the pains start or the membranes rupture, whichever occurs early.

Emergency C-section: an unplanned procedure that becomes necessary during labour or shortly before delivery due to unforeseen complications endangering the mother or baby.

According to NICE guidelines, it is used when an operation is to be done due to acute obstetric emergencies such as fetal

distress. There are four categories of emergency C-sections. Category 1 includes situations where there is an imminent threat to maternal or fetal life and where the decision delivery interval is 30 minutes. When there is a maternal or fetal compromise that does not pose an immediate threat and is to be done within 75 minutes of making a decision, it falls under category 2. Category 3 is when there is no maternal or fetal compromise but an early delivery is necessary. Category 4 is when the delivery is planned according to the convenience of the woman, family members, and the hospital staff.

Indications of emergency C section:[12]

The most common reason for emergency CS is fetal distress; some other indications are placenta previa, placental abruption, etc. In cases with bleeding vasa previa, delivery should be done by category-1 emergency caesarean section, and an intrapartum diagnosis of vasa previa needs expeditious delivery.

In summary, elective C-sections are planned in advance due to medical indications or maternal preference, while emergency C-sections are performed urgently during labour or just before delivery due to unforeseen complications endangering the mother or baby's health.

C-section on maternal request

In some cases, a woman may opt for a planned C-section for personal reasons, such as previous traumatic birth experiences or fear of labour pain, protection of pelvic floor support, and reduced risk of fetal injury.

Studies found that in newborns, rates of birth trauma, infection, and hypoxic ischaemic encephalopathy were low in both groups but statistically lower with CS. The guidelines from the ACOG note that CDMR should not be performed before 39 weeks' gestation. It is ideally avoided in women desiring several children because of the earlier-described morbidity from accruing caesarean operations [13].

The 2006 National Institutes of Health Consensus Panel concluded that there is insufficient evidence to recommend CS on maternal request over planned vaginal delivery for neonatal outcomes [14].

Absolute and relative indications for C section [12]

CS is done when labour is contraindicated or when vaginal delivery is found unsafe for the fetus and/or mother. The indications are broadly divided into two categories: Absolute and Relative

Table 1: Absolute and Relative Indications for C Section [12].

Absolute	Relative
<p>Vaginal delivery is not possible, and caesarean is needed even with a dead fetus in case of:</p> <ul style="list-style-type: none"> • Central placenta previa • Contracted pelvis or cephalopelvic disproportion • Pelvic mass causing obstruction (cervical or broad ligament fibroid) • Advanced carcinoma cervix • Vaginal obstruction (atresia, stenosis) 	<p>Vaginal delivery may be possible, but risks to the mother and/or baby are high.</p> <ul style="list-style-type: none"> • Cephalopelvic disproportion • Previous CS <ol style="list-style-type: none"> a) when primary CS was due to recurrent indication (contracted pelvis). b) Previous two CS c) Features of scar dehiscence. d) Previous classical CS • Non-reassuring FHR (fetal distress) • Dystocia • Antepartum haemorrhage: <ol style="list-style-type: none"> a) Placenta previa b) abruptio placenta • Malpresentation/malposition: breath, shoulder (transverse lie), brow presentation (non-progress of labour), (occipitoposterior, breech). • Hypertensive disorders: <ol style="list-style-type: none"> a) Severe preeclampsia, b) eclampsia • Medical-gynaecological disorders: <ol style="list-style-type: none"> a) Diabetes (uncontrolled), heart disease (coarctation of the aorta, Marfan's syndrome); b) Mechanical obstruction (due to benign or malignant pelvic tumours (carcinoma cervix) or following repair of vesicovaginal "fistula

Table 2: Maternal, fetal and maternal and fetal indications for CS [12]

Maternal	Fetal	Maternal and Fetal
Prior CS	Cardiac or pulmonary disease	Cephalopelvic disproportion
Abnormal placentation	Cerebral aneurysm or	Failed operative vaginal delivery Placenta previa or vasa previa
Maternal request	arteriovenous malformation	Placental abruption
Prior classical hysterotomy	Pathology requiring concurrent abdominal surgery	Placenta previa or vasa previa
Unknown uterine scar type	Perimortem CS	Nonreassuring fetal status
Prior uterine incision extension		Malpresentation
Uterine incision dehiscence		Macrosomia
Prior full thickness myomectomy		Congenital anomaly
Genital tract obstructive mass		Abnormal umbilical cord Doppler study Thrombocytopenia
Invasive cervical cancer		Prior neonatal birth trauma

Prior trachelectomy		
Permanent cerclage		
Prior pelvic reconstructive surgery Prior significant perineal trauma		
Pelvic deformity		
HSV or HIV infection		

HIV = human immunodeficiency virus; SV = herpes simplex virus.

The variations in the outcomes of elective C-sections for mothers and newborns.

Maternal outcomes

Benefits and risks of elective operation include a reduction in perinatal morbidity and mortality as there is no hazard from labour and delivery processes.

Maternal benefits include no pelvic floor dysfunction, whereas maternal risks are longer recovery time and hospital stay, and the risks of placenta previa and hysterectomy are higher in subsequent delivery [12].

Neonatal outcomes

CS is associated with a lower rate of fetal trauma [18], with fetal injury complicating 1% of caesarean deliveries. Skin laceration was most common; others included cephalohematoma, clavicular fracture, brachial plexopathy, skull fracture, and facial nerve palsy. CS deliveries following a failed operative vaginal delivery attempt had the highest injury rate. The lowest injury rate of 0.5% occurred in the elective CS group.

Additionally, the risk of respiratory morbidity, including transient tachypnea of the newborn, RDS, and persistent pulmonary hypertension, is higher for elective CS compared with vaginal delivery when delivery is earlier than 39–40 weeks of gestation. An increased rate of complications related to prematurity, including respiratory symptoms, hypothermia, hypoglycemia, and neonatal ICU admissions, was seen in infants delivered by CS before 39 weeks of gestation. Because of these potential complications, in the absence of other indications for early delivery, CS on maternal request should not be performed before a gestational age of 39 weeks [14].

Emergency caesarean section is associated with a higher rate of infection than the elective procedure. [12]

Possible complications in c-section

Like any major surgery, CS has risks. Problems happen in a small number of surgeries and can usually be treated. But in very rare cases, complications can be serious or even fatal. [15]

Some of the complications of CS include wound site infections, postpartum haemorrhage, endomyometritis, fascial dehiscence, thromboembolic disease, DVT, and septic pelvic thrombophlebitis. Surgical injury, e.g., uterine lacerations; bladder, bowel, ureteral injuries. Uterine atony and delayed return of bowel function are some other complications. In very rare cases, a hysterectomy may need to be done in uncontrolled bleeding. Caesarean birth also increases risks for future pregnancies, including placenta problems, uterine rupture, and hysterectomy.

4. Methodology of study

Secondary sources and literature review.

Three distinct studies were conducted at Paropakar Maternity and Women's Hospital, Lady Reading Hospital in Peshawar, Pakistan, and Nepal Medical College Teaching Hospital, focussing on caesarean section outcomes and incidences.

The first study was a hospital-based descriptive cross-sectional study analysis of 340 patients over three months. A total of 340 patients, evenly split between elective and emergency CS, were randomly enrolled. Aiming to provide a descriptive analysis of CS and compare outcomes between elective and emergency procedures [4].

The second study was a comparative investigation conducted over a year. 100 patients, divided into elective and emergency caesarean section groups, were included through convenient sampling. The sample size was determined using WHO software based on an 8% prevalence of CS in Pakistan. Complications were assessed using a semi-structured proforma, and statistical analysis, employing the Chi-square test, was conducted to compare outcomes between the two groups [17].

To meet the study objectives, the third study, which compared the outcomes of elective and emergency procedures for mothers and foetuses, collected prospective data from hospital records to ascertain the incidence of CS. Spanning six months, the study included all cases undergoing CS during this period. Results revealed an incidence rate of 22.30%, with emergency procedures accounting for 65.7% and elective ones for 34.3%. The methodology involved prospective [16].

5. Results

Three studies provide detailed insights into the maternal and fetal outcomes associated with elective and emergency CS.

In the first study, the rate of caesarean section was found to be 30.7%, with emergency procedures comprising 74.4% and elective ones 25.6%. The most frequent indication for emergency caesareans was fetal distress, which was more prevalent among younger women and primigravida, whereas previous caesarean with refusal of vaginal delivery after caesarean was the leading cause for elective caesareans and were more common among older women and multigravida. Maternal outcomes, including postoperative wound infection, postpartum haemorrhage, urinary tract infection, need for blood transfusion, fever, and maternal ICU, were significantly higher in emergency CS compared to elective ones. Similarly, fetal outcomes, such as birth asphyxia, meconium-stained liquor, and the need for Neonatal ICU admission, were

significantly higher in emergency CS than in elective ones [6].

The second study found that anaesthesia-related complications, tears in the cervix and uterus, were exclusive to emergency CS, with delayed recovery being the most common. A haemorrhage occurred in 58% of emergency cases, compared to 4% in elective cases. Postoperative complications, including anaemia, postpartum haemorrhage, fever, and abdominal distention, were significantly more prevalent in emergency CS. Some other indications of emergency CS include previous caesarean in labour, non-progress, and prolonged second stage of labour, while previous caesarean, breech, cephalopelvic disproportion, and caesarean demand were common indications for elective cesareans. Significant differences were observed in the length of hospital stay, fever, urinary tract infection, wound infection, low APGAR score at five minutes, and incidence of postpartum haemorrhage between emergency and elective CS [16].

In conclusion, both studies highlight a high incidence of CS and a higher overall complication rate associated with emergency procedures compared to elective ones [17].

Findings related to maternal and neonatal outcomes in elective C-sections and emergency C-sections (e.g., Apgar scores, admission to the NICU)

The complications of caesarean section are seen more commonly in emergencies than in elective cases. There was a significant difference seen in the length of hospital stay, fever, urinary tract infection, wound infection, and low APGAR in five minutes, indicating that these were more common in emergency CS. A significant difference was also seen in the incidence of postpartum haemorrhage, indicating that it was seen more in elective caesarean section [16].

A comprehensive study conducted at SRG Hospital, Jhalawar Medical College, assessed the outcomes and complications associated with CS over the course of a year. Intraoperative complications were observed in 11.08% of cases, with 82% occurring in emergency cases and 17.99% in elective caesareans. Postpartum haemorrhage was the most prevalent complication, affecting 135 out of 239 cases, with 108 instances in the emergency group. Wound infection was the most common postoperative complication, observed in 298 cases, predominantly in the emergency group. Additional complications included urinary tract infections, spinal headaches, and five cases necessitating caesarean hysterectomy due to massive haemorrhage and uterine atony. Maternal mortality totalled three cases.

Regarding neonatal outcomes, 97.40% of babies were born alive, with the majority (73.05%) born in emergency caesarean cases. Perinatal mortality was notably higher in the emergency group at 4.50%, compared to 0.56% in the elective group. Among the live births, 51 babies delivered via emergency caesarean section were stillborn. In total, there were 74 perinatal deaths observed during the study period. These findings highlight the considerable impact of emergency CS on both maternal and neonatal outcomes, underscoring the importance of careful consideration and

management during such procedures [17].

The perinatal mortality ranges from 5% to 10% and the deaths are mostly related to emergency operations and the complicating factors for which the operations are done. The causes of death are: (1) asphyxia may be preexisting; (2) RDS. (3) prematurity, (4) infection, and (5) intracranial haemorrhage—at attempting breech delivery through a small incision [12].

In a meta analysis of 203 studies, it was reported a maternal mortality rate of 13 per 100,000 with elective repeat caesarean compared with 4 per 100,000 with trial of labour [13].

6. Discussion

The incidence of caesarean sections has increased two to three times over the last decade, rising from an initial rate of about 10 and continuing to grow steadily. Largely due to increased safety of the operation, improved anaesthesia, availability of blood transfusion and antibiotics, rising incidence of primary CS due to identification of high-risk pregnancy and fetuses at risk before term (FGR), wider use of repeat CS, etc. [12].

In 2005 Ali et al. found repeat caesareans (43.24%) as the most common reason for elective and emergency CS, followed by fetal distress, non-progress of labour, malpresentation, antepartum haemorrhage, and obstructed labour [6]. Maternal intraoperative and postoperative complications were more common in emergency cases as compared to elective ones. In this study, overall intraoperative and postoperative complications were more common in the emergency group [17].

Areas for future research

More research is needed to understand the health effects of caesarean section on immediate and future outcomes on both maternal and neonatal health [9].

7. Conclusion [12]

Complications during C-section can be categorised into maternal and fetal. Maternal complications can be operative or post-operative. Intraoperative complications include uterine, incision extension, uterine laceration, bladder injury, uterine atony, and GIT injury. Postoperative complications can be immediate or remote with immediate complications, including postpartum haemorrhage, blood loss, shock, infections, wound complications, and anaesthetic hazards that are related to aspiration of the gastric contents resulting in aspiration atelectasis, aspiration pneumonitis, or Mendelson's syndrome. These are mostly associated with emergency operations.

Remote complications include menstrual abnormalities, chronic pelvic pain, incisional hernia, internal obstruction, and scar rupture. Fetal complications can include iatrogenic, prematurity, and the development of RDS. seen when fetal maturity is uncertain, accidental scalp injury to the baby may also occur.

Maternal and Perinatal Mortality

Maternal mortality ranges from 6 to 22 per 100,000 procedures, and the main causes are haemorrhage, shock, anaesthetic hazard, infection, and thromboembolic disorders. Perinatal mortality is higher in emergency CS compared to elective CS, ranging from 5% to 10% with severe birth asphyxia being the main cause of death and other causes including obvious prematurity, infection, and intracranial haemorrhage. [12]

It was concluded from the results of various studies and literature studies that maternal morbidity, including intraoperative and postoperative complications, is higher in emergency CS as compared to elective [17], [6]. Also, babies born out of elective CS have less frequent asphyxia and resuscitation compared to the emergency group [17].

8. Recommendations for clinical practice based on the findings

Longitudinal studies tracking women who underwent elective or emergency c-sections have provided valuable insights into potential complications and future reproductive health concerns. Comprehensive obstetric care requires an understanding of the ways in which a woman's health and quality of life are affected by her mode of delivery.

Longitudinal cohort studies following children born via elective or emergency c-sections have shed light on potential differences in health outcomes as they grew and developed.

Because of these risks, CS is usually done only when the benefits of the surgery outweigh the risks. With a 2-fold increase in maternal mortality and morbidity with CS relative to a vaginal delivery efforts to lower these rates are outlined in Safe Prevention of the Primary CS by the American College of Obstetricians and Gynaecologists (2019b) [14].

References

- [1] Benzouina, S., Boubkraoui, M. E.-M., Mrabet, M., Chahid, N., Kharbach, A., El-Hassani, A., & Barkat, "Fetal outcome in emergency versus elective caesareansections at Souissi Maternity Hospital, Rabat, Morocco". *The Pan African Medical Journal*, 23, 197 (2016).
- [2] N. Singh, Y. Pradeep, and S. Jauhari, "Indications and determinants of caesareansection: A cross-sectional study," *International Journal of Applied and Basic Medical Research*, vol. 10, no. 4, p. 280, 2020..
- [3] X. Xu, Y. Lin, L. Weng, Y. Guo, L. Lin, and J. Yan, "The application of rapid response team in category 1 emergency caesarean section teaching for OBGYN residents in the delivery room," *Medicine*, vol. 102, no. 35, p. e34551, Sep. 2023.
- [4] N. Darnal and G. Dungal, "Maternal and Fetal Outcome in Emergency versus Elective Caesarean Section," *Journal of Nepal Health Research Council*, vol. 18, no. 2, pp. 186–189, Sep. 2020.
- [5] X.-J. Yang and S.-S. Sun, "Comparison of maternal and fetal complications in elective and emergency caesareansection: a systematic review and meta-analysis," *Archives of Gynaecology and Obstetrics*, vol.

- 296, no. 3, pp. 503–512, Sep. 2017.
- [6] N. Darnal and G. Dungal, "Maternal and Fetal Outcome in Emergency versus Elective Caesarean Section," *Journal of Nepal Health Research Council*, vol. 18, no. 2, pp. 186–189, Sep. 2020.
- [7] A. Sharma, R. Acharya, Y. Pehal, and B. Sharma, "Elective versus emergency caesarean section: differences in maternal outcome," *International Journal of Reproduction, Contraception, Obstetrics and Gynaecology*, vol. 8, no. 8, p. 3207, Jul. 2019.
- [8] Kaplan and M. M. M. F. Elmar Peter Sakala, *Kaplan Obstetrics and Gynaecology*, LLC, dba Kaplan Publishing, North America, 2022.
- [9] WHO, "WHO Statement on Caesarean Section Rates," WHO.int. Para 2, 2015. [online]. Available: https://iris.who.int/bitstream/handle/10665/161442/WHO_RHR_15.02_eng.pdf. [Accessed: Aug. 21, 2024]
- [10] WHO, "WHO Statement on Caesarean Section Rates," WHO.int. Para 2, 2015. [online]. Available: <https://www.who.int/news-room/questions-and-answers/item/who-statement-on-caesarean-section-rates-frequently-asked-questions>. [Accessed: Aug. 22, 2024]
- [11] F. Talavera and C. Isaacs, "Caesarean Delivery Overview Practice Essentials ACOG/SMFM Guidelines for Prevention of Primary Caesarean Delivery Contributor Information and Disclosures." [Online]. Available: <https://emedicine.medscape.com/article/263424-overview?form=fpf>
- [12] D.C. DUTTA, *D.C DUTTA textbook of obstetrics and gynaecology*, 9th ed. Jaypee Brothers Medical Publishers (P) Ltd, New Delhi, 2018.
- [13] F.Gary Cunningham, Kenneth J. Leveno, Jodi S. Dashe, Barbara L Hoffman, S. Catherine Y, and Brian M. Casey, *Williams OBSTETRICS*, vol. 26. 2022. [Online] Available: https://drive.google.com/file/d/1kK-JH5uk4IH9N_sCf--Ww-MLhkRy9ljQ/view?pli=1 [Accessed: Jul. 15, 2024].
- [14] ACOG, "Committee on Obstetric Practice, Caesarean Delivery on Maternal Request." *acog.org*, para 3, 2019. [online]. Available:<https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2019/01/cesarean-delivery-on-maternal-request>. [Accessed: Jul. 15, 2024].
- [15] Hedwige Saint Louis, "Caesarean Delivery," *Medscape.com*, figure 1, Sep 06, 2023, [online]. Available:<https://emedicine.medscape.com/article/263424-overview?form=fpf>. [Accessed: Jul. 20, 2024].
- [16] A. Suwal, V. R. Shrivastava, and A. Giri, "Maternal and Fetal Outcome in Elective versus Emergency Caesarean Section," *Journal of Nepal Medical Association*, vol. 52, no. 192, Dec. 2013.
- [17] Mehnaz Raees, Sumaira Yasmeen, Sadaqat Jabeen, Naeema Utman, and Rukhsana Karim, "saadahmedmian,+Mehnaz," *JPMI*, vol. 27, pp. 55–62, 2013. [Online]. Available: <https://jpmi.org.pk/index.php/jpmi/article/download/1432/128> [Accessed: Jul. 15, 2024].
- [18] I. Linder, N. Melamed, A. Kogan, P. Merlob, Y. Yogev, and M. Glezerman, "Gender and birth trauma in full-term infants," *The Journal of Maternal-Fetal &*

Neonatal Medicine, vol. 25, no. 9, pp. 1603–1605, Sep. 2012.

Author Profile

Liyana Mohamed Ali graduated with a degree in medicine from Tbilisi State Medical University, Georgia, in 2023. She has completed observerships at Hamad Medical Cooperation Doha-Qatar in the trauma and emergency departments and at Medicare Hospital Thrissur, India, in the departments of surgery, gynaecology, and obstetrics. Currently she is working as a house surgeon (intern) at Koni Government Medical College Pathanamthitta, India.