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Original Research Article

Investigating Maternal Mortality Following Cesarean Sections in a Tertiary Healthcare Facility RIMS Ranchi

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Abstract:

Background: The rate of maternal mortality among patients after cesarean delivery in the labor room can be impacted by a multitude of factors such as the patient's health condition, surgical procedure type, quality of healthcare provided, and access to critical obstetric care.

Objective: This study aims to examine maternal mortality rates in patients following cesarean section in the labor room within the Department of Obstetrics and Gynecology at RIMS, Ranchi.

Methodology: Conducted in the Department of Obstetrics and Gynecology at RIMS, Ranchi, this hospital-based, prospective study spanned 18 months from March 2021 to August 2022. During this period, data on maternal mortality were gathered. Out of 6,280 deliveries, 3,209 cases (51.10%) were cesarean deliveries, which were then analyzed prospectively for maternal mortality.

Results: The investigation identified 21 maternal fatalities among 3,209 patients who underwent cesarean sections, yielding a maternal mortality ratio of 0.65%. Most deaths occurred within the first 24 hours post-operation, primarily due to antepartum hemorrhage (placental abruption), uterine rupture, and pulmonary embolism.

Conclusion: The maternal mortality ratio for post-cesarean patients at RIMS, Ranchi stood at 338 per 100,000 live births. Factors such as pre-existing health conditions, significant hemorrhage, and infections were prominent risk contributors.

Keywords: Maternal Mortality, Direct Obstetric Death, Indirect Obstetric Death.

Introduction

Maternal mortality, defined as the death of a woman due to complications from pregnancy or childbirth within 42 days after the pregnancy ends, excludes accidental causes. This term captures deaths related to the management of pregnancy [1]. Women who have undergone a cesarean section (C-section) are categorized as post-cesarean patients, who need substantial postoperative care in the labor room [2]. The maternal mortality rate for these patients is influenced by their health status, the nature of the surgical procedure, the level of medical care, and the availability of emergency obstetric services [3].

Key contributors to maternal deaths in post-cesarean patients include hemorrhage, infection, thromboembolism, and anesthesia complications. The World Health Organization in 2017 reported that about 295,000 women died globally due to pregnancy or childbirth-related issues [4]. Despite a global reduction in maternal mortality rates, the issue remains severe, especially in low- and middle-income countries, where challenges such as inadequate access to qualified healthcare, poor infrastructure, and limited resources prevail [5]. Post-cesarean women are at increased risk due to possible surgical complications, highlighting the need for effective postoperative care and monitoring [6].

In India, the maternal mortality ratio was noted at 113 per 100,000 live births in 2016, indicating improvement but still not meeting the United Nations Sustainable Development Goal of an MMR below 70 by 2030 [7]. Persistent challenges include insufficient access to quality obstetric care, particularly in rural areas, inadequate health facility resources, and cultural barriers that prevent women from seeking timely and appropriate care [8].

The Indian government has launched initiatives such as the National Health Mission and the Janani

Suraksha Yojana to boost maternal health and reduce mortality rates [9]. Programs like the Pradhan Mantri SurakshitMatritva Abhiyan and the LaQshya program are focused on improving antenatal care and labor room care quality [10]. While there has been progress, significant efforts are required to meet the SDG targets, necessitating continued investments in maternal health programs, better obstetric care access, and addressing socio-cultural factors that affect maternal health outcomes [11].

Research on maternal mortality in post-cesarean patients in India, particularly in areas with high rates like Ranchi, Jharkhand, is critical. It helps identify specific risk factors and causes of maternal mortality, which can guide the development of targeted interventions to improve maternal health outcomes and inform policies to enhance the quality of maternal healthcare [12,13]. Such studies are essential for identifying healthcare system gaps and formulating strategies to improve access to quality maternal care, especially in regions with increasing cesarean section rates and high maternal mortality [14,15].

Methods

Research Methodology and Participant Demographics: This investigation was conducted as a forward-looking study in the Department of Obstetrics and Gynecology at RIMS, Ranchi, within a clinical environment. The facility was selected for its role as a principal advanced healthcare institution in Jharkhand, acting as a key referral hub. It integrates into an international network focusing on women's health and services both rural and semi-urban populations under government support. Maternal mortality data was collected over 18 months, from March 2021 to August 2022. The research covered all expectant mothers and individual's post-caesarean section or uterine rupture surgery, inclusive of cases with and without complications. However, it excluded those who had normal vaginal deliveries, underwent a vaginal birth following a caesarean (VBAC), or succumbed to causes not linked to pregnancy-related issues. Patient recruitment post-surgery was executed, leading to the inclusion of 3209 out of 6280 deliveries (51.10%) in the study for assessing maternal fatalities, specifically those who had Lower Segment Caesarean Section (LSCS). Participants were selected without consideration of age, location, ethnicity, or other demographic factors. The study found that 1203 participants (37.49% of the sample) were aged 20 to 25 years, 1179 (36.74%) were aged 25 to 30 years, 535 (16.67%) were aged 30 to 35 years, 152 (4.74%) were 35 years or older, and 140 (4.36%) were below 20 years old. Regarding religious demographics, 75.97% (2438) were Hindu, 15.83% (508) were Muslim, and 8.20% (263) belonged to tribal communities. The rural demographic represented 65.63% (2106) of the study population, while the urban demographic comprised 34.37% (1103). These demographic details are summarized in Table 1.

Table 1: Demographical details of participants

Demographical aspects	No. of patients (n=3209)	Percentage
Age		
< 20 years	140	4.36%
20 – 25 years	1203	37.49%
25 – 30 years	1179	36.74%
30 – 35 years	535	16.67%
≥ 35 years	152	4.74%
Religion		
Hindu	2438	75.97%
Muslim	508	15.83%
Tribal	263	8.20%
Residence		
Rural	2106	65.63%
Urban	1103	34.37%
Socio economic Status		
Lower	2021	62.98%
Upper lower	776	24.18%
Lower middle	412	12.83%
Upper middle	0	0
Upper	0	0
Gestational Age (weeks)		
Preterm	553	17.23%
Term	2314	72.11%
Post-dated	342	10.66%
Referred cases		

Referred cases	1510	47.06%
Not Referred cases	1699	52.94%
Literacy		
Illiterate	768	23.93%
Primary	1257	39.18%
High school	811	25.27%
Graduate	373	11.62%

Procedure: Participants were requested to fill out data questionnaires about their past medical, surgical, and contraceptive history as well as their personal and family histories and socioeconomic level. Patients who had been admitted were examined for any indications of icterus, oedema, pedal pain, or pallor. Vital indicators such as blood pressure, pulse, weight, and height were also recorded. Every antenatal visit in the later stages of the pregnancy was followed by a systemic examination in which we examined for scar marks, uterine height, presentation, and scar discomfort if there had been a previous caesarean section. We performed routine blood exams on each patient, collecting information on their blood sugar, thyroid profile, routine urine, and haemoglobin percentage. Rh type serology blood grouping for HIV, HbsAg, and VDRL. In addition, we performed liver function tests, coagulation profiles, ultrasound, foetal and maternal echo, CT, MRI, and ECG on patients who needed these tests to rule out any serious health issues. The time between the admittance and the death, as well as the date, were recorded.

Study data were entered onto Microsoft Spreadsheets and recorded for further analysis. Utilising the proper statistical software, "SPSS version 24," data was examined. The data was shown as mean with suitable proportions or standard deviation. Calculations were made for variance, standard deviation, mean, and median. In addition, we performed regression analysis, the Karl Pearson Correlation Coefficient, the student's unpaired T-test, the Gaussian test for normal distribution/test for a single mean, and qualitative or categorical variables.

Ethical considerations: The organisational ethics committee gave its approval to the study protocol. Participants' autonomy and informed consent were upheld. They received comprehensive information about the goal of the study and any risks involved. Before they could participate, a consent form had to be filled out and signed.

Results

A total of 6280 births were made between March 2021 and August 2022, of which 3209 instances underwent LSCS. Informed agreement was obtained from each of the chosen patients, and not a single one of them declined to take part in the study. The patients with the highest LSCS rate were those who had previously undergone one LSCS (1045; 32.56%), vaginal delivery (532; 16.58%), two LSCS (114; 3.55%), or a history of abortion (59; 1.84%) (table 2).

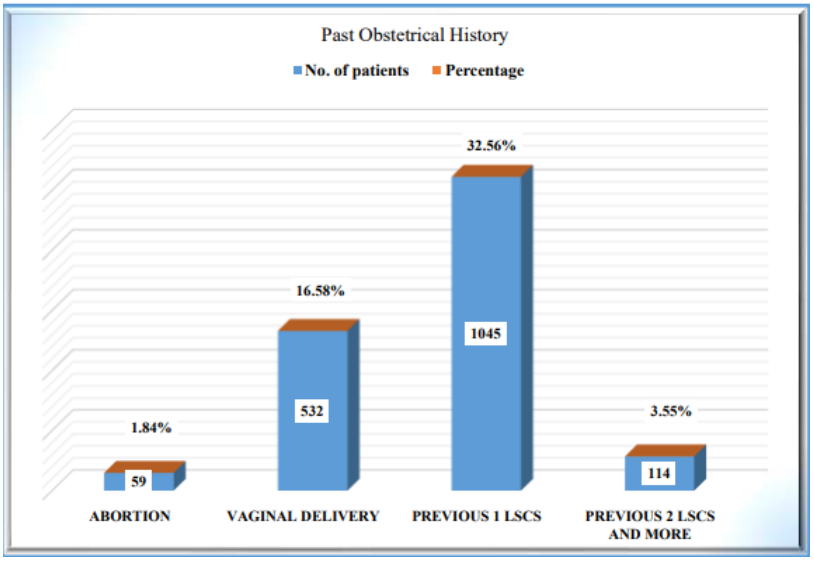

Figure 1: Shows the distribution of population according to their Past

Table 3 depicts various reason for LSCS among the included patients, maximum was due to previous 1LSCS (32.53%). This was due to meconium-stained liquor (12.56%), foetal distress (12.37%),

malpresentations 8.07% {which includes breech (3.96%), face presentation (0.65%) brow (0.06%) transverse lie (1.43%) direct occipito posterior (1.96%)}, compound presentation (footling presentation,(0.09%), Oligohydramnios (0.44%), Cord presentation and Cord prolapse (0.19%), Compound presentation (0.53%); IUGR (1%), Loop of cord (0.47%); MSL in early labour (12.56%), Twin pregnancy with 1st baby non cephalic (2.21%).

Table 2: Foetal Indications and their prevalence

Fetal Indication		No. of cases (n=3209)	Percentage
Fetal Distress		397	12.37%
Oligohydramnios		54	1.68%
Malpresentation (n=259, 8.07%)	Breech	127	3.96%
	Transverse lie	46	1.43%
	Face	21	0.65%
	Direct occipitoposterior	63	1.96%
	Brow	2	0.06%
Compound presentation (n=40, 1.25%)	Footling presentation	3	0.09%
	Hand-prolapse	14	0.44%
	Cord presentation and Cord prolapse	6	0.19%
	Compound presentation	17	0.53%
IUGR		32	1.00%
Loop of cord		15	0.47%
MSL in early labour		403	12.56%
Twin pregnancy with 1st baby non cephalic		71	2.21%

Antepartum haemorrhage (6.48%), previous 2 CS (3.55%), obstructed labour (3.15%), toxaemia of pregnancy (2.56%), twin pregnancy with first baby non-cephalic (2.21%), failed induction (2.12%), rupture uterus (1.50%), cephalopelvic disproportion (1.81%), elderly primigravida (1.31%), compound presentation (1.25%), on maternal request (0.93%), IUGR (1%), loop of cord (0.47%), and oligohydramnios (1.68%) were other maternal indications for See table 4. LSCS was also caused by placental and foetal problems. 17 of 3209 patients suffered placenta abruption (0.53%) and 191 had previa (5.95%).

Table 3: Maternal Indications of caesarean section and their prevalence

Maternal Indication of caesarean section		No. of cases (n=3209)	Percentage
Cephalopelvic Disproportion		58	1.81%
PREVIOUS LSCS (n=1158, 36.09%)	1 LSCS	1044	32.53%
	≥ 2 LSCS	114	3.55%
Rupture uterus		48	1.50%
Failed Induction		68	2.12%
Obstructed labour		101	3.15%
Maternal request		30	0.93%
Elderly Primigravida	≥ 35 years	42	1.31%
Toxemia of pregnancy (n=82, 2.56%)	Fetal distress	35	1.09%
	Failed induction	41	1.28%
	Mal presentation	6	0.19%

Most were hospitalised with problems or developed during hospitalisation (Table 5). In declining order, women developed complications: dense adhesions 834 (25.99%) among patients with LSCS, scar dehiscence 660 (20.57%), haemorrhage of more than 1000 cc blood loss in 449 (13.99%), adherent bladder to lower uterine segment in 423 (13.18%), laceration of bladder mucosa in 268 (8.35%), incision extended to lower uterine segment in 238 (7.32%), and uterine incision extension in 240 (7.48%).

Table 4: Intraoperative complications among the study population

Intra operative complication	No. of patients (n=3209)	Percentage
Adherent Bladder to Lower Uterine Segment	423	13.18%
Bleeding from placental bed	46	1.43%
Broad Ligament Hematoma	46	1.43%
Bladder injury	04	0.12%
Cesarean Hysterectomy	54	1.68%
Dense Adhesions	834	25.99%
Extension of uterine excision	240	7.48%
Haemorrhage >1000cc Blood loss	449	13.99%
Incision extended vertically in the lower Uterine segment upto cervix	238	7.42%
Placenta Accreta syndrome	41	1.28%
Laceration of Bladder Mucosa	268	8.35%
Scar Dehiscence	660	20.57%
Uneventful	895	27.89%

Patients enrolled to the trial had post-operative problems (Table 6). Anaemia 1214/3209 (37.83%) was the most common post-operative complication, followed by breast engorgement 429/3209 (13.37%), wound infection 403/3209 (12.56%), pyrexia 300/3209 (9.35%), wound gape 167/3209 (5.20%), postpartum haemorrhage 134/3209 (4.18%), abdominal distension 132/3209 (4.11%), urinary tract infection 91/3209 (2.84%), postpartum psychosis 36/3209 (1.12%), severe jaundice 23/3209 (0.72%), intraperitoneal hemorrhage, 19/3209 (0.59%), renal failure 3/ 3209 (0.09%).

Table 5: Post-operative complications among study population

Post-operative complications	No. of patients (n=3209)	Percentage
Pyrexia	300	9.35%
Wound Infection	403	12.56%
Anemia	1214	37.83%
Breast Engorgement	429	13.37%
Abdominal Distension	132	4.11%
UTI	91	2.84%
PPH	134	4.18%
Wound Gape	167	5.20%
Renal failure	3	0.09%
Intra peritoneal hemorrhage	19	0.59%
Post-Partum Psychosis	36	1.12%
Sever jaundice	23	0.72%

Of 3209 hospitalised patients, 21 died (0.65%) and 3188 survived (99.35%). Patients who survived were 2288 (71.77%). Hospital stays < 7 days and 900 (28.23%) patients. A hospital stay of at least 7 days is required. 21 (100%) non-survivors Hospital stay < 7 days for 6 (28.57%) patients. Hospital stay: > 7 days (Table 7).

Table 6: Comparison of duration of hospital stay between two groups

Duration of hospital stay (in days)	Survival group (n=3188)		Non – survival group (n=21)		P value	Results
	No.	Percentage	No.	Percentage		
< 7 days	2288	71.77%	21	100%	0.0481	Significant
≥ 7 days	900	28.23%	0	0%		

All maternal deaths were caused by health issues that vary per patient. In table 8, the non-survivor group's caesarean section indications and prevalence are shown for direct and indirect causes. Direct maternal death was caused by antepartum hemorrhage 5/21 (23.81%), post-LSCS intraperitoneal hemorrhage 3/21 (14.29%), ruptured uterus and pulmonary embolism 2/21 (9.52%), antepartum eclampsia, obstructed labor, sepsis, and postpartum psychosis 1/21 (4.76%). Anaemia, severe jaundice, decompensated heart disease, acute kidney injury, COVID-19, and pneumonia caused 1/21 (4.76%) maternal deaths.

Table 7: Causes of death among the study population

Causes of Death			No. of patients (n=21)	Percentage
Direct causes of death	Hemorrhage n= 8/21 (38.1%)	Antepartum Hemorrhage	5	23.81%
		Post LSCS Intraperitoneal Hemorrhage	3	14.29%
		Post-Partum Hemorrhage	0	0%
	Hypertension Disorders	Antepartum Eclampsia	1	4.76%
		Pre-Eclampsia	0	0%
	Obstructed Labour		1	4.76%
	Rupture uterus		2	9.52%
	Sepsis		1	4.76%
	Pulmonary Embolism		2	9.52%
	Post-Partum Psychosis		1	4.76%
Indirect causes of death	Anemia		1	4.76%
	Sever Jaundice		1	4.76%
	Decompensated Heart Disease		1	4.76%
	Acute Kidney Injury		1	4.76%
	Covid Pneumonia		1	4.76%

We compared survival and non-survival patients. it was found that ruptured uterus among the survival group were 44/3188 (1.38%), and in non-survivor group were 4/21 (19.05%) and their p value (< 0.0001) which is statistically significant with odds of death among the patient with ruptured uterus was 13.8 times more (OR 13.8 95% CI 5.44-34.95) , Antepartum haemorrhage among the survival group were 202/3188 (6.34%) and in non-survivor group were 6/21 (28.57%) and their p value (< 0.0001) which is statistically significant with odds of death among the patient with antepartum haemorrhage was 4.5 times more (OR 4.5 95% CI 2.26-8.98), patient who underwent caesarean hysterectomy among the survival group were 51/3188 (36.26%) and in non-survivor group were 4/21 (14.29%) with p value (1000lit among the survival group were 442/3188 (13.86%) and in non-survival group were 10/21 (47.62%) with p value (<0.0001) which is statistically significant with odds of death was 3.43 times more among the patient who had intraoperative haemorrhage (OR 3.43 95% CI 2.175- 5.42) . Obstructed labour was found in 98/3188 (3.07%) survivors and 3/21 (14.29%) non-survivors, with odds of death 4.64 times higher (OR 4.64 95% CI 1.601 – 13.42) (p value < 0.0047). Survival group had 127/3188 (3.98%) patients with pregnant toxaemia, while non-survivors had 3/21 (14.29%) with p value < 0.0184 and odds of death 3.58 times higher (OR 3.58 95% CI 1.24-10.36). See Figure 1.

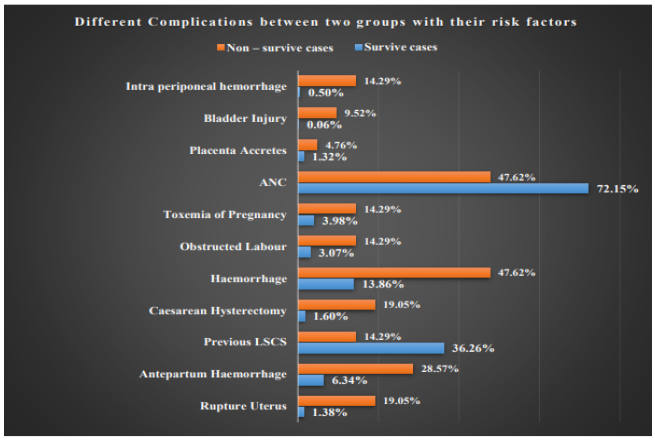

Figure 2: Shows Different Complications between two groups with their risk

Discussion

Maternal mortality continues to be a major public health issue in the field of obstetrics and gynecology, especially among patients who have cesarean sections [33]. The objective of our study was to examine the etiology, epidemiology, and risk variables linked to maternal death in post-cesarean patients who were brought to the labor room at RIMS Ranchi. The maternal mortality rate was 0.65%, with 21 maternal fatalities out of 3209 post-caesarean patients brought to the labour centre. This rate exceeds the 2019-2020 Indian National Family Health Survey-5 (NFHS-5) average of 0.34%. Antepartum hemorrhage (abruption placenta), burst uterus, and pulmonary embolism caused most maternal deaths within 24 hours of surgery. [19,20]

We found that hemorrhage, toxaemia, anemia, sepsis, embolism, and jaundice caused most indirect deaths. This matches global studies [21]. During a retrospective and prospective study [17] in a rural tertiary center hospital in central India, maternal mortality ranged from 426 to 641/1,00,000 births. Post-caesarean maternal mortality was 12.5 per 1000 live births in Pakistan [23]. The study also linked maternal death to pre-existing medical problems, significant hemorrhage, and infections [32]. The result matches ours, suggesting reliability. We observed that 20–25-year-olds and 25-30-year-olds had significant maternal mortality rates. According to research [24], 39.26% of patients were 20-24 years old, followed by 33.71% of 25-29-year-olds. 33.96 percent were 30-34 and 29.73 percent above 35. In contrast, another study indicated that maternal mortality is twice as high for women over 35 than for those 20-25. The finding contradicts ours, yet it may be true. Research [24]'s tiny sample size may be its main weakness. The non-survival women in our study were rural. Another study [22] revealed increased maternal mortality in rural India. Poor health infrastructure, literacy, income, and living conditions may cause maternal mortality [25]. Thus, the Indian government should incorporate socioeconomic class in its health plan to reduce post-caesarean maternal mortality. Several risk factors for post-caesarean maternal death were discovered in our study. Pre-existing medical problems such as hypertension, diabetes, 2 CS, obstructed labor, and pregnancy toxemia increased maternal mortality. Emergency cesarean sections increased maternal mortality compared to elective procedures [27]. The cross-sectional study [26] of maternal mortality at tertiary health care facilities identified 45 (26.2%) and 47 (27.4%) post-natal deaths from anemia and sepsis, which are preventable. Our current finding shows that anemia was the main post-operative complication that caused maternal mortality. The most prevalent post-operative consequence was anemia related to poor food, parasite infection or malaria, warm infestations, physiological effects of pregnancy, and blood loss at birth [28]. Jharkhand is endemic for infections.

The p-values for each of the associations indicate the probability of observing such a strong association by chance alone. In this study, all the p-values were less than 0.05, indicating that the associations were statistically significant.

Overall, these findings suggest that early recognition and management of these risk factors during pregnancy and childbirth may help to reduce the risk of maternal death [29].. However, it is important to note that this study may have limitations, such as the small sample size of non-survivor population and potential confounding factors, and therefore, further research is needed to confirm these findings [28].Managing pre-existing medical issues with proper prenatal care and timely intervention can lessen the requirement for emergency cesarean sections [29].

This study suggests a substantial relationship between variables and pregnancy-related mortality. The study indicated that ruptured uterus, antepartum hemorrhage, cesarean hysterectomy, intraoperative hemorrhage, obstructed labor, and pregnancy toxemia increased the risk of death. The odds ratios (ORs) for each component indicate their strength of relationship with death risk. The OR for a ruptured uterus was 13.8, meaning patients with this illness had 13.8 times the risk of mortality. The OR for antepartum haemorrhage was 4.5, meaning patients had 4.5 times the risk ofmortality. The confidence intervals (CIs) for each OR indicate estimated precision. The 95% CI for ruptured uterus OR was 5.44-34.95, indicating that the true OR is likely within this range.

Our study also revealed that delays in receiving appropriate medical care and poor quality of care were significant contributing factors to maternal mortality in post-caesarean patients. The common complication post-operatively were anaemia, breast engorgement, wound infection, pyrexia, wound gape, postpartum haemorrhage, abdominal distension, urinary tract infection, postpartum psychosis and others. The findings of this study are consistent with previous research [29] on maternal mortality in post-caesarean patients. In another study conducted by Oliver C et al (2002) The common complications were infectious morbidity (10.8%) postpartum haemorrhage (8.1%), prolonged hospital stay (6.8%) and postpartum anaemia (4.8%). The study's finding is congruent to the study [30] in which postoperative anaemia was by far the most common complication (75.76%) followed by infection (23.46%). This highlights the need for improving access to

emergency obstetric care, enhancing the skills of healthcare providers, and implementing protocols to reduce complications and improve postoperative recovery.

Our investigation recorded immediate death causes. Patients' LSCS day and ICU admission status is listed. Death can result from blood reactions, placenta previa, antepartum hemorrhage, foetal discomfort, heart disease, obstructed birth, and ruptured uterus [29]. Each patient died from shock, severe anaemia, DIC, pulmonary oedema, cardiac arrest, and renal failure.
This data highlights placenta previa, ruptured uterus, and LSCS consequences including ICU admission [28]. The research emphasises the necessity of monitoring and treating medical variables such as shock, severe anemia, and DIC, which can harm patient outcomes.
This result emphasises the need for continued research and cares to improve obstetric patient outcomes [28] and careful monitoring and treatment of medical variables during and after LSCS procedures. However, post-caesarean maternal death rates vary widely by country and healthcare system. A study in Ethiopia [31] showed 91.7 maternal deaths per 1000 live births in post-caesarean patients. Delays in emergency obstetric treatment and poor blood transfusion services also contributed to maternal death, the study found.
This study has substantial implications for improving maternity healthcare at RIMS Ranchi and elsewhere. The study recommends improving pre-existing medical issues in pregnant women and reducing serious bleeding and infections after cesarean delivery. To prevent maternal deaths, the study emphasizes immediate and suitable emergency obstetric care. Our investigation illuminates post-caesarean maternal death rates and causes at RIMS Ranchi. The results underline the need for improved prenatal care, quick intervention, and emergency obstetric care to reduce mother death in this population. This research may be utilised to develop treatments to improve post-caesarean care and reduce maternal mortality at RIMS Ranchi. The study found 338 maternal deaths per 100,000 live births in RIMS Ranchi post-caesarean patients.

Conclusion

It also identified many risk factors such as pre-existing medical disorders, severe bleeding, and infections. The results of this study align with prior research on maternal death rates among women who had undergone a cesarean section. Nevertheless, the incidence of maternal death among post-caesarean patients exhibits significant variation among various nations and healthcare systems. Several studies have identified antepartum haemorrhage, post-LSCS intraperitoneal hemorrhage, ruptured uterus, pulmonary embolism, anemia, jaundice, delays in accessing emergency obstetric care, and inadequate blood transfusion services as significant factors contributing to maternal mortality.
The results of this study have significant ramifications for enhancing maternal healthcare in RIMS Ranchi and other healthcare facilities. It is imperative to prioritize enhancing the treatment of pre-existing medical disorders in pregnant women and minimizing the occurrence of excessive bleeding and infection immediately following cesarean delivery. Timely and adequate emergency obstetric treatment is crucial in preventing mother mortality. This study is notable for its substantial number of samples and the utilization of hospital records for data collection. Nevertheless, the study is constrained by its retrospective approach, potentially impeding the acquisition of crucial data. Furthermore, the study was done exclusively at one medical centre, which may restrict the applicability of the results to different contexts.
Additional investigation is required to determine successful measures to decrease maternal mortality in post-caesarean patients, especially in environments with low resources and insufficient healthcare infrastructure. These approaches may encompass enhancing the availability of urgent obstetric care, optimizing the treatment of pre-existing medical issues, and adopting efficient infection control protocols.
The issue of maternal mortality in women who have undergone a cesarean section is a matter of global health that demands immediate attention. This study offers significant insights into the maternal mortality rate among post-cesarean patients at RIMS Ranchi and emphasizes the necessity for enhanced maternal healthcare in this specific group. Healthcare practitioners can mitigate the risk factors linked to maternal mortality by implementing preventive measures, hence enhancing maternal health outcomes.

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