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Obstetric Emergency: A Descriptive Study at Karsa Husada Batu Hospital

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ABSTRACT

Introduction: Obstetric emergencies remain a leading cause of maternal and neonatal morbidity and mortality, particularly in low- and middle-income countries. Understanding the distribution of obstetric emergencies in referral hospitals is essential for improving maternal healthcare services and strengthening emergency obstetric care systems. This study aimed to describe the pattern and distribution of obstetric emergencies among women managed at Karsa Husada Batu Hospital.

Methods: A quantitative descriptive study was conducted using secondary data obtained from medical records and standardized clinical audit forms of 1,030 respondents or obstetric emergency cases admitted between July 2021 and June 2023. Total sampling was employed to include all eligible cases. Data were analyzed using descriptive statistics and presented as frequencies and percentages.

Results: A total of 1,030 obstetric emergency cases were included in the study. Uterine rupture was the most frequently encountered obstetric emergency (58.74%), followed by prolonged labor (33.11%), postpartum hemorrhage (3.20%), neonatal asphyxia (2.33%), antepartum hemorrhage (1.65%), and eclampsia (0.58%). The findings indicate that severe obstetric complications constituted a substantial proportion of emergency referrals managed at the hospital.

Conclusion: Uterine rupture and prolonged labor were the predominant obstetric emergencies encountered at this referral hospital. These findings highlight the importance of strengthening emergency obstetric services, improving referral systems, enhancing healthcare workers' competencies, and ensuring the availability of timely interventions to reduce maternal and neonatal morbidity and mortality.

Keywords: Maternal Health, Obstetric Emergency, Prolonged Labor, Referral Hospital, Uterine Rupture

INTRODUCTION

Obstetric emergencies remain one of the leading causes of maternal and neonatal morbidity and mortality worldwide. Despite significant advances in maternal healthcare over recent decades, preventable complications during pregnancy, childbirth, and the postpartum period continue to account for hundreds of thousands of maternal deaths annually. According to the World Health Organization (WHO, 2025), approximately 287,000 women died from pregnancy- and childbirth-related causes in 2020, with nearly 95% of these deaths occurring in low- and middle-income countries. Most maternal deaths are preventable through timely recognition of complications, prompt referral, and appropriate emergency obstetric and neonatal care (EmONC). Consequently, improving the quality of emergency obstetric services has become a global priority for achieving the Sustainable Development Goals, particularly the target of reducing the global maternal mortality ratio to fewer than 70 deaths per 100,000 live births by 2030 (WHO, 2023).

The major causes of maternal mortality include postpartum hemorrhage, hypertensive disorders of pregnancy, sepsis, obstructed or prolonged labor, complications of abortion, and uterine rupture (Daniels & Abuosi, 2020). These conditions often develop rapidly and require immediate diagnosis and intervention to prevent severe maternal and neonatal outcomes. Delays in recognizing danger signs, inadequate transportation, delayed referral, shortages of trained healthcare professionals, and limited availability of emergency obstetric

resources contribute substantially to poor maternal outcomes, particularly in resource-constrained settings. Therefore, strengthening emergency obstetric care systems remains essential for reducing preventable maternal and neonatal deaths (WHO, 2023).

Indonesia continues to face considerable challenges in improving maternal health outcomes. Although national maternal mortality has declined over the past decade, the maternal mortality ratio remains among the highest in Southeast Asia. Obstetric emergencies continue to represent a substantial proportion of maternal deaths, especially in referral hospitals that manage complicated pregnancies transferred from primary healthcare facilities. As the final level of referral, hospitals providing Comprehensive Emergency Obstetric and Neonatal Care (PONEK) play a crucial role in managing severe obstetric complications through multidisciplinary teams, advanced clinical interventions, emergency surgical services, blood transfusion facilities, and neonatal resuscitation. Understanding the characteristics of obstetric emergencies managed at referral hospitals is therefore essential for evaluating the effectiveness of referral systems and identifying priorities for quality improvement (FOGSI-GESTOSIS-ICOG, 2026).

Several studies have described the prevalence of specific obstetric complications, such as postpartum hemorrhage, hypertensive disorders, or prolonged labor (Escobar et al., 2022). However, relatively few studies have comprehensively described the overall distribution of obstetric emergency cases managed at referral hospitals in Indonesia.

Furthermore, evidence describing the pattern of obstetric emergencies in East Java remains limited. Such information is important for healthcare administrators and policymakers because the spectrum of obstetric emergencies encountered at referral hospitals may differ substantially from that observed in primary healthcare facilities. Describing these patterns may assist in planning human resources, strengthening emergency preparedness, allocating medical equipment, improving referral pathways, and developing competency-based training programs for healthcare professionals (Syairaji, 2024).

Karsa Husada Batu Hospital is a regional referral hospital providing comprehensive emergency obstetric and neonatal care services for Batu City and surrounding districts. The hospital receives obstetric referrals from community health centers, private clinics, and district hospitals, resulting in a diverse spectrum of emergency maternal conditions (Kemenkes, 2025).

Therefore, this study aimed to describe the distribution and pattern of obstetric emergencies among women managed at Karsa Husada Batu Hospital between July 2021 and June 2023. The findings are expected to provide baseline epidemiological data for evaluating emergency obstetric services, strengthening referral systems, improving healthcare workers' competencies, and informing evidence-based maternal health policies aimed at reducing maternal and neonatal morbidity and mortality.

METHOD

This study employed a quantitative descriptive design using routinely collected hospital data to describe the

distribution and pattern of obstetric emergencies managed at Karsa Husada Batu Hospital. Because the study aimed to describe the frequency and characteristics of obstetric emergency cases without examining associations or causal relationships, a descriptive observational approach was considered appropriate.

The study was conducted at Karsa Husada Batu Hospital, East Java, Indonesia, a regional referral hospital providing Comprehensive Emergency Obstetric and Neonatal Care (Pelayanan Obstetri Neonatal Emergensi Komprehensif [PONEK]). The hospital has been designated as a PONEK facility since 2015 and provides emergency obstetric services in the emergency room. The hospital receives obstetric referrals from community health centers (Puskesmas), private maternity clinics, and district hospitals throughout Batu City and surrounding regions. Comprehensive emergency services are available 24 hours a day and are delivered by a multidisciplinary team consisting of obstetricians, anesthesiologists, pediatricians/neonatologists, midwives, nurses, and other supporting healthcare professionals.

Data were collected from obstetric emergency cases managed between July 2021 and June 2023.

The study population consisted of all women diagnosed with obstetric emergencies who received treatment at Karsa Husada Batu Hospital during the study period. The study sample comprised 1,030 obstetric emergency cases that met the eligibility criteria. A total sampling technique was employed, whereby all eligible obstetric emergency cases recorded during the study period were

included in the analysis. All included patients underwent caesarean section as the definitive management.

The inclusion criteria were women diagnosed with one or more obstetric emergencies during pregnancy, labor, or the postpartum period, patients admitted and managed at Karsa Husada Batu Hospital between July 2021 and June 2023, patients who underwent caesarean section and medical records containing complete clinical information required for the study variables.

Cases were excluded if the medical records were incomplete or contained substantial missing data and duplicate records were identified.

The primary variable of interest was the type of obstetric emergency (Shah et al., 2020). Obstetric emergencies were classified into six categories: uterine rupture, prolonged labor, postpartum hemorrhage, antepartum hemorrhage, neonatal asphyxia, and eclampsia. Demographic characteristics included maternal age and parity status. Because all included cases underwent caesarean section, mode of delivery was not analyzed as a separate variable.

Secondary data were obtained from hospital medical records, standardized clinical audit forms, and obstetric service documentation routinely maintained at Karsa Husada Batu Hospital. Data were extracted using a structured data extraction form developed by the research team based on standardized obstetric emergency reporting forms used by the hospital. Prior to analysis, all records were reviewed for completeness, consistency, and duplication.

The data were entered into Microsoft Excel and analyzed using IBM SPSS

Statistics version 25. Descriptive statistical analysis was performed. Categorical variables are presented as frequencies and percentages, whereas continuous variables, such as maternal age, are summarized using the mean and standard deviation or the median and interquartile range according to data distribution. The findings are presented in tables and figures to describe the distribution of obstetric emergency cases over the study period. No inferential statistical analyses were conducted because the objective of the study was descriptive.

Ethical approval for this study was obtained from the Research Ethics Committee of Karsa Husada Batu Hospital (Reference No. 020/1794/102.13/2023).

The study complied with the ethical principles outlined in the Declaration of Helsinki. Because this research used secondary data obtained from medical records, informed consent from individual patients was waived by the Ethics Committee. Patient confidentiality and privacy were protected by anonymizing all identifiable information prior to data analysis. Data were used solely for research purposes and were accessible only to the research team.

RESULTS

A total of 1,030 women with obstetric emergencies who underwent caesarean section at Karsa Husada Batu Hospital between January 2021 and June 2023 were included in this study. The characteristics of the study participants are presented in Table 1.

Most participants were aged >35 years, were grand multiparous, had a gestational age >41 weeks, and were referred from private clinics/midwife practices.

Table 1. Demographic and Clinical Characteristics of the Study Participants

Characteristic	n	(%)
Maternal age (years)		
<20	288	28
20–34	299	29
>35	443	43
Total	1030	110
Parity		
Primiparous	371	36
Multiparous	124	12
Grand multiparous	535	52
Total	1030	100
Gestational age		
<37 weeks	319	31
37–41 weeks	247	24
>41 weeks	464	45
Total	1030	100
Referral status		
Referred from Primary Health Care (Puskesmas)	330	32
Referred from Private Clinic/Midwife Practice	350	34
Referred from Other Hospitals	226	22
Self-presented	124	12
Total	1030	100

Uterine rupture was the most frequently encountered obstetric emergency, accounting for more than half of all cases (58.74%), followed by prolonged labor (33.11%). Postpartum hemorrhage, neonatal asphyxia, antepartum hemorrhage, and eclampsia were less common, collectively accounting for fewer than 10% of all obstetric emergency cases.

Table 2. Distribution of Obstetric Emergencies (n = 1,030)

Type of obstetric emergency	n	(%)
Uterine rupture	607	58.74
Prolonged labor	341	33.11
Postpartum hemorrhage	35	3.20
Neonatal asphyxia	24	2.33
Antepartum hemorrhage	17	1.65
Eclampsia	6	0.58
Total	1030	100

Table 3. Temporal Distribution of Obstetric Emergencies by Observation Period

Type of emergency	Jul– Dec 2021	Jan– Jun 2022	Jul– Dec 2022	Jan– Jun 2023	Total
Uterine rupture	56	26	170	353	607†
Prolonged labor	93	67	76	105	341
Postpartum hemorrhage	3	7	11	12	33
Neonatal asphyxia	6	2	8	8	24
Antepartum hemorrhage	4	4	0	9	17
Eclampsia	0	0	0	6	6

Uterine rupture demonstrated the most marked increase during the observation period, particularly between the second half of 2022 and the first half of 2023. Prolonged labor also showed an increasing trend toward the end of the study period. In contrast, postpartum hemorrhage, neonatal asphyxia, antepartum hemorrhage, and eclampsia occurred less frequently and exhibited relatively smaller fluctuations over time.

DISCUSSION

This study provides an overview of the distribution of obstetric emergencies managed at Karsa Husada Batu Hospital, a Comprehensive Emergency Obstetric and Neonatal Care (PONEK) referral hospital in East Java, Indonesia. Among 1,030 women with obstetric emergencies requiring caesarean section, uterine rupture was the most frequently encountered condition, followed by prolonged labor, postpartum hemorrhage, neonatal asphyxia, antepartum hemorrhage, and eclampsia (Syairaji, 2024). These findings reflect the pattern of severe obstetric cases managed in a referral hospital rather than the overall incidence of obstetric emergencies in the general obstetric population. Consequently, the results should be interpreted within the context of a tertiary referral system that receives complicated cases from lower-level healthcare facilities (Pan American Health Organization, 2013).

The predominance of uterine rupture (58.74%) is considerably higher than that reported in most international studies, where postpartum hemorrhage and hypertensive disorders of pregnancy remain the leading causes of severe maternal morbidity. This discrepancy is likely attributable to referral bias. Karsa Husada Batu Hospital functions as a PONEK referral center receiving women with advanced obstetric complications requiring emergency surgical intervention. Many patients are referred only after prolonged labor, failed delivery attempts, or suspected uterine rupture, resulting in a concentration of severe cases at the hospital. Similar referral patterns have been reported in low- and middle-income

countries, where delayed referral substantially increases the risk of maternal complications requiring emergency operative management. Therefore, the high proportion of uterine rupture observed in this study should not be interpreted as the population incidence but rather as the clinical profile of patients managed at a referral center (Jejaw et al., 2023).

Another important finding was the substantial proportion of prolonged labor, accounting for approximately one-third of all obstetric emergencies. Prolonged labor remains one of the principal contributors to maternal and neonatal complications because it increases the likelihood of uterine rupture, postpartum hemorrhage, maternal infection, fetal distress, and neonatal asphyxia. Recent evidence has emphasized that timely labor monitoring using the WHO Labor Care Guide, prompt recognition of abnormal labor progression, and early referral are effective strategies for preventing severe obstetric complications. The coexistence of a high proportion of prolonged labor and uterine rupture in this study suggests that delays in recognition, referral, or definitive management may have contributed to disease progression before arrival at the referral hospital (Sheikh et al., 2022).

The increasing trend in uterine rupture observed during the study period deserves particular attention. Although this descriptive study cannot determine causality, several factors may explain this pattern. First, increasing utilization of referral services may have resulted in a greater number of high-risk pregnancies being transferred to Karsa Husada Batu Hospital. Second, implementation of regional referral policies may have centralized severe obstetric cases at

designated PONEK hospitals. Third, improved documentation and clinical reporting over time may also have increased case identification. Future analytical studies should investigate patient-level and health system factors associated with delayed referral and adverse maternal outcomes.

The demographic characteristics of the participants further support these findings. Most women were older than 35 years, were grand multiparous, and presented with pregnancies beyond 41 weeks of gestation. These characteristics are recognized risk factors for prolonged labor, uterine rupture, placental abnormalities, and postpartum hemorrhage. Advanced maternal age has been associated with reduced uterine contractility and increased obstetric intervention, whereas grand multiparity is associated with diminished uterine muscle integrity and an increased risk of uterine rupture and postpartum hemorrhage. Likewise, post-term pregnancy increases the likelihood of cephalopelvic disproportion, labor dystocia, and emergency operative delivery (Callaghan, 2018). Collectively, these maternal characteristics may have contributed to the predominance of severe obstetric complications observed in this study.

Referral status also provides important insight into the burden of obstetric emergencies. More than half of the women were referred from primary healthcare facilities and private maternity clinics, highlighting the critical role of the maternal referral network in Indonesia. An effective referral system is fundamental to reducing preventable maternal mortality; however, delays at any stage of care may worsen maternal outcomes (Tonyali et al.,

2024). The findings of this study may therefore be interpreted within the framework of the Three Delays Model, which identifies delays in deciding to seek care, delays in reaching an appropriate health facility, and delays in receiving adequate treatment as major contributors to maternal morbidity and mortality (Shah et al., 2020). Strengthening communication between referring facilities and referral hospitals, improving transportation systems, and standardizing referral criteria may reduce delays and improve maternal outcomes.

Although postpartum hemorrhage, neonatal asphyxia, antepartum hemorrhage, and eclampsia represented smaller proportions of obstetric emergencies in this study, these conditions remain major contributors to maternal and neonatal mortality worldwide (Tunçalp et al., 2015). Their relatively low frequency should not diminish their clinical importance, as each requires immediate recognition and evidence-based management. Continuous competency-based training in postpartum hemorrhage management, neonatal resuscitation, hypertensive emergency management, and emergency caesarean section should therefore remain priorities within PONEK hospitals (Maaløe et al., 2023).

From a health service perspective, the findings have several important implications. First, strengthening emergency obstetric competencies among healthcare professionals working in primary healthcare centers, private maternity clinics, and district hospitals is essential to facilitate earlier recognition of obstetric complications. Second, wider implementation of standardized labor monitoring tools, including the WHO

Labor Care Guide, may reduce the progression of prolonged labor to uterine rupture (WHO, 2021). Third, regular maternal and perinatal mortality audits should be conducted to identify avoidable factors contributing to severe maternal morbidity. Finally, continuous evaluation of the regional referral system is needed to ensure that women with obstetric emergencies receive timely access to comprehensive emergency obstetric and neonatal care.

Overall, this study contributes valuable epidemiological information regarding the pattern of obstetric emergencies encountered in a regional PONEK referral hospital in Indonesia. The findings emphasize that strengthening referral systems, improving intrapartum monitoring, enhancing emergency obstetric competencies, and maintaining multidisciplinary readiness are essential components of strategies to reduce maternal and neonatal morbidity associated with obstetric emergencies (WHO, 2022).

This study has several limitations. It was done in one regional PONEK referral hospital, so the results may not reflect the situation in other hospitals or in the general population. The study also used retrospective hospital records, so the findings depended on the completeness and accuracy of the available data, and some important variables such as socioeconomic status, antenatal care, referral delay, previous caesarean section, and maternal or neonatal outcomes were not always recorded. In addition, because this was a descriptive study, it could show the pattern of obstetric emergencies but could not explain the causes or risk factors behind them, including the increase in

uterine rupture. However, the study also has strengths because it included a large number of cases over 30 months and provides useful baseline information for improving emergency obstetric care, referral systems, and future multicenter studies.

CONCLUSION

This study provides a comprehensive description of obstetric emergencies managed at Karsa Husada Batu Hospital, a regional Comprehensive Emergency Obstetric and Neonatal Care (PONEK) referral hospital in East Java, Indonesia, with uterine rupture and prolonged labor identified as the most frequent cases, followed by postpartum hemorrhage, neonatal asphyxia, antepartum hemorrhage, and eclampsia; the predominance of uterine rupture reflects the hospital's role as a referral center for severe and complicated obstetric cases. These findings underscore the importance of timely recognition of obstetric complications, effective referral pathways, multidisciplinary emergency obstetric care, strengthened labor monitoring, improved communication within the referral network, enhanced competency of healthcare professionals through regular emergency obstetric and neonatal care training, and sustained readiness of PONEK services to improve maternal healthcare quality. The results also provide baseline evidence for hospital managers, clinicians, and policymakers to evaluate emergency obstetric services and develop targeted quality improvement programs, while future multicenter analytical studies are recommended to identify factors associated with obstetric emergencies, assess referral system effectiveness, and

examine maternal and neonatal outcomes after emergency obstetric interventions.

Based on the findings of this study, several recommendations are proposed to strengthen emergency obstetric care services.

Enhance the competency of healthcare professionals through regular competency-based training in emergency obstetric and neonatal care (EmONC/PONEK), including simulation-based management of obstetric emergencies.

Strengthen the integrated maternal referral system by improving communication, coordination, and feedback mechanisms between primary healthcare facilities, private maternity clinics, and referral hospitals to facilitate timely management of obstetric emergencies.

Improve intrapartum monitoring through the consistent implementation and periodic evaluation of evidence-based labor management tools, including the WHO Labour Care Guide (2021) (or partograph, according to local policy) and Active Management of the Third Stage of Labour (AMTSL), to reduce preventable maternal and neonatal complications.

Conduct regular maternal and perinatal audits to identify avoidable clinical and system-related factors contributing to severe maternal morbidity and to support continuous quality improvement of emergency obstetric services.

Strengthen hospital preparedness by ensuring the availability of trained multidisciplinary PONEK teams, essential medications, blood products, emergency surgical facilities, and neonatal resuscitation equipment to improve the management of obstetric emergencies.

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