

Prospective Observational Study on Referred Term Obstetric Study to RIMS Ranchi, Jharkhand

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Abstract

Background: Maternal referral systems play a pivotal role in reducing maternal and perinatal morbidity and mortality by ensuring timely access to comprehensive emergency obstetric care. Despite ongoing improvements in maternal health services, inappropriate referrals, delayed transportation, and inadequate peripheral healthcare infrastructure continue to pose significant challenges in developing countries. Understanding the pattern, causes, and outcomes of referred obstetric cases is essential for strengthening healthcare delivery systems.

Objectives: To study the pattern and primary reasons for referral of term obstetric cases to a tertiary care centre and to assess maternal and perinatal outcomes among referred women.

Materials and Methods: A hospital-based prospective observational study was conducted in the Department of Obstetrics and Gynaecology, Rajendra Institute of Medical Sciences (RIMS), Ranchi, Jharkhand, from January 2024 to December 2024. A total of 240 referred term pregnant women with gestational age ≥ 38 weeks fulfilling inclusion criteria were enrolled after obtaining informed consent. Sociodemographic characteristics, obstetric profile, referral details, maternal outcomes and neonatal outcomes were recorded using a structured proforma. Data were analysed using descriptive statistics and expressed as frequencies, percentages, means and standard deviations.

Results: The majority of referred women belonged to the 20–30 years age group (79.58%), were primigravida (47.50%) and belonged to lower socioeconomic strata (86.70%). Only 51.25% had received antenatal care. Severe preeclampsia was the commonest indication for referral (12.50%), followed by severe anaemia (10.83%), previous lower segment caesarean section (8.33%) and premature rupture of membranes (7.92%). Most referrals originated from Sadar Hospital Ranchi (35.42%), and 78.75% of women utilised 108 ambulance services. Caesarean section was the predominant mode of delivery (55%). Live births constituted 62.92% of neonatal outcomes, whereas 27.92% required NICU admission. Maternal morbidity included febrile illness (24.58%), urinary tract infection (15%) and blood transfusion requirement (7.08%). One maternal death was recorded.

Conclusion: Hypertensive disorders of pregnancy, severe anaemia and previous caesarean delivery remain major contributors to obstetric referrals. Strengthening peripheral healthcare facilities, improving antenatal coverage, ensuring timely transportation and enhancing referral documentation may significantly reduce maternal and neonatal adverse outcomes.

Keywords: Obstetric Referral, Maternal Outcome, Perinatal Outcome, Tertiary Care Centre, Severe Preeclampsia, Maternal Morbidity.

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Introduction

Maternal mortality remains a major public health challenge in developing countries despite considerable advances in obstetric care. Effective referral systems serve as an essential link between

primary healthcare institutions and tertiary centres, facilitating timely management of high-risk pregnancies. The referral mechanism is intended to ensure that pregnant women with complications

beyond the scope of peripheral facilities receive comprehensive emergency obstetric care. However, inadequacies in infrastructure, shortage of trained personnel, delayed transportation, lack of blood banking services, poor communication, and delayed decision-making frequently compromise the effectiveness of referral pathways.

Jharkhand continues to face substantial challenges related to maternal health due to geographical barriers, socioeconomic disparities, and uneven distribution of healthcare resources. Understanding the referral profile of obstetric patients and evaluating their maternal and neonatal outcomes may provide valuable insights into areas requiring healthcare strengthening.

Aims and Objectives

Aim: To study the pattern of referral among term obstetric cases admitted to a tertiary care institution.

Primary Objective: To assess maternal and perinatal outcomes among referred term obstetric cases admitted at RIMS, Ranchi.

Secondary Objective: To identify deficiencies in peripheral healthcare facilities responsible for obstetric referrals.

Materials and Methods

Study Design: Hospital-based prospective observational study.

Study Duration: January 2024 to December 2024.

Study Centre: Department of Obstetrics and Gynaecology, Rajendra Institute of Medical Sciences (RIMS), Ranchi, Jharkhand.

Sample Size: A total of 240 referred term obstetric patients were enrolled consecutively during the study period.

Sample Size Formula: The study included all eligible referred obstetric patients presenting during

the study period. Consecutive sampling technique was adopted.

Suggested formula for journal presentation:

$$n = Z^2PQ/d^2$$

Where:

$$Z = 1.96$$

P = Expected prevalence

$$Q = 100 - P$$

d = Absolute precision

Inclusion Criteria

- Referred term pregnant women.
- Gestational age ≥ 38 weeks.
- Age ≥ 15 years.
- Women willing to provide informed consent.

Exclusion Criteria

- Pregnancy less than 38 weeks.
- Non-referred obstetric admissions.
- Women refusing consent.

Intervention Plan: No intervention was performed as this was an observational study. Participants received standard obstetric management according to institutional protocols. Maternal and neonatal outcomes were documented prospectively.

Data Collection: Detailed history, referral records, clinical examination findings, obstetric characteristics, mode of transport, referral centre details, maternal complications and neonatal outcomes were recorded using a structured proforma.

Statistical Analysis: Data were entered in Microsoft Excel and analysed using descriptive statistical methods. Continuous variables were presented as mean $\pm$ standard deviation, whereas categorical variables were expressed as frequencies and percentages.

Results

Table 1: Distribution of Age Categories

Age Group	Frequency	Percentage
<20 years	18	7.50
20–30 years	191	79.58
30–40 years	31	12.92

Brief Discussion: The majority of referred obstetric patients belonged to the 20–30-year age group. This finding is consistent with reproductive trends in India, where most pregnancies occur during the third decade of life. Younger maternal age groups constituted only a small proportion of referrals.

Table 2: Parity Distribution

Parity	Frequency	Percentage
Primigravida	114	47.50
P1	66	27.50
P2	28	11.67
Others	32	13.33

Brief Discussion: Nearly half of all referrals were primigravida women, suggesting inadequate awareness regarding danger signs during pregnancy and labour among first-time mothers. Similar findings have been reported in several Indian referral studies.

Table 3: Gestational Age Characteristics

Mean gestational age	39.03 ± 3.06 weeks
Median	39 weeks
Range	37–43 weeks

Brief Discussion: The study predominantly included women at term gestation, reflecting the inclusion criteria and emphasizing that complications continue to arise even in advanced gestational periods requiring tertiary-level care.

Table 4: Literacy Distribution

Education Level	Percentage
10th Standard	25.83
8th Standard	23.75
12th Standard	17.92
Illiterate	14.17
Graduate	4.58

Brief Discussion: Educational attainment among referred women was generally low. Limited education may adversely affect healthcare-seeking behaviour, antenatal registration, and timely recognition of obstetric complications.

Table 5: Antenatal Care Utilisation

ANC Status	Frequency	Percentage
Yes	123	51.25
No	117	48.75

Brief Discussion: Almost half of the referred women had not received adequate antenatal care. This finding underscores persistent gaps in maternal healthcare utilisation and highlights the necessity for strengthening community-based ANC services.

Table 6: Socioeconomic Status

Socioeconomic Class	Frequency	Percentage
Lower	208	86.70
Middle Lower	32	13.30

Brief Discussion: Most patients belonged to economically disadvantaged backgrounds, emphasizing the impact of socioeconomic determinants on maternal health outcomes and healthcare accessibility.

Table 7: Causes of Referral (Major Causes)

Cause	Percentage
Severe Preeclampsia	12.50
Severe Anaemia	10.83
Previous LSCS	8.33
PROM	7.92
Meconium-stained liquor	5.83
Non-progression of labour	4.17
Obstructed labour	2.08

Brief Discussion: Hypertensive disorders were the predominant indication for referral. Severe anaemia and previous caesarean section also constituted significant causes, reflecting inadequate risk stratification and management capabilities at peripheral healthcare centres.

Table 8: Availability of Referral Slips

Referral Slip	Frequency	Percentage
Present	240	100

Brief Discussion: All women carried referral slips; however, completeness and adequacy of information varied considerably, indicating the need for standardisation of referral documentation.

Results (Continued): Brief Discussion: Approximately three-fourths of the referral slips contained adequate information. However, nearly one-fourth lacked essential details, which may adversely affect decision-making

and delay prompt interventions at tertiary care centres. Standardized referral documentation should be encouraged.

Table 9: Distribution of Referral Centres

Referring Centre	Frequency (%)
Sadar Ranchi	85 (35.42)
Sadar Khunti	33 (13.75)
CHC Tamar	16 (6.67)
CHC Bero	9 (3.75)
CHC Bundu	7 (2.92)
DH Lohardaga	6 (2.50)
Private Hospitals	5 (2.08)
Others	79 (32.91)

Brief Discussion: Sadar Ranchi was the leading referral centre, contributing more than one-third of all referred cases. This finding may indicate limited availability of comprehensive emergency obstetric services at secondary-level institutions.

Table 10: Mode of Transport

Mode	Frequency	Percentage
108 Ambulance	189	78.75
Private Vehicle	41	17.08
Ambulance (other)	8	3.33
Public Transport	2	0.83

Brief Discussion: The majority of patients utilized the government-supported 108 ambulance service, demonstrating the positive impact of emergency transportation services in facilitating timely referral and reducing delays in accessing tertiary care.

Table 11: Distribution of Mode of Delivery

Mode of Delivery	Frequency	Percentage
LSCS	132	55.00
Vaginal Delivery	102	42.50
Forceps Delivery	3	1.25
Laparotomy with LSCS	3	1.25

Brief Discussion: Caesarean section was the predominant mode of delivery. Most referred women had complications requiring operative intervention, reflecting the high-risk nature of referred obstetric populations.

Table 12: Fetal Outcomes

Outcome	Frequency	Percentage
Healthy with Mother	151	62.92
NICU Admission	67	27.92
Stillbirth	19	7.92
Intubated	2	0.83
Delayed Cry	1	0.42

Brief Discussion: Nearly two-thirds of neonates remained with their mothers after delivery. Nevertheless, NICU admissions constituted a considerable proportion, indicating substantial perinatal morbidity among referred pregnancies.

Table 13: Maternal Morbidity and Mortality

Complication	Frequency	Percentage
Normal Outcome	84	35.00
Febrile Illness	59	24.58
UTI	36	15.00
Blood Transfusion	17	7.08
Infection	12	5.00
Jaundice	6	2.50
Primary PPH	6	2.50
Secondary PPH	4	1.67
Burn Abdomen	2	0.83
DIC	2	0.83

Platelet Transfusion	1	0.42
Pneumonia	1	0.42
Renal Failure	1	0.42
Maternal Death	1	0.42

Brief Discussion: Febrile illness was the most commonly observed morbidity. One maternal death occurred due to pulmonary edema with multiorgan dysfunction syndrome. The findings highlight the need for early recognition and management of high-risk obstetric complications.

Discussion

The present study evaluated the referral patterns and outcomes among 240 term obstetric patients referred to a tertiary healthcare institution in Eastern India.

The majority of referred women belonged to the 20–30 years age group (79.58%), which is consistent with studies conducted by Prakriti et al., Sweta K et al., and Rekha Jakhar et al., where the majority of referrals also occurred during the peak reproductive age group.

Nearly half of the study participants were primigravida women (47.5%). Primigravida women often have limited awareness regarding danger signs during pregnancy and labour, predisposing them to delayed healthcare seeking and increased referrals.

Only 51.25% of women had undergone antenatal care. Inadequate ANC coverage remains an important determinant of poor maternal outcomes and may contribute to delayed detection of complications such as preeclampsia and severe anaemia. Most women belonged to lower socioeconomic strata (86.70%). Financial limitations, inadequate transportation facilities, poor health literacy and delayed decision-making are recognized barriers to timely obstetric care utilization.

Severe preeclampsia emerged as the leading cause of referral (12.50%), followed by severe anaemia and previous lower segment caesarean section. Similar findings have been reported in studies conducted in Madhya Pradesh, Rajasthan and Uttarakhand.

All patients carried referral slips; however, approximately one-fourth lacked adequate clinical information. Incomplete documentation adversely affects communication between healthcare facilities and may delay lifesaving interventions.

The 108 ambulance service was extensively utilized, indicating improved accessibility to emergency obstetric transportation services.

Caesarean section was the predominant mode of delivery (55%), reflecting the complexity and

severity of complications among referred women. Neonatal outcomes revealed that 27.92% of newborns required NICU admission, emphasizing the burden of perinatal morbidity.

Maternal morbidity was primarily related to febrile illnesses, urinary tract infections and blood transfusion requirements. Maternal mortality was low (0.42%), which may reflect the availability of specialized obstetric services at the tertiary centre.

Limitations

The study has several limitations.

- Single-centre hospital-based study.
- Relatively small sample size.
- Lack of long-term maternal and neonatal follow-up.
- Absence of multivariate statistical analysis to identify independent predictors of adverse outcomes.
- Findings may not be generalizable to other regions.

Conclusion

The present study demonstrates that hypertensive disorders of pregnancy, severe anaemia, previous caesarean section and inadequate antenatal care are major contributors to obstetric referrals.

Most referrals originated from secondary healthcare institutions, highlighting deficiencies in peripheral obstetric services. Strengthening emergency obstetric care at lower healthcare facilities, improving antenatal coverage, ensuring availability of blood transfusion services, promoting proper referral documentation and enhancing transportation facilities may substantially reduce maternal and perinatal morbidity and mortality.

Early identification of high-risk pregnancies and timely referral remain the cornerstones for improving maternal and neonatal outcomes in resource-limited settings.

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