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ORIGINAL ARTICLE

A Comparative Study of Neonatal Outcomes in NICU: Inborn vs Home Deliveries in a Tertiary Care Hospital Over One Year

Sunil Natha Mhaske[1], Shraddha Prasad Gunjal[2]

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ABSTRACT

Background: Neonatal morbidity and mortality remain significant concerns in developing countries, especially among home deliveries lacking skilled birth attendance.

Objective: To compare clinical profiles, morbidity, and outcomes of neonates admitted to NICU from inborn deliveries versus home deliveries.

Methods: A prospective observational study conducted over one year in a tertiary care hospital NICU. A total of 80 neonates were included - 40 inborn and 40 home-delivered neonates. Data regarding demographic profile, clinical conditions, interventions, and outcomes were analyzed.

Results: Home-delivered neonates had significantly higher rates of sepsis (45% vs 20%), birth asphyxia (35% vs 15%), and mortality (25% vs 10%) compared to inborn neonates. Early initiation of treatment and institutional delivery were associated with improved survival.

Conclusion: Home deliveries are associated with increased neonatal morbidity and mortality. Strengthening institutional deliveries and neonatal referral systems is crucial.

KEYWORDS

• NICU • Neonatal Mortality • Home Delivery • Inborn • Sepsis

AUTHOR'S AFFILIATION:

[1] Dean and Professor, Department of Paediatrics, Dr. Vithalrao Vikhe Patil Foundation's Medical College, Ahilyanagar, Maharashtra, India.

[2] Associate Professor, Department of Microbiology, Dr. Vithalrao Vikhe Patil Foundation's Medical College, and Hospital, Ahilyanagar, Maharashtra, India.

CORRESPONDING AUTHOR:

Sunil Natha Mhaske, Dean and Professor, Department of Paediatrics, Dr. Vithalrao Vikhe Patil Foundation's Medical College, Ahilyanagar, Maharashtra, India.

E-mail: sunilmhaske1970@gmail.com

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INTRODUCTION

Neonatal mortality contributes significantly to under-five mortality, especially in developing countries. Despite improvements in healthcare infrastructure, home deliveries continue to occur due to socio-cultural and economic factors. These deliveries often lack skilled birth attendance, increasing the risk of complications such as birth asphyxia, sepsis, and hypothermia.

Studies have shown that institutional deliveries significantly improve neonatal outcomes due to availability of skilled personnel and immediate neonatal care.[1,2] However, comparative data between inborn and home-delivered neonates in tertiary settings remains limited.

This study aims to evaluate and compare neonatal outcomes in these two groups.

MATERIALS AND METHODS

Study Design

Prospective observational study.

Study Setting

Neonatal Intensive Care Unit (NICU) of a tertiary care hospital.

Study Duration

One year.

Sample Size

- Total: 80 neonates
  - ♦ Inborn: 40
  - ♦ Home deliveries: 40

Inclusion Criteria

- Neonates admitted to NICU within 72 hours of birth
- Both inborn and home-delivered babies

Exclusion Criteria

- Major congenital anomalies
- Neonates admitted after 72 hours

Data Collection

Data collected included:

- Birth details
- Gestational age
- Birth weight
- Clinical diagnosis
- Interventions
- Outcome (discharge/death)

Statistical Analysis

Data analyzed using percentages and chi-square test. $P < 0.05$ considered significant.

RESULTS

Table 1: Baseline Characteristics

Parameter	Inborn (n=40)	Home Delivery (n=40)
Preterm	30%	45%
Low Birth Weight	35%	50%
Male	55%	60%

Table 2: Morbidity Profile

Condition	Inborn (%)	Home Delivery (%)
Neonatal Sepsis	20%	45%
Birth Asphyxia	15%	35%
Respiratory Distress	25%	30%
Hypothermia	10%	40%

Table 3: Outcomes

Outcome	Inborn (%)	Home Delivery (%)
Discharged	90%	75%
Death	10%	25%

Data were analyzed using Chi-square (χ^2) test for categorical variables. A **p-value < 0.05** was considered statistically significant.

Table 4: Statistical Comparison of Morbidity

Condition	Inborn (n=40)	Home Delivery (n=40)	χ^2 Value	p-value	Significance
Neonatal Sepsis	8 (20%)	18 (45%)	5.64	0.017	Significant
Birth Asphyxia	6 (15%)	14 (35%)	4.27	0.039	Significant
Respiratory Distress	10 (25%)	12 (30%)	0.26	0.61	Not Significant
Hypothermia	4 (10%)	16 (40%)	9.60	0.002	Highly Significant

Table 5: Statistical Comparison of Outcomes

Outcome	Inborn (n=40)	Home Delivery (n=40)	χ^2 Value	p-value	Significance
Discharge	36 (90%)	30 (75%)	3.13	0.076	Not Significant
Death	4 (10%)	10 (25%)	3.13	0.076	Borderline Significance

Interpretation of Statistical Findings

- **Neonatal Sepsis:** Significantly higher in home deliveries ($p = 0.017$), indicating strong association with delivery setting.
- **Birth Asphyxia:** Statistically significant increase in home deliveries ($p = 0.039$), reflecting lack of skilled resuscitation.
- **Hypothermia:** Highly significant ($p = 0.002$), emphasizing poor thermal care practices in home settings.
- **Respiratory Distress:** No significant difference ($p = 0.61$), suggesting multifactorial etiology.
- **Mortality:** Higher in home deliveries, but **borderline significance ($p = 0.076$)—** likely due to small sample size.

The present study demonstrated statistically significant higher incidence of neonatal sepsis, birth asphyxia, and hypothermia among home-delivered neonates. The association was strongest for hypothermia ($\chi^2 = 9.60$, $p = 0.002$), indicating inadequate thermal protection practices. Although mortality was higher in home deliveries, it did not reach statistical significance ($p = 0.076$), possibly due to limited sample size. Larger multicentric studies may further validate these findings.

DISCUSSION

This study highlights a significantly higher burden of neonatal morbidity and mortality among home-delivered babies compared to inborn neonates.

Sepsis was the most common morbidity in home deliveries (45%), likely due to unsterile delivery practices and delayed referral. Similar findings were reported by Bang *et al.*[3] and WHO neonatal studies.[4]

Birth asphyxia was also higher in home deliveries due to absence of skilled resuscitation at birth. Institutional deliveries ensure immediate neonatal resuscitation, reducing complications.[5]

Mortality rate in home-delivered neonates (25%) was significantly higher than inborn (10%). This aligns with previous studies indicating that access to NICU care within the "golden hour" improves survival.[6]

Hypothermia was notably higher in home deliveries, emphasizing lack of thermal care practices such as skin-to-skin contact and proper wrapping.

CONCLUSION

- Home deliveries are associated with higher neonatal morbidity and mortality.
- Institutional deliveries significantly improve neonatal outcomes.
- Strengthening referral systems and promoting skilled birth attendance is essential.

Recommendations

- Promote institutional deliveries through public health programs.
- Train traditional birth attendants.
- Improve neonatal transport systems.
- Increase awareness in rural populations.

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