Determinants of Adverse Clinical Outcomes among Preterm Infants Admitted to Kericho County Referral Hospital, Kenya

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ABSTRACT

Background: Preterm infants face respiratory, infectious and thermal complications. Facility-specific evidence can describe the burden of morbidity and guide priorities for neonatal services.

Objective: To assess maternal and perinatal factors associated with adverse clinical outcomes among preterm infants admitted to Kericho County Referral Hospital.

Methods: A hospital-based retrospective cohort review analysed 148 preterm infant records. The abstract reports January-December 2024. Structured abstraction captured maternal, perinatal and neonatal information. Analyses used descriptive statistics and logistic regression in STATA 17.

Results: Preterm infants represented 203/1,138 neonatal admissions (17.8%). Among the 148 analysed infants, 139 (93.9%) had at least one recorded complication. Respiratory distress syndrome occurred in 124 (83.8%), jaundice in 36 (24.3%), sepsis in 19 (12.8%) and hypothermia in 12 (8.1%). APGAR 7-10 versus 0-3 at one minute was associated with lower adjusted odds of the composite outcome (AOR 0.046; 95% CI 0.002-0.923; p=0.044).

Conclusion: Recorded morbidity was high, dominated by respiratory distress syndrome. The APGAR association is imprecise and based on a very small normal-score subgroup. Findings support attention to preterm care but do not demonstrate causation.

INTRODUCTION & OBJECTIVES

Clinical context: This hospital record review examines complications during neonatal admission. It describes infants receiving facility care rather than all births in Kericho County.

General objective
Assess determinants of adverse clinical outcomes among admitted preterm infants.

Study questions addressed
1. What proportion of neonatal admissions were preterm?
2. What maternal and perinatal characteristics were documented?
3. What proportion of analysed infants had adverse clinical outcomes?
4. Which maternal and perinatal factors were associated with the composite outcome?

Analytical boundary: The preterm-only analytic sample can examine factors associated with outcomes among preterm infants. Without a term-infant comparison group, it cannot identify risk factors for preterm birth itself.

Outcome used in Chapter 4: At least one of respiratory distress syndrome, neonatal sepsis, jaundice or hypothermia. These conditions can overlap; component percentages should not be added.

METHODS

Design: Retrospective cohort record review in the hospital newborn unit.

Records: 1,138 neonatal admissions; 203 identified as preterm; 148 included in the analysis. The disposition of the other 55 records is not clearly reconciled.

Data: Structured abstraction from maternal and neonatal records; descriptive summaries, crude and multivariable logistic regression; AORs with 95% CIs.

Reporting note: The thesis alternates between 2024 and 2025 and between systematic sampling and a census. These details require author confirmation before final submission.

RESULTS | BURDEN & PROFILE

Table 1. Admission burden and recorded complications

Indicator	n/N (%)
Preterm admissions	203/1,138 (17.8)
Any composite complication	139/148 (93.9)
No composite complication	9/148 (6.1)
Respiratory distress syndrome	124/148 (83.8)
Jaundice	36/148 (24.3)
Neonatal sepsis	19/148 (12.8)
Hypothermia	12/148 (8.1)

Denominator is all 148 analysed records for each complication. RDS, sepsis and hypothermia each had one missing record. Complications are not mutually exclusive.

Infant profile: 80/148 male (54.1%). Gestational age was recorded in 146 infants: 62 at 28-32 weeks (42.5%), 46 at 33-36 weeks (31.5%) and 38 below 28 weeks (26.0%). Categories follow the thesis.

RESULTS | ADJUSTED ASSOCIATIONS

Table 2. Reported multivariable logistic regression

Comparison	AOR (95% CI)	p
APGAR 4-6 vs 0-3	1.423 (0.250-8.092)	0.691
APGAR 7-10 vs 0-3	0.046 (0.002-0.923)	0.044
Multiple vs singleton pregnancy	0.499 (0.084-2.977)	0.446

One-minute APGAR categories. Only 3/148 infants had APGAR 7-10. The model diagnostics list 137 outcome-positive records versus 139 in descriptive results; the effective model denominator requires verification.

KEY FINDING

93.9%

139 of 148 infants had at least one of four recorded complications.

83.8% had RDS
124/148 analysed infants.
These are hospital-sample proportions, not population estimates.

DISCUSSION

Respiratory morbidity predominated. RDS affected more than four in five analysed infants and was the main component of the composite outcome. This pattern identifies respiratory care as a priority for local service review.

Composite outcomes need context. The 93.9% figure represents at least one of four recorded complications. It is not a mortality estimate. Jaundice is included in the Chapter 4 composite, although the operational definition elsewhere differs.

APGAR is an association, not a treatment effect. APGAR 7-10 was associated with lower adjusted odds relative to 0-3, but only three infants had normal scores. Sparse data and the wide confidence interval limit precision and stability. Odds ratios must not be interpreted as relative risks.

Non-significance is inconclusive. Multiple pregnancy was not statistically associated with the outcome in the adjusted model. The broad confidence interval does not rule out clinically relevant associations.

Limits to inference. This single-centre record review is vulnerable to missing documentation and selection effects. Only nine infants had no composite complication, limiting regression information. Inconsistent dates, sampling descriptions and model counts require reconciliation; apparent model fit alone cannot resolve them.

CONCLUSIONS & IMPLICATIONS

Conclusion: Recorded complications were common in the analysed preterm cohort, particularly respiratory distress syndrome. The reported APGAR association is exploratory and does not establish causality.

Service priorities: Review respiratory support, immediate newborn assessment, thermal care, infection prevention and monitoring of preterm infants.

Before presentation: Confirm the study year and record selection, reconcile the composite definition and model denominator, and verify the regression output. Larger prospective studies could test the observed associations.

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SELECTED REFERENCES FROM THE THESIS BIBLIOGRAPHY
1. Ohuma EO, et al. National, regional, and global estimates of preterm birth in 2020, with trends from 2010: a systematic analysis. Lancet. 2023;402:1261-1271.
2. Cnattingius S, Johansson S, Razaz N. Apgar score and risk of neonatal death among preterm infants. N Engl J Med. 2020;383:49-57.
3. Walani SR. Global burden of preterm birth. Int J Gynaecol Obstet. 2020;150:31-33.
4. Nyandiko WM, Kiptoon P, Lubuya FA. Neonatal hypothermia and adherence to World Health Organisation thermal care guidelines among newborns at Moi Teaching and Referral Hospital, Kenya. PLoS One. 2021;16:e0248838.
5. Irimu G, et al. Neonatal mortality in Kenyan hospitals: a multisite, retrospective, cohort study. BMJ Global Health. 2021;6(5).

Data source: Rotich MK. Thesis as at 3 September 2026, Kabarak University; abstract, Chapters 3-5 and Tables 4.1, 4.4, 4.6-4.8. Values transcribed from the thesis; no patient-level reanalysis performed. Percentages rounded to one decimal.