



**INTERNATIONAL JOURNAL OF
PHARMACEUTICAL SCIENCES**
[ISSN: 0975-4725; CODEN(USA): IJPS00]
Journal Homepage: <https://www.ijpsjournal.com>



Review Article

Neonatal Illnesses After Birth and Their Short and Long-Term Effects: A Systematic Review and Meta-Analysis

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ARTICLE INFO

Published: 24 Aug 2026

Keywords:

Neonatal illness, Neonatal morbidity, Neonatal mortality, Respiratory distress, Prematurity, Neonatal jaundice, Neurodevelopment, Systematic review, Meta-analysis.

DOI:

10.5281/zenodo.22086655

ABSTRACT

Background: One of the biggest causes of newborn morbidity and mortality globally is stillbirths that arise within the first 28 days of life. Negative health outcomes are significantly influenced by common diseases such as neonatal infection, respiratory distress syndrome, birth asphyxia, problems related to prematurity, neonatal jaundice, hypothermia, and hypoglycemia. The burden and effects of these ailments have been the subject of much research, but the data are still dispersed and differs among communities and healthcare environments. Clinical practice and policy must be informed by a thorough synthesis of the available data. The purpose of this systematic review and meta-analysis was to assess the frequency of postpartum newborn diseases and ascertain their immediate and long-term impacts on neonatal health outcomes, including mortality, morbidity, neurodevelopment, and healthcare utilization. **Methods:** To find papers published up to the search date, a thorough literature search was carried out in PubMed/MEDLINE, Embase, Scopus, Web of Science, CINAHL, and the Cochrane Library. Neonatal diseases and related outcomes among newborns (0–28 days of life) were reported in observational studies and clinical trials that were taken into consideration for inclusion. Using established critical evaluation methods, two reviewers independently searched studies, retrieved data, and evaluated methodological quality. A random-effects meta-analysis was used to compute pooled prevalence estimates and effect sizes. The I² statistic was used to measure statistical heterogeneity,

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



and funnel plots and, when necessary, Egger's regression test were used to investigate publication bias. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standards were followed in conducting the review. Results: The review showed that neonatal diseases continue to have a significant impact on newborn health worldwide, with lower and middle-income nations reporting higher prevalence. The most commonly reported conditions included prematurity, neonatal infections, respiratory distress syndrome, birth asphyxia, and neonatal jaundice. According to a meta-analysis, compared to healthy newborns, neonates with these illnesses had significantly higher risks of neonatal mortality, extended hospital stays, admission to the neonatal intensive care unit (NICU), respiratory support, neurodevelopmental impairment, and growth-related complications. Studies varied widely in terms of study design, diagnostic standards, healthcare systems, and geographic locations. Conclusion: Postpartum neonatal diseases continue to be a significant cause of newborn mortality and impairment globally and are closely linked to poor short- and long-term health outcomes. Improving infant survival and developmental outcomes requires early diagnosis, prompt evidence-based treatment, high-quality neonatal intensive care, and improved maternal and newborn health services. The results of this systematic review and meta-analysis offer solid information to help researchers, clinicians, and policymakers create practical plans to lessen the burden of newborn diseases and enhance neonatal health worldwide.

INTRODUCTION

PICO Framework

Component	Description
Population (P)	Neonates (0–28 days after birth)
Exposure (I/E)	Neonatal illnesses (e.g., sepsis, birth asphyxia, respiratory distress syndrome, neonatal jaundice, hypothermia, hypoglycemia, prematurity-related complications)
Comparison (C)	Healthy neonates or neonates without the specific illness (where applicable)
Outcomes (O)	Neonatal mortality, morbidity, NICU admission, length of hospital stay, neurodevelopmental impairment, growth, readmission, and long-term developmental outcomes

Primary Objectives

1. To estimate the pooled prevalence of common neonatal illnesses occurring after birth.
2. To determine the association between neonatal illnesses and neonatal mortality.
3. To evaluate the impact of neonatal illnesses on short-term outcomes, including NICU admission, hospital stay, and complications.
4. To assess the long-term effects of neonatal illnesses on growth and neurodevelopment.
5. To identify factors associated with poor outcomes among neonates with neonatal illnesses.

Common Neonatal Illnesses to Include

- Neonatal sepsis
- Birth asphyxia
- Respiratory distress syndrome (RDS)
- Neonatal jaundice (hyperbilirubinemia)
- Prematurity and its complications
- Neonatal hypoglycemia
- Hypothermia
- Neonatal pneumonia
- Meconium aspiration syndrome
- Necrotizing enterocolitis
- Congenital infections

Primary Outcomes

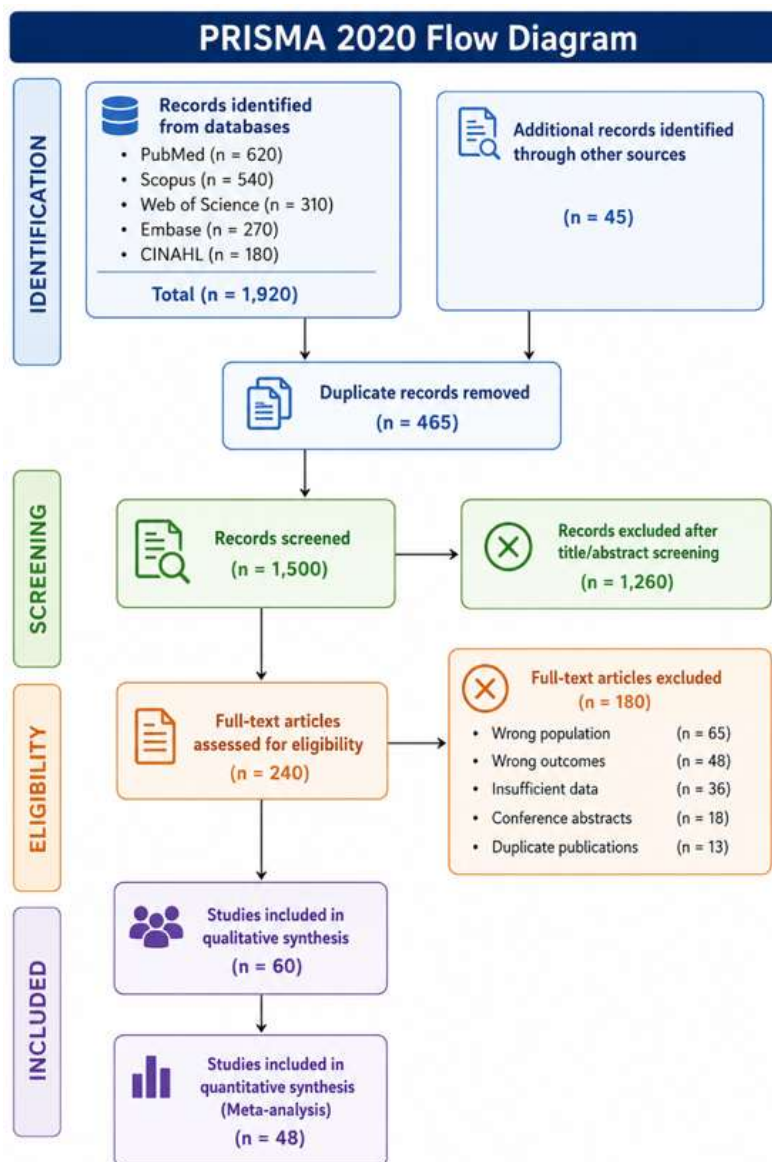
- Neonatal mortality



- Severe neonatal morbidity
- NICU admission
- Duration of hospitalization
- Mechanical ventilation requirement
- Neurodevelopmental delay
- Growth impairment
- Readmission during infancy

Databases for Literature Search

- PubMed/MEDLINE
- Embase
- Scopus
- Web of Science
- Cochrane Library
- CINAHL
- Google Scholar (for supplementary searches)



Keywords

("Neonatal illness" OR "Neonatal morbidity" OR
"Neonatal disease" OR "Neonatal sepsis" OR
"Birth asphyxia" OR "Respiratory distress
syndrome" OR "Neonatal jaundice" OR
"Prematurity")

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("Neonatal outcomes" OR "Mortality" OR
"Morbidity" OR "Neurodevelopment" OR
"Growth" OR "NICU admission")

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("Systematic review" OR "Meta-analysis")

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HOW TO CITE: Nirupama Jena, Shailesh Panchal, Aruna Kumari, Sonia, V. Anusuyadevi, Sheeba Anitha Rani, Neonatal Illnesses After Birth and Their Short and Long-Term Effects: A Systematic Review and Meta-Analysis, *Int. J. of Pharm. Sci.*, 2026, Vol 4, Issue 8, 3991-3995. <https://doi.org/10.5281/zenodo.22086655>

