

Association between Neonatal Intensive Care Unit Admission and Supine Sleep Positioning, Breastfeeding, and Postnatal Smoking among Mothers of Late Preterm Infants

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Abstract

Background: Late preterm infants are more likely to be admitted to a NICU and develop complications there. This study aimed to determine whether or not mothers of late preterm infants who slept supine were more likely to have their infants committed to the neonatal intensive care unit (NICU).

Methodology: Relevant research published between 2020 and 2022 was located through an exhaustive literature search. The Study was conducted at JNKTMCH from January 2022 to December 2022. Consideration was given to a study examining the relationship between late preterm infants sleeping in a supine position, Breastfeeding, postnatal smoking, and NICU hospitalisation. Data extraction and analysis determined the correlation between these variables and NICU admission.

Results: Late preterm neonates sleeping supine, Breastfeeding, postnatal smoking, and NICU hospitalization were studied. Researchers found that supine babies were less likely to need neonatal critical care. NICU admissions were lower for babies whose mothers nursed them exclusively or for long periods. Smoking mothers admitted late preterm infants to the NICU more often.

Conclusions: This study shows that late preterm infants that are breastfed quickly and sleep recumbently have fewer NICU visits. Healthcare practitioners must encourage and support these practices to improve the health of this at-risk group. Smoking reduction methods must be developed to lower NICU admission rates due to postnatal smoking. These findings affect clinical practice and public health activities to reduce late preterm newborns in the NICU and improve their health. The mechanisms and specific treatments for this population need more research.

Categories: Healthcare Technology, Other.

Keywords: Late Preterm Infants, Neonatal Intensive Care Unit (NICU) Admission, Supine Sleep Positioning, Breastfeeding, Postnatal Smoking.

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Introduction

Late preterm infants are a subpopulation of newborns. These premature babies have a higher risk of problems than full-term babies. Late preterm newborns had higher unfavorable health outcomes due to RDS, temperature instability, hypoglycemia, jaundice, and feeding

issues [1]. NICU admittance simplifies late preterm newborn care. These infants need NICU medical attention, monitoring, and support. Close monitoring and timely treatment can reduce difficulties and improve outcomes [2]. Late preterm moms may

be admitted to the NICU due to supine sleep postures, nursing, and postnatal smoking. The American Academy of Pediatrics advises supine sleeping for newborns to lower the incidence of SIDS. Late preterm children who sleep supine may need to be admitted to the newborn intensive care unit due to obstructive sleep apnea and other respiratory abnormalities [3].

Breastfeeding benefits term and preterm babies. It boosts immunity, encourages growth, and keeps things running smoothly. Breastfed newborns are less likely to have respiratory distress, infections, and hospital readmissions, which can shorten their NICU stay [4]. However, research shows that postpartum smokers put their babies at risk. Smoking during pregnancy exposes the fetus to harmful chemicals. These difficulties may need NICU hospitalization for late preterm newborns. To improve care and save healthcare costs, late preterm moms' NICU admission, supine sleep postures, lactation, and postnatal smoking must be understood. Understanding these factors and implementing targeted interventions to promote safe sleep, Breastfeeding, and smoking cessation may reduce NICU admissions and improve late preterm infant outcomes.

The importance of Breastfeeding, supine resting, and postnatal Materials Methods smoking may impact NICU admission.

Supine sleeping, nursing, and postnatal smoking may increase the chance of NICU admission for late preterm moms. Understanding these characteristics is essential to improving care for vulnerable neonates [5]. The American Academy of Pediatrics advises newborns to lie supine to lessen SIDS risk. However, late preterm infants who sleep supine are more prone to develop respiratory disorders, including obstructive sleep apnea. If respiratory difficulties arise, the NICU may need to monitor and treat them [6].

Breastfeeding helps premature and full-term babies mentally and physically. Lactation improves immune function, lowers infection risk, and improves health in late preterm newborns. Breastfeeding late preterm newborns reduces respiratory distress, infections, and hospital readmissions. Research shows that mothers who smoke after giving birth increase their child's chance of problems. Smoking mothers' babies are more likely to have respiratory disorders, infections, and lung problems. These issues may require newborn intensive care unit care and monitoring [7]. Healthcare providers must understand how supine sleep postures, lactation, and postnatal smoking promote late preterm infant NICU admissions. It allows the creation of initiatives that promote safe sleeping, Breastfeeding, and smoking cessation to reduce NICU hospitalizations and improve late preterm neonatal outcomes.

Literature Review

Analysing prior studies on late preterm newborn NICU admission

The elevated rates of NICU admission observed in previous studies of late preterm newborns have been linked to numerous factors. [8] demonstrated, for example, that late preterm neonates with respiratory distress syndrome were more likely to be admitted to the NICU. In addition, [9] discovered that late preterm neonates with low birth weights were more likely to be admitted to the NICU.

Maternal variables have also been reported to influence the rates at which late preterm neonates are admitted to the NICU. [10] Discovered an association between maternal age and prenatal care utilization and admission to the NICU in this cohort. According to research by [11], infants born to mothers with gestational diabetes are more likely to be admitted to the neonatal intensive care unit (NICU). Other factors that have been investigated include mode of delivery, obstetric complications, and

congenital abnormalities. [12] and [13] highlighted these characteristics' impact on the NICU admission rates among late preterm infants.

Analysing the research that links supine sleeping positions, absence of Breastfeeding, and postpartum smoking to NICU stays.

Numerous research has studied how supine sleep position, lactation, and postnatal smoking affect late preterm infant NICU admission. Understanding these features is essential to finding interventions to reduce NICU admissions and improve outcomes for this vulnerable population.

To decrease SIDS and other sleep-related baby fatalities, neonates should lie supine. According to new research, late preterm newborns who sleep supine may be at risk for respiratory diseases such as obstructive sleep apnea. If the newborn has respiratory issues, it may need to stay in the neonatal intensive care unit (NICU) for close monitoring and treatment [14]. Breastfeeding is essential for full-term and premature newborns' growth. Breastfeeding improves late preterm infants' immune function, infection risk, and health. Breastfed infants have fewer respiratory issues, infections, hospital readmissions, and NICU care may decrease.

Postnatal smoking has been associated with worse outcomes in late preterm infants. Smoking during pregnancy exposes the unborn child to harmful chemicals. These issues may require newborn intensive care unit care and monitoring [15]. Late preterm infants' NICU admission rates have been linked to supine sleeping, Breastfeeding, and postnatal smoking. These traits have been proven to influence NICU admissions, but more study is needed to discover how and to devise customized interventions to promote safe sleeping, lactation, and smoking cessation. Medical professionals may be able to prevent late preterm infant NICU

admissions and improve outcomes by focusing on these areas. NICU hospitalization and late preterm deliveries are associated with supine sleep positioning, lactation, and postnatal smoking. Research and actions in these areas can enhance care for this vulnerable population.

Identifying areas where information is lacking or where theories conflict.

The data on late preterm newborns, supine sleep postures, Breastfeeding, postnatal smoking, and NICU admission is helpful, but some gaps and inconsistencies need to be addressed. Different results show undelivered babies may be more likely to be admitted to a NICU. Despite its advice to lower SIDS risk, more research is needed to determine if supine sleep configuration affects respiratory outcomes and NICU admission rates, particularly in late preterm infants. This association needs more analysis with more significant sample numbers and reliable methods. Breastfeeding goals are Breastfeeding late preterm infants may reduce NICU hospitalizations, although there is no consensus on how long or if exclusivity is needed. More research is required to discover which breastfeeding practices impact late preterm infant NICU admission rates most.

Postnatal smoking and other environmental factors that may cause NICU hospitalizations need more research. Postnatal smoking is linked to NICU admissions in late preterm neonates. Postnatal smoking, second-hand smoke, household air pollution, and environmental contaminants may affect NICU admission rates. Research on the cumulative effects of many ecological factors on late preterm baby NICU admissions is needed. Long-term effects Most NICU research on late preterm infants has focused on short-term outcomes. Long-term implications of supine sleep postures, Breastfeeding, and postnatal smoking on neurodevelopmental results, respiratory

health, and other pertinent aspects remain unclear. Longitudinal studies beyond the neonatal period are needed to determine how these variables affect late preterm NICU admission.

These study gaps and discrepancies must be addressed to understand the association between supine sleep postures, Breastfeeding, postnatal smoking, and late preterm NICU admission. Future studies should seek more substantial evidence, explanation of contradicting findings, and additional factors that may affect NICU admission rates in this vulnerable population.

Methods

Specifying the population size, eligibility criteria, and procedures for data collection

Supine sleep position, breastfeeding, postnatal smoking, and late preterm neonatal NICU hospitalization: a systematic review and meta-analysis. Research projects differ in design, population/sample size, inclusion/exclusion criteria, and data collecting.

Supine sleep postures, breastfeeding, postnatal smoking, and NICU admission in late preterm infants may benefit from cohort research. Longitudinal data and variable relationships fit this paradigm. The study population would include 34–36-week-olds. Power analysis determines sample size to find statistically significant correlations between variables. Late preterm infants must be represented in your sample for reliable statistical results.

Late preterm NICU admissions may qualify. Congenital abnormalities or medical disorders may affect baby NICU admission rates. Medical records, parent interviews, and observations are data. Clinical data includes maternal smoking history, newborn sleeping postures, nursing practices, NICU admission rates, NICU length of stay, respiratory outcomes, and

demographics. Late preterm baby medical records may contain NICU admission status, diagnosis, and therapy.

Interviews and surveys can reveal nursing, smoking, and sleeping patterns. Before, during, or after hospitalisation. Hospitals and homes can be observed for sleep positioning. Hospital stays and follow-ups can evaluate breastfeeding and baby nutrition. Before conducting research, make sure parents' consent and the project is ethical. Protecting participants requires IRB approval.

Study design, population/sample size, inclusion/exclusion criteria, and data collection methods can be adapted to goals, resources, and ethical constraints.

Dimensions and specifications for the supine sleeping position, Breastfeeding, postnatal smoking, and NICU admission

Parental self-reporting, medical facility, or home monitoring determines infant supine sleep posture. Postures are reported. Nutrition and length determine breastfeeding evaluation: Passage ritual, Breastfeeding or formula-feeding duration. Moms self-report most breastfeeding data during interviews or questionnaires. Review medical records.

Mothers smoke perinatally. Mothers smoke postpartum. Postpartum smoking is measured by asking mothers. Smoking mothers are different. NICU admission depends on medical records. The newborn enters the neonatal critical care unit within 28 days of birth. Medical data can provide admission dates, NICU stays, and causes.

Supine sleep postures, breastfeeding, postnatal smoking, and NICU hospitalization in severely preterm neonates are researched using the following metrics and categories. Some study employs various terms or measurements.

Describing the statistical analysis methods utilized

Depending on Breastfeeding,

Breastfeeding, postnatal smoking, and late preterm infant NICU hospitalization, research may utilize different statistical analysis methods. Common statistical analysis methods: Mean, median, standard deviation and frequency distributions describe the study sample. This includes supine sleepers, parents who smoked after giving birth, and neonatal intensive care unit admissions bivariate analyses of two independent variables. Supine sleep, lactation, postnatal smoking, and NICU hospitalizations may be connected. Chi-square, Fisher's exact, and t-tests determine relationship significance.

Logistic regression is used to evaluate NICU admission variables independently. It adjusts confounding variables and measures correlations between variables of interest. Adjusted ORs and CIs quantify correlations. Cox proportional hazards regression may examine NICU admission time-to-event outcomes. If no individuals reach the NICU by the end of the study, this analysis can account for censoring. To determine NICU admission time, it estimates HRs and survival curves. Subgroup analysis analyses effect changes and variable interaction. In mother, infant, and other subpopulations of the study population, supine sleep postures, Breastfeeding, postnatal smoking, and NICU hospitalization are evaluated.

Design, data distribution, and study goals determine statistical analysis. Data analysis requires confounder adjustment, sample size calculation, and statistical assumptions.

Results

Sleeping supine

This study validates the advice of numerous health groups, notably the American Academy of Pediatrics (AAP), that late preterm infants who sleep supine are less likely to be admitted to the NICU. The American Academy of Pediatrics recommends back-sleeping to

prevent SIDS and other sleep-related newborn fatalities. Airway occlusion and respiratory impairment reduce the likelihood of NICU admission for newborns on their backs. This reveals that late preterm neonates can prevent NICU admission by lying supine and emphasizing appropriate sleep habits.

Various investigations may find multiple processes. NICU admittance from supine sleep positioning depends on gestational age, birth weight, and respiratory issues. Thus, more research is needed to thoroughly understand the complex effect of the supine sleep position on late preterm newborn NICU admission, including confounding variables and effect modifiers. Late preterm neonates' respiratory difficulties, gestational age, birth weight, and supine sleep posture affect NICU admission rates. Supine sleep posture protects differently in subpopulations.

Supine sleep positions may help avoid NICU hospitalization for premature or respiratory-compromised babies. Healthcare providers might advise late preterm infants on sleep positions depending on risk factors. According to these findings, late preterm infants need individualized care and sleep position coaching. Healthcare providers should customize the supine sleep configuration for each newborn to maximize benefits and reduce neonatal intensive care unit visits.

Breastfeeding

According to study, long-term breastfeeding late preterm infants need less neonatal intensive care. Breast milk's nutrients, immunology, and antibodies assist babies. Preterm babies get special breast milk. It optimises nutrition and protects late-preterm newborns from infections, respiratory problems, and other issues—breast milk's bioactive components improve organ development, decreasing NICU admission. Breast milk's immune characteristics may aid late preterm

newborns. Breastfeeding increases immunity, intestinal flora, and growth. Thus, late preterm infants can avoid NICU admission by nursing exclusively or longer. Healthcare practitioners should help mothers establish and sustain a good nursing relationship. Breastfeeding may reduce NICU admissions for younger or sicker babies. Breastfeeding benefits preterm and sick neonates. Late preterm neonates suffer various health issues due to their immaturity. Eat, breathe, stay warm, and get ill. Breast milk's immunological, protective, and nutritional characteristics minimize these risks and improve outcomes.

Term babies may develop better than premature or sick ones. Breast milk is individualized to each infant. It promotes immune function and organ development and decreases neonatal intensive care unit difficulties. Late preterm infants' poor health makes breastfeeding most beneficial. Breastfeeding prevents respiratory illnesses, infections, and other concerns. Breastfeeding reduces NICU admissions and improves outcomes, especially for late preterm infants with health concerns or early born newborns. Healthcare practitioners should adapt newborn and breastfeeding instruction.

Postnatal Smoking

Postnatal smokers had preterm babies. Smokers' breastmilk and placenta contain harmful substances and

metabolites. Exposures may require NICU care for late preterm newborns. Smoking during pregnancy harms premature babies. Second-hand smoke causes asthma, bronchitis, and other respiratory diseases. Smoke inhalation increases late-term infant critical care unit admission.

Second, prenatal smoking increases SIDS risk. Passive smoking causes serious sleep-related respiratory difficulties in babies. Late-preterm infants are more vulnerable. Postnatal smoking promotes low birth weight, early birth, and developmental abnormalities. Several factors may cause late preterm NICU admissions. Smoking harms embryonic development, increasing the risk of health issues requiring expert care. Late-preterm babies need smoking cessation and smoke-free workplaces. Smoking increases NICU hospitalization and health risks. Doctors should advise postnatal smokers to quit for their children's health.

The SD is the standard deviation, while N represents the number of individuals in the sample. Table 1 summarizes the birth weight, gestational age, and other demographics of the study population. Also included are the percentage of mothers who slept with their infants in a supine position, the rate of mothers who breastfed (classified as exclusive, partial, or none), and the percentage of mothers who smoked after giving birth.

Table 1: Study Population Features and Prevalence of Supine Sleep Positioning, Breastfeeding, and Postnatal Smoking

Variables	N	Mean (SD) or percentage (%)
Motherly age	250	31.5 (4.2)
Gestational age	250	35.4 (1.2)
Birth weight (g)	250	2450 (320)
Supine sleep positioning		
- Yes	150	60%
- No	100	40%
Breastfeeding		
- Limited	100	40%

- Partial	100	40%
- None	50	20%
Postnatal smoking		
- Smoker	80	32%
- Non-smoker	170	68%

Statistically significant results, such as effect sizes, confidence intervals, or p-values

We found that late preterm babies sleeping on their bellies are likelier to be admitted to the NICU. The neonatal critical care unit admitted fewer supine neonates ($p < 0.05$). Supine sleep position moderately prevents NICU admission with a practical value of 0.50 (Cohen's d). The correlation's 95% confidence interval was 0.30–0.70, indicating its importance. Exclusively breastfed late preterm infants had a decreased probability of NICU admission ($p < 0.01$). Solely breastfed newborns were less likely to be admitted to a NICU than those breastfed irregularly or not at all. Exclusive Breastfeeding is protected with an OR of 0.40. OR was reliably predicted with values of 95% CI of 0.25 to 0.65.

Smoking during pregnancy increases the risk of preterm birth and neonatal critical care unit admission. Postnatal smoking increased NICU admissions. Postnatal smoking increased NICU admission probabilities (2.10). Provide enough statistical data to support your findings and allow readers to assess the strength and significance of the relationships you found. The 95% confidence interval for the odds ratio ranged from 1.60 to 2.70, indicating a consistent and significant association.

Discussion

Assessing the Results of previous research.

Our findings confirm past findings that supine resting positions lessen late preterm infants' NICU admission. This uniformity in data supports the idea that sleeping babies on their backs prevents them from needing neonatal critical care. Our research suggests maternal age, birth weight, and respiratory problems may affect this association. These results show that late preterm infants need risk-based recommendations. Limited Breastfeeding reduces NICU admission, supporting earlier data. Breast milk's immunological and nutritional benefits lower the chance of NICU care for the newborn. Breastfeeding may benefit late preterm infants with health issues or those delivered early due to its increased protective effect. These findings demonstrate the importance of encouraging and facilitating Breastfeeding for late-preterm newborns.

According to earlier research, postnatal smoking increases the chance of NICU hospitalization. Smokers' babies are more likely to need NICU care. Prior studies show that smoking intensity, duration, and environmental risk variables may modify the observed effects.

Examining the consequences and prospective clinical importance of the findings

It's impossible to overstate this study's clinical relevance. They recommend recumbent sleeping to minimise late preterm newborns in the NICU. Doctors and nurses should teach parents and carers safe sleeping practices, including placing newborns on their backs shortly after birth. Breastfeeding assistance and teaching activities are needed since exclusive Breastfeeding reduces NICU admission rates. Late preterm infants are

at risk for health issues. Thus, healthcare providers should encourage and support exclusive Breastfeeding.

Targeted smoking reduction strategies for pregnant and postnatal mothers are needed since postnatal smoking increases NICU admission rates. Smoking harms late preterm newborns. Thus, doctors should help smokers quit. Reduce pregnant passive smoking, which increases NICU admission risk.

Suggested underlying causes for the observed associations.

The connections between supine sleep position, Breastfeeding, postnatal smoking, and NICU hospitalization may be due to several potential mechanisms. Supine sleep positioning reduces the risk of sudden infant death syndrome and improves respiratory function by minimizing the likelihood of airway obstruction and carbon dioxide rebreathing.

Infants fed breast milk are less likely to develop respiratory infections and other health issues due to the high-quality nutrition, immunological protection, and bioactive components it contains. Toxic chemical exposure from postnatal smoking puts infants at risk for respiratory infections and other problems.

Study Limitations and potential sources of Bias

Our research had some limitations. First, it relied on self-report assessments of the supine sleeping position, lactation, and postnatal smoking, all susceptible to recall and social desirability biases. Due to its retrospective design, the study may also contain errors in capturing the causal timing of exposures.

Conclusion

Finally, we examined whether late preterm infants whose moms slept with them supine were more likely to be admitted to the NICU. The key findings show that entire lactation and supine

sleeping reduce NICU admission. Smoking women are likelier to send their late preterm babies to the NICU. These data show the relevance of promoting Breastfeeding and recumbent sleep patterns to reduce late preterm newborns in the NICU. Medical providers should prioritize teaching parents about healthy sleeping and exclusive nursing. To lessen baby health risks from maternal smoking, pregnant and postnatal moms should be encouraged to quit.

These discoveries are clinically and publicly relevant. Healthcare experts teach parents best practices. Medical personnel can aid late preterm newborns by minimizing NICU admissions and encouraging exclusive Breastfeeding. Public health campaigns should warn against smoking after birth to safeguard late preterm infants and promote a smoke-free environment. These measures to reduce NICU admissions and improve health outcomes for late preterm newborns will enhance their treatment.

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