



ORIGINAL ARTICLE

Factors associated with hospitalization during neonatal period[☆]

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KEYWORDS

Neonatal hospitalization;
 Prematurity;
 Hierarchic modeling

Abstract

Objective: Neonatal mortality rate remains high in Brazil. The aim of the study was to evaluate the factors associated with hospitalization during the neonatal period.

Methods: Cross-sectional study conducted in ten randomly-selected Brazilian municipalities. Mothers of children under the age of 6 who were carrying the child's health booklet were interviewed in basic health units. Hierarchical modeling of sociodemographic factors (distal level), maternal variables (intermediate level), and features of the newborns (proximal level) was performed. The variables that presented a value of $p \leq 0.20$ in the univariate analysis were included in the multivariate hierarchical modeling process, with block input according to their hierarchical level. The variables with a value of $p \leq 0.05$ were considered statistically significant.

Results: 2022 mothers were included, allowing 258 (12.8%) cases of hospitalization during the neonatal period to be identified, of which 49.7% were male, 8.9% were premature, and 8.4% had low birth weight (<2500g). After analysis by hierarchical approach, factors associated with neonatal hospitalization (PR [95% CI]) included: history of prematurity (2.03 [1.25–3.30], $p=0.004$), gestational risk (2.02 [1.46–2.79], $p<0.001$); intrapartum risk (3.73 [2.33–5.99], $p<0.001$); gestational age (32–37 weeks: 13.83 [1.74–110.09], $p=0.01$; and < 32 weeks: 25.03 [3.03–207.12], $p=0.003$); low birth weight (3.95 [2.56–6.09], $p<0.001$), and male gender (1.44 [1.09–1.98], $p=0.01$).

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Conclusion: Factors associated with maternal and neonatal history are associated with neonatal hospitalization.

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PALAVRAS-CHAVE

Internação neonatal;
Prematuridade;
Modelagem
hierárquica

Fatores associados a internação durante o período neonatal

Resumo

Objetivo: A taxa de mortalidade neonatal permanece alta no Brasil. O objetivo do estudo foi avaliar os fatores associados a internação durante o período neonatal.

Métodos: Estudo transversal realizado em dez municípios brasileiros aleatoriamente selecionados. As mães das crianças com menos de seis anos de idade que estavam com a caderneta de informações de saúde da criança foram entrevistadas nas unidades básicas de saúde. Foi realizada a modelagem hierárquica dos fatores sociodemográficos (nível distal), das variáveis maternas (nível intermediário) e das características dos recém-nascidos (nível proximal). As variáveis que apresentaram um valor de $p \leq 0,20$ na análise univariada foram incluídas no processo multivariado de modelagem hierárquica com entrada em blocos de acordo com seu nível hierárquico. As variáveis com valor de $p \leq 0,05$ foram consideradas estatisticamente significativas.

Resultados: 2022 mães foram incluídas, nos possibilitando identificar 258 (12,8%) casos de internação durante o período neonatal, dos quais 49,7% foram meninos, 8,9% foram prematuros e 8,4% apresentaram baixo peso ao nascer (<2.500 g). Após a análise por abordagem hierárquica, os fatores associados a internação neonatal (IP [IC de 95%]) incluíram: histórico de prematuridade (2,03 [1,25-3,30], $p=0,004$), risco gestacional (2,02 [1,46-2,79], $p<0,001$); risco intraparto (3,73 [2,33-5,99], $p<0,001$); idade gestacional (32-37 semanas: 13,83 [1,74-110,09], $p=0,01$) e (<32 semanas: 25,03 [3,03-207,12], $p=0,003$); baixo peso ao nascer (3,95 [2,56-6,09], $p<0,001$) e sexo masculino (1,44 [1,09-1,98], $p=0,01$).

Conclusão: Os fatores associados a histórico materno e neonatal foram associados a internação neonatal.

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Introduction

Prioritization of children's health is essential for the progress of a population.¹⁻³ Infant mortality reflects the conditions of socioeconomic development, environmental infrastructure, and access to and quality of available resources for maternal and child health care; its reduction is an important health strategy.⁴ Neonatal mortality, death in the first 28 days of life, accounts for 70% of infant mortality. In Brazil, after social and health policies were implemented, the infant and neonatal mortality rates have decreased in the last decades. However, Brazilian neonatal mortality rates remain very high (8.97 deaths per 1000 live births)⁵ compared to high-income countries in 2014 (3.94 deaths per 1000 live births in the United States).⁶ Prematurity and low birth weight are the main factors associated with neonatal mortality.⁷

Several studies have evaluated factors associated with neonatal mortality⁸ and prematurity.⁹ However, few Brazilian studies have evaluated the predictive factors for hospitalization during neonatal period. Factors associated with hospitalization during neonatal period might be similar to those related to neonatal mortality. In addition, understanding the sociodemographic, assistance-related, and biological mother-infant interactions that result in

hospitalization during neonatal period may contribute to the identification of strategies to reduce neonatal mortality. The aim of this study was to evaluate the factors associated with hospitalization during neonatal period.

Methods

This cross-sectional study was conducted in ten municipalities in the five Brazilian macro-regions. Eighty-six Brazilian metropolitan municipalities with at least 5000 live births in 2011 were considered eligible, according to the Information System on Live Births (Sistema de Informação sobre Nascidos Vivos [SINASC]). The study was carried out in randomly selected municipalities and stratified by Brazilian macro-region. Therefore, two municipalities from each macro-region were selected: Santarém and Boa Vista in the North, Campina Grande and Vitória da Conquista in the Northeast, Cuiabá and Anápolis in the Center-West, São Gonçalo and Uberlândia in the Southeast, and Pelotas and Joinville in the South. Previously to data collection, local health authorities were contacted to detail the characteristics of the urban population covered by the basic health units of each selected municipality. Therefore, interviews were carried out in basic health units that contained the largest

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