



Main Causes of Neonatal Admissions to a Hospital in the Far South of São Paulo

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ABSTRACT

OBJECTIVE

To analyze the causes of neonatal hospitalization, prevalent pathologies, the need for critical interventions and mortality outcomes.

METHODS

Data on the reasons for hospitalization of newborns were collected through electronic medical records from a public hospital in the City of São Paulo, which were analyzed using descriptive statistics.

RESULTS

The sample consisted of 200 patients, of which 194 were included after exclusions. The majority of newborns (98.98%) were admitted at 0 days of age, with an average length of stay of 19.2 days. There was a predominance of males (51.02%). The main reasons for hospitalization were respiratory conditions (44.39%), newborns small for gestational age (14.29%) and prematurity (9.69%). Regarding ICD-10 diagnoses, P22.9 (newborn respiratory distress syndrome, 17.35%), P05.1 (small for gestational age, 12.04%) and P22.8 (other respiratory syndromes, 10.71%) stood out. All patients required intensive care, with frequent interventions such as orotracheal intubation (16.84%), use of vasoactive drugs (8.67%) and surgical procedures (4.59%). The findings reinforce the predominance of respiratory causes, prematurity and low birth weight as the main determinants of neonatal hospitalization.

CONCLUSION

In general, neonatal hospitalizations are concentrated due to respiratory causes, mainly ICD-10 P22.9. Low mortality (1.5%) was observed, attributed to early recognition and immediate interventions. The results reinforce the importance of qualified prenatal care and delivery to improve the neonatal prognosis.

KEYWORDS

Health profile; Pediatrics; Diseases of the newborn; Infant mortality; Neonatal death.

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INTRODUCTION

The neonatal period, which covers the first 28 days of life after birth, is a time of marked biological vulnerability in which, consequently, the need for special care arises, such as social and health protection, which are recognized by the Child and Adolescent Statute (ECA).¹ Neonatal health promotion, prevention and assistance have a lasting impact, with repercussions that extend into adult life. Therefore, the analysis of birth and mortality indicators in this period is essential for directing public policies in Brazil.¹

According to DataSUS, in 2022, there were around 1,400 deaths in hospitals in the city of São Paulo of patients aged 0 to 27 days old.² The assistance and care provided during this time are critical determinants, as they are associated with the decline in infant mortality,³ as neonatal mortality currently accounts for almost 70% of deaths in the first year of life, with 25% of these deaths on the first day.¹

Rapidly detecting and timely identification of neonatal morbid conditions is crucial to providing effective care, including the immediate administration of appropriate treatments during critical situations and the prevention of more serious complications.⁴ Although the characteristics of the diseases that most affect them and lead them to be hospitalized do not follow a clear pattern, there is still a lack of research on the reasons for hospitalizations in this age group.⁵

Neonatal care has progressed with the implementation of advanced therapies, emerging technologies, and increased staff specialization. However, to provide truly effective assistance, more than just scientific knowledge is needed; It is essential to have a prior understanding of Newborns (NBs) and their particular characteristics.⁶

Therefore, understanding the pathologies that lead newborns to be hospitalized is fundamental to understanding the negative outcomes related to social vulnerability and risk factors, such as low birth weight, prematurity and cesarean section.⁶ Furthermore, a significant prevalence of respiratory disorders,⁴ cardiac disorders and jaundice is notable.⁷

Given the high number of deaths in the country, in the context of the need for specialized infrastructure, the Scientific Department of Neonatology of the Brazilian Society of Pediatrics (SBP) recommends that the number of neonatal ICU beds be at least 4 beds for every 1,000 live births. These beds must be distributed regionally and organized in a hierarchical system of perinatal care.⁸

Since infant mortality is still a public health problem in Brazil, even with the progress made in recent years,⁹ the understanding of the pathologies of neonatal hospitalizations is relevant, as it helps to raise awareness among health professionals, encouraging the implementation of actions aimed at reducing hospitalizations.

Based on the above, this study aims to characterize the causes of hospitalizations of newborns in a general hospital in the south zone of the city of São Paulo. The aim is to identify the pathologies that determine hospitalization in the first 28 days of life, the frequency of critical interventions and mortality outcomes.

Therefore, carrying out this study is justified by the scarcity of epidemiological data in general hospitals of the Unified Health System (SUS) in the South Zone of São Paulo. By filling this gap, the research strengthens local scientific literature and provides support for combating neonatal and infant mortality in the capital of São Paulo. Furthermore, the results can guide the implementation of strategies aimed at improving health care and optimizing therapeutic success in neonatology.

METHODS

This is a descriptive epidemiological study, retrospective in nature and with a quantitative approach, carried out by collecting data on the reasons for hospitalization of newborns at the Hospital Geral do Grajaú, a unit belonging to the SUS network. The retrospective design was selected because it allows the historical analysis of medical records and the characterization of the morbidity profile over an extended period.

To carry out this work, the following steps were necessary: i) Data collection through the analysis of electronic medical records from the last 5 years (from July 2019 to July

2024); ii) Processing of data collected using Excel 2019 and iii) Analysis and description of results using descriptive statistics.

The initial sample consisted of 200 electronic medical records of patients hospitalized between July 2019 and July 2024, selected for convenience. After applying the eligibility criteria, the final sample totaled 196 patients. The studied population consisted of newborns (0 to 28 days of age) hospitalized in that institution.

Variables such as age at admission, gender, reasons for hospitalization (based on ICD-10), length of hospital stay and clinical outcome (discharge or death) were analyzed. As part of the interventions, the need for an intensive care bed, use of vasoactive drugs, invasive ventilatory support and surgical procedures were investigated.

The inclusion criteria included patients hospitalized in the neonatal period (0 to 28 days) in the aforementioned general hospital, linked exclusively to the SUS. Records with incomplete or duplicate data, patients treated exclusively in emergency care or outpatient care with immediate discharge, and those whose length of stay exceeded the time frame of the research were excluded.

Cases with multiple diagnoses were classified according to the main ICD of hospitalization for the present research, representing a possible bias in the study. Thus, the results were compiled and organized in Excel 2019 tables and analyzed using descriptive statistics.

To guarantee the rights and dignity of the students involved in the research, this research was submitted to the Ethics Committee of Universidade Santo Amaro, under approval with the Submission Number for Ethics Appreciation (CAAE) 82066824.5.0000.0081, to the Ethics Committee of Hospital Geral do Grajaú, under approval with CAAE 82066824.5.3001.5447, and to the Commission of Research from the Santo Amaro University, under opinion number 769/2024. Furthermore, in order to guarantee the anonymization of the data, the researcher signed a Term of Commitment and Responsibility prepared in accordance with Resolution 196/96 CONEP and identification was not requested during the evaluation of the medical records, which guaranteed the anonymity of the participant.

Compliance with all regulations and requirements was ensured throughout the entire research process.

RESULTS AND DISCUSSION

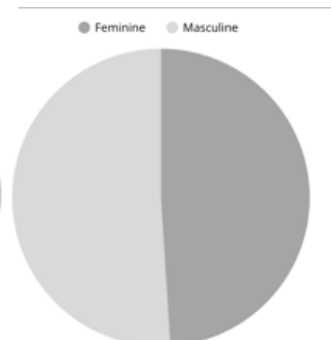
Among the patients included, 194 are 0 days old (98.98%), while only 2 are 1 day old (1.02%) (graph 1), in line with the findings of Benite and Nunes (2006)¹², showing that newborns are sent to the neonatal ICU on the same day of their birth, in the hospital of origin. The average length of hospital stay was 19.2 days, a minimum of zero days and a maximum of 108 days. Corroborating the results found by Yang and Meng (2020)¹⁴, which had an average result of 10 ± 2.5 days.

In terms of gender, the proportion of male participants was 100 (51.02%), being predominant, and female participants were 96 (48.98%) (graph 2), according to the results found by Barbosa, et al. (2021)¹², which did not demonstrate a significant difference regarding sex. In contrast, the study by Yang and Meng (2020)¹⁴ had a prevalence in males.

Graph 1 - Age Variables, n = 196



Graph 2 - Gender Variables, n = 196



Source: own elaboration

The main reasons that led to the hospitalization of newborns were predominantly related to respiratory factors, which corresponded to 87 cases (44.39%), a finding that is in agreement with Pereira LDC, et al. 10, which reveals that respiratory syndromes and diseases are among the neonatal conditions that most frequently require hospitalization in progressive care neonatal units.

The occurrence of small newborns for gestational age was also observed, with 28 cases (14.29%), prematurity with 19 cases (9.69%), and low birth weight in 16 cases (8.16%). These findings corroborate the study by Borges, et al. (2016) 4, who says that the most prevalent diseases were respiratory distress syndrome, prematurity and jaundice in their study.

Other factors identified included maternal conditions in 9 cases (4.59%), neonatal jaundice in 6 cases (3.06%), newborn conditions unrelated to maternal causes in 4 cases (2.04%), and cardiovascular causes in 4 cases (2.04%). In addition to these, 23 newborns (11.74%) were hospitalized due to clinical conditions. Thus, the causes were distributed in Table 1.

Table 1 - Distribution of main reasons that led participants to hospitalization, n = 196

Variables	Amount	%
Respiratory	87	44,39%
Newborn small for gestational age	28	14,29%
Prematurity	19	9,69%
Low birth weight	16	8,16%
Maternal conditions	9	4,59%
Neonatal jaundice	6	3,06%
Conditions not related to maternal causes	4	2,04%
Cardiac	4	2,04%
Others	23	11,74%
Total	196	100%

Source: own elaboration

The distribution of diagnoses, based on ICD-10 codes, highlighting conditions of the perinatal period (Chapter XVI) of the newborns included in the research were: the most frequent code is P22.9 (Newborn difficulty breathing syndrome, with no other prediction), with 34 cases (17.35%). In agreement with results found by Nunes and Cunha (2014) 16, who found 8 out of 40 NBs in their research presenting ICD P229 as a determination for hospitalization.

Followed by P05.1 (Newborn small for gestational age), with 24 cases (12.04%), and P22.8 (Other respiratory distress syndromes in the newborn), with 21 cases (10.71%). Other diagnoses include P07.3 (Extreme prematurity) with 19 cases (9.69%), P22.0 (Hyaline membrane syndrome) with 14 cases (7.14%), and P07.1 (Low birth weight, between 1,000 and 1,499 grams) with 11 cases (5.61%).

Less frequent diagnoses include P59.9 (Neonatal jaundice, not otherwise specified) with 6 cases (3.06%), P00.8 (Maternal conditions affecting the fetus or newborn, not otherwise specified) with 5 cases (2.55%), P07.2 (Low birth weight, between 500 and 999 grams) and P21.9 (Sunrise asphyxia, not otherwise specified) with 4 cases each (2.04%), and P07.0 (Low birth weight, less than 500 grams) with 3 cases (1.53%). The "Other" category (51 cases, 26.02%) includes adverse, less common or unspecified conditions. The predominance of respiratory conditions, prematurity and low birth weight reflect typical clinical challenges in newborns in the perinatal period.

The data on the distribution of diagnoses regarding

data collection, which are treated according to the ICD-10 code, were displayed in Table 2 for a better visualization of the results obtained.

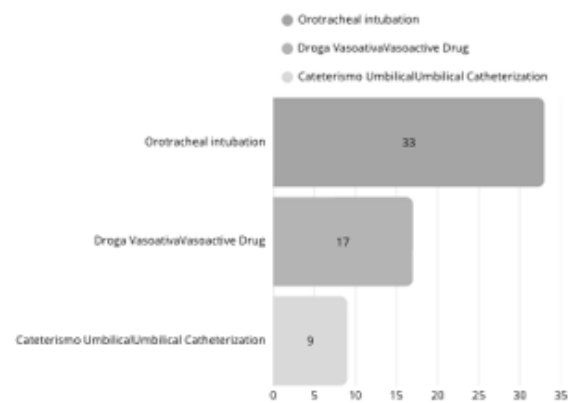
Table 2 - Distribution of diagnoses, n = 196

Variables	Amount	%
P229	34	17,35%
P051	24	12,04%
P228	21	10,71%
P073	19	9,69%
P220	14	7,14%
P071	11	5,61%
P599	6	3,06%
P008	5	2,55%
P072	4	2,04%
P219	4	2,04%
P070	3	1,53%
Outros	51	26,02%
Total	196	100%

Source: own elaboration

Regarding the most common interventions, all (100%) participants required an intensive care bed and were prescribed medication after discharge, in addition to referral to the Basic Health Unit closest to their residence for subsequent follow-up. Furthermore, 33 (16.84%) required orotracheal intubation, 17 (8.67%) needed vasoactive drugs and 9 (4.59%) underwent a surgical procedure, all of which required the passage of an umbilical catheter (graph 3).

Graph 3 - Interventions carried out on participants



Source: own elaboration

CONCLUSION

From data analysis, it is concluded that the main causes of neonatal hospitalization in a hospital located in the extreme south of the city of São Paulo are predominantly related to respiratory disorders, with emphasis on ICD-10 P22.9, referring to unspecified respiratory distress in the newborn. A higher frequency of hospitalizations was observed among male newborns; however, no statistically significant differences were identified regarding gender.

All newborns evaluated were born and admitted to the Neonatal Intensive Care Unit of the hospital of origin, which suggests the effectiveness of the care team in the early identification of clinical signs and symptoms, allowing timely and appropriate interventions. This approach is reflected in the low mortality rate observed, with only three deaths among

the 196 cases analyzed, highlighting the relevance of early detection and adequate interpretation of neonatal pathologies to guarantee safe and resolute assistance.

Although only 2% of hospitalizations were associated with maternal conditions, programs such as Rede Cegonha, within the scope of the SUS, remain essential for reducing adverse outcomes related to social vulnerability, inadequate prenatal care and unfavorable conditions at the time of birth.

Furthermore, the results reinforce the importance of maintaining and expanding educational strategies aimed at health professionals, with an emphasis on qualifying care during prenatal care, childbirth and the neonatal period, contributing to the promotion of better health conditions from the first days of life.

Finally, some limitations of the study must be recognized, such as the number of NBs included and the period of analysis, factors that may restrict the generalization of the findings. Therefore, it is suggested that future studies be carried out with broader samples and covering other regions of the State of São Paulo, in order to deepen the understanding of the investigated scenario and strengthen the robustness of the available evidence.

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