Epidemiological profile of newborns´ mothers admitted to a public neonatal unit*

Perfil epidemiológico de mães de recém-nascidos admitidos em uma unidade neonatal pública

Mariana Fanstone Ferraresi[1], Alessandra da Rocha Arrais[1]

Objective: to identify the epidemiological profile newborns´ mothers hospitalized in a public neonatal unit. **Methods**: this is a descriptive and cross-sectional study of 57 mothers and 58 infants who were admitted to the neonatal unit. **Results**: it was observed that most of the women had unfavorable sociodemographic conditions, had intercurrences during pregnancy and although most of them had performed the recommended number of prenatal consultations, the hospitalization of the newborn in a specialized unit leads to questioning the quality of this care. **Conclusion:** a risk profile for admission of newborns in a specialized unit was identified, since most of the women had unfavorable sociodemographic conditions and presented intercurrences during pregnancy.
Descriptors: Intensive Care Units, Neonatal; Maternal and Child Health; Health Profile.

Objetivo: identificar o perfil epidemiológico de mães de recém-nascidos internados em uma unidade neonatal pública. **Métodos**: estudo descritivo e transversal, realizado com 57 mães e 58 bebês que ficaram internados na unidade neonatal. **Resultados**: observou-se que a maioria das mulheres tinha condições sociodemográficas desfavoráveis, apresentou intercorrências na gestação e, apesar da maior parte ter realizado o número preconizado de consultas de pré-natal, o internamento do recém-nascido em Unidade especializada leva ao questionamento da qualidade dessa assistência. **Conclusão:** identificou-se perfil de risco para admissão de recém-nascidos em Unidade especializada, pois a maioria das mulheres tinha condições sociodemográficas desfavoráveis e apresentou intercorrências na gestação.
Descritores: Unidades de Terapia Intensiva Neonatal; Saúde Materno-Infantil; Perfil de Saúde.

Introduction

Through rapid technological and scientific advances, the decrease in the number of deaths of newborns in the world has made possible the survival of newborns previously considered unfeasible, constituting one of the greatest successes in the public health area[1]. Brazil has managed to achieve the Millennium Development Goal of reducing child mortality by two-thirds. However, there is still a high rate of neonatal deaths. Currently, most of these deaths can be associated with preventable causes, evidencing the need to improve access and quality of maternal and child care[2-3].

The neonatal period is very vulnerable and is the main component of infant mortality. It is estimated that about 25.0% of deaths occur in the first twenty-four hours of life. Most neonatal deaths are related to prematurity, asphyxia, and infections, potentially controllable factors. The neonatal component has a close relationship with the health conditions of women during pregnancy and access to care services in the delivery and at birth[2].

The literature shows several gestational risk factors, such as advanced maternal age, teenage pregnancy, unfavorable socioeconomic conditions, low education, high parity, obstetric illness during pregnancy, poor quality and/or insufficient prenatal care, clinical intercurrences during pregnancy, among others. These may contribute to unfavorable neonatal outcomes, such as newborn hospitalization in a neonatal unit[4-6].

Regarding the characteristics of neonates hospitalized in a neonatal unit, prematurity, and low birth weight represents the main reasons for admissions. These newborns, in the great majority, demand special and continuous care, since they are more likely to be infected, delayed in development and died[7-8].

Given this context, research is needed to highlight the main epidemiological characteristics of the mothers of infants hospitalized in a neonatal unit, since this knowledge is an important tool to improve prenatal care, delivery and birth to prevent perinatal conditions and neonatal deaths[3].

Knowledge of the characteristics of these mothers is extremely important, since it can contribute to the promotion and improvement of maternal and child health, helping in the elaboration of public health policies directed to the group of the population studied and in the prevention of perinatal conditions that may lead to the need for treatment in a specialized unit.

In this scenario, considering that the profile of mothers may influence the birth of newborns requiring hospitalization in a neonatal unit, this study aimed to identify the epidemiological profile of mothers of newborns hospitalized in a public neonatal unit.

Methods

This is a descriptive and cross-sectional study, carried out in a public neonatal unit of a hospital of high complexity linked to the Unified Health System, located in the Federal District, Brazil.

The inclusion criteria of this study are a minimum period of seven days of hospitalization of the baby in the Neonatal Intensive Care Unit and two days of hospitalization in the Neonatal Intermediate Care Unit. These criteria were established, considering the need for a time of coexistence between the mothers and the team to respond to the questionnaire and the inherent characteristics of each unit, because the Neonatal Intensive Care Unit had lower turnover and longer hospitalization time.

The sample was 57 mothers and 58 babies who were admitted to the neonatal unit where the study was performed. The data collection period was between April and September 2015. The data were collected from the medical records and through a structured form, prepared and pre-tested by the researchers. The pre-test was performed with five women before the application of the questionnaires for definitive data collection of the research. After

the pre-test, the questionnaire was adjusted with the objective of adapting it to the reality of the service. The list of patients eligible to enter the study was daily obtained, and an invitation was then sent to the mothers who were included in the inclusion criteria to participate in the study. The mother's approach was initiated with a presentation of the research, its risks, benefits, costs and freedom to participate or not. The questionnaires were applied to mothers in the neonatal unit, through interviews conducted by a properly trained research assistant.

The variables collected were about the woman, the newborn and the care provided: Parturient - age in years, family income, education, marital status, profession, origin, type of pregnancy, desired/planned pregnancy, intercurrences during pregnancy, children hospitalized in a neonatal unit previously, knowledge of why the baby was admitted to the unit; Newborn – gender, gestational age, birth weight, indication of newborn hospitalization in the Unit, place of hospitalization; Assistance - number of prenatal consultations, type of delivery.

The data collected were computed into a data file in the Excel 2013 software and then processed using the Software R statistical software version 3.1.2. Descriptive statistics were used to characterize the studied population, using absolute and relative frequencies for the studied variables, whose analysis was done by a statistical professional hired for this purpose. A 95% confidence interval was established for the proportions.

The study complied with the formal requirements contained in the national and international regulatory standards for research involving human beings.

Results

As for income, it was observed that a significant number of mothers (50.9%) lived with per capita income up to a minimum wage. Most mothers came from the Federal District (29.8%) and Goiás (29.8%)

and about 70.0% did not have extra domicile work. Regarding the level of education, 89.4% did not have completed tertiary education. It was observed that 42.1% had completed high school, followed by incomplete fundamental (21.0%) and incomplete secondary school (12.3%). Regarding marital status, the results showed that most mothers were married (57.9%), followed by single mothers (31.5%). About age, a higher frequency was observed in the age range of 26 to 30 years old (28.0%) and 21 to 25 years old (22.9%), with not very prevalent age extremes (<17 years and> 35 years - 8.8%) (Table 1).

Table 1 - Sociodemographic characteristics of the newborns´ mothers hospitalized in the public neonatal unit.

Sociodemographic data	n (%)	CI 95%*
Income (minimum wage)		
≤ 1	29 (50.9)	37.44 – 64.2
1,0 – 1,5	8 (14.0)	6.68 – 26.35
1,5 – 2,0	9 (15.8)	7.91 – 28.37
> 2	6 (10.5)	4.35 – 22.2
No answer	5 (8.8)	3.27 – 20.04
Origin		
Federal District	17 (29.8)	18.8 – 43.57
Goiás	17 (29.8)	18.8 – 43.57
Bahia	7 (12.3)	5.49 – 24.29
Piauí	4 (7.0)	2.27 – 17.83
Other	7 (12.3)	5.49 – 24.29
No answer	5 (8.8)	3.27 – 20.04
Extra domicile work		
No	40 (70.2)	56.43 – 81.12
Yes	17 (29.8)	18.80 – 43.57
Education		
Incomplete Elementary school	12 (21.0)	11.80 – 34.25
Complete Elemenary school	1 (1.7)	0.09 – 10.63
Incomplet eHigh School	7 (12.3)	5.49 – 24.29
Complete High School	24 (42.1)	29.40 – 55.88
Incomplete tertiary education	7 (12.3)	5.49 – 24.29
Complete tertiary education	5 (8.8)	3.27 – 20.04
No answer	1 (1.8)	0.09 – 10.63
Marital status		
Married	33 (57.9)	44.12 – 70.60
Single	18 (31.5)	20.27 – 45.38
Stable union	4 (7.0)	2.27 – 17.83
Divorced	1 (1.8)	0.09 – 10.63
No answer	1 (1.8)	0.09 – 10.63
Mother´s age (years old)		
≤ 17	5 (8.8)	3.27 – 20.04
18 – 20	12 (21.0)	11.80 – 34.25
21 – 25	13 (22.9)	13.16 – 36.16
26 – 30	16 (28.0)	17.36 – 41.75
31 – 35	6 (10.5)	4.35 – 22.20
> 35	5 (8.8)	3.27 – 20.04

*Confidence Interval

According to the mothers' reports, pregnancy was unwanted at 38.6% and was not planned at around 43.0%. The results also showed that 47.0% were in the first gestation, 86.0% had never had an abortion, 89.5% had never had a child hospitalized in a neonatal unit previously, and 10.5% of the mothers did not know the reason the child was hospitalized. In 59.6% of the cases, the mothers performed six or more consultations during prenatal care. Regarding the type of delivery, 72.0% of the mothers had a cesarean delivery.

Table 2 reports the most common gestational intercurrences. Most of the mothers (68.5%) had some intercurrence, being the most prevalent the Specific Hypertensive Disease of the Gestation that occurred in 26.3% of the cases, followed by Urinary Tract Infection, in 22.8%. Placental abruption and intrauterine growth occurred in 3.5% of the mothers. The other complications that appeared only once were: vaginosis, ruptured pouch (12 days), eclampsia, pelvic inflammatory disease, syphilis, placenta previa, gestational diabetes, acute pulmonary edema, furunculosis and vaginal monolysis. The percentage did not total 100.0% (n=57) since more than one intercurrence could be reported for a single mother. It is worth noting that 15.0% of the women who had a cesarean birth in this study did not present an intercurrence according to records in the charts and 66.6% of the infants of these women were born preterm.

As for the newborns, the sample totaled 58 due to the presence of twins. According to the World Health Organization, newborns can be classified by gestational age, being considered premature babies born less than 37 weeks. These can still be classified according to the birth weight, being considered low weight those born with less than 2500g.

Table 2 - Characterization of gestational intercurrences of mothers of newborns hospitalized in a public neonatal unit

Gestational Intercurrences	n (%)	IC 95%*
Without intercurrences	18(31.5)	20.27 – 45.38
Intercurrences		
Pregnancy-specific hypertensive disease	15(26.3)	15.94 – 39.91
Urinary tract infection	13(22.8)	13.16 – 36.16
Placental abruption	2 (3.5)	0.61 – 13.16
Restricted intrauterine growth	2 (3.5)	0.61 – 13.16
Vaginosis	1 (1.7)	0.09 – 10.63
Eclampsia	1 (1.7)	0.09 – 10.63
Pelvic inflammatory disease	1 (1.7)	0.09 – 10.63
Syphilis	1 (1.7)	0.09 – 10.63
Placenta previa	1 (1.7)	0.09 – 10.63
Acute lung edema	1 (1.7)	0.09 – 10.63
Furunculosis	1 (1.7)	0.09 – 10.63
Vaginal Monolysis	1 (1.7)	0.09 – 10.63

*Confidence interval

Table 3 shows that 82.4% of the newborns were premature and 77.5% were born with low birth weight. Premature infants were also classified according to the degree of prematurity. The results of this study showed that 12.1% were extremely preterm (gestational age <28 weeks), 36.2% were very preterm (28 to 32 weeks), and 34.5% were preterm infants to late preterm infants (32 to 37 weeks). Regarding low birth weight infants, 15.6% had extremely low weight (<1000g) and 29.3% very low weight (1000-1500g).

Table 3 - Data characterization of neonates hospitalized in a public neonatal unit

Characterization of newborns	n (%)	CI 95%*
Gestational age (full weeks)		
< 28	7 (12.1)	5.39 – 23.91
28 – 32	21 (36.2)	24.34 – 49.94
32 – 37	20 (34.5)	22.82 – 48.12
> 37	10 (17.2)	9.01 – 29.88
Weight at birth (kg)		
< 1	9 (15.6)	7.77 – 27.30
1,0 – 1,5	17 (29.3)	18.46 – 42.91
1,5 – 2,0	13 (22.4)	12.92 – 35.59
2,0 – 2,5	6 (10.3)	4.27 – 21.83
2,5 – 4,0	13 (22.4)	12.92 – 42.91
Gender		
Male	33 (56.9)	43.29 – 69.6
Female	24 (41.4)	28.86 – 55.04
No answer	1 (1.7)	0.09 – 10.46
Diagnosis/hospitalization indication		
Prematurity	46 (79.3)	66.28 – 88.41
Low weight	44 (75.9)	62.54 – 85.72
Respiratory distress	33 (56.9)	43.29 – 69.60
Neonatal infection	13 (22.4)	12.92 – 35.59
Place of hospitalization		
Intermediate Care Unit	23 (39.7)	27.33 – 53.36
Neonatal Intensive Care Unit	35 (60.3)	46.64 – 72.67

*Confidence interval

It is also observed in Table 3 that most of the newborns were male (56.9%). The place of hospitalization with the largest number of infants in the period studied was the Intensive Care Unit, corresponding to 60.3% of hospitalizations. Regarding the diagnosis/indications of neonatal hospitalization in the neonatal unit, prematurity (79.3%), low birth weight (75.9%), respiratory discomfort (56.9%) and neonatal, 4%) were the most prevalent. The percentage did not total 100.0% (n=58) since more than one diagnosis could be reported for a single mother/baby.

Discussion

The data obtained in this study cannot be extrapolated to the general population, not allowing the generalization of results. Despite this, the results found may contribute to the elaboration of public health policies directed to the group of the studied population, since the knowledge of the profile of these mothers by health professionals is essential to develop and prioritize quality maternal and child care.

In this study, women tended to have children at a later age. The postponement of maternity in the new family constitution has become a common factor nowadays since previously adolescence was considered the ideal age group to have children[6]. Regarding education, the results of this study showed that most of the women did not have a full tertiary education. There is evidence that low education may be associated with neonatal mortality. Mothers who have this condition are more vulnerable to situations of risk, which can negatively affect the health of the newborn[4,9].

Regionalization is one of the guidelines of the Unified Health System, and guides the decentralization of health actions and services, enabling better obstetric care to meet the needs of pregnant women in a given territory[10]. In this way, it can be observed that the results of this study corroborate the idea that this regionalization faces great challenges, and often it is not fulfilled, so that many women seek health services in other regions, In this way, the demand for assistance in these places.

About income, it is known that in Brazil, the public health system is more sought after by the low-income and lower-income population, unlike what happens in developed countries, where public network users do not always have this profile[11]. Regarding the labor market, the results of this study are in line with the findings of another study conducted in a school hospital located in Turkey, where 87.0% of the mothers of infants admitted to the Intensive Care Unit did not work[12].

According to the results of this investigation, there were significant numbers of unwanted and unplanned pregnancies. An unplanned/unwanted pregnancy can be related to several diseases related to maternal and perinatal reproductive health, generating great impact in the life of the woman. The occurrence of these phenomena also makes these women more vulnerable to gestational risk factors. A study conducted in the extreme south of Brazil showed that black/brown skin color, adolescence and without a partner had an association with unplanned pregnancy. Unwanted pregnancy was more frequent in women who smoked regularly and women with more children[13].

It is important to note that the lack of knowledge of some mothers about the reason for the child's hospitalization may be related to the lack of communication among some of the health professionals of the Unit. This study also shows that for most mothers the experience of having a child hospitalized in a neonatal unit was new, which could lead to even more insecurity due to the strange, stressful and confusing environment inherent in the neonatal unit, with even more negative consequences in the mother/child relationship in the neonatal unit[14].

The results of this study in the gestational intercurrences are in line with another study[15] conducted in the state of São Paulo, Brazil. In the research, it was demonstrated that most of the mothers had gestational intercurrences, with the Specific Hypertensive Disease of the Gestation and the Infection of the Urinary Tract as the most prevalent. These intercurrences can generate several clinical repercussions and are related to high rates of maternal and neonatal morbidity and mortality[5]. Urinary tract infection also stands out because it is associated with prematurity, which can generate great impacts on the mother-child binomial[16].

Although most women had gestational

complications, this fact does not justify the high percentage of cesareans observed in this study (71.9%), as this result is close to other studies also performed in Neonatal Units, which demonstrated a percentage of cesareans around 55 to 60.0%[8,17].

The high rate of prematurity observed in babies born with a cesarean delivery, whose mothers did not present gestational intercurrence, may be linked to the increase of elective cesarean sections, also leading to an increase in prematurity[18]. When performed without adequate indication, this surgical procedure can generate serious complications that may lead to the need for intensive treatment of the newborn in a specialized unit. Brazil is experiencing an epidemic of cesarean operations, and in recent years the increase in the rate of cesarean sections has increased progressively, becoming a major public health problem[8,18].

Prenatal care is extremely important in pregnancy and can contribute to the diagnosis and timely treatment of conditions, as well as to reduce neonatal and maternal complications. Although the literature demonstrates that the increase in the number of prenatal consultations may be an indicator of quality and correlate with more favorable outcomes, this study presented contradictory data, since despite the majority of women having performed the number of consultations recommended (six or more), the majority of infants had unfavorable outcomes, such as prematurity and low birth weight, two important factors in the high percentage of neonatal morbidity and mortality, which may lead to a question whether prenatal care is being performed with the quality it should be[3,19].

It should be noted that most babies in this study were male, as was observed in studies performed in other neonatal units[8,15]. Regarding the diagnosis/indications of hospitalization of the newborn in the neonatal unit, the results of this study are in line with another research carried out in

a Unit of Neonatal Intensive Care of Southern Brazil, which also demonstrated that the main reasons for hospitalization of the newborn preterm infants, low weight and respiratory discomfort[7].

Conclusion

The results showed that the profile of the mothers found in this study is a risk for admission of newborns in a specialized unit since it was observed that most of the women had unfavorable sociodemographic conditions and presented intercurrences during pregnancy.

Collaborations

Ferraresi MF and Arrais AR contributed to the design, planning, analysis and interpretation of the data, relevant critical review of the content and approval of the final version to be published.

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