ORIGINALES

Health profile of newborns admitted to a conventional neonatal intermediate care unit

Perfil de saúde de recém-nascidos admitidos em unidade de cuidados intermediários neonatais convencionais

Perfil de salud de los recién nacidos ingresados en una unidad de cuidados intermedios neonatales convencionales

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ABSTRACT:
Objective: To characterize the health profile of newborns admitted a Conventional Neonatal Intermediate Care Unit of a reference Maternity in the State of Piauí.
Method: Descriptive, exploratory and analytical study, with quantitative data approach, conducted from July to August 2021 in a Conventional Neonatal Intermediate Care Unit of a reference Maternity in the State of Piauí. It was developed through the evaluation and analysis of the unit's own newborn admission checklist. The data collection was performed using an elaborated and tested form. 1,251 newborns admitted to the unit during the selected period were included, and readmissions, incomplete or inconclusive records, or those outside the time frame were excluded. Data were analyzed using descriptive and inferential statistics.
Results: The admissions occurred in a higher percentage in 2020, with a predominance of mothers from the interior of the state, male newborns, preterm, suitable for gestational age, with Apgar score of 8-10, born from cesarean delivery and coming from the delivery room.
Conclusion: From the data obtained through the characterization of newborns, we obtain adequate management, reduced morbidity and mortality, reduced hospitalization time and acquisition of resources needed for the care of the newborn.

Keywords: Health profile; Newborn; Neonatal Intensive Care Unit; Hospital Service of Patient Admission; Hospitalization time.

RESUMO:
Objetivo: Caracterizar o perfil de saúde de recém-nascidos admitidos em uma Unidade de Cuidados Intermediários Neonatais Convencionais de Maternidade de referência do Estado do Piauí.
Método: Estudo descritivo, exploratório e analítico, com abordagem quantitativa de dados, realizado no período de julho a agosto de 2021 em Unidade de Cuidados Intermediários Neonatais Convencionais de Maternidade de referência do Estado do Piauí. Ele foi desenvolvido por meio de avaliação e análise de checklist próprio de admissão de recém-nascidos da unidade. A coleta dos dados foi realizado por meio de formulário elaborado e testado. Foram incluídos 1.251 recém-nascidos internados na unidade no periodo elegido, e excluídos readmissões, registros incompletos, inconclusivos ou fora do recorte temporal. Os dados foram analisados utilizando estatística descritiva e inferencial.
Resultados: As admissões ocorreram em maior porcentagem em 2020, com predominância de mães provenientes do interior do Estado, recém-nascidos do sexo masculino, pré-termos, adequado para a idade gestacional, com Apgar de 8-10, nascidos de parto cesáreos e provenientes da sala de parto.
Conclusão: A partir dos dados obtidos por meio da caracterização dos recém-nascidos, obtém-se manejo adequado, redução da morbimortalidade, redução de tempo de internação e aquisição de recursos necessários para o atendimento ao neonato.

Palavras-chave: Perfil de saúde; Recém-nascido; Unidade de Terapia Intensiva Neonatal; Serviço Hospitalar de Admissão de Pacientes; Tempo de internação.

RESUMEN:
Objetivo: Caracterizar el perfil de salud de los recién nacidos ingresados en una Unidad de Cuidados Intermedios Neonatales Convencionales de Maternidad de referencia en el Estado de Piauí.
Método: Estudio descriptivo, exploratorio y analítico, con abordaje de datos cuantitativos, realizado en el período de julio a agosto de 2021 en una Unidad de Cuidados Intermedios Neonatales Convencionales de Maternidad de referencia en el Estado de Piauí. Se elaboró mediante la evaluación y el análisis de la propia lista de control de admisión de recién nacidos de la unidad. La recogida de datos se realizó mediante un formulario elaborado y probado. Se incluyeron 1.251 recién nacidos ingresados en la unidad en el periodo elegido, y se excluyeron los reingresos, los registros incompletos o no concluyentes, o los que estaban fuera de plazo. Los datos se analizaron mediante estadísticas descriptivas e inferenciales.
Resultados: Los ingresos se produjeron en mayor porcentaje en 2020, con predominio de madres procedentes del interior del estado, recién nacidos varones, pretérmino, adecuados a la edad gestacional, con puntuación de Apgar de 8-10, nacidos de parto por cesárea y procedentes de la sala de partos.
Conclusión: A partir de los datos obtenidos mediante la caracterización de los recién nacidos, se obtiene un manejo adecuado, la reducción de la morbimortalidad, la reducción del tiempo de internamiento y la adquisición de los recursos necesarios para la atención al recién nacido.

Palabras clave: Perfil de salud; Recién nacido; Unidad de Terapia Intensiva Neonatal; Servicio Hospitalario de Admisión de Pacientes; Tiempo de internación.

INTRODUCTION

The neonatal period consisting of the first 28 days of life is considered a phase of great fragility, as it is related to the phase corresponding to extrauterine adaptation[1]. It is evidenced as the most vulnerable for the survival of the newborn (NB)[2], thus, the quality assistance that starts from prenatal care, as well as the services offered from birth to hospital discharge, enable the reduction of injuries and a better quality of life for newborns[3].

Within this period, changes may occur influenced by environmental, biological, socioeconomic, cultural risks, as well as maternal conditions[4]. Neonatal deaths reach approximately 3 million in the world, with prematurity being the main cause, where 46% of deaths of children under five occur in their first days of life[1-4].

Thus, among the units that care for newborns (NBs) who need special care, there are

the Neonatal Units, which are made up of the NICU (Neonatal Therapy Unit), UCINCo (Conventional Neonatal Intermediate Care Unit) and UCINCa (Unit of Intermediate Neonatal Care). of Kangaroo Intermediate Care)[5].

UCINCo is a semi-intensive neonatal unit where newborns classified as having medium risk of complications are admitted. In these less complex units when compared to NICUs, continuity of treatment is developed for newborns who need complementary care such as Continuous Positive Airway Pressure (CPAP) or FiO2 below 30%; low birth weight newborns (between 1,000g and 1,500g) stable and without central venous access, for weight gain and clinical follow-up[6].

In this context, it is common to observe a higher incidence of studies that include newborns with a period of hospitalization compatible between two and three months, with less prevalence being those that allude to long periods, that is, those with numbers greater than four months, or less than one month of hospital stay[3].

Thus, in view of this problem, it is imperative to highlight that the length of stay in neonatal units can vary and be related to the diagnosis and prognosis of the baby, thus, it is necessary to know the characteristics of this population, due to the limitation of studies with newborns. born from UCINCo, so that assistance, technical and administrative actions can be developed, and consequently, improvement in the quality of the service performed.   Given this scenario, the study aims to characterize the health profile of newborns admitted to a reference Maternity Intermediate Neonatal Care Unit in the State of Piauí.

METHOD

This is a descriptive, exploratory and analytical study, with a quantitative data approach. Data collection was carried out from January to August 2021 in a Conventional Neonatal Intermediate Care Unit of a reference maternity in the State of Piauí. This, in turn, has 30 neonatal ICU beds, 37 intermediate care beds for the care of premature newborns or those who need special care. It currently has 248 adult beds, 167 neonatal beds, and has an average of 1,200 hospitalizations and 900 deliveries per month[7].

The study population consists of all newborns admitted to the UCINCo of the co-participating Health Institution (IS), from January 2018 to January 2021. 2021 was due to the Covid19 Pandemic, with the aim of preventing interference related to the repercussions of the disease on eligible participants. All newborns hospitalized in the unit during the chosen period were included, and readmissions (more than one hospitalization of the same NB), incomplete, inconclusive or outside the time frame were excluded.

The study was developed through the evaluation and analysis of the unit's own newborn admission checklist. Data collection was carried out using a form designed and tested for this study, enabling the collection of the following variables: date of admission, unit of origin, date of birth, mother's origin, type of delivery, birth weight, sex, gestational age (GA), classification according to weight and gestational age, height, head circumference (HC), chest circumference (PT), Apgar score at the 1st and 5th minute and identification when multiple births.

Data were tabulated and analyzed electronically, presented in tables with the aid of the Statistical Package for the Social Sciences (SPSS), version 20.0. Univariate and bivariate statistical analyzes were performed, as well as simple descriptive stratification, using absolute frequencies, means, maximums, minimums and percentages to assess the characteristics of the study participants.

Numerical variables were evaluated using the Kolmogorov-Smirnov test to verify adherence to normal distribution, meeting the assumption of normality. For categorical variables, the chi-square test was used to verify associations. Analysis of Variance (ANOVA) was used to verify whether there was a statistical difference in the variables: type of delivery, gestational age classification, weight classification, sex, sector of origin, Apgar classification in the 1st and 5th minute of life, then Tukey's test was used for multiple comparisons. The significance level adopted was α = 0.05 and a confidence level of 95%.

The research waived an Ethics Committee, for using secondary data and without the possibility of individual identification, as recommended by Resolution CNS 466/2012 under the terms of law nº 12.527/2011[8].

RESULTS

The sample consisted of 1,251 newborns admitted to the UCINCo of the maternity hospital studied. According to the characterization of the sample, 37.3% were admissions in the year 2020, with 60.4% corresponding to the majority of mothers from the interior of the State, with 75.0% cesarean delivery, with 72.8% preterm neonates. -term (Table 1).

Table 1: General characteristics of the variables of newborns in the Neonatal Conventional Intermediate Care Unit (n=1,251). Teresina, Piauí, Brazil, 2021.

VARIABLES	N	%
Year		
2018	388	31,0
2019	359	28,7
2020	466	37,3
2021	38	3,0
Origin		
Capital	496	39,6
Countryside	755	60,4
Gender		
Male	708	56,6
Female	531	42,4
Undetermined	12	1,0
Childbirth		
Natural	306	24,5
Cesarean section	938	75,0
Forceps	7	0,6

GI rating		
Pre-term	911	72,8
Term	338	27,0
Post-term	2	0,2
Weight rating		
PIG	374	29,9
AIG	812	64,9
GIG	65	5,2
Origin sector		
Birth room	687	54,9
Rooming-in	106	8,5
NICU	415	33,2
Regulated from other ISs	43	3,4
Twinning		
Yes	70	5,6
Not	1181	94,4
Apgar 1st minute		
0 - 2 (severe)	45	3,6
3 - 4 (moderate)	154	12,3
5 - 7 (light)	441	35,3
8 - 10 (no suffocation)	611	48,8
Apgar 5th minute		
3 - 4 (moderate)	6	0,5
5 - 7 (light)	117	9,4
8 - 10 (no suffocation)	1128	90,2

Caption: PIG: small for the IG; AIG: suitable for the IG; GIG: Big for IG.
Source: Data obtained from the survey.

Table 2 is relative to the anthropometric characteristics presented by the newborns. Birth weight averaged 2,212.9 grams (SD = 864.1).

Table 2: Anthropometric characteristics of newborns admitted to the Neonatal Conventional Intermediate Care Unit (n=1,251). Teresina, Piaui, Brazil, 2021

VARIABLES	MIN.	MAX.	AVERAGE	SD
PN	560	7155	2.212,9	864,1
IG	22	42	34,7	3,3
Height	23	58	43,5	4,8
PC	20	50	31,4	3,4
PT	2	50	28,6	4,3

CAPTION: SD: STANDARD DEVIATION
Source: Data obtained from the survey.

Table 3 shows the association between the types of delivery and the variables, where a positive relationship is observed in the variables between sector of origin (p = 0.028) and weight classification (p <0.001), with cesarean delivery being prevalent in all variables, even in non-positive relationships.

Table 3: Association between types of delivery (normal, cesarean section and forceps) and variables. (n=1,251). Teresina, Piauí, Brazil, 2021.

	Natural		Cesarean		Forceps		Total		Value-p*
	n	**%**	**n**	**%**	**n**	**%**	**n**	**%**	
Origin sector									**0,028**
Birth room	161	23,4	521	75,8	5	0,7	687	54,9	
Rooming-in	38	35,8	68	64,2	0	0,0	106	8,5	
NICU	101	24,3	313	75,4	1	0,2	415	33,2	
Regulated from other Iss	6	14,0	36	83,7	1	2,3	43	3,4	
Gender									0,654
Male	172	24,3	530	74,9	6	0,8	708	56,6	
Female	131	24,7	399	75,1	1	0,2	531	42,4	
Undetermined	3	25,0	9	75,0	0	0,0	12	1,0	
Class IG									0,945
Pre-term	225	24,7	681	74,8	5	0,5	911	72,8	
Term	81	24,0	255	75,4	2	0,6	338	27,0	
Post-term	0	0,0	2	100,0	0	0,0	2	0,2	
Class Weight									**<0,001**
PIG	67	17,9	306	81,8	1	0,3	374	29,9	
AIG	230	28,3	576	70,9	6	0,7	812	64,9	
GIG	9	13,8	56	86,2	0	0,0	65	5,2	
Twinning									0,166
Yes	11	15,7	59	84,3	0	0,0	70	5,6	
Not	295	25,0	879	74,4	7	0,6	1181	94,4	
Apgar 1									0,981
0 - 2 (severe)	11	24,4	34	75,6	0	0,0	45	3,6	
3 – 4 (moderate)	38	24,7	115	74,7	1	0,6	154	12,3	
5 - 7 (light)	102	23,1	336	76,2	3	0,7	441	35,3	
8 - 10 (no suffocation)	155	25,4	453	74,1	3	0,5	611	48,8	
Apgar 5									0,963
3 - 4 (moderate)	2	33,3	4	66,7	0	0,0	6	0,5	
5 - 7 (light)	30	25,6	86	73,5	1	0,9	117	9,4	
8 - 10 (no suffocation)	274	24,3	848	75,2	6	0,5	1128	90,2	

Caption: *Chi-square test.
Source: Data obtained from the survey.

From table 4, four associations were obtained between the variables: type of delivery, classification of gestational age and weight, and the APGAR score in the first and fifth minutes with the sectors of origin of the neonates.

Therefore, in the association of sectors of origin with the variables, there was a positive relationship with all the variables: childbirth (p = 0.028); GI classification (p < 0.001); weight classification (p = 0.005); Apgar score at 1st minute (p < 0.001); Apgar at the 5th minute (p < 0.001). The prevalent classification by variable was: childbirth: cesarean section (75%); GA classification: preterm (72.8%); weight classification: AIG

(64.9%); Apgar 1st minute: 8-10(48.8%); Apgar 5th minute: 8-10 (90.2%).

Table 4: Association between the sectors of origin (delivery room, rooming-in, NICU and regulated from other SI) and the variables. (n=1,251). Teresina, Piauí, Brazil, 2021.

	Delivery room		Joint accommodation		NICO		Regulated from other IS		Total		p-value
	n	%	n	%	n	%	n	%	n	%	
Childbirth											0,028
Natural	161	23,4	38	35,8	101	24,3	6	14,0	306	24,5	
Cesarean section	521	75,8	68	64,2	313	75,4	36	83,7	938	75,0	
Forceps	5	0,7	0	0,0	1	0,2	1	2,3	7	0,6	
Class IG											<0,001
Pre-term	489	71,2	63	59,4	336	81,0	23	53,5	911	72,8	
Term	198	28,8	43	40,6	77	18,6	20	46,5	338	27	
Post-term	0	0,0	0	0,0	2	0,5	0	0,0	2	0,2	
Class Weight											0,005
PIG	181	26,3	29	27,4	153	36,9	11	25,6	374	29,9	
AIG	463	67,4	70	66,0	250	60,2	29	67,4	812	64,9	
GIG	43	6,3	7	6,6	12	2,9	3	7,0	65	5,2	
Apgar 1											<0,001
0 - 2 (severe)	13	1,9	2	1,9	28	6,7	2	4,7	45	3,6	
3 - 4 (moderate)	60	8,7	12	11,3	77	18,6	5	11,6	154	12,3	
5 - 7 (light)	231	33,6	23	21,7	175	42,2	12	27,9	441	35,3	
8 - 10 (no suffocation)	383	55,7	69	65,1	135	32,5	24	55,8	611	48,8	
Apgar 5											<0,001
3 - 4 (moderate)	0	0,0	0	0,0	4	1,0	2	4,7	6	0,5	
5 - 7 (light)	32	4,7	5	4,7	76	18,3	4	9,3	117	9,4	
8 - 10 (no suffocation)	655	95,3	101	95,3	335	80,7	37	86,0	1128	90,2	

Caption: *Chi-square test.
Source: Data obtained from the survey.

DISCUSSION

This study identified a huge variety of NBs admitted to the UCINCo, coming from different neonatal units. Therefore, the data obtained from this population is intended to demonstrate the reality and needs faced in hospital services for the construction of real data, enabling better planning of actions, as well as the establishment of a therapeutic and care plan[9].

It was found that the year 2020 concentrated the highest number of admissions in the scenario studied, however, this does not mean that the number of births is proportional to admissions, as there is also the issue of bed turnover, resulting from unit transfers or death. According to national and international data, it is observed that little is known about the characteristics of the supply of neonatal beds in the SUS, however, there is a predominance of clinical studies, with rare ones characterizing the supply of neonatal care[10].

In the meantime, one of the guidelines of the Unified Health System (SUS) is the regionalization that decentralizes health services so that users have access to specialized services in the reference due to the shortage of beds in municipalities in the interior[11]. The infrastructure is not adequate, the precarious physical and technological resources do not meet the demand, in addition to the absence of highly complex neonatal care, which is a lack throughout the country. The object unit of this study is the public reference of the State, and its reality is the growing increase in admissions of newborns from mothers residing in rural areas[12].

When analyzing characteristics of newborns in terms of birth, this study points to a predominance of 56.6% of males, 75% born by cesarean section and classified as preterm according to gestational age (72.8%). In a study carried out in a public Neonatal Unit in the city of Curitiba (PR), a higher prevalence of cesarean deliveries was also obtained, as well as a predominance of male premature newborns[13].

Cesarean deliveries generate higher costs for the public sector, in addition to the high risk of avoidable mortality and morbidity. Brazil has one of the highest cesarean rates in the world, as opposed to the 15% recommended by the World Health Organization (WHO). Research that carried out a comparison of cesarean sections performed in 21 countries, showed a growing increase in rates, however, this fact only had a difference in inpatient units in Japan[14]. Thus, the negative consequences of cesarean delivery are numerous and can be both maternal, and neonatal, such as: hemorrhages, infections, pulmonary embolism and anesthetic complications. When observing the repercussions on newborns, they present: respiratory dysfunctions, jaundice, iatrogenic prematurity, anoxia, neonatal mortality and increased risk of hospitalization in a Neonatal Unit[14,15].

In this research, there was a significant association between the classification of gestational age and the type of delivery, with the prevalence of cesarean delivery in all classifications: preterm (74.8%), term (75.4%) and postterm (100%), as well as presenting positive correlations with the sector of origin and the newborn weight classifications. 54.9% of admissions to the UCINCo originated from the vaginal delivery room, with 64.9% of neonates classified according to weight as adequate for gestational age (AGA), even with high rates of prematurity. In accordance with these

data, a reference maternity hospital in Santa Catarina, which despite the admissions to the Neonatal Units having the classification of neonates with adequate weight for gestational age, direct the need for greater attention to premature newborns with very low birth weight and extreme low because they are more susceptible to infections resulting from prolonged hospitalization[16].

The UCINCo is an environment aimed at NBs who need continuous assistance of lesser complexity, framed as support for neonatal intensive care units. The highest estimated demand must be from the NICUs, which is different from what was demonstrated in this study, also contradicting the recommendation of the guidelines and objectives of the Ministry of Health[5]. Therefore, this unit is mainly responsible for the care of newborns transferred from the NICU and who still need complementary care, such as assistance in the face of mild respiratory discomfort, surveillance in the face of the offer of enteral nutrition, as well as for clinical follow-up and weight gain[17,18].

As a limitation of the study and although quantitative, it is attributed to the sample not being considered representative of the entire national territory. However, as a contribution of the study, the current and characterizing aspect of the profile of newborns admitted to the Conventional Neonatal Intermediate Care Unit of a reference Maternity in the State of Piauí is evident. Finally, it is believed that the information presented here can serve as a complement to the current literature in an attempt to increase the scientific production on assistance in neonatal units of lesser complexity and help doctors and nurses in neonatal health care based on their characteristics. since birth.

CONCLUSION

The results of this research allowed characterizing the profile of newborns, through data collected on admission to a Conventional Neonatal Intermediate Care Unit, favoring the analysis and development of managerial measures capable of corresponding to the outlined profile.

The findings indicate that for qualified assistance, it is necessary to know the profile of the newborn corresponding to the destination Unit, so that the necessary resources are available for the care of this population that requires specific and targeted care.

We emphasize the importance of other national and international studies that allow the characterization of the profile of NBs, so that they are classified in the delivery room, according to their complexity and directed to the corresponding neonatal unit, enabling an adequate management and thus reducing the neonatal morbidity and mortality and length of stay.

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