



## Factors associated with non-adherence to outpatient follow-up of neonatal intensive care discharge

Fatores associados à não adesão ao seguimento ambulatorial de egressos de terapia intensiva neonatal

Factores asociados a la no adhesión al seguimiento ambulatorio de egresados de terapia intensiva neonatal

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### ABSTRACT

**Objective:** To analyze the factors associated with non-adherence to the outpatient follow-up of infants discharged from the Neonatal Intensive Care Unit. **Method:** A cross-sectional study that included 596 children who were discharged between October 1, 2014 and September 30, 2015 and who were referred to outpatient follow-up. The data were collected by evaluating the discharge report and attendance to the consultations. **Results:** Of the 596 children referred for follow-up, 118 (19.80%) did not attend any outpatient care in the 12 months after discharge. Children with gestational age at birth  $\geq 37$  weeks (*odds ratio* 1.97,  $p=0.013$ ), who were not resuscitated at birth (*odds ratio* 1.79,  $p=0.032$ ) and those without continuous use of medications at home (*odds ratio* 1.69,  $p=0.046$ ) were more likely to not adhere to outpatient follow-up. **Conclusion:** The expressive number of non-adherence to follow-up indicates the need for actions to ensure care continuity to newborns at risk after hospital discharge. Although the differences pointed out cannot be defined as predictors of non-follow-up, evidence of these variables allows us to recognize risks and seek to reduce factors that influence abandoning follow-up care.

### DESCRIPTORS

Infant, Low Birth Weight; Infant, Premature; Ambulatory Care; Continuity of Patient Care; Neonatology; Neonatal Nursing.

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## INTRODUCTION

In recent years, the increase in technologies in neonatology has led to an increase in the survival of low birth weight preterm infants and those with other birth defects. These impaired birth conditions increase hospitalization time and increase the risk of long-term health problems. Children admitted to Neonatal Intensive Care Units (NICUs) often present complex health problems and are at risk of neurological diseases that pose challenges to their development<sup>(1-3)</sup>. Hospitalization among infants born preterm in their first year of life is three times higher than those born at term<sup>(4)</sup>.

Thus, children born at risk who survive hospitalization in intensive care need to be followed-up in specialized outpatient services<sup>(1)</sup>. This follow-up consists of specialized multidisciplinary follow-up of children discharged from NICUs for the early detection of deviations in development and intervention planning such as necessary medications and non-drug treatments according to the identified needs, thereby minimizing possible harm<sup>(5)</sup>.

Adherence is a challenge that has been observed in populations of different age groups and with different health problems who jointly have the need for follow-up over the first 2 years of life. Adherence is considered the choice to follow the proposed treatment, understanding that this decision will enable an improvement in their health condition<sup>(6)</sup>.

Studies on non-adherence to outpatient follow-up of children report that non-attendance to follow-up is associated with the mother's use of drugs during pregnancy, multiple gestation, male children, greater distance between the place of residence and the hospital and transportation costs, absence of chronic lung disease, shorter hospital stay, the use of oxygen<sup>(7)</sup> and lower maternal stress regarding admission to the NICU<sup>(8)</sup>. A study conducted in Bahia state assessing adherence to the neonatal hearing screening of 102 children who were asked to return to the outpatient clinic due to the results being classified as "flawed" or inconclusive, found that the following are among the factors that seem to negatively influence adherence: lower level of maternal schooling, mothers with only one child, absence of risk indicators for hearing impairment, and the belief that their child is not at risk for disability<sup>(9)</sup>.

In a study conducted in Paraná state with a population of 53 neonates less than 1,500 g discharged from the NICU, 30.2% were readmitted, and 37.5% of which were not under outpatient follow-up<sup>(10)</sup>. This finding reiterates the risk situation of this population group and the need for specialized follow-up for care continuity to children released from the NICU after hospital discharge.

Despite the scientific community being aware of the problems caused by discontinuity of care and studies that address the experience of families in the care of children released from the NICU after hospital discharge, few studies have been identified regarding factors associated with adherence to follow-up in the Brazilian context. Thus, the present study aims to analyze the factors associated with non-adherence to the outpatient follow-up of children who are discharged from the NICU in the first year of life.

## METHOD

### STUDY DESIGN

This is a cross-sectional study conducted at a NICU of a philanthropic hospital in Belo Horizonte, being a reference to the Ministry of Health in women's and children's health.

### SCENARIO

The institution offers an outpatient service for the follow-up of children at risk of neuropsychomotor development disorders from hospital discharge up to 2 years of age. In the care of these children, the service follows the recommendations of the Kangaroo Method outpatient follow-up and therefore considers the following criteria for follow-up: birth weight less than or equal to 2,500 g, gestational age (GA) at birth less than or equal to 32 weeks and 6 days, severe perinatal asphyxia, neurological changes, among others. Seven consultations are recommended over the 2 years. The first one is performed within 48 hours after discharge, ideally with regular returns at 2, 4, 9, 12, 18 and 24 months<sup>(11)</sup>.

### SELECTION CRITERIA

Children born at the institution or transferred who were discharged from the NICU between October 1, 2014 and September 30, 2015, and who were referred for outpatient follow-up of nursing, physiotherapy and occupational therapy, speech therapy, neurologist, pediatrician, psychology and/or social service of the institution were included in the study, totaling 596 children. Children whose discharge report did not include a referral to any of the available outpatient specializations at the institution were excluded from the study.

### IMPLEMENTED INSTRUMENT

The instrument implemented for obtaining sociodemographic information and the health condition of the studied population was elaborated under the guidance of the Behavioral Model of Health Services Utilization<sup>(12)</sup>, which seeks to "evaluate and understand the behavior of individual use of health services, define and measure equitable access to services, and assist in the implementation of policies that promote equity in access." This model guided the selection of variables that made up the data collection instrument and was validated by researchers and professionals specialized in the area. The instrument was subsequently submitted to pre-test and no need for adequacy was verified.

### DATA COLLECTION

The data were collected by the *Medomai Knackhq* platform, using a mobile device with connection to satellite internet, which allowed for real time collection and data storage.

Data collection was performed in two stages: the researchers initially accessed the daily discharge records of the neonatal care units searching for the children eligible for outpatient follow-up, as well as to identify the record referring to referrals to the outpatient clinic. Next, the data

referring to the characterization of the newborn were collected from the clinical records (gestational age at birth, birth weight, type of delivery, Apgar score, gender), the care provided in the NICU (resuscitation in the delivery room, nasal catheter, mechanical and non-invasive ventilation), care required at discharge (technological devices and medicines), referrals for follow-up after discharge, and the scheduled appointment for outpatient care.

In a second moment, one of the investigators would visit the clinic daily in the mornings and afternoons in order to check the attendance records obtained from the appointment schedule and medical records. Children who did not attend any of the schedules were considered as non-adherence.

Attendance verification of the children included in the study for outpatient visits was carried out for 2 years. Follow-up of all included children was monitored for 12 months after inclusion in an attempt to meet the length of time required for some appointments and schedules, as well as possible rescheduling.

### DATA ANALYSIS AND PROCESSING

The data characterizing the population are presented as absolute and relative frequencies. In order to evaluate the influence of the explanatory variables on the outcome (non-adherence), a univariate analysis was performed through logistic regression. From this, a pre-selection of the potential predictors of the occurrence of non-adherence was carried out with variables with p-value less than 0.25 included in the model. The pre-selected variables were adjusted in multivariate logistic regression models, in which the Backward method was applied for the final selection of variables. A significance level of 5% was adopted for the Backward method. R software was used for the analyzes (version 3.3.1).

### ETHICAL ASPECTS

The research was approved by the Research Ethics Committee of the institution's study field under the opinion number 501.424. Participants were invited to participate in the study and signed the clear and Informed Consent Form.

### RESULTS

Over the course of 1 year of follow-up, 596 children were discharged from the NICU and were referred for follow-up at the at-risk child outpatient clinic. Of these, 478 (80.2%) participated in at least one consultation scheduled for follow-up by the multiprofessional team, and 118 (19.8%) children referred for outpatient follow-up did not attend any outpatient clinic visits within 12 months after discharge. The average number of visits of the children who attended the outpatient follow-up was 4.46, with a standard deviation of 3.66. It should be noted that the minimum number of consultations was 1, while the maximum number was 25. Table 1 presents the data regarding the birth condition, the care required by the newborns in the NICU and the care required after the discharge of children who adhered and who did not adhere to outpatient follow-up.

**Table 1** – Characteristics of newborns who did not adhere to outpatient follow-up according to their birth condition, care required in the NICU and care required at discharge – Belo Horizonte, MG, Brazil, 2016.

Characterization variables		n <sup>#</sup>	%
<b>Delivery (n=551)</b>	Caesarean	241	43.7
	Vaginal	310	56.3
<b>Gender (n=553)</b>	Female	268	48.5
	Male	285	51.5
<b>Gestational age at birth (n=555)</b>	< 37 weeks	430	77.5
	≥ 37 weeks	125	22.5
<b>Weight (n=557)</b>	< 2.500 g	448	80.4
	≥ 2.500 g	109	19.6
<b>Newborn resuscitation* (n=505)</b>	No	332	65.7
	Yes	173	34.3
<b>Intubation* (n=173)</b>	No	52	30.1
	Yes	121	69.9
<b>O2 using latex* (n=173)</b>	No	95	54.9
	Yes	78	45.1
<b>O2 using the Ambu* (n=173)</b>	No	81	46.8
	Yes	92	53.2
<b>Cardiac massage* (n=173)</b>	No	154	89.02
	Yes	19	10.98
<b>Medication* (n=173)</b>	No	146	84.39
	Yes	27	15.61
<b>Mechanical ventilation* (n=507)</b>	No	283	55.82
	Yes	224	44.18
<b>Non-invasive ventilation* (n=501)</b>	No	210	41.92
	Yes	291	58.08
<b>External nasal catheter* (n=480)</b>	No	387	80.63
	Yes	93	19.38
<b>Apgar 5' (n=530)</b>	< 7	48	9.06
	≥ 7	482	90.94
<b>Continued use of medications<sup>§</sup> (n=596)</b>	No	329	55.20
	Yes	267	44.80
<b>Dependent on technology<sup>§</sup> (n=596)</b>	No	558	93.62
	Yes	38	6.38

# The value of n varies according to the total number of records of the variable.

\* Events analyzed at birth.

§ Events analyzed at discharge.

Table 2 presents the comparison of the categorical explanatory variables between the outcomes (adherence and non-adherence to the outpatient treatment). It is important to point out that the percentage of children who adhered to outpatient follow-up was higher among those who had gestational age less than 37 weeks and weight below 2,500g.

Table 3 presents the factors that influenced the non-adherence of newborns to outpatient follow-up.

Based on resuscitation at birth and continuous use of medication at home, gestational age at birth exerted a significant influence on outpatient non-adherence. The chance that patients with gestational age  $\geq 37$  weeks never attended was 1.97 times the chance of children who were gestational age  $< 37$  weeks.

Considering gestational age at birth and continuous use of medication at home, there was a significant influence of non-resuscitation at birth on outpatient non-adherence.

The chance that children who did not undergo resuscitation never attended was 1.79 times in relation to children who had undergone resuscitation.

Considering gestational age at birth and resuscitation at birth, there was a significant influence of non-continuous use of medication at home on outpatient non-adherence. The chance that children who did not make continuous use of home medication never attended was equal to 1.69 times the chance of children who were continuously using drugs at home.

**Table 2** – Comparison of categorical explanatory variables between the adherence and non-adherence outcomes of outpatient follow-up – Belo Horizonte, MG, Brazil, 2016.

Variables		Adherence		Non-adherence		O.R.	p-value
		N <sup>#</sup>	%	N <sup>#</sup>	%		
Delivery	Caesarean	196	81.3	45	18.7	1.00	
	Vaginal	249	80.3	61	19.7	1.07	0.767
Gender	Female	223	83.2	45	16.8	1.00	
	Male	230	80.7	55	19.3	1.19	0.444
Gestational age at birth	$< 37$ weeks	363	84.4	67	15.6	1.00	
	$\geq 37$ weeks	88	70.4	37	29.6	2.28	0.001*
Weight	$< 2.500$ g	375	83.7	73	16.3	1.00	
	$\geq 2.500$ g	76	69.7	33	30.3	2.23	0.001*
Resuscitation	Yes	152	87.9	21	12.1	1.00	
	No	261	78.6	71	21.4	1.96	0.012*
Mechanical ventilation	Yes	194	86.6	30	13.4	1.00	
	No	226	79.9	57	20.1	1.64	0.047*
Non-invasive ventilation	Yes	255	87.6	36	12.4	1.00	
	No	157	74.8	53	25.2	2.38	0.000*
External nasal catheter	Yes	78	83.9	15	16.1	1.00	
	No	320	82.7	67	17.3	1.09	0.785
Apgar 5'	$< 7$	39	81.2	9	18.8	1.00	
	$\geq 7$	393	81.5	89	18.5	0.98	0.961
Continued use of medications	Yes	234	87.6	33	12.4	1.00	
	No	244	74.2	85	25.8	2.50	0.000*
Dependent on technology	Yes	29	76.3	9	23.7	1.00	
	No	449	80.5	109	19.5	0.78	0.535

# Varies according to the total number of records of the variable.

\* Categorical variables selected in the univariate analysis as possible predictors of the non-adherence outcome (p-value $<0.25$ ).

**Table 3** – Model with multivariate logistic regression analysis and odds ratio (OR) (95% CI) – Belo Horizonte, MG, Brazil, 2016.

Variables		Adherence		Non-adherence		O.R.	p-value
		N <sup>#</sup>	%	N <sup>#</sup>	%	(95% CI)	
Gestational age at birth	$< 37$ weeks	363	84.4	67	15.6	1.00	
	$\geq 37$ weeks	88	70.4	37	29.6	1.97	
						(1.15-3.37)	0.013
Resuscitation at birth	Yes	152	87.9	21	12.1	1.00	
	No	261	78.6	71	21.4	1.79	
						(1.05 - 3.13)	0.032
Continuous use of medicines at home	Yes	234	87.6	33	12.4	1.00	
	No	244	74.2	85	25.8	1.69	
						(1.01 - 2.78)	0.046

# The n value varies depending on the total number of records of the variable.

## DISCUSSION

The present study observed that children with gestational age at birth greater than or equal to 37 weeks, absence of newborn resuscitation at birth and no continuous use of drugs at home were more likely to not adhere to outpatient follow-up. Ensuring post-discharge follow-up of at-risk children is a goal to be achieved, considering that these children have a risk of hospital readmissions and other interurrences they may present over time<sup>(13)</sup>.

It can be emphasized that hospitalization is always a difficult moment under any situation, and in the lives of relatives the shock of diagnosis, the news and perspective of the hospitalization in NICUs are episodes permeated by many painful feelings<sup>(14)</sup>. In addition, immediate and long-term injuries can result from NICU stay, and contribute to changes in child development, as well as increasing their need to use health services<sup>(15)</sup>.

Regarding the percentage of abandoning follow-up, although the great majority of the children started the outpatient follow-up, the identification of 19.80% of non-attendance at the specialized outpatient clinic after hospital discharge is worrisome and points to the importance of interventions during hospitalization that promote family adherence to follow-up, as well as the attention of professionals, managers and policy makers in order to guarantee measures that reduce these rates. The dropout rates identified in this study do not allow us to indicate a situation of lack of care to the child at risk; however, we can question their insertion in a service qualified to meet the specifics inherent to this group of children. A study that sought to analyze the attendance of 133 children to the follow-up of NICU outpatients for 1 year identified 31.6% non-attendance<sup>(7)</sup>.

In Belo Horizonte<sup>(16)</sup>, a study that evaluated the care and health status of 65 high-risk children in the first 3 years of life identified that 30.8% of high-risk newborns have inadequate care by health centers, and 76.9% do not perform follow-up in a specialized outpatient clinic, concluding that the follow-up of high-risk children was unsatisfactory, and that the qualification of care for these children is necessary for promoting their health. Non-adherence of the at-risk child to the specialized follow-up service compromises the early identification of developmental impairment and consequently the realization of timely interventions, implying in increased financial and social costs for their care<sup>(16)</sup>. In addition to identifying the morbidities presented by the newborns, the follow-up clinic also has health promotion as a goal. Thus, it is important to highlight the importance of also monitoring newborns at lower risk<sup>(17)</sup>.

Additionally, the possibility of these children being assisted in primary health care is highlighted. However, the care provided in a primary care setting does not exclude the importance of outpatient follow-up. Both services should be understood as complementary in providing care for the baby and their family in view of the policy for the follow-up of a child at risk<sup>(11)</sup>.

It was observed that newborns at risk who presented a higher gestational age were predisposed to non-attendance

to the service. This finding ratifies the results found in an American study<sup>(18)</sup> when analyzing the adherence rate of 481 infants with birth weight of 495-4,195 g and gestational ages at birth between 23 and 42 weeks in an urban African-American population, observing a higher adherence rate (70%) to outpatient follow-up among the more immature and lower birth-weight infants ( $IG \leq 28$  weeks). Therefore, good adherence to outpatient follow-up is essential for early identification of development delays and that there is timely intervention to ensure better outcomes<sup>(18)</sup>.

In view of the exposure to diseases that newborns at risk have when they abandon follow-up, a study<sup>(15)</sup> analyzed the medical records of 229 infants of a University Hospital of Minas Gerais in order to estimate the prevalence of neonatal morbidities and complications according to birth weight, GA and weight/GA ratio in users of a follow-up service. The results showed associations regarding the frequency of complications and morbidities according to gestational age, indicating an increasing prevalence according to the reduced GA in most variables. These findings reaffirm that newborns are more vulnerable in the early stages of morphofunctional development under adverse conditions<sup>(15)</sup>.

Although a lower gestational age at birth is a predisposing factor to health problems, an analysis performed in New York<sup>(19)</sup> found that when determining the need for therapeutic services for 77 premature newborns (34 to 36 weeks of gestation) and morbidities associated with their developmental delays compared to 50 very preterm infants (<32 weeks of gestation) in an outpatient setting between late premature and very preterm infants, the same risk of morbidities was observed. Thus, it is necessary to create drop-out prevention strategies with emphasis on newborns with greater gestational age at birth since they are predisposed to higher drop-out rates, even if they present an aggravation risk similar to that of preterm infants with lower gestational age.

A higher birth weight in children who did not initiate follow-up was found in this sample. In a study carried out in Maringá – PR, through monitoring 237 at risk children<sup>(4)</sup>, and in another study carried out in Portugal where 265 healthy newborns weighing less than or equal to 1,500 g and/or gestational age less than or equal to 32 weeks admitted to the NICU of this hospital<sup>(20)</sup>, it was found that low birth weight and preterm birth were identified as some of the predictive risk factors for sequelae in neuropsychomotor development.

Although there are correlations between prematurity and low birth weight with problems in the development of language, cognition, motor and behavioral aspects<sup>(3)</sup>, there are protective factors such as increased head circumference at birth, breastfeeding and increased family income which reduce the risk of preterm infants having poor performance<sup>(21)</sup>. These findings indicate the importance of greater attention to children who although are premature or of low weight, are located near the expected levels for neonates of habitual risk, but due to their apparent normal health condition there may be lower adherence to ambulatory risk follow-up by the caregivers.

A higher percentage of resuscitation at birth was observed in the adherence group at outpatient follow-up, which may be indicative of the greater complexity of these children. In the United States<sup>(22)</sup>, investigating the predisposition to neurological morbidities after cardiopulmonary resuscitation (CPR) in the delivery room, higher morbidity rates and developmental delay were observed than in resuscitated children among the 8,685 infants analyzed, and only 14% of the resuscitated infants survived without sequelae. Lower birth weight and gestational age were observed among the 1,333 (15%) resuscitated infants, as well as higher death rates after 12 hours and 120 days after birth. Therefore, although the need for resuscitation is related to increased risk of the newborn and future sequelae with neurological and developmental impairments, the chance of non-adherence to outpatient follow-up was associated with non-resuscitation of the newborn. The lack of care in other services allows us to infer that professionals have missed care opportunities to this group.

In relation to the aggravations of pulmonary etiology, there were higher percentages of mechanical ventilation and non-invasive ventilation in the attendance group. This finding corroborates the results of a study carried out in São Paulo<sup>(13)</sup> which evaluated the respiratory complications of 28 low-weight preterm newborns who were followed up in the outpatient clinic until 6 months of age, and identified that children who use mechanical ventilation or oxygen therapy for a long time have higher rates of respiratory morbidity, repetitive wheezing, pneumonia and hospitalization in the first year of life than those who do not use ventilatory assistance. The repercussions of lung diseases in this population were also verified in a study that evaluated the profile of 116 newborns submitted to early stimulation in a NICU in Fortaleza. The results suggest that any ventilatory modality used in newborns at risk may expose them to high risks of altered neuropsychomotor development, requiring specialized monitoring to mitigate possible damage<sup>(23)</sup>.

A study of 97 children admitted to a NICU and followed up at the outpatient follow-up clinic for newborns at risk showed that the incidence of respiratory morbidity at 12 to 36 months of age remains high in high-risk children. The study also showed that women with schooling over 8 years of age tend to better recognize the symptoms associated with respiratory morbidity. Also, the same group of women showed greater adherence to health services. The study findings point to the need for follow-up and specific interventions that provide better quality of life for children and their families<sup>(24)</sup>.

Pulmonary health problems present greater morbidity from the perspective of the newborn, suggesting greater concerns by families and being able to facilitate the adherence process to the follow-up service. When correlating these results with the scientific literature, an association between greater number of days using oxygen and chronic lung disease and non-attendance in outpatient appointments is identified<sup>(7)</sup>.

Finally, a significant relationship was found between continuous non-use of medication at home and non-adherence to outpatient follow-up. In Paraná<sup>(10)</sup>, an evaluation of the incidence of factors associated with the readmission

of 53 very low birth weight preterm infants in a university hospital showed 30.2% rehospitalization less than 7 days after discharge, with the great majority being due to respiratory tract infections (56.3%), followed by drug intoxication (6.3%) caused by preparation errors (dose and dilution) and administration by the mother at home, even after being advised at the time of hospital discharge.

The outpatient service has the specific competence to guide the administration of medications in the home environment, as well as to adjust doses and medications as needed, reducing the risk of accidents in childhood. In order for this work to be performed, it is necessary to have family commitment to outpatient care<sup>(10)</sup>.

In addition to the impacts on children's health, it is important to highlight the repercussions of absenteeism on the institution's costs, since a structure is financed but not used in its entirety.

Thus, children with better birth conditions and less use of continuous medications at home are more likely to present non-adherence to the outpatient follow-up service. Thus, it is necessary that health professionals who provide hospital and outpatient care are attentive to these factors in order to intervene early on. In addition, public and private health institutions need to adopt strategies, and more public policies need to be created which have the objective to reverse the critical points of the problem.

Since the data collection was done through consultation with the discharge report, there was some information not identified by the professionals in the children's medical records, which led to a limitation for this study.

## CONCLUSION

Although outpatient follow-up is expected to begin because of the risks of morbidity and mortality to which children are exposed, it is necessary to look at the characteristics of the children which may influence their predisposition to not initiate follow-up. Although factors related to discontinuing outpatient follow-up were identified in this study, they do not allow predicting non-follow-up alone. Non-adherence is multifactorial, not restricted to the newborn, and can be determined by aspects related to the caregiver, family organization and beliefs, and socioeconomic factors, therefore a joint analysis of other variables is necessary.

It is recognized that these children may be attended in primary care. In these cases, it is recommended that follow-up be shared with outpatient follow-up, seeking to ensure a complementarity of actions between these points of care.

It is essential that the health professional knows the profile of the at-risk child and their families in order to intervene according to the identified factors that may influence their predisposition to adherence or not to follow-up. This study can contribute to planning actions that subsidize care continuity to newborns in follow-up clinics. It is recommended that the services produce indicators that consider the different factors that interfere in adherence to follow-up in order to subsidize management actions at the hospital and outpatient level, in addition to articulating them with public policies.

**RESUMO**

**Objetivo:** Analisar os fatores associados à não adesão ao seguimento ambulatorial de crianças egressas da Unidade de Terapia Intensiva Neonatal. **Método:** Estudo transversal, que incluiu 596 crianças que receberam alta entre 1º de outubro de 2014 e 30 de setembro de 2015 e foram encaminhadas para o seguimento ambulatorial. Os dados foram coletados por meio de avaliação do relatório de alta e acompanhamento da assiduidade às consultas. **Resultados:** Das 596 crianças encaminhadas ao seguimento, 118 (19,80%) não compareceram a nenhum atendimento ambulatorial nos 12 meses após a alta. Crianças com idade gestacional ao nascimento  $\geq 37$  semanas (*odds ratio* 1,97,  $p=0,013$ ), que não foram reanimadas ao nascimento (*odds ratio* 1,79,  $p=0,032$ ) e sem uso contínuo de medicamentos no domicílio (*odds ratio* 1,69,  $p=0,046$ ) tiveram maiores chances de não aderirem ao seguimento ambulatorial. **Conclusão:** O número expressivo de não adesão ao seguimento indica a necessidade de ações para garantir a continuidade da assistência ao recém-nascido de risco após a alta hospitalar. Ainda que as diferenças identificadas não permitam ser definidas como preditoras do não seguimento, evidenciar essas variáveis permite-nos reconhecer riscos e buscar reduzir os fatores que influenciam o abandono do seguimento.

**DESCRITORES**

Recém-Nascido de Baixo Peso; Recém-Nascido Prematuro; Assistência Ambulatorial; Continuidade da Assistência ao Paciente; Enfermagem Neonatal.

**RESUMEN**

**Objetivo:** Analizar los factores asociados a la no adhesión al seguimiento ambulatorio de niños egresados de la Unidad de Terapia Intensiva Neonatal. **Método:** Estudio transversal, que incluyó a 596 niños que recibieron alta entre el 1 de octubre de 2014 y el 30 de septiembre de 2015 y fueron derivados para el seguimiento ambulatorio. Los datos fueron recolectados por medio de evaluación del informe de alta y seguimiento de la asistencia a las consultas. **Resultados:** De los 596 niños encaminados al seguimiento, 118 (19,80%) no asistieron a ninguna atención ambulatoria en los 12 meses después del alta. Los niños con edad gestacional al nacer  $\geq 37$  semanas (*odds ratio* 1,97,  $p=0,013$ ), que no fueron reanimados al nacer (*odds ratio* 1,79,  $p=0,032$ ) y sin uso continuo de medicamentos a domicilio (*odds ratio* 1,69,  $p=0,046$ ) tuvieron mayores posibilidades de no adherir al seguimiento ambulatorio. **Conclusión:** El número expresivo de no adhesión al seguimiento indica la necesidad de acciones para garantizar la continuidad de la asistencia al recién nacido de riesgo después del alta hospitalaria. Aunque las diferencias identificadas no permitan ser definidas como predictoras del no seguimiento, evidenciar esas variables nos permite reconocer riesgos y buscar reducir los factores que influyen en el abandono del seguimiento.

**DESCRIPTORES**

Recién Nacido de Bajo Peso; Recién Nacido Prematuro; Atención Ambulatoria; Continuidad de la Atención al Paciente; Enfermería Neonatal.

**REFERENCES**

- Hintz SR, Gould JB, Bennett MV, Gray EE, Kagawa KJ, Schulman J, et al. Referral of very low birth weight infants to high-risk follow-up at neonatal intensive care unit discharge varies widely across California. *J Pediatr*. 2015;166(2):289-95. DOI: 10.1016/j.jpeds.2014.10.038
- Doyle LW, Anderson PJ, Battin M, Bowen JR, Brown N, Callanan C, et al. Long term follow up of high risk children: who, why and how? *BMC Pediatr* [Internet]. 2014 [cited 2016 June 15];14:279. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4289257/>
- Silveira KA, Enumo SRF. Biopsychosocial risks to development in preterm children with low birth weight. *Paidéia (Ribeirão Preto)* [Internet]. 2012 [cited 2016 June 10];22(53):335-45. Available from: [http://www.scielo.br/pdf/paideia/v22n53/en\\_05.pdf](http://www.scielo.br/pdf/paideia/v22n53/en_05.pdf)
- Barreto MS, Silva RLDT, Marcon SS. Morbidity in children of less than one year of age in risky conditions: a prospective study. *Online Braz J Nurs Online* [Internet]. 2013 [cited 2016 July 07];12(1):5-20. Available from: <http://www.objnursing.uff.br/index.php/nursing/article/view/3999>
- Sociedade Brasileira de Pediatria, Departamento Científico de Neonatologia. Seguimento ambulatorial do prematuro de risco [Internet]. São Paulo; 2012. Disponível em: [http://www.sbp.com.br/pdfs/Seguimento\\_prematuro\\_ok.pdf](http://www.sbp.com.br/pdfs/Seguimento_prematuro_ok.pdf)
- Moraes AB, Rolim GS, Costa Junior AL. O processo de adesão numa perspectiva analítico comportamental. *Rev Bras Ter Comp Cogn* [Internet]. 2009 [citado 2018 abr. 10];11(2):329-45. Disponível em: [http://pepsic.bvsalud.org/scielo.php?pid=S1517-55452009000200009&script=sci\\_abstract&tlng=en](http://pepsic.bvsalud.org/scielo.php?pid=S1517-55452009000200009&script=sci_abstract&tlng=en)
- Harmon SL, Conaway M, Sinkin RA, Blackman JA. Factors associated with neonatal intensive care follow-up appointment compliance. *Clin Pediatr*. 2013;52(5):389-96. DOI: 10.1177/0009922813477237
- Ballantyne M, Stevens B, Guttman A, Willan AR, Rosenbaum P. Maternal and infant predictors of attendance at Neonatal Follow-Up programmes. *Child Care Health Dev*. 2014;40(2):250-8.
- Rangel SB, Ferrite S, Begrow DDV. Fatores que influenciam a não adesão ao retorno para a triagem auditiva neonatal. *Rev Baiana Saúde Pública* [Internet]. 2011 [citado 2016 jun. 15];35(4):948-65. Disponível em: <http://files.bvs.br/upload/S/0100-0233/2011/v35n4/a2820.pdf>
- Hayakawa LM, Schmidt KT, Rossetto EG, Souza SNDH, Bengozi TM. Incidência de reinternação de prematuros com muito baixo peso nascidos em um hospital universitário. *Esc Anna Nery Rev Enferm* [Internet]. 2010 [citado 2016 maio 20];14(2):324-9. Disponível em: [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S1414-81452010000200016](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-81452010000200016)
- Brasil. Ministério da Saúde; Secretaria de Atenção à Saúde, Departamento de Ações Programáticas Estratégicas. Atenção humanizada ao recém-nascido de baixo peso: método Canguru: manual técnico [Internet]. Brasília; 2013. Disponível em: [http://bvsms.saude.gov.br/bvs/publicacoes/atencao\\_humanizada\\_recem\\_nascido\\_canguru.pdf](http://bvsms.saude.gov.br/bvs/publicacoes/atencao_humanizada_recem_nascido_canguru.pdf)
- Andersen RM. Revisiting the behavioral model and access to medical care: does it matter? *J Health Soc Behav*. 1995;36(1):1-10.
- Utyama JA, Rompinelli VO, Freitas NMM, Dantas EDO, Rullo VEV. Intercorrências respiratórias em recém-nascidos prematuros de baixo peso. *Rev UNILUS Ens Pesq* [Internet]. 2016 [citado 2016 jul. 7];13(30):64-73. Disponível em: <http://revista.lusiada.br/index.php/ruep/article/view/717/u2016v13n30e717>
- Oliveira KD, Veronez M, Higarashi IH, Corrêa DAM. Vivências de familiares no processo de nascimento e internação de seus filhos em UTI neonatal. *Esc Anna Nery Rev Enferm* [Internet]. 2013 [citado 2016 jun. 10];17(1):46-53. Disponível em: [www.scielo.br/scielo.php?script=sci\\_arttext&pid=S1414-81452013000100007](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-81452013000100007)

15. Lemos RA, Frônio JS, Neves LAT, Ribeiro LC. Estudo da prevalência de morbidades e complicações neonatais segundo o peso ao nascimento e a idade gestacional em lactentes de um serviço de follow-up. Rev APS [Internet]. 2010 [citado 2016 jul. 22];13(3):277-90. Disponível em: <https://aps.uff.emnuvens.com.br/aps/article/view/603>
16. Pinto ACM, Lansky S, Machado CJ, Friche AAL, Freire TRM. Avaliação da assistência e da situação de saúde de crianças recém-nascidas de alto risco de um Distrito Sanitário de Belo Horizonte: desafios para além da sobrevivência infantil. Rev Med Minas Gerais. 2014;24(3):349-60.
17. Nóbrega VM, Silva MEA, Fernandes LTB, Viera CS, Reichert APS, Collet N. Chronic disease in childhood and adolescence: continuity of care in the Health Care Network. Rev Esc Enferm USP. 2017;51:e03226. DOI: <http://dx.doi.org/10.1590/S1980-220X2016042503226>
18. Perenyi A, Katz J, Flom P, Regensberg S, Sklar T. Analysis of compliance, morbidities and outcome in neurodevelopmental follow-up visits in urban African-American infants at environmental risk. J Dev Orig Health Dis. 2010;1(6):396-402. DOI: 10.1017/S2040174410000590
19. Kalia JL, Visintainer P, Brumberg HL, Pici M, Kase J. Comparison of enrollment in interventional therapies between late-preterm and very preterm infants at 12 months' corrected age. Pediatrics. 2009;123(3):804-9. DOI: 10.1542/peds.2008-0928
20. Marecos C, Oliveira A, Figueiredo H, Cadete A, Cunha M. Factores preditivos da aderência dos pais a um programa de seguimento de crianças nascidas de muito baixo peso. Ifisionline [Internet]. 2011 [citado 2016 jul. 15];2(1):5-11. Disponível em: [http://www.ifisionline.ips.pt/media/3jan\\_vol2\\_n1/pdfs/artigo1\\_vol2\\_n1.pdf](http://www.ifisionline.ips.pt/media/3jan_vol2_n1/pdfs/artigo1_vol2_n1.pdf)
21. Vieira MEB, Linhares MBM. Developmental outcomes and quality of life in children born preterm at preschool- and school-age. J Pediatr (Rio J) [Internet]. 2011 [cited 2016 July 20]; 87(4):281-91. Available from: <http://www.jpmed.com.br/ArtigoDetalhe.aspx?varArtigo=2206&idioma=pt-BR>
22. Wyckoff MH, Salhab WA, Heyne RJ, Kendrick DE, Stoll BJ, Laptook AR. Outcome of extremely low birth weight infants who received delivery room cardiopulmonary resuscitation. J Pediatr [Internet]. 2012 [cited 2016 July 20];160(2):239-44. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3258355/>
23. Souza K, Campos N, Santos Júnior F. Perfil dos recém-nascidos submetidos à estimulação precoce em uma Unidade de Terapia Intensiva Neonatal. Rev Bras Promoc Saúde (Fortaleza) [Internet]. 2013 [citado 2016 jul. 20];26(4):523-9. Disponível em: <http://www.bioline.org.br/pdf?bh13132>
24. Chalfun G, Mello RR, Dutra MVP, Andreozzi VL, Silva KS. Fatores associados à morbidade respiratória entre 12 e 36 meses de vida de crianças nascidas de muito baixo peso oriundas de uma UTI neonatal pública. Cad Saúde Pública [Internet]. 2009 [citado 2016 jul. 21];25(6):1399-408. Disponível em: [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S0102-311X2009000600022](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0102-311X2009000600022)

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