# Stress levels of newborns' parents in Neonatal Intensive Care Unit

Níveis de estresse de pais de recém-nascidos em Unidade de Terapia Intensiva Neonatal

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**Objective**: to evaluate the stress levels of newborns' parents in the Neonatal Intensive Care Unit. **Methods**: this is a cross-sectional and analytical research with 57 newborn parents. A questionnaire on the sociodemographic data of the newborn and parents and Parental Stress Scale: Neonatal Intensive Care Unit was applied. Frequency analysis, position measurements of the scores, Mann-Whitney test, and Student's t-test were performed. **Results**: in the domain "Change in the role of the mother/father", the concentration of responses was higher in the higher scores; in the domain "Sounds and images", in the concentration of responses was higher in the lowest scores, both in the hospitalization and in the discharge of the intensive care unit. **Conclusion**: parents of infants in the Neonatal Intensive Care Unit presented high levels of stress associated with the "Change in the role of the mother/father" during hospitalization and discharge, and the "Appearance and behavior of the baby" domain at the time of hospitalization.

Descriptors: Intensive Care Units, Neonatal; Parents; Infant, Newborn; Stress, Psychological; Nursing Care.

**Objetivo**: avaliar níveis de estresse de pais de recém-nascidos em Unidade de Terapia Intensiva Neonatal. **Métodos:** pesquisa transversal e analítica realizada com 57 pais de recém-nascidos. Foi aplicado questionário de dados sociodemográficos do recém-nascido e dos pais e *Parental Stress Scale: Neonatal Intensive Care Unit.* Realizou-se análise de frequência, medidas de posição dos escores, teste de Mann-Whitney e teste *t-Student.* **Resultados:** no domínio "Alteração no papel de mãe/pai", a concentração das respostas foi maior nos escores mais altos; no domínio "Sons e imagens", nos escores mais baixos, tanto na internação quanto na alta da unidade de terapia intensiva. **Conclusão:** pais de bebê em Unidade de Terapia Intensiva Neonatal apresentaram níveis de estresse elevados associados à "Alteração no papel de mãe/pai" na internação e alta, e ao domínio "Aparência e comportamento do bebê", no momento da internação.

**Descritores:** Unidades de Terapia Intensiva Neonatal; Pais; Recém-Nascido; Estresse Psicológico; Cuidados de Enfermagem.

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# Introduction

The survival of newborns in a serious clinical state due to prematurity or other pathologies has been enabled by the complexity, technological and human resources of the Neonatal Intensive Care Unit. This environment is stressful, with specific routines and equipment, which makes it less welcoming, associated with the death and fragility of newborns<sup>(1)</sup>.

The expectation that the birth of a child is related to the idea of taking a healthy baby home. However, in some situations, this fact does not materialize, when interrupted by intensive care<sup>(2)</sup>, in which the disease is a threat to life, with changes in the family structure. During the stay in the waiting room of the Neonatal Intensive Care Unit, parents experience a mixture of feelings, resulting from the frustration of dreams, joy replaced by insecurity, fear, anguish, anxiety, apprehension, stress and even mourning. Stress can be aggravated by the observation of the movement of patients, professionals, and family, restriction of visits and information<sup>(3)</sup>.

Stress consists of complex psychophysiological reactions for adaptation to a stressor, classified in phases: alert, resistance, near-exhaustion and exhaustion. The first is a positive phase, in which the person energizes through the release of adrenaline in search of survival. In the second, the individual automatically tries to deal with the stressors to maintain their internal homeostasis. In the third, there is the persistence of the stimuli in frequency and intensity, the breakdown of the resistance and beginning of the deterioration of organs of greater vulnerability. In the latter, diseases emerge, stress is not relieved and/or appropriate coping measures are not used, which causes pathological stress. In this process, individual susceptibility is associated with the meaning attributed by the person to stressful experiences and how to deal with these situations(4).

When accompanying the changes in neonatal care, the presence of parents in the Neonatal Intensive Care Unit is becoming more frequent. Research has

shown that preterm birth favors negative feelings by the parents and stress<sup>(5)</sup>. This study showed that parents' stress is related to internal and external stressors, such as watching the baby in distress, noise from alarms and environmental machines, separation of father and son and other daily obligations<sup>(6)</sup>. Another investigation found an association between parental stress and changes in the performance of their role<sup>(7)</sup>. In this sense, it is important to reflect on the repercussions and more appropriate ways the family is approached to promote better adaptation at this critical stage experienced by the neonate, parents, and family, shared with the care team<sup>(3)</sup>.

As well as hospitalization, discharging from the unit is also a potentially stressful event for parents, with expectations and uncertainties. At the same time that they feel relieved and satisfied, they are tense, frightened, anxious, and worried about their abilities and skills in taking responsibility for their child's care<sup>(8)</sup>.

In this sense, the team needs to take a strategic look, consider and respect the peculiar characteristics of this population, combined with the humanized care, so the families can deal with the hospitalization of their child in the Neonatal Intensive Care Unit and make the moment an opportunity for learning and personal development<sup>(3)</sup>. Regarding the discharge, parental empowerment should address infant care, so-cioeconomic, intellectual, psychological and physical conditions, occurring gradually and being developed throughout hospitalization<sup>(8)</sup>.

The relevance of this research is centered on the opportunity to observe the family of the baby, with focus on the parents, for the integral and humanized assistance. Stress evaluation provides support for reflections, discussions, and actions of health professionals working in neonatal intensive care, triggering public policies of attention in neonatology, health promotion, recovery, prevention of complications and improvement of the quality of life, which can contribute to the reduction of the period of hospitalization of the child. Considering this, it is aimed to evaluate the

stress levels of parents of newborns in the Neonatal Intensive Care Unit.

# Methods

This is a cross-sectional and analytical research carried out from February to December 2016, in a Neonatal Intensive Care Unit, from a philanthropic hospital institution, size IV, in the northwestern part of the State of Rio Grande do Sul, Brazil. In the sector, eight neonatal beds are available through the Unified Health System and the team has nine pediatric physicians, one specialist nurse coordinator, six specialist assistant nurses, twenty-eight nursing technicians, four physiotherapists, a speech therapist and a clerk.

The study population included parents (fathers and mothers) of newborns hospitalized at the unit from February to December 2016. There were 57 participants included who accepted to participate in the study and met the criterion of inclusion: being a father or mother of a newborn - an infant hospitalized at the Neonatal Intensive Care Unit of the referred hospital. The exclusion criteria were parents under 18 years old and difficulty in understanding the questions of the instruments. The difficulty was observed during the interview from answers at odds with the questions, even after explanations of the researcher.

The parents' approach occurred in the first week of the baby's hospitalization in the Neonatal Intensive Care Unit, in a private setting. Data were collected through the sociodemographic questionnaire and Parental Stress Scale: Neonatal Intensive Care Unit (PSS: NICU). The questionnaire has the following variables: kinship, age, religion, years of study, marital status, children, monthly income, gestational age, type of delivery and birth weight. This information was collected before the application of the PSS: NICU by the researcher, which is composed of 26 items, distributed in three subscales: "Sounds and images", "Appearance and behavior of the baby" and "Change in the role of the mother/father". The parents indicated if they experienced stress on a Likert scale with a

score of 1 to 5. The "1" score refers to no stress, "2" a little stress, "3" moderate stress, "4" lot of stress and "5" extreme stress<sup>(7)</sup>.

The Cronbach's alpha was calculated to analyze the reliability and study of the characteristics of the metric during hospitalization and discharge. The coefficients showed an adequate result, with values between 0.811 and 0.919, considered good and optimal. At admission, values for "Change in the role of the mother/father", "Sounds and images" and "Appearance and behavior of the baby" were 0.832, 0.811, and 0.865, respectively. At discharge, "Change in the role of the mother/father" was equivalent to 0.919, "Sounds and Images" 0.844 and "Appearance and behavior of the baby" 0.916.

The data analysis was performed with descriptive and analytical statistics, involving frequency of the scores, measurements of the position of the scores (Lower Limit, Quartile 1, Quartile 2, Median, Quartile 3, Upper Limit), Mann-Whitney test and t-Student using the software Statistical Package for the Social Sciences 16.0. The significance level of p<0.05 was adopted for all tests.

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

# **Results**

The results show that between fathers and mothers, 56.1% were female, 86.0% married, 56.1% had a child and 87.7% had income up to three minimum wages. Regarding the age, 50.9% were between 20 and 30 years old. Regarding religion, 50.9% were Catholics, 42.1% evangelicals and 7.0% with no religion. It is evident that 75.4% attended incomplete high school, 14.1% complete high school and 10.5% in the higher level. Among the 32 infants hospitalized, 100.0% were preterm, with 34.4% borderline, 40.6% moderate and 25.0% extreme. Regarding the birth, 78.1% were cesarean sections and 90.6% were small

for gestational age, weighing less than 2,500 grams.

Table 1 shows the frequency of parents' stress levels scores in each domain of the PSS: NICU scale. It was verified that in the intensive care unit, in the "Change in the role of the mother/father", there was a higher frequency of scores in the categories "a lot of stress" and "extreme stress", with 72.3% for mother and 67.2% for father. In the domain "Sounds and images", it was evidenced a difference between the parents' perception. For the mother, the highest percentages were "no stress" (25.0%), "little stress" (21.9%) and "moderate stress" (21.9%). For the father, this domain presented higher percentages in the categories "a lot of stress (20.0%), extreme stress (24.0%) and moderate stress (28.0%)". For the "Appearance and behavior of the baby" domain, the highest percentage was in the "extreme stress" category, with 37.8% for the mother and 36.7% for the father.

When evaluating the frequency of stress levels in neonates in the neonatal intensive care unit, compared to the percentage of hospitalizations, a percentage reduction was observed in the category "extreme stress" and an increase in the others.

In the evaluation of the position measurements of the stress levels scores in each domain in the application of the PSS: NICU, it was found that in the domain "Change in the role of the mother/father", the highest concentration for the mother was in quartile 2 - median with score 4, and for father, quartile 2 - median 4.5. On the other hand, in the domain "Sounds and images", prevailed for both quartile 2, median with score 2. In "Appearance and behavior of the baby", quartile 2 was predominant, median score 5.

Descriptive statistics and the Mann-Whitney test to verify the association between the parents' stress levels scores, in each PSS: NICU domain, with kinship (being the father or being the mother), showed that there is no significant difference between the stress level (p>0.05). In the "Change in the role of the mother/father", the median value for father and

mother was equivalent to the moderately stressful score (p= 0.942), in the domain "Sounds and images" were at the low stress level (p=0.818) and the appearance and behavior of the baby was extremely stressful (p=0.119).

**Table 1** – Frequency of stress scores for parents during hospitalization and discharge

	Moth	er	Fath		
Domains			-Hospitali-		
	zation %	ge %	zation %	ge %	%
Change in the role of the mother/father	he				
No stress	5.4	16.5	7.5	5.8	6.3
Little stress	8.9	15.0	10.3	7.0	9.5
Moderate stress	13.4	11.0	14.9	15.1	14.1
A loto f stress	27.2	307	17.2	18.6	22.9
Extreme stress	45.1	26.8	50.0	53.5	47.2
Sounds and images					
No stress	25.0	37.6	16.0	17.2	21.1
Little stress	21.9	18.3	28.0	23.4	24.6
Moderate stress	21.9	12.8	12.0	20.3	17.5
A loto f stress	12.5	19.3	20.0	23.4	15.8
Extreme stress	18.8	11.9	24.0	15.6	21.1
Appearance and behavior of	of the baby				
No stress	20.5	22.3	27.3	6.4	23.6
Little stress	13.9	11.5	14.3	11.7	14.1
Moderate stress	9.7	13.7	10.1	27.7	9.8
A lot of stress	18.2	25.9	11.7	24.5	15.2
Extreme stress	37.8	26.6	36.7	29.8	37.3

Table 2 shows the t-Student test scores of the stress levels in each domain, in the hospitalization and discharge of newborns. Levels of stress in the "Change in the role of the mother/father" domain, there were significantly different at hospitalization and discharge (p<0.01) and, in the domains "Sounds and images" and "Appearance and behavior of the baby", there was no significant difference in hospitalization and discharge of the child.

**Table 2** – Comparison between stress levels at admission and discharge relative to each PSS domain: NICU

Stress levels	Li*	Ls**	Median	Mean	Standard Deviation	р
Change in the role of the mother	er/					
Hospitalization	1	5	4	3,95	1,25	0,001
Discharge	1	5	4	3,65	1,40	
Sounds and images						
Hospitalization	1	5	4	2,65	1,55	0,320
Discharge	1	5	4	2,67	1,43	
Appearance and behavior of th	e baby					
Hospitalization	1	5	4	3,28	1,63	0,344
Discharge	1	5	4	3,37	1,41	

Scores: 1- No stress; 2- Little stress; 3- Moderate stress; 4- A lot of stress; 5-Extreme stress. \*Li – Inferior limit; \*\*Ls – Superior limit.

#### Discussion

As limitations of the study, the small number of participants and the transversal method are identified, hindering to appropriate stress-related subjectivity.

The evaluation of the stress levels of parents of newborns in the Neonatal Intensive Care Unit showed that both parents experienced high levels of stress, with a statistically significant difference in the "Change in the role of the mother/father" during hospitalization and discharge. This result was also evidenced in a study that tested the relationship between stress and hospitalization of a child in the neonatal intensive care unit and parents' responses, in which the average stress in this domain was high and related to fatigue, anxiety, depression, and sleep<sup>(7)</sup>.

Research to identify impulsive and restrictive forces in the process of maternity to newborns hospitalized in the Neonatal Intensive Care Unit showed that comfortable environment for the family, support of the team, educational actions and communication favor the development of the role of the mother and the performance of the team, access to the service, environment of the unit, fear of death, equipment, painful procedures in the child and maternal feelings of strangeness may be obstacles to the mother-child bond<sup>(1)</sup>.

Regarding the domain "Sounds and images", there was a difference in the parents' evaluation, with a lower level of stress for the mother. In the meantime, research presented a similar result, lower level of stress in the parents of babies in this dimension, compared to the other domains<sup>(9)</sup>. Another study, which described the experience of parents with newborns in the Neonatal Intensive Care Unit, showed that the first visit was unforgettable, parents were shocked, worried and anxious, especially by observing the baby with different equipment<sup>(10)</sup>.

The parents' perception that their child is different from a healthy newborn leads to a compensatory parenting, in need of adaptation. In this sense, the results showed that in the "Appearance and behavior of the baby" domain, the highest percentage was in the "extreme stress" category. A quasi-experimental study demonstrated this domain with the second highest stress score for parents<sup>(9)</sup>, which shows the importance of emotional and educational support by the health team to prepare the family members to cope with this situation.

The results showed a young population, more than half of the female sex and with a child. In this sense, research with 24 parents on the relationship between satisfaction and stress levels of parents with children in intensive care presented similar results, mean age 30.96 years old, 66.7% female, 58.4% married and 50.0% with their first child<sup>(11)</sup>. Regarding education level, a study to verify the stress of 20 mothers of premature newborns in the Intensive Care Unit and neonatal intermediate care showed that 55.0% of them studied from 5 to 9 years<sup>(12)</sup>, which shows low education level, as in this research.

Socioeconomic conditions such as family income, education level, and precarious basic sanitation are related to the higher risk of neonatal morbidity and mortality<sup>(13)</sup>. Also, low maternal education is an obstetric risk factor for the mother and the newborn, with a higher probability of being hospitalized in the Neonatal Intensive Care Unit<sup>(14)</sup>.

It was evidenced that most parents (87.7%)

reported monthly income of up to three minimum wages. In this context, people with more years of education have a family income that increases gradually, and even information related to health education and self-care are more evident<sup>(7)</sup>. Low purchasing power contributes to increased social vulnerability and predisposes to risk situations. Moreover, the relationship between education level, difficulty in understanding and perception of the need for care during pregnancy predisposes to the occurrence of preterm births and other complications, such as fetal death<sup>(15)</sup>.

Religious, considered a support for the acceptance of this moment, is one of the main sources of hope, comfort, and sustenance of the individuals, helps to understand processes of illness, death, and resignification of life. Likewise, belief in a higher self is capable of reducing depression, anxiety, anguish, and morbidity<sup>(16)</sup>. In a qualitative study with 20 parents about perceptions of having children under intensive care, 18 were catholic and two declared to be atheists<sup>(17)</sup>, results similar to this study.

Regarding the marital situation, most participants were married, also presented in research that pointed out the presence of a partner as important in moments of fragility and stress, such as the hospitalization of a child in intensive care<sup>(18)</sup>. The authors mentioned that having a structured family and being able to share distress is conducive to resilience in relation to stress situations.

Regarding the gestational age of the babies, all of them were premature and most of them were small for gestational age, weighing less than 2,500 grams. Prolonged hospitalization for premature birth causes parents to feel negative feelings, guilt, fear, and impotence, which favor stress and anxiety that may compromise the affective relationship between parents and the baby<sup>(5)</sup>.

The identification of stressors in parents with children hospitalized for intensive care may contribute to the actions and interventions of the team in clinical practice with the objective of reducing stress levels. Thus, it is important the reflection of nurses

and other professionals on the most appropriate way to approach parents and family and, in this way, to favor the adaptation, including with the baby's discharge from the unit.

# Conclusion

Parents of infants in the Neonatal Intensive Care Unit had high levels of stress associated with "Change in the role of the mother/father" during hospitalization and discharge, and the "Appearance and behavior of the baby" domain at the time of hospitalization.

# **Collaborations**

Stübe M contributed to the design and project and writing of the article. Cruz CT and Morin PV contributed to data analysis and interpretation and article writing. Rosa MBC and Pretto CR contributed to the analysis and interpretation of the data, article writing and final approval of the version to be published. Stumm EMF contributes to the design and project, relevant critical review of the intellectual content and final approval of the version to be published.

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