PAIN ASSESSMENT IN PRETERM NEWBORNS IN INTENSIVE CARE SETTINGS: FROM THE PERSPECTIVE OF NURSING AND PHYSICAL THERAPY

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Abstract

Hospitalized premature newborns require specialized care in the Neonatal Intensive Care Unit. During this period, they are daily subjected to several painful procedures inherent to their treatment, carried out by nursing and physical therapy staff. An exploratory, descriptive, and analytical study (Content Analysis) was conducted to identify pain recognition and actions to be taken by fifty healthcare professionals in a NICU in Belém. Based on the analysis of field data, it was observed that there is a need for the nursing and physical therapy staff to know/recognize the types of pain through the use of scales and detailed observation. It was concluded that nurses should train technicians in the use of the NIPS Scale and in the careful observation of preterm newborns; nurses, physical therapists, and other professionals should exchange experiences regarding the application of techniques and medications, promote refresher courses on pain for all professionals dealing with preterm newborns, and foster empathy and affection between the professional and the preterm newborn.

Keywords: Pain, Newborns, NICU, Nursing, Physical Therapy.

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INTRODUCTION

Every year, 30 million low-birth-weight newborns are born worldwide, many as a consequence of preterm birth. This contributes substantially to the high neonatal mortality rates that still exist in various regions, especially in poor and/or developing countries. In Brazil, in 2022, there were 2.54 million births, but the government drew attention to a 3.5% decrease compared with the previous year (WHO, 2018 as cited in Bordino et al., 2023 and Brazil, 2024).

In Brazil, from the 1990s onward, neonatal mortality became the main component of infant mortality, mainly due to the proportional reduction in post-neonatal deaths and the persistence of the early neonatal component (Lansky et al., 2014 and Silva; Reckziegel; Silva, 2018).

Neonatology has undergone profound transformations in recent decades, both from the technological standpoint and in the dissemination of scientific evidence, which have provided significant improvements in the care of the preterm newborn (PTNB) and the family, thanks to intensive care, although many of the necessary procedures are painful (Santos et al., 2012).

The organic survival of PTNBs has increased, allowing neonates with extreme gestational ages or very low birth weight to survive. Despite technological advances and the country's development, prematurity rates unfortunately remain high. In Brazil, a developing country, the prevalence of preterm newborns is approximately 7%. From 2012 to 2022, 31,351,324 births were recorded, and of this total, 3,530,568 were preterm births, with the highest rates in the Northern Region (Santos et al., 2012 and Brazil, 2024).

In view of the above, the following question was posed: What is the importance of the (re)cognition of types of pain in the management, treatment, and care of PTNBs in NICUs by the nursing and physical therapy teams?

NEONATAL PAIN: CONCEPTUALIZATION AND ASSESSMENT

Pain is defined by the International Association for the Study of Pain (IASP) as an unpleasant sensory and emotional experience associated with potential, actual, or described tissue injury. This definition highlights the always subjective nature of pain, which is influenced by emotional, social, cultural, environmental, and cognitive factors, in addition to being tied to the meaning attributed to the situation in previous lived experiences, as well as the individual's ability to understand causes and consequences (Silva; Ribeiro-Filho, 2011 and Martucci, 2021).

A preterm newborn is not able to comprehend and understand pain and its consequences, nor, in some cases, to express pain and its intensity intelligibly/verbally to nurses and physical therapists, thus depending directly on them for the perception of and the way they will deal with another's pain—that is, empathy.

The newborn undergoes countless painful experiences, since he or she is exposed to painful procedures in the NICU and is more sensitive to pain because of having a greater number of nociceptive nerve fibers than adults. In addition, the descending inhibitory fibers to the posterior horn of the spinal cord are still immature, making sensitivity even greater, such that positioning, medication administration, and feeding, among others, may provoke a sensation of pain (Sposito et al., 2017 and Araújo et al., 2021).

Painful experiences during the peri- and postnatal period may cause future effects such as cognitive and motor deficits, which may only be diagnosed at preschool age, school age, or even adolescence. Ultrasound examination may cause discomfort to the baby because of the noise made by the device, the pressure on the mother's skin, among other factors, which the professional could minimize by asking the mother where the baby's head and feet are located, allowing the device to be moved through areas that do not cause discomfort or pain (Alves et al., 2013 and Costa et al., 2017).

Identifying pain is extremely important for effective management. Self-report is considered by health professionals to be one of the best instruments for pain assessment. However, newborns do not verbalize their pain. Thus, it is essential to use other methods known and used by professionals to assess

pain, such as validated scales and, especially, precise and in-depth observation of the newborn. It is also important to talk with and exchange information with the team that accompanies development, care, feeding, and medication—that is, especially the nursing technicians and other professionals who support the PTNB (Costa et al., 2017).

Pain recognition in the newborn is based on behavioral factors (simple or complex motor responses, facial expressions, and crying) and physiological factors (increased heart rate, decreased oxygen saturation, increased intracranial pressure, altered cerebral blood flow, sweating, and variability in respiratory rate and transcutaneous PO2 and PCO2 values), since newborns still do not express themselves verbally. However, these factors do not quantify pain (Silva; Silva, 2010).

The growing knowledge regarding pain assessment and intervention in neonates and infants remains underrecognized and undertreated; pain management in the newborn continues to be a challenge for Chinese and American neonatal care professionals because these newborns cannot speak and advocate for themselves when they feel pain.

Thus, for a pain scale to be ideal and useful, it should require minimal financial resources and minimal training by those who use it, be easy to apply and interpret, take little time, allow pain to be quantified both in intensity and duration, and be comparable to others. In addition, it should be appropriate to the PTNB's age, the clinical context, and the type of pain (Silva; Silva, 2010).

Therefore, unidimensional scales appear to be more sensitive tools for identifying individuals in pain when compared with multidimensional scales. In this context, Guinsburg and Cuenca (2010) indicate, for neonatal pain assessment, the use of multiple scales by different health professionals, but recommend that at least one of these instruments be a unidimensional behavioral scale—that is, one that takes into account the various pain behaviors displayed by the newborn. It should be emphasized that in their studies the authors recommend the use of scales in the pain assessment protocol.

There are several scales whose application has already been proven; the most commonly recommended in use are the following: Neonatal Facial Coding System - NFCS, Premature Infant Pain

Profile - PIPP, and Neonatal Infant Pain Scale - NIPS. NFCS is a unidimensional instrument used to assess acute procedural pain. The newborn's facial activity is observed during painful stimuli, and the indicators are open eyes, deepened nasolabial furrow, tightly closed eyes, mouth stretched vertically or horizontally, and tense tongue (Gaspardo et al., 2008).

PIPP is a multidimensional instrument that assesses acute pain through the analysis of seven pain indicators: facial movements (brow bulge, tightly closed eyes, and nasolabial furrow), physiological indicators (heart rate and oxygen saturation), and contextual aspects (gestational age and sleep-wake state) (Stevens et al., 1996).

NIPS, in turn, assesses six indicators of behavioral responses to acute pain: facial expression, crying, breathing pattern, motor activity of arms and legs, and sleep-wake state (Lawrence et al., 1993).

It is understood, therefore, from the description of the aforementioned instruments, that neonatal facial activity in response to painful stimuli constitutes a strong indication of pain, according to Silva and Silva (2010). There is a typification of pain, and we present a summary table below:

Table No. 01

Types of Pain

Painful state	Causes	Characteristics
Acute pain	Fracture, rupture, avulsion, burns	Lasts a few days, mild or severe, known or unknown cause, presumed nociceptive afference
Subacute pain	Postoperative, post-fracture	Duration from a few days to a few months
Recurrent acute pain	Rheumatoid arthritis, osteoarthritis, migraine	Recurrent nociceptive afference from an underlying chronic disease
Persistent acute pain	Uncontrolled neoplastic disease	Continuous nociceptive afference
Chronic pain	Evolves from acute pain (longer duration)	Usually lasts more than 6 months; nociceptive afference is reduced or unknown, but there is still adequate functional adaptation of the patient
Chronic pain syndrome	Evolves from chronic pain—low back pain—or acute pain—whiplash injury	Poor functional adaptation; pain becomes the central focus of the patient's life

Source: Araújo (2020, p. 3) – Table adapted from Creu; Pinsky (1984).

Based on the type of pain, the nurse, physical therapist, among other professionals, may or may not intensify management with the PTNB, making it possible to reduce pain intensity resulting from the treatment being provided. The PTNB expresses pain and its intensity through crying and facial expressions, as well as indicating which movement and/or touch causes pain. It is worth remembering that the table above applies only partially to the theme of this investigation, since the investigation concerns PTNBs who present a condition of low birth weight and intubation and who undergo numerous procedures, including nursing care and physical therapy care.

Health professionals (nurses, nursing technicians, and physical therapists) may use scales to assess the pain the PTNB may be feeling; the most common are: Neonatal Facial Coding System - NFCS, Premature Infant Pain Profile - PIPP, and Neonatal Infant Pain Scale - NIPS. Based on their application, the nurse and physical therapist can organize, plan, and guide their handling/movement actions, administer medication, provide guidance on hygiene and feeding, among other measures, with the aim of causing as little pain as possible and/or minimizing it.

APPLICATIONS OF SCALES IN NEONATAL PAIN ASSESSMENT

Exposure to pain is one of the most harmful extrauterine environmental factors for newborns and may generate serious organic and emotional consequences, compromising growth and development. Thus, the more immature and/or ill the neonate is, and the earlier and more frequent the exposure to these stressful and painful events, the greater the risk of harmful consequences to health (Capellini, 2012).

The immediate effects of neonates' exposure to pain and stress include behavioral and physiological changes. Behavioral changes include facial expressions of pain, body movement, and crying. Physiological changes include increased heart rate, respiratory rate, blood pressure, and intracranial pressure; decreased oxygen saturation; increased levels of cortisol, catecholamines, and glucagon; and decreased insulin. Pain in neonates may also cause feeding difficulties, hyperalgesia—

significant increase in pain—as well as compromise in brain development and behavior (Brazil, 2022 and Moreira; Bomfim, 2004).

The Neonatal Infant Pain Scale - NIPS, created in 1993 by researchers at the Children's Hospital of Eastern Ontario, in Canada, is a multidimensional instrument that analyzes behavioral aspects and one physiological aspect, and aims to indicate the presence of pain in term and preterm newborns who are not under sedation or who do not have neurological impairment (Marins, 2010).

NIPS is considered the most widely used and studied instrument because it is a scale that is easy to interpret and apply and can be used simultaneously with the measurement of vital signs before, during, and after painful procedures. Its score ranges from 0 to 7, and when the score is above 3, the presence of pain is considered. Preventing painful sensation in the neonate is important not only because of the ethical aspects related to the subject. The scale is used in the assessment of acute pain (Marins, 2010 and Motta, 2013).

From the use of the scale, nursing and physical therapy professionals can evaluate their actions in procedures necessary for maintaining the newborn's health. In nursing, the application of the Neonatal Pain, Agitation and Sedation Scale - N-PASS (Table 02) is carried out simultaneously with the monitoring of vital signs, that is, every 1 to 3 hours, according to the patient's severity. Scores > 3 should alert professionals to the need to introduce or adjust the dose of analgesics.

Table No. 02

Neonatal Pain, Agitation and Sedation Scale - N-PASS

Table 1. N-PASS - Neonatal Pain, Agitation and Sedation Scale (Hummel et al., 2009).

	Sedation		Sedation/Pain	Pain/Agitation	
	-2	-1	0/0	1	2
Crying/Irritability	Does not cry with painful stimulus	Grumbles/cries with painful stimulus	No signs of sedation or pain	Irritable or episodes of cry Consolable	High-pitched cry or continuous silent cry Is not consolable
Behavior	Does not awaken with stimulus No spontaneous movement	Wakes briefly with stimulus Rare spontaneous movement	No signs of sedation or pain	Restless, squirms Wakes frequently	Arches body, kicks Wakes constantly or does not wake doesn't move (is not sedated)
Facial Expression	Mouth slack and open No facial expressions	Minimal facial expression with stimulus	No signs of sedation or pain	Any expression of pain intermittent	Any expression of pain continuous
Extremity Tone	No grasp reflex Flaccid	Weak grasp reflex Muscle tone ↓	No signs of sedation or pain	Clenched fists or splayed hands intermittently Relaxed body tone	Clenched fists or splayed hands continuously Tense body tone
Vital Signs: HR, RR and SpO_2	No change (Δ) after stimulus Hypoventilation or apneas	Change (Δ) < 10% with stimulus	No signs of sedation or pain	↑ 10-20% relative to baseline SpO_2 76-85% with stimulus; rapid recovery	↑ 20% relative to baseline SpO_2 < 75% with stimulus; slow recovery Not in sync with ventilator

Sedation: -10 to 0; Deep sedation: -10 to -5; Mild sedation: -5 to -2.
Pain: 0-11 (add 1 point if NB < 30 weeks corrected GA); Pain present if score > 3.

Source: Hummel et al (2009 apud Balda;Guinsburg, 2019,p.44) *(translated and adapted)*

The Neonatal Pain, Agitation and Sedation Scale - N-PASS enables: pain interpretation, pain and agitation analysis, adoption of pharmacological and non-pharmacological measures, adequate sedation (non-opioid analgesics and opioid analgesics), use of topical or local anesthetics, among other procedures (Péret; Péret; Radd, 2022).

The physical therapist is one of the professionals who work with PTNBs within Neonatal Intensive Care Units (NICUs), being one of the important professionals in reducing neonatal morbidity and mortality and especially pain in PTNBs, through techniques and knowledge that facilitate the rehabilitation of these newborns (Santos; Otto, 2019).

It is worth remembering that neonatal physical therapy consists of maintaining airway patency to ensure the maintenance and/or gain of pulmonary volumes, thereby optimizing gas exchange and reducing respiratory effort, thus attenuating the number of aspirations that cause pain; on the other hand, the nursing professional enables newborn containment (venous access puncture, blood collection, dressing changes), among other types of care, especially by knowing how to guide the nursing technicians in the handling/treatment of the PTNB (Caetano et al., 2013).

Another factor that draws the attention of nursing and physical therapy professionals concerns the painful impulses frequently suffered by PTNBs, which contribute to sequelae in the development of the neurological system, such as peri-intraventricular hemorrhage, periventricular leukomalacia, difficulty gaining weight, and greater susceptibility to infections, thus affecting recovery of general health status (Amaral et al., 2024 and Lima et al., 2025).

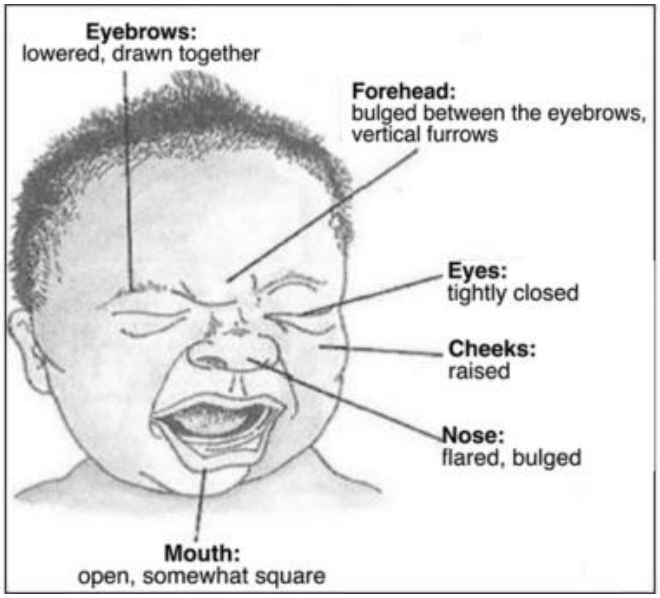
Given the consequences that pain may cause in the newborn, it is important that the physical therapist, together with the nursing professional and other professionals, include pain assessment and treatment during their procedures (aspiration, maneuvers, puncture, personal hygiene, among others). It should be emphasized that untreated pain may make the newborn more susceptible to infections (urinary tract infection, bacterial meningitis, bloodstream infection, wound infections, pneumonia, among others),

hypoxia, changes in sleep-wake patterns, metabolic and behavioral changes, among others (Brazil, 2014 and Lima et al., 2025).

Trained observation by the nursing professional and the team, as well as by physical therapists, is important in identifying pain through the PTNB's behavioral expression, as shown in the figure below:

Figure No. 01

Facial expression of an infant under stress and pain



Source: Balda; Guinsburg (2019, p.45)

The PTNB's facial expression conveys the intensity and frequency of the pain felt; nursing professionals, physical therapists, and other professionals can analyze the newborn's expression and identify the pain felt by the PTNB. Professionals can use the NIPS Scale to assess pain in PTNBs and possibly determine the care measures to be taken to minimize or eliminate pain (Crescênio; Zanelato; Leventhal, 2009).

The PTNB's expression, added to the understanding and comprehension of the NIPS Scale by the nursing professional, the team, the physical therapist, and other professionals, can reduce painful states that some activities may cause in PTNBs. However, the fact is that there are attitudes among health professionals that do not fully reflect the knowledge acquired, because the entire team must be in sync

regarding PTNB handling and care. Therefore, nursing technicians, who spend the vast majority of the time with PTNBs, must be well trained by the nursing professional to know how to act and report changes in mood, behavior, and expression observed in the PTNB to the entire team (physicians, nurses, physical therapists, and other professionals).

It is not enough merely to sedate the PTNB so that pain is not felt; rather, knowing how to perform the actions necessary for the newborn's well-being and health is a major challenge for all professionals who work with PTNBs in neonatology, especially with regard to the assessment and use of non-pharmacological and pharmacological measures. Therefore, the implementation of protocols for pain management/control is necessary, and records in medical charts may contribute to the systematization of care for PTNBs in pain and/or to avoiding painful situations.

For the implementation of pain protocols in NICUs to occur, the following should be taken into consideration: newborn patient safety regarding medication use; ethical and bioethical aspects of care for the newborn in pain; mediation of teaching processes; identification, assessment, and treatment of pain across shifts so that everyone may appropriate knowledge regarding pain and the procedures to be taken with newborns, as well as in the education of new health professionals, so that they may include such content in their curricula, proposing articulation between theory and practice—praxis (Christoffel et al., 2017).

METHODOLOGY: STEPS AND INSTRUMENTS

The research was carried out in a public hospital that is a reference in PTNB care, approved by the Research Ethics Committee of the Institute of Health Sciences of the Federal University of Pará – ICS (CAAE No. 38096114.6.0000.0018).

The research participants were invited to participate individually and voluntarily in the investigation by signing an Informed Consent Form (ICF), and identification of the participant's name was not mandatory.

TYPE OF APPROACH

Discussing pain in newborns in the ICU from the perspective of nursing professionals, physical therapists, and other professionals led us to choose an exploratory, descriptive, and analytical study focusing on the recognition of and actions to be taken in response to pain.

SETTING AND PARTICIPANTS

The research was conducted in the city of Belém with professionals who work in Neonatal Intensive Care Units (NICUs). The study was carried out with 50 (fifty) professionals who work directly with newborns in NICUs in the city of Belém, such as nurses, physicians, physical therapists, speech therapists, occupational therapists, and nursing technicians, regardless of length of experience in the healthcare field. Professionals who do not work in NICUs were excluded.

INVESTIGATION INSTRUMENTS AND DATA ANALYSIS

The instrument used for data collection was a questionnaire containing open- and closed-ended questions. Aranda (2016) and Fernandez and Camargo (2019) state that the questionnaire aims to verify which procedures professionals perform to assess the pain of the preterm newborn admitted to the NICU.

As it involved the application of a questionnaire, the study presented minimal risks regarding breaches of confidentiality and possible discomfort in answering some questions. However, every possible precaution was taken to ensure the confidentiality of personal data, and participants were informed that there was no obligation to answer all questions. The questionnaires were identified only with the initials of the name, with no identification of the people who participated in this study. This applied both to the questionnaire and to the Informed Consent Form (ICF).

Descriptive statistical techniques were used for the quantitative data. Most responses were presented in tables with the frequency of each one. Responses to the open-ended questions were analyzed through Content Analysis (Bardin, 2011).

In Content Analysis (CA), Bardin (2011) presents three distinct phases: pre-analysis, which is the period in which the material on which the researcher will systematize the initial ideas about the object of investigation is organized, a moment of "intuitions," separating material pertinent and not pertinent to the research and conducting a floating reading.

In pre-analysis, the researcher's actions are divided into four distinct moments: floating reading; choice of documents—which is subdivided into rules of exhaustiveness, representativeness, homogeneity, and pertinence; formulation and/or reformulation of objectives and hypotheses; and formulation of indicators that will support preparation for exploration of the material.

In the material exploration phase, the researcher codes the researched material, that is, transforms raw data into texts, knowledge, and information pertinent to the investigation in question, presenting new concepts and knowledge transformed into categories of analysis.

In the final phase, the researcher must process the results and interpret them based on the constitutive elements of the classical communication mechanism; it is the construction of the research text/report by analyzing and interpreting the collected data (Valle; Ferreira, 2025).

RESULTS: ANALYSIS AND DISCUSSION

Although the investigation data come from multiple professionals who work directly with PTNBs in NICUs, we focused on the role of the nurse and the physical therapist in pain assessment, management, and relief. It is known that during most of the hospitalization period, the closest follow-up is the responsibility of the nursing technicians' team, and any change is reported to the immediate supervisor (nurse), followed by the physical therapist, pediatric physician, and other involved professionals. Pain assessment in newborns can be complex, requiring observation of signs and symptoms such as facial expression, crying, and body movement, in addition to the use of the NIPS Scale, among others.

Table No. 01

Distribution of the professionals interviewed according to knowledge of any instrument/scale for assessing the baby's pain

KNOWLEDGE OF INSTRUMENT FOR ASSESSING THE BABY'S PAIN	PROFESSIONALS	
	Nº	%
Has no knowledge	11	22
NIPS	14	18
Knows one, but did not specify which	25	50
Total	50	100

Source: Field Research, 2019

According to the data in Table No. 01, it can be seen that 50% of the professionals know some instrument/scale for assessing the baby's pain but did not specify which ones; 22% reported having no knowledge, and 18% use NIPS. Since the newborn does not verbalize pain, the use of other methods, such as validated scales, is essential (Costa et al., 2017). Careful observation of changes in behavior and facial expressions is therefore necessary, and for this the nursing technician's observation must be trained.

For Anand et al. (2006), pain assessment in newborns occurs through specific instruments that allow the professional to obtain evaluation scores and plan treatment.

NIPS, the scale identified by participants in this study, is considered the most widely used instrument because it is easy to interpret and apply and can be used simultaneously with the measurement of vital signs before, during, and after painful procedures (Motta, 2013). In a study carried out by Caetano et al. (2013), it was found that 4.2% of nursing personnel used scales to assess pain.

Table No. 02

Distribution of the professionals interviewed according to the habit of evaluating daily the pain of babies hospitalized in the NICU, or not

DAILY ASSESSMENT HABIT OF THE BABY'S PAIN	PROFESSIONALS	
	Nº	%
Yes	44	88
No	6	12
Total	50	100

Source: Field Research, 2019

The data in Table No. 02 show that most of the professionals interviewed (88%) have the habit of assessing daily the pain of babies hospitalized in the NICU, while 12% do not. Silva and Silva (2010) emphasize that prevention of pain in newborns should be the goal of all health professionals, especially nurses, since repeated painful exposures have the potential for deleterious consequences. In this context, it is recommended that neonatal pain be routinely assessed before and after procedures by means of multidimensional tools chosen to guide the provision of effective pain-relief care.

Bottega et al. (2014) mention that the nursing team must recognize the need to approach pain in the newborn based on the newborn's singularity, since the repercussions that pain may cause may occur in the short and long term in health development, which confirms the care of most participants in performing pain assessment daily.

Physical therapists promote welcoming, control, and reduction strategies for states of pain in the newborn, because pain alters the newborn's entire system, removes comfort, hinders treatment, increases length of hospitalization, interferes with the response to treatment, and may cause intracranial bleeding, among other consequences. Pain control reduces deleterious effects in the newborn (Gimenez et al., 2020).

Table No. 03

Distribution of the professionals interviewed according to the method used to assess the baby's pain

METHOD USED FOR ASSESSMENT OF THE BABY'S PAIN	PROFESSIONALS	
	Nº	%
Crying	25	50
Change in behavior	19	38
Assessment scales	17	34
Verbal report of pain	16	32
Physical examination	16	32

Source: Field research, 2019

From the data in Table No. 03, it is observed that half (50%) of the interviewees assess the baby's pain through crying, 38% through changes in behavior, 34% through assessment scales, 32% through verbal report of pain, and 32% through physical examination. Half of the professionals interviewed in this

study referred to identification of the type of crying as one of the characteristics most often observed in relation to pain assessment in the newborn, which may be explained by Balda and Guinsburg (2019) and Santana et al. (2023) when they report that during painful stimuli there may be subtle changes in normal crying patterns, such as prolongation of the expiratory phase, higher pitch, loss of melodic pattern, and increased duration, which help detect pain.

Changes in behavior, physical examination, and the scales used by some of the participants are supported by Silva and Silva (2010), who state that recognition of babies' pain is based on behavioral and physiological factors and on the use of scales. Some interviewees mentioned that they evaluate pain through verbal report of pain, which is inconsistent, since the newborn cannot yet use this behavior (Costa et al., 2017 and Silva; Silva, 2010).

For pain control to occur in the newborn in a NICU, the nursing team must be well trained and in sync with the physical therapy team so that the newborn may be monitored and welcomed while strategies are created to reduce pain.

Table No. 04

Distribution of the professionals interviewed according to whether pain is recorded in the medical chart, or not

PAIN RECORD IN THE MEDICAL CHART	PROFESSIONALS	
	Nº	%
Does not record	0	-
Records only pain	22	44
Records pain and location	16	32
Records pain, location, and intensity	10	20
Yes, but did not specify how	2	4
Total	50	100

Source: Field Research, 2019

Table No. 04 presents the following data: all participants record pain in the medical chart, with 44% recording only pain, 32% recording pain and location, 20% recording pain, location, and intensity, and 4% reporting that they record it but did not specify how. In addition to the need for neonatal pain control, recording these actions is essential and, according to COFEN Resolution No. 429 of February 15,

2012, it is the responsibility and duty of the nursing team to record in the patient's medical chart the care activities performed, linked to the care process and work management, thereby guaranteeing the quality and continuity of nursing care (Otoni; Grave, 2014).

Many professionals may not recognize the baby's signs of discomfort; therefore, if these signs are identified and recorded in the medical chart, they will be alerted to perform a quality intervention (Fiorenzano et al., 2019 and Garate et al., 2024).

Table No. 05

Distribution of the professionals interviewed according to the physiological signs considered most appropriate for identifying the baby's pain

PHYSIOLOGICAL	PROFESSIONALS	
SIGNS	Nº	%
Tachycardia	40	80
Tachypnea	36	72
Decreased O2 saturation	32	64
Dyspnea	13	26
Increased O2 saturation	7	14
Apnea	4	8
Bradycardia	2	4

Source: Field Research, 2019

In Table No. 05, the physiological signs considered by the professionals interviewed to be most appropriate for identifying the baby's pain are presented. The data in Table 5 show that 80% referred to tachycardia, 72% to tachypnea, 64% to decreased O2 saturation, 26% to dyspnea, 14% to increased O2 saturation, 8% to apnea, and 4% to bradycardia.

Balda and Guinsburg (2019) state that, currently, it is known that during hospitalization pain contributes to respiratory, cardiovascular, and metabolic changes in the health of the PTNB, increasing neonatal morbidity and mortality rates. As the literature states, recognition of babies' pain may be based on physiological measures (Silva; Silva, 2010; Amaral et al., 2014; and Bottega et al., 2014). In a study conducted by Caetano et al. (2013), it was found that 9% of nursing staff assessed pain through physiological parameters.

Table No. 06

Distribution of the professionals interviewed according to the behavioral signs used to identify pain in the baby

PHYSIOLOGICAL SIGNS	PROFESSIONALS	
	Nº	%
Crying	50	100
Leg movement	33	66
Arm movement	32	64
Tightly closed eyes	26	52
Chin tremor	25	50
Bulging forehead	14	28
Narrowed palpebral fissure	12	24
Tense tongue	10	20
Open mouth	10	20
Tongue protrusion	7	14
Stretched mouth	7	14
Deepened nasolabial furrow	5	10

Source: Field Research, 2019

The data in Table No. 06 show that 100% of the interviewees used crying to identify pain in the baby, 66% used leg movements, 64% used arm movements, 52% observed tightly closed eyes, 50% chin tremor, 28% bulging forehead, 24% narrowed palpebral fissure, 40% tense tongue and open mouth, 28% tongue protrusion and stretched mouth, and 10% deepened nasolabial furrow.

Recognition of pain occurs through simple or complex motor responses, facial expressions, and crying. It is worth emphasizing that recognition of babies' pain may be based on behavioral factors (Silva; Silva, 2010; Caetano et al., 2013; Amaral et al., 2014; Bottega et al., 2014). In their investigation, it was observed that 88% of the nursing staff assessed pain through behavioral changes.

FINAL CONSIDERATIONS

The procedures performed with PTNBs in the NICU may cause pain—or rather, most of them do—and this affects prolonged hospitalization. From the literature reviewed together with the field data, it is evident that the empathy established between the health professional (nurse, nursing technician, and physical therapist) makes a difference in maintaining the PTNB's well-being.

It is worth remembering that pain results from both physiological and behavioral changes, which should be observed by the health professional; in this case, the focus is on the nurse (and nursing technicians) and the physical therapist, who, when properly trained, are able to assess the intensity and frequency of pain and subsequently intervene assertively with the PTNB.

Regarding the field data, it was affirmed that the vast majority of professionals interviewed in this study have the habit of assessing daily the pain of babies hospitalized in the NICU, using behavioral methods, physiological methods, and scales. However, another piece of information that emerged concerned the need to listen to nursing technicians regarding changes in the PTNB that presents behavioral alterations and is possibly in pain, but the higher-level professional does not listen, believing that only his or her own assessment is accurate when faced with pain in PTNB patients.

The main behavioral sign these professionals use is crying, but they also observe leg movements, arm movements, tightly closed eyes, bulging forehead, narrowed palpebral fissure, tense tongue and open mouth, tongue protrusion and stretched mouth, and deepened nasolabial furrow.

With regard to physiological signs, the interviewed professionals referred to tachycardia, tachypnea, decreased O2 saturation, dyspnea, increased O2 saturation, apnea, and bradycardia. Half of the professionals were unable to indicate which scale they knew, and those who could identified the Neonatal Infant Pain Scale (NIPS), endorsed by the literature.

Recording these actions in the medical chart is essential to ensure the quality and continuity of the intervention with the baby. The effective participation of all professionals in neonatal pain assessment in this study suggests that this is a type of care that can involve interdisciplinary action, which would greatly improve quality of life during hospitalization in the NICU. PTNBs are susceptible to pain, and the cited literature showed that when pain is not treated the newborn may present long-term physical and psychological sequelae.

Pain should be approached in a multidimensional way, as has already been stated, and physical therapists and nurses should have knowledge of the procedures that cause pain so that effective resources

may be provided to minimize the pain of these patients. However, for this to occur, the nursing technicians' team must be trained in the perception, analysis, and description of pain, in chart recording, and in the use of the NIPS Scale, among others.

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