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Non-pharmacological interventions in the control of pain in newborns pre-term: knowledge of nursing staff

ABSTRACT | Objective: To investigate the knowledge of the nursing staff on non-pharmacological pain management and describe the main non-pharmacological methods for pain management in preterm newborns under intensive care. Method: Exploratory-descriptive study, with a qualitative approach, carried out in an Intensive Care Unit, in Fortaleza-CE, Brazil, whose data collection was carried out from July to August 2018, through interviews and observation of nursing care to neonates. Two nurses and six nursing technicians participated and four newborns were observed for physiological and behavioral responses to invasive procedures during intensive care. Results: The methods most used by the nursing team in the researched unit were: 25% glucose serum, non-nutritive suction, facilitated containment, breast milk and Kangaroo Method. Conclusion: Some participants demonstrated that they do not know the methods for non-pharmacological management of pain in preterm newborns, confirming the need for more research related to the theme investigated.

Keywords: Pain; Premature Newborn; Nursing care.

RESUMEN | Objetivo: Investigar los conocimientos del equipo de enfermería sobre manejo no farmacológico del dolor y describir los principales métodos no farmacológicos para manejo del dolor en recién nacidos prematuros en cuidados intensivos. Método: Estudio exploratorio descriptivo, cualitativo, realizado en Unidad de Cuidados Intensivos, en Fortaleza-CE, Brasil, cuya recolección de datos se realizó de julio a agosto de 2018, a través de entrevistas y observación de cuidados de enfermería a neonatos. Participaron dos enfermeras y seis técnicos de enfermería y se observaron a cuatro recién nacidos para determinar las respuestas fisiológicas y conductuales a los procedimientos invasivos durante los cuidados intensivos. Resultados: Los métodos más utilizados por el equipo de enfermería en la unidad investigada fueron: suero de glucosa al 25%, succión no nutritiva, contención facilitada, leche materna y método canguro. Conclusión: Algunos participantes señalaron no conocen los métodos para manejo no farmacológico del dolor en recién nacidos prematuros, por lo que se necesitan más investigaciones relacionadas al tema investigado.

Palabras claves: Dolor; Recién Nacido Prematuro; Atención de Enfermería.

RESUMO | Objetivo: Investigar o conhecimento da equipe de enfermagem sobre o manejo não farmacológico da dor e descrever os principais métodos não farmacológicos para o manejo da dor em recém-nascidos pré-termo sob cuidados intensivos. Método: Estudo exploratório-descritivo, com abordagem qualitativa, realizado em Unidade de Terapia Intensiva, de Fortaleza-CE, Brasil, cuja coleta de dados foi realizada de julho a agosto de 2018, por meio de entrevista e observação dos cuidados de enfermagem aos neonatos. Participaram duas enfermeiras e seis técnicas de enfermagem e observaram-se quatro recém-nascidos quanto às respostas fisiológicas e comportamentais aos procedimentos invasivos durante o tratamento intensivo. Resultados: Os métodos mais utilizados pela equipe de enfermagem na Unidade pesquisada foram: soro glicosado a 25%, sucção não nutritiva, contenção facilitada, leite materno e Método Canguru. Conclusão: Algumas participantes demonstraram não conhecer os métodos para manejo não farmacológico da dor em recém-nascidos pré-termo, constatando-se necessidade de mais pesquisas relacionadas à temática investigada.

Palavras-chaves: Dor; Recém-Nascido Prematuro; Cuidados de Enfermagem.

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INTRODUCTION

The environment of a Neonatal Intensive Care Unit (NICU) is intended for newborns (NBs) who can be term or preterm and, among these, the seriously ill, with hemodynamic or vital function instability, as well as those who present a high risk of mortality, such as extremely premature infants, and those who require clinical surveillance, monitoring and/or intensive treatment. ⁽¹⁾

The NICU is a relevant resource for the survival of critical newborns who need specialized care and continuous treatment. However, it is an exhausting environment, which can compromise the development of the Preterm Newborn (PTNB), as it is very bright and with continuous noises, caused by life support equipment, by the flow of people, incubators, heated cribs, infusion pumps, cardiac monitors, respirators, the intensity being the cause of many harms. ⁽²⁾

For many years, pain was neglected in clinical practice due to the hypothesis that PTNB did not have a fully formed nervous system, due to incomplete myelination of nerve fibers. However, since the 1980s, relevant changes in Neonatology have made it known that in neonates, the mechanism of modulation of the painful experience is immature, which makes the ability to cope with pain and stress limited. ⁽³⁾

A study reports that PTNBs are more sensitive to pain than children and adults, due to the anatomical, neurophysiological and hormonal pathways being ready at birth, however, the pathways capable of inhibiting and reducing them are not. ⁽⁴⁾ The pain in this public, therefore, is even greater due to the immaturity of the inhibitory descending spinal pathways.

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strategies that are gaining prominence in pain relief, such as the use of music and 25% glucose. The use of music in preterm infants promotes relaxation, reduces anxiety and pain perception, modifies moods, promoting distraction and providing comfort. ⁽⁵⁾

The administration for 2 minutes of sweetened solutions before painful invasive procedures helps to modulate pain in neonates. Sweetened solutions stimulate the palate and activate cortical areas related to pleasure, promoting physiological and behavioral impacts where the release of endogenous opioids occurs, modulating the painful response. ⁽⁶⁾

Pain management is enhanced when there is a combination of treatments, such as skin-to-skin contact, milk or glucose, non-nutritive sucking, multisensory stimuli, and you can consider that breastfeeding combines all these elements, constituting an intervention indicated in acute painful procedures. ⁽⁷⁾

It is known that in the NICU, non-pharmacological pain management in PTNBs is still used with a certain restriction by nursing professionals. Thus, the present study is justified by the need to use non-pharmacological methods to relieve pain in PTNB. The team at the NICU, especially nurses, deals with difficult emotional situations. The fragility and suffering of a PTNB, death, feelings of anxiety and insecurity on the part of family members are constant in the professional routine. ⁽⁸⁾

After reading and reflecting on the context, some questions were raised: what is the knowledge of the nursing team working at the NICU on non-pharmacological interventions in pain control in PTNB? How does the nursing team act in the face of PTNB pain during nursing interventions? In view of the considerations, the objectives of the study were: to identify the knowledge of the nursing team on non-phar-

macological pain management and to describe the main non-pharmacological methods for pain management in PTNB under intensive care.

METHOD

Descriptive exploratory study with a qualitative approach, (9) performed in a NICU of a referral hospital in highly complex obstetric and neonatal care, in Fortaleza, Ceará, Brazil. The NICU has 22 beds distributed in two rooms. A multidisciplinary team works in this Unit and includes nurses, nursing technicians, distributed on a duty schedule, during the day and night periods, with an average monthly admission of 30 NBs, due to the high turnover, among them, high-risk NBs, sick, in PTNB and very low birth weight.

The PTNs who met the inclusion criteria participated in the research: having a weight ≤ 1.500 grams and a gestational age ≤ 37 weeks; stay in the Unit for seven days; do not have severe malformations that affect hemodynamic stability and do not cause PTNB to die during the study period. These were observed during the procedures.

In the second step, an interview was conducted with nurses and nursing technicians about the knowledge about non-pharmacological pain management in PTNB in the NICU, by signing the Informed Consent Form (ICF).

Data collection was carried out from July to August 2018. The research carried out in the field represents studies developed in places of social coexistence, and knowledge about individuals is only possible with the description of the human experience, how it is lived, how it is defined by the authors themselves. (10)

For data analysis, a qualitative approach was used. (11) After understanding the data, content analysis was performed, according to the literature. The project was presented to the Research Ethics Committee of the Uni-

versity of Fortaleza (UNIFOR), through Plataforma Brasil, and was approved by opinion No. 2.726.261, according to Resolution 466/12. (12) To guarantee the anonymity of the participants of the nursing team, they received the code name of flowers and the newborns were designated as RN.

RESULTS

Eight NICU professionals participated in the research, six nursing technicians and two nurses. The studied group was composed of female professionals, the age group from 25 to 43 years old. The team consisted of professionals working in the neonatal area from 2 to 14 years old.

The nursing technician Anis stated that she observed that the newborn used to growl and/or was tearful before using any non-pharmacological method, such as changing the NB's decubitus. When asked about the humanizing strategies she uses to reduce PTNB pain, she stated that she used to decrease the light, reduce the sound and change the position. Regarding knowledge about the types of procedures that allow non-pharmacological pain management in PTNBs, she informed that she did not know how to respond.

Nurse Bromélia reported knowing about easier containment, non-nutritive sucking and 25% glucose. She reported using facilitated containment, non-nutritive sucking and 25% glucose as a humanizing strategy. Regarding knowledge about the types of procedures that allow non-pharmacological pain management in PTNBs, she cited venous access, blood collection, passage of a Peripherally Inserted Central Catheter (PICC), blood gas analysis.

The nursing technician Tulipa, when asked about knowledge about non-pharmacological pain management in PTNB, mentioned that she recognized, through facial mimic, when

PTNB was in pain and needed to use some pharmacological and/or non-pharmacological method. He claimed to use non-nutritive sucking and heating to reduce pain in PTNBs. Regarding the knowledge about the types of procedures that allow non-pharmacological pain management in PTNBs, he mentioned venipuncture, blood collection and vaccines.

The nursing technician Lavanda, when asked about knowledge about non-pharmacological pain management in preterm infants, reported knowing the change in decubitus, moistened cotton, if the preterm infant has a fever, the Kangaroo Method (MC - Método Canguru), through skin to skin contact. She mentioned using baby warming, non-nutritive sucking and 25% glucose solution as a humanizing strategy for pain control in preterm infants. Regarding the knowledge about the types of procedures that allow non-pharmacological pain management in PTNBs, she mentioned blood collection, venipuncture and tube passage.

The nursing technician Amarílis, when questioned in relation to the knowledge about non-pharmacological pain management in PTNB, stated that she knew the change in decubitus, administering breast milk. She mentioned using 25% glucose as a humanizing strategy to reduce PTNB pain, changes in decubitus, non-nutritive sucking, 25% glucose solution and breast milk. He reported using 25% glucose, changing the position and warming the baby. Regarding the knowledge about the types of procedures that allow non-pharmacological pain management in PTNBs, she mentioned venipuncture.

The nursing technician Anêmona, when asked about the knowledge about non-pharmacological pain management in PTNB, reported observing facial mimicry and stated that she used to change the decubitus position and warm up the baby. Regarding the

knowledge about the types of procedures that allow non-pharmacological pain management in PTNBs, he mentioned venipuncture, blood collection and the central catheter.

The Lavender technique reported in relation to knowledge about non-pharmacological pain management in preterm infants, the baby's warming and non-nutritive sucking. In relation to humanizing strategies for pain control, he said he used the baby's heating, non-nutritive sucking, the 25% glucose solution and breast milk. Regarding knowledge about the types of procedures that allow non-pharmacological pain management in PTNBs, he mentioned venous access, venipuncture, intubation and central access.

Nurse Jasmim, when asked about knowledge about non-pharmacological pain management in PTNB, reported knowing glucose 25%, non-nutritive sucking, breast milk and facilitated containment. She reported using non-nutritive sucking and facilitated containment as a humanizing strategy for pain control in preterm infants. Regarding the knowledge about the types of procedures that allow non-pharmacological pain management in PTNB, she reported venipuncture, arterial puncture, collection of exams, PICC and tube passage.

The observational part of the research took place through the analysis of medical records and observation of the newborn's physiological and behavioral responses, during painful invasive procedures. It was found that three of them (RNPT 1, RNPT 2, RNPT 4) had altered oxygen saturation (SatO₂). Regarding the Heart Rate (HR), the PTNB mentioned above also presented alterations.

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Regarding the behavioral responses observed in PTNBs, when undergoing painful invasive procedures, it was observed that none of them presented flaccidity of the extremities, motor hypertonicity of the legs, arms and opening of the hands with spacing of the fingers. All PTNBs showed frowning and none showed tongue extension. In addition, all PTNBs showed arching of the eyebrows and none showed greater eye opening.

DISCUSSION

All components of the interviewed nursing staff considered that PTNBs are capable of feeling pain. Pain in preterm infants is revealed through physiological and behavioral changes, since preterm infants manifest non-verbally.⁽¹³⁾ It was analyzed that nurses and nursing technicians used physiological and behavioral changes to assess the pain of PTNBs under their care.

Technological advances in the area of neonatal intensive care have increased the survival of newborns, especially preterm infants. However, a greater number of manipulations, exams and painful procedures are necessary for the newborns' survival.⁽¹⁴⁾ Generally, during the period of stay in the NICU, PTNBs undergo, on average, 100 procedures. Among these procedures, we highlight the heel puncture, the puncture for laboratory exams and endotracheal tube aspiration and the introduction of PICC.

A study reports that PTNBs are more vulnerable to the effects of exposure to painful procedures, which can cause altered neurobehavioral development, and it is relevant to study this population in terms of area, exposure to painful procedures, as well as the practice of acute pain control, performed by professionals in the NICU.⁽¹⁵⁾

The physiological responses found

in the study were: change in SatO₂, change in HR, change in skin color, vomiting, sneezing, hiccups, yawning and tremors. Such responses can mean manifestations of discomfort, dissatisfaction and, probably, respiratory failure. Responses can intensify patients' susceptibility and cognitive, psychosomatic and psychiatric changes in childhood and adolescence. The behavioral responses found were the raising of the eyebrows and the frowning, which can mean discomfort, disorganization and pain in the face of invasive procedures for PTNB, a result also found in another previous study. ⁽¹⁶⁾

The mechanism of action of oral sweetened glucose/sucrose solution in newborns in pain control has not yet been defined. However, it is known that these solutions stimulate the taste of these patients and activate cortical areas that are related to pleasure, promoting physiological and sensory effects, with the release of endogenous opioids that occupy their own receptors (mainly

μ receptors), modulating the painful experience. ⁽¹⁶⁾ In this study, the administration of glucose at 25% was mentioned by practically all professionals who claimed to use or have used the method as pain relief in newborns.

It has been shown in studies that the kangaroo position and breastfeeding (BF) are effective in relieving pain, as it reduces the agitation and crying of newborns. Pain reduction is a result of the behavioral organization promoted by skin-to-skin contact, through the position where the newborn is placed, on the mother's chest, stimulating deep sleep and thermoregulation. These experiences are less common through the use of traditional methods. ⁽¹⁷⁾

Although the MC was not mentioned by the interviewees, the use of this method was observed by the mothers of PTNBs supervised by nurses and nursing technicians, in an exclusive room for the application of the MC in the researched institution. In this context, it is known that comprehen-

sive care to the PTNB is a relatively constant challenge for health teams. The highly specialized treatment, on which the NB depends for survival, gives him and his parents an important weakness, which motivates the nursing team to think about health actions, aiming at the humanization of care in the NICU. ⁽¹⁸⁾

A limitation of the study refers to the sample size, which, when presented in a small number, allows us to consider the results found only for the population in question.

CONCLUSION

The results obtained in this research demonstrate that the nursing professionals were able to identify the indicative signs of pain in newborns, through the observation of physiological and behavioral responses, using non-pharmacological measures, however, they demonstrated incomprehension related to the use of these measures. 🐦

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