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ORIGINAL ARTICLE

NURSING INTERVENTION FOR PAIN CONTROL IN NEWBORNS: EFFECTIVENESS OF NON-PHARMACOLOGICAL ACTIONS

INTERVENÇÃO DE ENFERMAGEM NO CONTROLE DA DOR EM NEONATO: EFICÁCIA DE AÇÕES NÃO FARMACOLÓGICAS

INTERVENCIÓN DE ENFERMERÍA EN EL CONTROL DEL DOLOR EN NEONATOS: LA EFICACIA DE ACCIONES NO FARMACOLÓGICAS

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ABSTRACT

Objectives: checking the effectiveness of non-pharmacological actions in pain control in neonates and applying the NIPS scale while collecting blood comparing the scores. ***Method:*** an exploratory and descriptive study of a quantitative approach performed with NICU newborns at a university hospital, where was observed newborn's reaction during blood collection according to the score in NIPS scale. The data were recorded and analyzed using Graph Pad Prism 5.02. The research had the project approved at the Research Ethics Committee, CAAE 09208512.1.0000.5183. ***Results:*** there is no significant difference of the score in NIPS between the group control and the group conduct, both considering the total number of newborns, as each newborn alone. ***Conclusion:*** the nursing interventions in pain management enable better newborn response to painful procedures and should be part of the care process. ***Descriptors:*** Neonate; Pain Measurement; Nursing.

RESUMO

Objetivos*:** verificar a eficácia de ações não farmacológicas no controle da dor em neonatos e aplicar a Escala NIPS durante a coleta de sangue comparando os scores. ***Método*:** estudo exploratório e descritivo de abordagem quantitativa, realizada com neonatos da UTIN de um hospital universitário, onde foi observada a reação do neonato durante a coleta de sangue de acordo com a pontuação obtida na Escala NIPS. Os dados foram agrupados e analisados utilizando o Graph Pad Prism 5.02. A pesquisa teve aprovado o projeto de pelo Comitê de Ética em Pesquisa, CAAE 09208512.1.0000.5183. ***Resultados*:** há diferença significativa da pontuação na escala NIPS entre o grupo controle e o grupo conduta, tanto considerando o número total de neonatos, quanto cada neonato isoladamente. ***Conclusão: a intervenção de enfermagem no manejo da dor possibilita uma melhor resposta do neonato aos procedimentos dolorosos e deve fazer parte do processo de cuidar. ***Descritores*:** Neonato; Medição da Dor; Enfermagem.

RESUMEN

Objetivos: verificar la eficacia de las medidas no farmacológicas en el tratamiento del dolor en los recién nacidos y aplicar la escala NIPS mientras que la recogida de sangre comparando las puntuaciones. ***Método:*** este es un estudio exploratorio y descriptivo con enfoque cuantitativo realizado con los recién nacidos de la UCIN de un hospital universitario, donde se observó la reacción del recién nacido durante la recogida de sangre de acuerdo con la puntuación en la escala NIPS. Los datos fueron registrados y analizados utilizando Graph Pad Prism 5.02. La investigación había aprobado el proyecto por el Comité de Ética en la Investigación, CAAE 09208512.1.0000.5183. ***Resultados:*** hay diferencias significativas de la punctuación en la escala NIPS entre el grupo control y el grupo conducta, tanto teniendo en cuenta el número total de recién nacidos, ya que cada recién nacido solo. ***Conclusión:*** la intervención de enfermería en el manejo del dolor permite una mejor respuesta de los recién nacidos a los procedimientos dolorosos y debe ser parte del proceso de atención. ***Descriptores:*** Neonatos; Medición del Dolor; Enfermería.

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INTRODUCTION

Pain is a complex, subjective and multifactorial phenomenon defined by the *International Association for the Study of Pain (IASP)* as an unpleasant sensory and emotional experience associated with or related to real or potential tissue injury.[1] The importance of the study of pain is due to the fact that this feeling creates stress, suffering and discomfort for the patient and his family.[2] In addition, pain is not expressed in the same way in all cultures, and might not be felt by the individuals alike.[3]

One can recognize the presence of pain through certain behavior patterns. In children, the diagnosis or detection is difficult, because it is not a behavior or reaction to be easily identified as coming from algic feeling. Until the 1970s, knowledge of health professionals, especially nurses working in care and education about pain and analgesia in children, was incipient, which complicated the evaluation and the unsatisfactory control.[4]

It is known today that, from a functional point of view, the newborn at term or premature, healthy or ill, has a wide repertoire of cardio-respiratory, hormonal and behavioral changes in response to noxious stimuli and that, since the 16th week of gestation, the transmission of pain from peripheral receptors to the cortex is possible and has completed its development after the 26th week.[5]

Sometimes, it is clear that health professionals tend to underestimate child's pain. Such misconceptions substantiated the absence of care of the pain, which led to the undertreatment of children. The pain felt by newborns means discomfort and suffering and can have repercussions in long term, in terms of interaction with their family, as well as in cognition and learning.

The evaluation of the painful experience in newborns is made indirectly by observing changes in physiological and behavioral parameters in the moments that permeate interventions.[6] Therefore there is a need to adopt an evaluation method and pain mensurative of this population. The NIPS scale, specifically, is easy to apply, uses non-invasive method and allows the joint assessment of the main indicators of pain signals in the neonate.[7]

The assessment, prevention and pain management are measures that should be considered daily in neonatal care. Several pharmacological and non-pharmacological therapeutic strategies have been developed and proposals to prevent and minimize pain in newborns. Nursing as the main responsible for the care and interventions with the child or neonate, should be knowledgeable of these strategies and be used for such relief, prevention and treatment of pain.

It is in the Neonatal Intensive Care Unit (NICU) that newborns with varying degrees of commitment are met and often these use the most varied support care technologies and are essential to perform numerous procedures, particularly painful for a complete assistance with problem solving. And it was due to the numerous procedures that cause pain and discomfort in NB that perceived the need of the study of reaction of these to pain. Often it does not adopt any measure of prevention, mitigation or treatment of pain by the team and is known to reaction and the suffering of children during procedures. The unit where the research took place does not have a standardized protocol for conducting painful or potentially painful procedures, favoring often performing procedures and individualized pipes according to the practice of each professional.

OBJECTIVES

- Checking the effectiveness of non-pharmacological actions in pain control in newborns.
- Applying the NIPS scale while collecting blood comparing the scores.

METHOD

This is a descriptive and exploratory study quantitative in nature with hospitalized neonates of the Neonatal Intensive Care Unit (NICU) that has five beds, of the University Hospital Lauro Wanderley (HULW) in João Pessoa/PB.

Data collection occurred in February 2014 and was through the application of Pain Rating Scale Neonatal (NIPS) during the blood collection procedure conducted by nurses using the collection instrument attached. This scale consists of five behavioral indicators and physiological (facial expression, crying, breathing, position of the arms, legs, position and state

of consciousness) can be used in preterm and term infants. The score ranges from zero to seven, defining pain to values greater than or equal to four.[8]

There was the reaction of newborns during blood collection without the use of non-pharmacological measures punctuating their reactions according to the NIPS, as well repeated the same scale similar procedure with the use of measures by nursing, to compare the responses of NB to pain. There were performed 12 procedures without use of non-pharmacological measures, and this group identified as control, and 12 procedures non-pharmacological measures were used, identifying this group as group behavior.

Results were expressed as mean ± standard error of the mean (SEM) of the scores recorded by the scale of NIPS through the observations. Statistical analysis was performed using the *Student* t test paired or unpaired, where appropriate between variables (control and management) and analysis of variance (ANOVA), followed by Tukey's post-test to compare more than two groups. The values of $p<0,05$ were considered statistically significant. All analyzes were performed using the *GraphPadPrism* 5.02.

In carrying out this research there was taken into account the observance recommended by Resolution 466/12 of the National Health Council, in force in the country involving Humans, given the ethical principle of autonomy within all essential steps in the process, like signing the mothers or guardians of Informed Consent after being clearly informed of the purposes of the study and the procedures to be performed. This study was approved according to the number of CEP/Platform Brazil: 183.454 and Presentation Certificate for Ethical Appreciation - CAAE: 09208512.1.0000.5183.

RESULTS

There were followed 24 blood collection procedures, ranging from venous and arterial puncture. The first evaluation and implementation of NIPS scale was made during the procedure without the use of non-pharmacological measures. Later there was the reapplication of scale when using non-pharmacological measures, which were used in combination or alone. The main measures used were the non-nutritive sucking and containment.

Regarding the profile of newborns in the survey, it was found that the average length of stay in the NICU was of 15 days, most were women, cesarean birth born and basic pathologies were congenital malformations such as duodenal atresia, esophageal and choanal atresia, respiratory distress, prematurity and neonatal anoxia.

The measures for the relief of pain and treatment may be pharmacologic as in the use of analgesics (opioid and non-opioid), sedation and local anesthetics such as non-pharmacological and non-nutritive sucking, changes in position, containment winding decrease tactile stimulation, early breastfeeding and oral glucose before and after applying a painful stimulus.[5] For this research, we used to mainly non-nutritive sucking, containment or a combination of these, *since they are simple, safe measures, easy to apply and reproducible, not causing thus any damage or injury to the NB.*

Figure 1 shows a comparison of the scores obtained with the application of NIPS between the group control and the conduct group. In the control group did not apply any pain relief measure during the course of blood collection, since the group conduct was adopted to contain and / or non-nutritive sucking as non-pharmacological measures.

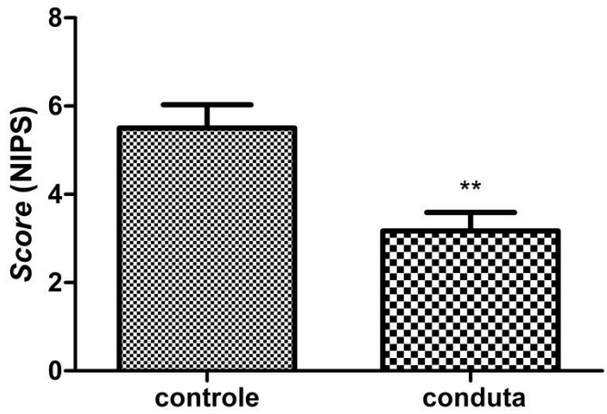

Figure 1. Comparison between values of NIPS obtained independently between control groups and conduct. Values expressed as average ± e.p.m. (*n* = 24), ** *p*<0,05.

Given the result above, it was found a significant difference (p<0,05) score in NIPS between the two groups. Most often, considering the overall condition of the NB, the score obtained without the use of measures during the lancing for blood collection was the maximum.

The results in Figure 2 show that there are differences when the scores obtained in the same NB, with and without intervention are compared. In all cases, there is a significant difference in results, indicating that the adoption of one or more non-pharmacological measures induces a better response against neonate painful procedure.

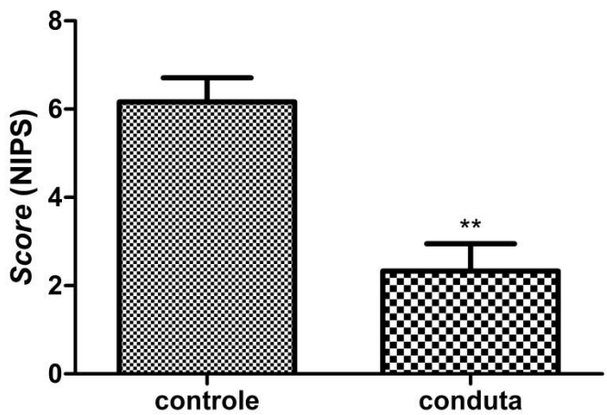

Figure 2. Comparison between values of NIPS obtained from observations of the same individuals, submitted or not to non-pharmacological measures. Values expressed as average ± e.p.m. (*n* = 24), ** *p*<0,05.

Considering the procedures performed with the use of one or two non-pharmacological measures, and making the comparison between the values obtained with the application of NIPS, it was found that the use of isolated or associated measures do not interfere with the observed effect, or is, there is as effective when the conduct is applied alone or in combination.

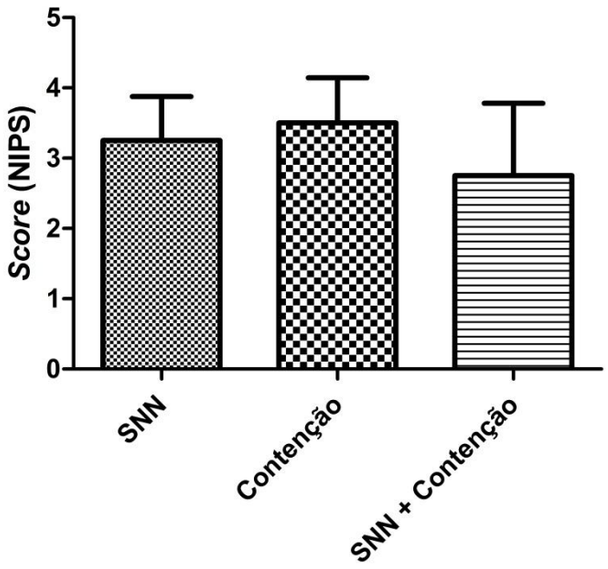

Figure 3. Comparison between values of NIPS obtained from observations of newborns undergoing isolated or associated conducts. Values expressed as average ± e.p.m. (n = 24), ** p< 0,05.

It was observed that in the face of considerable score between the procedures that were used non-pharmacological measures, the NB had less time for its reorganization, with less time crying and movement of the limbs.

DISCUSSION

The procedures with nociceptive potential, such as, for example, the puncture for blood collection, are a constant in the Neonatal Intensive Care Unit. Most of the time the permanence of the newborn in the NICU is prolonged; what contributes to this child being exposed to many painful procedures, which may reflect on its current or future health condition.

It is estimated that every newborn in the ICU receive 50-150 potentially painful procedures during the day and that the weighing less than 1,000 g suffer about 500 or more painful interventions throughout its hospitalization.[9] As noted in the results, the average stay of the newly born in NICU studied was of 15 days, enough time for exposure for several episodes with nociceptive potential.

Since untreated, pain promotes physiological and hemodynamic alterations that may jeopardize the well-being and recovery of the newborn, as well as implications for their neurobehavioral development in the medium and long term, reiterating the importance of pain is properly identified, assessed and, above all, it treated.[10] This issue has attracted increasing attention. There is evidence that in many Brazilian NICUs had not been, included assessment protocols of neonatal pain in her care practices, moreover, it seems there is a lack of team preparation in the use of these scales.[10]

The present study corroborates such proof, because in the scenario where the research was carried out, there is also no standard or protocol for evaluation and management with NB exposed to the painful procedure. Even in the collection of blood, which is a procedure so common, routine and essential for full assistance and monitoring of NB[11], health situation, there was not any approach aimed at relieving pain; however, it is known that assess pain in NB is no easy task, due mainly to difficulty in decoding its form of communication, as the signs at the moment of sensation of pain can easily be confused with that they have against other stressful conditions that are constantly exposed;[12] but, from careful evaluation, it is possible to identify the pain, determine its impact, establish interventions for its control and assess whether the strategies of pain management are having the desired effect.[13]

There are several scales which can be used for this purpose, including the Neonatal Facial Coding System (NFCS), the O2 Requires Crying is above 90% saturation Increased Vital Signs, Expression and Sleeplessness- (CRIES), the pre pain profile term (Premature Infant Pain Profile- PIPP) and the Neonatal Infant Pain Scale (NIPS), which was used in this study. The desired

scale for the development of the current study was the pain assessment scale Neonatal (*Neonatal Infant Pain Scale*), NIPS[14], because it is a multidimensional scale that includes physiological and behavioral indicators, it is a simple and rapid implementation of easily measured and widely known.

The simple application of a scale as this allows the nursing professional, more knowledge and more real verification of the feeling experienced by the neonate during a painful procedure, especially during blood collection, favoring the application and implementation of measures to prevent and / or minimize the pain, favoring therefore a more rapid recovery.

Among the measures that can be used for this purpose are the pharmacological, using drugs and non-steroidal anti-inflammatory drugs, opioids and anesthetics and non-pharmacological and non-nutritive sucking, use of sweetened solutions (25% dextrose and sucrose), winding, containment, skin to skin contact, breastfeeding.[5]

The containment and non-nutritive sucking the measures that were used in that study were effective in the prevention and treatment of pain. Containment was effective as it provides rest and promotes behavioral organization of the newborn, and studies have shown that when the newborn is wrapped in blanket and contained during painful stimuli, he cries for less time and stabilizes the sleep-awake cycle.[8] The non-nutritive sucking shown effective because it inhibits the hyperactivity, modulates the discomfort of infants and reduces the pain of full-term newborns and premature infants undergoing acute painful procedures, minimizing the physiological and behavioral repercussions and is still associated with an increase in oxygenation, aspiration and bowel function.[15] Analgesia occurs only during the suction rhythmic movements, when there serotonin release in the Central Nervous System. This therapeutic approach can be applied to infants while performing some procedures such as blood sampling.[16]

In this context, the nursing team, being responsible for the care, monitoring and implementation of various procedures in the NICU has at its disposal, several measures easy to apply, safe and effective. Several studies show that nursing and specifically nurses have knowledge and believe that newborns feel pain, but this pain is often neglected and not treated properly.

Additionally, these simple measures to prevent and treat pain can make all the difference when it comes to comprehensive care, humane and appropriate to the needs of the NB. The non-pharmacological treatment cited by most authors, constitutes actions and great validity procedures, as this assists in the maturation of brain functions due to perform a physiological and behavioral organization, thus decreasing the agitation and stress[16-7], the being most cited in the analysis of the selected literature: touch therapy; the warmth; the cozy atmosphere; non-nutritive sucking; 25% glucose by mouth; sensory stimulation (through music and speech soft); soothing massages; proper positioning; reduction of environmental stimuli.[1,18]

During the research it was found that the use of non-pharmacological measures suggested by the literature, specifically the non-nutritive sucking and restraint, were able to reduce pain in newborns observed. This was evidenced by the decrease in score measured by the NIPS submitted in NB non-pharmacological behavior compared to the NB in which the measures were not used. Both the average scores of all newborns, non-pharmacological measures (non-nutritive sucking and containment) have proven effective in reducing pain measured through the NIPS. Moreover, it seems that the combination of measures (containing more non-nutritive sucking) does not contribute to increase the intensity of pain inhibition compared to each conduct applied alone (non-nutritive sucking or containment), suggesting that a short and timely intervention (use of only a pipe) may be sufficient to promote the relief of pain.

Finally, there was the effectiveness of pain relief measures, according to the scores obtained on the scale, as well as through observation and finding the best neonate's response to pain on the use of the measures. Given that, the need for evaluation and applying measures that can alleviate the suffering of these children before painful procedures and it is suggested that these interventions should be part of the care process and care practice in all institutions.

CONCLUSION

The pain management in neonates still seems to be something with difficult

accessibility and applicability in the NICU. It is known that pain can influence the mortality conditions of the newborns, so that the detection and pain management become indispensable in neonatal care. The nursing intervention in pain management provides a better newborn's response to painful procedures. These interventions should be part of the care process and care practice in all institutions.

Pain is considered as the 5th vital sign, but its assessment is not done concurrently checking the other signs, which is a suggestion for the records of team where the research was carried out.

It was found that the nursing team still does not make use of non-pharmacological measures to systematically assess pain in newborns using the available tools often individualizing the care provided and neglecting proper care of the pain in this child; also that before the adoption of measures for prevention and treatment of pain the newborn presented a positive feedback regarding the response before the painful procedure. Thus, the construction and implementation of an instrument as a basis for pain management it is necessary in newborns and can standardize the practice in relation to the assessment and management of pain from contemplating the conduct during the procedure, the assessment and measuring pain as well as its prevention and treatment.

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