

Assistance flowchart for pain management in a Neonatal Intensive Care Unit

Fluxograma assistencial para manejo da dor em Unidade de Terapia Intensiva Neonatal

Flujograma assistencial para manejo del dolor en Unidad de Terapia Intensiva Neonatal

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ABSTRACT

Objective: To describe and discuss the process of developing a flowchart collectively constructed by the health team of a Neonatal Intensive Care Unit for the management of neonatal pain. **Method:** This is a descriptive and an exploratory study with a qualitative approach that used Problem-Based Learning as a theoretical-methodological framework in the process of developing the assistance flowchart for the management of neonatal pain. **Results:** Based on this methodology, there was training in service and the discussion of key points of pain management by the health team, which served as input for the construction of the flowchart. **Final considerations:** The assistance flowchart for pain management, based on scientific evidence, provided means to facilitate the decision-making of the health team regarding the pain of the newborn. It is suggested to use the flowchart frequently to promote the permanent education of the team and identify possible points to be adjusted.

Descriptors: Pain Management; Neonatal Intensive Care Units; Workflow; Neonatal Nursing; Newborn.

RESUMO

Objetivo: Descrever e discutir o processo de desenvolvimento de um fluxograma construído coletivamente pela equipe de saúde de uma Unidade de Terapia Intensiva Neonatal para o manejo da dor neonatal. **Método:** Trata-se de um estudo descritivo, exploratório, com abordagem qualitativa que usou a Aprendizagem Baseada em Problemas como referencial teórico-metodológico no processo de desenvolvimento do fluxograma assistencial do manejo da dor neonatal. **Resultados:** A partir desta metodologia ocorreu uma capacitação em serviço e a discussão de pontos chaves do manejo da dor pela equipe de saúde, que serviram de subsídios para construção do fluxograma. **Considerações finais:** O fluxograma assistencial do manejo da dor, construído a partir de evidências científicas, forneceu meios para facilitar a tomada de decisão da equipe de saúde frente à dor do recém-nascido. Sugere-se a aplicação do fluxograma com frequência para promover a educação permanente da equipe e identificar possíveis pontos a serem ajustados.

Descritores: Manejo da Dor; Unidades de Terapia Intensiva Neonatal; Fluxo de Trabalho; Enfermagem Neonatal; Recém-Nascido.

RESUMEN

Objetivo: Describir y discutir el proceso de desarrollo de un diagrama de flujo construido colectivamente por el equipo de salud de una Unidad de Terapia Intensiva Neonatal para el manejo del dolor neonatal. **Método:** Se trata de un estudio descriptivo, exploratorio, con un abordaje cualitativo que utilizó el Aprendizaje Basado en Problemas como referencial teórico-metodológico en el proceso de desarrollo del diagrama de flujo asistencial del manejo del dolor neonatal. **Resultados:** A partir de esta metodología ocurrió una capacitación en servicio y la discusión de puntos claves del manejo del dolor por el equipo de salud, los cuales sirvieron de subsidios para la construcción del diagrama de flujo. **Consideraciones finales:** El flujograma asistencial del manejo del dolor, construido a partir de evidencias científicas, proporcionó medios para facilitar la toma de

decisión del equipo de salud frente al dolor del recién nacido. Se sugiere la aplicación del diagrama de flujo con frecuencia para promover la educación permanente del equipo e identificar posibles puntos a ser ajustados.

Descritores: Manejo del Dolor; Unidades de Terapia Intensiva Neonatal; Flujo de Trabajo; Enfermería Neonatal; Recién Nacido.

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INTRODUCTION

In the care for the Newborn (NB) hospitalized in a Neonatal Intensive Care Unit (NICU), there is a growing concern among health professionals regarding the management of pain, and several methods are used during routine procedures to relieve this pain⁽¹⁾.

The scientific evidence indicates several ways for pain management to be effective; however, the health team must develop strategies to minimize the number of procedures and to know pharmacological and non-pharmacological methods for the relief of neonatal pain. Only this way will be possible to minimize the disastrous consequences of this unpleasant sensory experience for NBs⁽¹⁾.

There is a gap in knowledge and depreciation by health professionals about pain assessment and treatment. This fact is evidenced by the reduced number of times that the health team searches for information about pain in formal sources in the literature, lack of records regarding pain management and lack of documentation regarding the subject⁽²⁾.

In neonatal units, newborns undergo multiple painful procedures during hospitalization. Despite the increased awareness of the presence of pain associated with an increased frequency of analgesic use, there is still an abyss between the attitude, in theory, of neonatologists, and their practice. In this sense, professionals know that they should use analgesics, but they do not always do it⁽³⁾.

In order to ensure that knowledge about pain management is reflected in care practice, reflecting changes in this practice, it is necessary to develop strategies for the education and training of professionals. The strength of existing evidence is crucial to the quality of management of pain through the definition of clinical guidelines capable of helping professionals to adopt effective and safe pain control measures^(2,4).

The collective construction of a protocol among health professionals and their implementation has an impact on the quality of pain assessment and its treatment. Structured guidelines and protocols produce a neonatal pain care system and optimize outcomes, and are effective for multi-faceted pain management^(2,4,6).

Some advantages have been pointed out for the use of protocols such as the improvement in the qualification of the professionals for the assistance decision-making, facility for the incorporation of new technologies and the instrumentalization for dissemination of knowledge⁽⁷⁾.

Protocols comprise a set of actions and decisions focused on results. The protocols can be clearly and concisely symbolized by a graphical structure called "flowchart", which consists of the representation of the flow of information and actions of a process, functioning as a tool that subsidizes the choice of the best alternative to solve a problem⁽⁷⁾.

OBJECTIVE

To describe and discuss the process of developing a flowchart collectively constructed by the health team of a NICU for the management of neonatal pain.

METHOD

Ethical aspects

The study was approved by the Research Ethics Committee of the university to which it was linked, according to Resolution 466/12 of the National Health Council, in accordance with the Certificate of Presentation for Ethical Appreciation. The participants contributed voluntarily to the research and signed the Free and Clarified Consent Term.

Type of study and theoretical-methodological framework

This is a descriptive, exploratory study with a qualitative approach based on Problem-Based Learning (PBL) as a theoretical-methodological framework in the process of elaborating an assistance flowchart for the management of neonatal pain.

The PBL is a student-centered teaching and learning strategy and works with the goal of developing knowledge, solving a real or simulated problem, encouraging creativity, investigative capacity and scientific reasoning based on scientific evidence to solve these problems⁽⁸⁻¹¹⁾.

This strategy is adopted by the Ministry of Health in the training of professionals to care for the underweight NB in the guidelines established by the Kangaroo Care, aiming at the formation of critical health professionals capable of transforming their reality⁽¹²⁾.

The PBL teaching process is conducted through tutorial sessions. There is a basic structure for the development of the methodology, however, it is possible a remodeling to meet some details^(8,12).

Sessions are developed in a seven-step sequence⁽¹²⁾:

Step 1 - health professionals are organized into small groups, presented to a real-life problem, and the elucidation of unfamiliar terms and concepts occurs;

Step 2 - there is an analysis of the problem and identification of the learning issues considered relevant by the group;

Step 3 - it consists in the formulation of hypothetical explanations for these questions based on the prior knowledge that the group has on the subject through a brainstorm;

Step 4 - the group summarizes explanations, identifying gaps in knowledge;

Step 5 - the learning objectives are set, which lead the student to prove/deny, to deepen, to complement the explanations;

Step 6 - individual studies are carried out respecting the objectives set;

Step 7 –discuss all over again the problem in the tutorial group, based on the knowledge obtained by the group, responding to the objectives, confirming or refuting the formulated hypotheses, reaching a solution to the problem.

Place of research and participants

The study was developed in a NICU of a maternity hospital belonging to a federal university located in the city of Rio de Janeiro. The unit has a multiprofessional team and 17 beds for the care of preterm and full-term newborns within the neonatal period. As for the epidemiological profile, the following are the main reasons for hospitalization: prematurity, respiratory discomfort, meconium aspiration, sepsis and jaundice.

The sample for convenience consisted of 10 nurses, 40 nursing technicians and two physiotherapists. Included in the study were NICU health professionals who were available to

participate in the tutorial sessions, and those who were on medical leave or absent from the unit for any reason during the data collection period were excluded.

Data collection

For data collection, 15 tutorial sessions were held with NICU health professionals between March and November 2013. Each session, supported by NICU coordination, lasted approximately 40 minutes and was pre-scheduled with the health care team on that day. The sessions took place in a room attached to the NICU.

Work steps following the Problem-Based Learning steps

The tutorial sessions developed in the present study followed the steps recommended by the PBL, as shown in the table below.

Chart 1 – Seven Steps of Problem-Based Learning developed during the tutorial sessions, Rio de Janeiro State, Brazil, 2017

Steps of Problem-Based Learning	Steps followed in the development of the tutorial group
1- Presentation of the problem	Presentation of the problem situation through a dynamic that allowed the group to experience pleasant and painful sensations similar to those experienced by the neonates hospitalized in the Neonatal Intensive Care Unit. Once the problem was defined (neonatal pain), we tried to clarify the unknown terms.
2 - Problem analysis and identification of learning issues	The problem was analyzed by the group and culminated with the following questions: How do I manage neonatal pain? What can cause painful sensations/stimuli in newborns hospitalized in the Neonatal Intensive Care Unit? How the evaluation of neonatal pain is performed using specific scales? How do I apply non-pharmacological methods of neonatal pain relief?
3 - Formulation of hypothetical explanations	The researcher (in the role of tutor) can guide learning by coordinating a brainstorming and each member of the group participated in the formulation of hypothetical explanations for the issues listed.
4 - Identification of knowledge gaps.	Next, these explanations were organized and synthesized, exposing the limits of the knowledge of the group and making clear the gaps in this knowledge.
5 - Definition of learning objectives	To understand the management of neonatal pain; to identify the painful procedures to which the newborns are submitted; to evaluate neonatal pain with the use of specific scales (one-dimensional and multidimensional); and to employ non-pharmacological methods of neonatal pain relief.
6 - Individual studies	Copies of texts selected by the tutor were extracted from a survey of MEDLINE, LILACS and SciELO (2009 to 2013) online databases. The descriptors used in the search were: Pain, Newborn and Pain Management.
7 - Rediscussion of the problem and solution	As the problem was discussed again, the group gradually introduced information from national and international literature that supported or refuted prior knowledge. The group can identify some procedures, such as calcaneal puncture, venous puncture, aspiration of the airways, among others that promote sensations and painful stimuli in hospitalized newborns. It was possible the recognition and interpretation of pain signals of the newborn through the physiological and behavioral indicators that the newborn had in the period of pain. As to the evaluation of neonatal pain, the group identified some scales used in neonatal practice and from the demonstration of a painful video procedure could simulate the applicability of some scales and unanimously chose a scale that was more practical and had better applicability to the unit. All doubts about the use of the scale were clarified by the tutor. The literature pointed to the use of the scale along with painful procedures and also accompanied the verification of the vital signs and the group agreed that these moments were the most useful for the application of the scale in the unit. Regarding methods of neonatal pain relief, some non-pharmacological strategies of pain relief in relation to different situations were also listed, as well as the choice and the correct technique to use each of the measures of pain relief.

Data analysis

The tutorial sessions were recorded and after transcription the data were submitted to thematic analysis, according to Minayo⁽¹³⁾. Three categories were developed that guided the construction of the assistance flowchart: management of neonatal pain before and after procedures, pain assessment by the application of the Neonatal Infant Pain Scale (NIPS) and use of non-pharmacological measures of pain relief.

The construction of the assistance flowchart for the neonatal pain management

The literature presented by the tutor with the knowledge constructed by the group served as the basis for the elaboration of a protocol for the management of neonatal pain appropriate to the unit. To facilitate its application in care practice, it was decided to develop a flowchart as a schematic representation of this protocol, outlining the care sequence for the newborns hospitalized in the NICU (Figure 1).

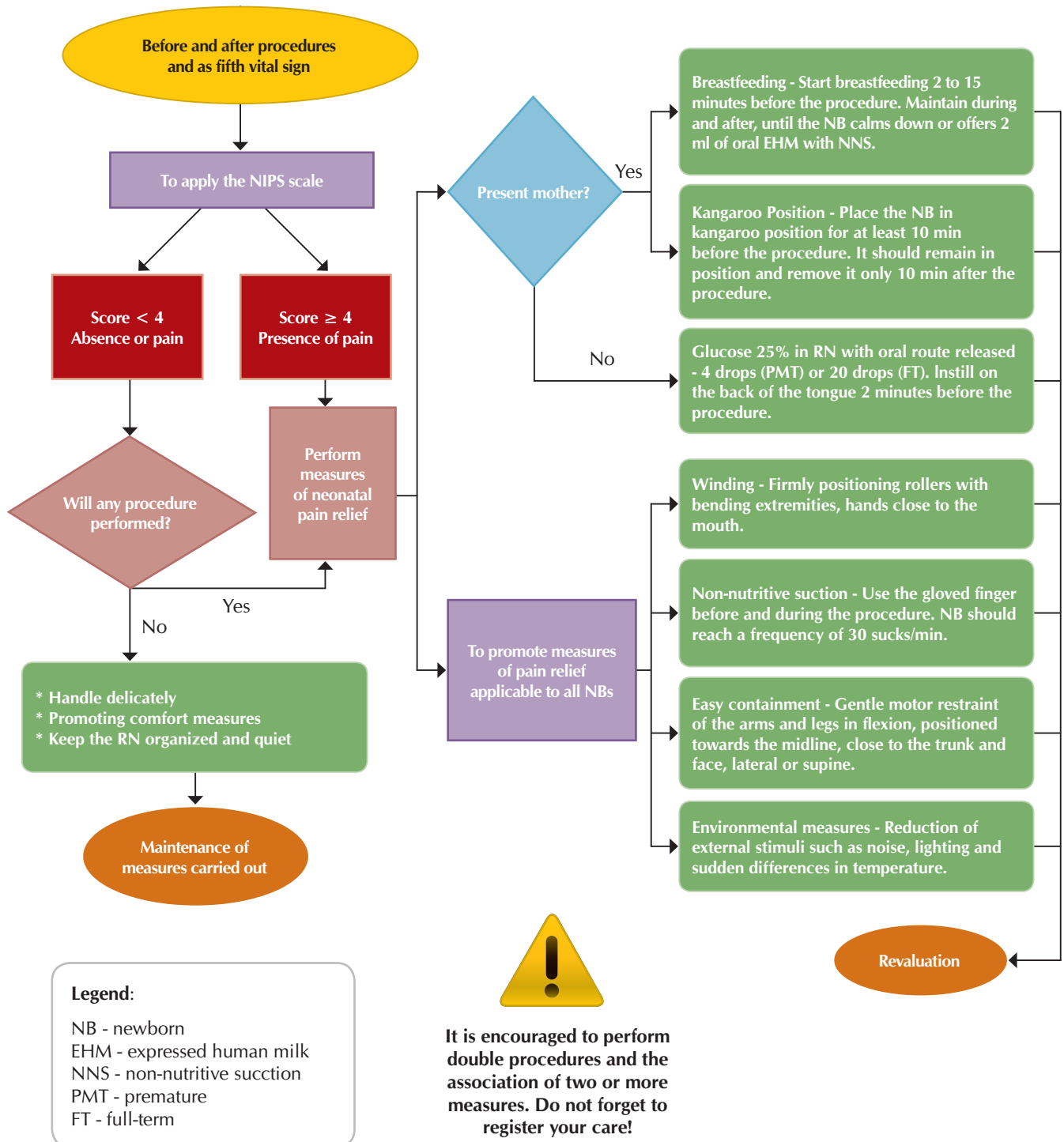


Figure 1 – Neonatal Pain Management Flowchart, Rio de Janeiro State, Brasil, 2017

RESULTS

For the process of development of the flowchart it has been considered the synthesis of the sessions, where the group defined: the way in which the process of the neonatal pain management (represented by the oval geometrical figure) would begin and end the actions performed (represented by the geometric figure of the rectangle) and the moment of decision-making (represented by the geometric figure elangle).

The representation of the geometric figures for the design of the flowchart followed the recommendations of the *Guia para Construção de Protocolos Assistenciais de Enfermagem* (Guide for Nursing Assistance Protocols Construction)⁽⁷⁾.

Initiating the flowchart, the group decided the moments of evaluation of the pain with vital signs, as the fifth vital sign and before and after procedures. This evaluation should be performed through a scale with multidimensional parameters and the scale chosen was NIPS.

On the basis of this scale, a score <4 with an unforeseen performance to perform procedures should observe the neurobehavioral organization of the NB and promote measures of comfort and minimal handling.

A score of ≥ 4 or <4 , predicted to perform procedures such as peripheral venous puncture, calcaneal puncture and airway aspiration, indicates to healthcare professionals the need for action (perform neonatal pain relief) and leads to that may involve the presence or not of the mother. If the mother is present, the strategy to relieve the pain of the newborn will be breastfeeding or skin-to-skin contact in the kangaroo position.

Breastfeeding can be offered in two ways, through breastfeeding or the oral supply of human milk. In the presence of the mother, if NB is able to suck the breast, breastfeeding should be started 2 to 15 minutes before the procedure and maintained during and after NB calms down. In case the mother is present, but the NB has some restriction to the maternal breast, it is indicated the oral offer of 2 ml of milked human milk, associated with the use of non-nutritive suction.

Another possible action with the present mother is the skin-to-skin contact in the kangaroo position. The NB should remain in the skin-to-skin contact before, during and after the procedure and should only be put back into bed 10 minutes after the end of the procedure.

The use of 25% oral glucose with or without non-nutritive suction is effective for pain relief and should be used preferably in the absence of the mother and when NB is able to receive oral diet. The agreed dose for the unit was four drops of 25% oral glucose for premature infants and 20 drops for full-term NB on the back of the tongue two minutes before the procedure.

Some measures are applicable to all NBs (winding, non-nutritive suction, facilitated containment and environmental measures) and have been described in the flowchart in order to increase the range of actions against a score ≥ 4 , or <4 realization of procedures.

With regard to winding, a bed sheet should be used to wrap the baby's body surface and use of rollers employed as allowance to demarcate the boundaries and organize the NB. The facilitated restraint presents itself as a gentle motor

restraint of the flexed extremities. It should be used, mainly, to organize the NB in moments after stress. The reduction of light and vestibular stimuli is also an important measure of NB pain and stress management, as well as the maintenance of the environment temperature without sudden change.

Any strategy to minimize the impact of the NICU environment on neurodevelopment of NB should be encouraged.

DISCUSSION

The collective construction of a protocol with the involvement of health professionals responsible for its application is effective and potentially capable of promoting positive transformations in the work process⁽¹⁴⁾.

Through a dynamic methodology in which the knowledge of each one was valued and allowed learning based on scientific evidence, it was possible to establish an assistance flowchart for the neonatal pain management and the systematic implementation of non-pharmacological strategies for the relief of NB pain, consecrated in the literature.

The American Academy of Pediatrics has been bringing updated guidelines on the prevention and management of painful procedures at the NICU with new evidence to help health professionals implement pain prevention programs that involve strategies to minimize the number of painful procedures performed, a plan assessment and management including routine pain assessment, non-pharmacological and pharmacological therapies for pain prevention associated with routine procedures⁽⁶⁾.

NB is subjected to numerous procedures from the first days of life, such as vitamin K administration, calcaneal puncture for capillary glycaemia, venous or arterial puncture, aspiration of the airways, and others during its entire hospitalization⁽¹⁵⁾. A study of 32 Canadian units with 3,822 NBs demonstrated the exposure of these NBs to pain. A total of 78.2% of NBs were submitted to at least one painful procedure in the 24 hours, with a mean of 6.3 painful procedures per child. The calcaneal puncture was the most accomplished procedure⁽¹⁶⁾.

Repeated painful procedures have short- and long-term negative consequences for NBs and proper pain management is essential and ethical. In recent years, there has been a significant evolution in pain assessment, including its standardization as the fifth vital sign by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), which considers it a priority in the assessment, intervention and reassessment during integral care in hospitalization of the patient. For JCAHO, pain assessment should be based on behavioral scales and physiological parameters^(6,17).

Effective pain management has been a major challenge due to the inability of NB to report its own pain, especially the extreme premature, sick and neurologically impaired. There are more than 30 pain assessment scales adapted for children predominantly based on physiological, behavioral or both parameters. Some authors point out that the use of multidimensional scales in NBs are more appropriate because they evaluate behavioral indicators associated with physiological responses to pain, making the approach more complete since the pain report cannot be manifested in this public⁽¹⁷⁻¹⁸⁾.

The use of scales to evaluate pain is not yet used systematically in neonatal care. Lack of knowledge, lack of prioritization of pain management, time constraints and uncertainty about the validity of available tools have been pointed out as reasons for their non-use⁽¹⁹⁾. Thus, it is essential to implement the pain assessment scales in NBs with a range of 4-6 hours as a low cost and high impact clinical tool in the identification of pain as the fifth vital sign^(6,17).

The scale chosen by health professionals for pain assessment in the present study was the NIPS, created by Lawrence *et al.* In 1993. It is composed of five behavioral parameters and a physiological indicator (facial expression, crying, breathing, arm position, position of legs and state of consciousness). Evaluations are done at one minute intervals before, during and after the procedure, and the score is between 0 and 7. A score equal to or greater than 4 is indicative of pain⁽²⁰⁾.

In the literature, pain assessment by the NIPS scale is used in conjunction with the verification of vital signs before and after procedures such as: calcaneal puncture, arterial puncture, nasal and tracheal aspiration, respiratory physiotherapy, central catheter insertion, intubation and tracheal extubation, gastric tube insertion, among others^(17,21). Although the NIPS scale is considered a useful tool for health professionals, it presents some limitations such as the fact that it does not consider the gestational age of the NB evaluated⁽²²⁾.

Studies show that the Premature Infant Pain Profile (PIPP) developed in 1996 by Stevens *et al.*⁽²²⁾, better meet these criteria. PIPP is a multidimensional instrument that evaluates the behavioral, physiological and contextual indicators of the occurrence of pain in term and preterm NB and uses the following parameters: gestational age and behavioral status, heart rate and oxygen saturation, and three aspects of facial mimicry. It has been translated, adapted and validated in Brazil for application in research and clinical practice⁽²²⁾.

In addition, NIPS uses behavioral indicators that may be altered in sedated NBs or with any clinical condition that makes it impossible to respond to pain through motor activity and other types of behavioral response⁽²³⁾.

Once the pain assessment scale and the timing for the application have been chosen, health professionals must define their behavior in the light of neonatal pain assessment results.

Breastfeeding and oral breast milk supplementation are the preferred alternatives, since it counts on the participation of the mother in neonatal care. Breastfeeding and oral breast milk supplementation may be used to relieve pain in NBs undergoing painful procedures such as: calcaneal puncture and venous puncture. The presence of the mother and the readiness of NB to suckle the mother's breast should be observed and valued as measures for pain management⁽²⁴⁾.

The soothing effect of breastfeeding or oral breast milk can be explained by the mother's own comforting presence, the physical sensation of skin-to-skin contact, the diversion of attention, and the suctioning of a sweetened solution due to lactose and other ingredients present in milk⁽²⁴⁾. Breastfeeding should be used to alleviate procedural pain in NBs undergoing a single painful procedure, although it has yet to be studied in the preterm population⁽²⁴⁾.

With regard to the kangaroo position, it provides skin-to-skin contact, demonstrates innumerable physiological benefits, as well as its effectiveness in reducing NB pain, associated or not with other measures. However, it is indicated that this contact be initiated before the procedure to be performed and maintained during and after it whenever possible⁽²⁵⁻²⁷⁾. Current evidence shows that preterm NBs benefit from kangaroo care in pain relief before, during and after procedures, and that nurses should encourage families to participate in kangaroo care⁽²⁸⁾.

Regarding the use of sweetened solutions, some carbohydrates such as sucrose and glucose in different concentrations are used for the relief of neonatal pain. A meta-analysis, a systematic review, aimed at evaluating the efficacy of sweetened solutions for pain relief during painful procedures in newborns, concluded that glucose reduces pain and crying scores during a single painful procedure. The studies evaluated used doses between 0.2 ml and 2 ml. The results indicated that the use of glucose in concentrations between 20% and 30% has analgesic effects and may be recommended for the reduction of pain associated with the procedure in healthy and premature NBs⁽²⁶⁾.

Another systematic review conducted to determine the efficacy, dose-effect, and safety of oral sucrose to relieve pain associated with procedures in newborns reaffirms this information, concluding that sucrose is safe and effective in reducing associated pain to single event procedures⁽²⁹⁾.

In Brazil, the Ministry of Health recommends the use of 1 ml of 25% glucose, orally (administered in the anterior portion of the tongue) before small procedures such as capillary or venous puncture⁽³⁰⁾.

Individually, the mechanism of action of the sweetened solution in pain modulation seems to be related to the stimulation of the palate with the activation of pleasure-related cortical regions that culminate in the release of opioids, modulating the painful experience. This prerogative is potentiated when associated with non-nutritive sucking of a pacifier or gloved finger⁽³¹⁾.

Non-nutritive sucking often associated with the use of 25% glucose can be considered as care technology, which provides a relief for the premature NB pain and contributes to its quality survival⁽³¹⁾. Scientific evidence found in a meta-analysis corroborates this statement⁽³²⁾.

Non-nutritive sucking inhibits hyperactivity, relieves NB discomfort, and minimizes pain when undergoing acute painful procedures. However, this mechanism is only effective if the suction movements are rhythmic, thus releasing serotonin into the central nervous system. This therapeutic resource can be used during the performance of some procedures such as heel puncture, venipuncture, blood collection, aspiration of upper airways and orotracheal intubation⁽³⁰⁾. Non-nutritive sucking should be used with the use of the gloved finger and started before the procedure, and NB should have a regular suction frequency in order to be effective⁽⁴⁾.

Another measure performed by health professionals was winding, which can be used in many NBs as long as they are clinically monitored and stable, constituting a low cost and low risk measure⁽¹⁾. Through gentle and regular stimulation, winding provides stimuli that can compete with stress

and pain and must be performed prior to any procedure and maintained most of the time^(4,33).

The facilitated containment, another strategy pointed out by health professionals and widely used in their practice, consists of the delicate control of extremities near the trunk, with lower and upper extremities flexed, and the hands close to the mouth. It promotes effective physiological and behavioral stability, reducing cry time and heart rate changes of NBs during painful procedures⁽¹⁾. Containment and positioning can help you get organized and should be maintained for 10 minutes after the procedure or until it is stable, recovering physiological parameters and behavioral status⁽³⁴⁾.

A meta-analysis of 51 studies on non-pharmacological interventions for pain relief, used during calcaneal puncture and intravenous catheter insertion, pointed out that measures such as facilitated restraint and winding are beneficial for full-term newborns⁽³⁵⁾. It is important to always consider the use of non-pharmacological strategies with or without sweetened solution for painful procedures of mild to moderate pain⁽⁶⁾.

In addition to all these measures, the assistance flowchart of neonatal pain management still provides for the use of environmental measures such as the reduction of stimuli, noise, abrupt changes in temperature and luminosity.

When taken to the NICU, traditionally, NB finds an environment extremely different from that in which it was in the womb. In this sense, any intervention aimed at minimizing the unpleasant stimuli resulting from this hospitalization process should be encouraged and put into practice by the whole team at any time, especially when there is a positive evaluation for pain⁽²⁵⁾.

Strategies to reduce noise in the unit, such as: prompt attention to alarms, prohibition of cell phone use, adaptation of more modern equipment with self-management of noise, reduction of conversations and tone of voice can be encouraged to maintain the calmer environment. As far as possible, the luminosity of the unit should also be controlled, reducing the exposure of NBs to direct light, facilitating the circadian cycle⁽³⁵⁾.

These environmental measures are described as a kind of neuroprotective care for premature NBs and are included in management programs focused on neurodevelopmental care. These programs focus on a healing environment, on partnership with families, on proper NB positioning, on sleep protection, on reducing stress and pain, on skin protection and on optimizing total nutrition. Interventions to promote stability such as NB organization in nests, facilitated containment, delicate handling, and comfortable positioning should be incorporated into routine care⁽³⁶⁻³⁷⁾.

The prevention and treatment of pain is a human right. Non-pharmacological measures are simple, with no significant economic cost and practically no adverse effects and practices such as the use of sucrose, performing procedures during breastfeeding or kangaroo position, facilitated containment and the suitability of the NICU environment for noise and lighting should be a priority in all neonatal units⁽³⁸⁾.

Clinical neonatal pain management relief should be a constant concern of health professionals and in this scenario, the nursing team responsible for NB care should be highlighted, especially nurses who must be able to detect any change or manifestation of pain and relieve it as best as possible⁽³⁹⁾.

Study limitations

This study had as limitation the non-participation of NICU medical staff. It is important to emphasize the presence of a large part of the nursing and physiotherapy team that can act as multipliers of good practices related to the neonatal pain management.

In addition, the fact that it was developed with a smaller group and in a single field, has a methodological limitation, and it may be necessary to adapt to the different realities found in different scenarios.

Contributions to the area of nursing, health or public policy

The study contributes directly to the program of permanent institutional education, besides instrumentalizing the professional in the decision-making, supporting it in its activities of the assistance practice. In addition, it brings a contribution to the neonatal nursing area, filling a gap between practice and theory, where often those who are on the cutting edge, that is, taking care of NB directly, do not employ the scientific evidence available.

Thus, it is considered relevant to construct this flowchart to provide a broad view of the entire pain management process by subsidizing nursing care management.

FINAL CONSIDERATIONS

Through PBL that presents itself as active teaching methodology learning took place a qualification in service of the team. As the relevant topics were discussed, a protocol was built that was subsequently transformed into a workflow that is feasible in clinical practice.

The preparation of the protocol with the team provided each professional to express their knowledge and their experiences, culminating in unified guidelines for a better quality of care.

This model is simple to follow and uses strategies available in many units. A pain scale the reality of the NICU and the time equally suited your application has been chosen and the definition of the relevant care actions with viable strategies and based on the literature, for relief of pain listed by health professionals themselves.

We believe that the flowchart can contribute to the performance of the multiprofessional team working at the NICU in order to minimize the pain of NBs and favor the maintenance of a more therapeutic, humanized and individualized hospitalization environment. The creation of this protocol and its presentation through the graphic figure of the flowchart provided a safe path and a scientific basis of quality for the neonatal pain management.

It is further the assistance flowchart of pain management can be adapted to the conditions of each institution according to resources (human and material) and the available access to their customers. However, it needs to be re-evaluated frequently so that the best recommendations for clinical practice are used whenever there is a change or to incorporate new knowledge. It is important that all health professionals involved in NB care at NICU are able to assess and appropriately manage neonatal pain.

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