

Attitudes of healthcare professionals regarding the assessment and treatment of neonatal pain^a

Atitudes dos profissionais de saúde na avaliação e tratamento da dor neonatal

Actitudes de profesionales de salud frente a la evaluación y el tratamiento del dolor neonatal

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ABSTRACT

Objectives: To describe and analyze the attitudes of health professionals in relation to the evaluation and treatment of pain in newborns undergoing painful procedures in neonatal units. **Methods:** This descriptive, exploratory, quantitative study was performed in a maternity hospital in the state of Rio de Janeiro. Participants were 42 nursing assistants/technicians, 22 nurses, 20 physicians and 02 physical therapists. Data were collected through a self-administered questionnaire covering the profile of the health professionals and their attitudes in the assessment and treatment of pain. **Results:** It was found that the professionals mentioned assessing NB pain through behavioral parameters, however, did not use scales and did not perform this evaluation systematically. The majority of the nursing professionals used non-pharmacological measures for pain relief, with wrapping being the most used. **Conclusion:** There is a difference between what is prescribed and what is performed, indicating the existence of a gap between existing knowledge and the practice. Attitudes need to be changed and actions implemented according to the best available evidence.

Keywords: Newborn; Pain; Nursing; Health Professionals; Health Practices.

RESUMO

Objetivos: Descrever e analisar as atitudes dos profissionais de saúde em relação à avaliação e ao tratamento da dor em recém-nascido, submetido a procedimentos dolorosos na unidade neonatal. **Métodos:** Estudo descritivo, exploratório, com análise quantitativa, realizado em uma maternidade do Município do Rio de Janeiro. Participaram 42 auxiliares/técnicos de enfermagem, 22 enfermeiros, 20 médicos e duas fisioterapeutas. Os dados foram coletados por um questionário autoaplicável referente ao perfil dos profissionais de saúde e atitudes na avaliação e tratamento da dor. **Resultados:** Verificou-se que profissionais referem avaliar a dor do RN por parâmetros comportamentais, mas não utilizam escalas e não realizam essa avaliação de maneira sistemática. A maioria dos profissionais de enfermagem utilizam medidas não farmacológicas para o alívio da dor, sendo o enrolamento o mais utilizado. **Conclusão:** Há divergência entre o que é considerado prescrito e o administrado, apontando a existência de uma lacuna entre a prática e o conhecimento existente. As atitudes precisam ser mudadas e instrumentalizadas pela melhor evidência disponível.

Palavras-chave: Recém-nascido; Dor; Enfermagem; Pessoal de saúde; Práticas em saúde.

RESUMEN

Objetivos: Describir y analizar las actitudes de los profesionales de salud con relación a la evaluación y el tratamiento del dolor en recién nacidos sometidos a procedimientos dolorosos en una unidad neonatal. **Métodos:** Estudio descriptivo, exploratorio, con análisis cuantitativo, realizado en una maternidad en la ciudad de Rio de Janeiro. Participaron 42 auxiliares/técnicos de enfermería, 22 enfermeras, 20 médicos y dos fisioterapeutas. Los datos se recogieron mediante un cuestionario autoaplicable referente al perfil de los profesionales de salud y las actitudes en la evaluación y tratamiento del dolor. **Resultados:** La evaluación del dolor RN se hace por parámetros de comportamiento, pero sin escalas o evaluación sistemática. La mayoría de los profesionales utiliza medidas no farmacológicas para aliviar el dolor. **Conclusión:** Hay diferencia entre lo prescrito y lo administrado, evidenciando una laguna entre la práctica y el conocimiento existente. Las actitudes necesitan ser cambiadas y manipuladas para una mejor evidencia disponible.

Palabras clave: Recién nacido; Dolor; Enfermería; Personal de Salud; Prácticas en salud.

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INTRODUCTION

Advances in the understanding of neonatal pain, have been produced and disseminated in the international literature since the 1980s. One of the factors that stimulated this growth was the evolution of care in the neonatal intensive care unit (NICU), which contributed to greater survival of increasingly immature and seriously ill newborns (NBs).¹

Although pain in NBs is a subjective and difficult phenomenon to assess, scientific evidence available in literature²⁻⁴ subsidizes the assessment and treatment of pain in NBs, aiming to minimize its harmful effects, especially in premature infants, in both the short and long term.

Studies⁵⁻¹¹ have shown that there is a gap in the application of scientific knowledge in the clinical practice by health professionals, particularly with regards to the management of neonatal pain. While there are valid and reliable scales for the assessment of pain, and effective non-pharmacological and pharmacologic strategies to treat the pain, the undertreatment of pain in NBs is still a problem in many countries.²⁻⁴

Several recommendations^{1-4,12} for the assessment and relief of pain in NBs have been presented in care protocols, guidelines or consensuses to support the implementation of methods, the results of which have been positive in the management of neonatal pain. These strategies include the routine assessment of pain, reducing the number of painful procedures, effective use of non-pharmacologic and pharmacologic measures for the prevention of pain associated with routine minor procedures and the elimination of surgical pain or procedures considered major.^{1-4,12}

The implementation of these guidelines in the clinical practice is not an easy task, as various organizational and individual factors are involved. The practices of health professionals, however, should be based on evidence and not simply follow routine, tradition or individual professional experiences involved in assisting the NB subjected to numerous painful and stressful procedures.

This study aimed to describe and analyze the attitudes of health professionals in relation to the evaluation and treatment of the pain of the NB subjected to painful procedures in the neonatal unit.

METHODS

This descriptive, exploratory, quantitative study was carried out in a neonatal unit of a maternity hospital in the city of Rio de Janeiro, including 22 neonatal beds, nine in the Level I NICU (newborns requiring more complex intensive care) seven in the level II NICU (newborns requiring less complex intensive care), six in the Nutritional Recovery Unit (NRU) (newborns in nutritional rehabilitation after discharge from the NICU) and four beds in Kangaroo Quarters (newborns discharged from the NICU eligible for kangaroo care). The newborns admitted to these units are often exposed to numerous stressful and painful procedures such as venous and calcaneus punctures.

This study fulfilled all the requirements of Resolution 196/96 and was approved by the Ethics Committee for Research with Human Subjects of the Maternity Hospital, being registered under No. 102/2012. The study is part of a project to implement an evidence based educational intervention program for the adequate management of pain in neonatal units, which is based on the knowledge transfer framework.¹³

Data collection was conducted from October 2012 to February 2013. Of a total of 96 health professionals working in direct NB care in the participating neonatal units, 86 were interviewed, these being 42 nursing assistants/technicians, 22 nurses, 20 physicians and two physical therapists. Ten health professionals were excluded because six were on vacation and four absent due to medical leave.

The health professionals were contacted individually by the researcher in the neonatal units and, after explanation of the aims of the research, agreed to participate in the study, signing the consent form. The participants received a self-administered questionnaire accompanied by a text with guidelines on its proper completion, which had to be returned, duly completed, after three days. The questionnaires were placed in sealed envelopes and delivered directly to the researcher. On rare occasions, the sealed envelopes were delivered to the Head Nurse of the sector.

The questionnaire was developed based on national and international literature related to neonatal pain and validated by the researchers and graduate students of the Nursing Research Group on Care for Children and Adolescents (GPECCA) of the University of São Paulo at Ribeirão Preto College of Nursing (EERP-USP), and by nurses of the Nursing Research Center of Child and Adolescent Health of the Anna Nery School of Nursing of the Federal University of Rio de Janeiro (UFRJ EEN). Modifications were made according to the suggestions made by the specialists, with a view to greater clarity of the instrument.

The questionnaire contained 19 items for the characterization data of the health professional (such as gender, academic training, work and professional contract, professional qualification related to the subject of neonatal pain, work regime and working conditions) and 36 items with statements that addressed the attitudes of the professionals related to the identification, assessment and treatment of neonatal pain. For each of the items, the professional needed to choose an answer considering the options of the Likert type scale: 1 (never), 2 (rarely), 3 (often), 4 (usually) and 5 (always). In this study only the main items of the Likert scale were used.

Before the application of the questionnaire, a pilot study was carried out with ten health professionals working in the maternity units, in order to identify possible difficulties in understanding the questions. The health professionals of the units that participated in the pilot were not part of the study. There were two changes in the questionnaire related to the use of acronyms and names of pharmaceuticals to facilitate the understanding of the participants.

The data from the questionnaires were double entered into a Microsoft Excel (version 2010) database to check consistency,

with the correction of any differences, and descriptive and inferential statistical analysis was performed. To verify the relationship between the attitudes of the health professionals in the assessment and the strategies for neonatal pain relief, the chi-squared and Fisher's exact tests were used, considering a significance level of 5%.

RESULTS

Of the 86 professionals interviewed, there was a predominance of females (89.5%). The mean age of the health professionals was 34.1 (± 7.4) years.

Regarding the academic training of the health professionals, among the nursing assistants/technicians, three (7.14%) had completed a graduation course in nursing, one (2.38%) had a neonatal specialization and four (9.52%) were attending a graduation course. The majority (81.81%) of the nurses, all the physicians and all the physical therapists had completed *lato sensu* post-graduation courses or were attending *stricto sensu* post-graduation courses in the neonatal area. The training of a safer and more aware health professional regarding issues of neonatal pain is reflected in the development of safe and quality care.

Regarding the work contract with the maternity unit, 25 (29.1%) of the health professionals were public workers and 54 (62.8%) were contracted. Considering the work regime, the majority of the nursing assistants/technicians (92.8%) and the nurses (63.7%) worked in the 24 x 120 hours shift system, with the possibility of performing extra shifts. With regard to the physicians, 35% had a working week of 20 hours and 100% of the physical therapists worked 24 hours per week.

The majority of the health professionals were involved in human resource training and development activities, with the nursing staff (73.80% of the nursing assistants/technicians and 77.27% of the nurses) having greater participation in these activities compared to the physicians (40% of the physicians). However, it is emphasized that in the previous two years, none of the courses offered by the maternity units addressed the issue of management of neonatal pain, prioritizing other issues such as breastfeeding, hospital infection and intravenous therapy, among others.

When evaluating the working conditions, 33 (78.57%) of the nursing assistants/technicians, 18 (31.82%) of the nurses, seven (35%) of the physicians and one (50%) of the physical therapists said they were satisfied with the working hours and physical structure of the unit. The majority of the professionals (76.74%) had more than one work contract, with nine (21.42%) nursing assistants/technicians, eight (36.36%) nurses, ten (50%) physicians and one (50%) physical therapist having another job that was not in the neonatal area. Almost all (98.87%) of the health professionals only worked in care, with one physician performing teaching activities.

The majority of the health professionals (66.27%) mentioned having received information about neonatal pain throughout

their training in technical, undergraduate or *lato sensu* graduate courses. The most cited sources used by these professionals to seek information were guidance of the head of the sector (16.27%), guidance of other health professionals (18.60%) and the use of textbooks (17.44%).

The data referring to attitudes reported by the health professionals regarding the evaluation and treatment for neonatal pain relief are shown in Table 1.

It was verified that many of the professionals reported that they usually assessed pain through facial expressions, with these including 45.24% of the nursing assistants/technicians, 50% of the nurses, 55% of the physicians and 50% of the physical therapists.

Regarding the assessment of pain through body movement and agitation, 35.71% of the nursing assistants/technicians, 59.09% of the nurses, 55% of the physicians and 50% of the ph.

It was observed that 19.05% of the nursing assistants/technicians, 18.18% of the nurses, 45% of the physicians and 100% of the physical therapists said they usually carried out the assessment of NB pain by measuring vital signs.

In proportionally higher numbers, nurses (27.27%) and physicians (40%), and one physical therapist (50%), mentioned that they usually carried out the assessment of pain together with the measurement of the vital signs of the newborns, while the majority of nursing assistants/technicians (30.95%) and one physical therapist (50%) said they rarely performed this evaluation together with the vital signs. The assessment of pain is subjective, and therefore instruments are needed that decode the pain language, this being considered the fifth vital sign. It is essential that the newborn is evaluated frequently regarding: vital signs (heart rate, respiratory rate), crying and facial and bodily expressions, by health professionals using pain scales. The identification, assessment and treatment of pain contribute to a faster recovery and better quality care.

The health professionals reported that they usually used more than one non-pharmacological measure for the relief of pain in NBs, with higher proportions of nurses (50%) physicians (30%) and physical therapists (50%) than nursing assistants/technicians (26.19%). Considering discussions with the health team regarding the use of pharmacological measures for the prevention and relief of pain in NBs, there was a higher proportion of nursing assistants/technicians (26.19%), nurses (54.55%) and physical therapists (100%) among those professionals that reported rarely performing this practice with the physicians.

It was observed that 28.57% of the nursing assistants/technicians said they rarely registered non-pharmacological interventions used for the prevention and relief of pain in newborns in the medical record, with this also verified for nurses (54.55%), physicians (50%) and physical therapists (50%).

In relation to registering complications with the administration of non-pharmacological measures in the medical records, 26.19% of the nursing assistants/technicians, 40.91% of the nurses, 30% of the physicians and 50% of the physical therapists said they never did this.

Table 1. Attitudes of the health professionals regarding the evaluation and treatment for neonatal pain relief. Rio de Janeiro, RJ, Brazil, 2013. (n = 86)

Attitudes performed neonatal pain relief	Never			Rarely			Often			Usually			Always		
	A/T (%)	NU (%)	PH (%)	A/T (%)	NU (%)	PH (%)	A/T (%)	NU (%)	PH (%)	A/T (%)	NU (%)	PH (%)	A/T (%)	NU (%)	PH (%)
1. Evaluate pain through facial expressions	7.14	4.55	0.00	7.14	9.09	0.00	21.43	18.18	40.00	50.00	45.24	50.00	19.05	18.18	5.00
2. Evaluate pain through body movement and agitation	11.90	0.00	0.00	14.29	9.09	5.00	23.81	18.18	35.00	50.00	35.71	59.09	14.29	13.64	5.00
3. Evaluate pain by measuring vital signs of the NB	9.52	0.00	0.00	47.62	27.27	0.00	16.67	31.82	45.00	0.00	19.05	18.18	7.14	22.73	9.09
4. Evaluate pain together with the vital signs	11.90	18.18	0.00	30.95	27.27	5.00	28.57	9.09	25.00	0.00	21.43	27.27	7.14	18.18	27.27
5. Use more a non-pharmacological measure* for pain relief	11.90	0.00	0.00	21.43	0.00	30.00	23.81	31.82	30.00	0.00	26.19	50.00	16.67	18.18	9.09
6. Discuss with health staff the use of non-pharmacological measures to prevent/relieve pain	23.81	4.55	15.00	26.19	54.55	10.00	21.43	22.73	45.00	0.00	21.43	18.18	7.14	0.00	5.00
7. Register in the medical record non-pharmacological interventions for pain prevention/relief	19.05	22.73	30.00	28.57	54.55	50.00	23.81	22.73	20.00	0.00	16.67	0.00	11.90	0.00	0.00
8. Register in the medical record complications in the administration of non-pharmacological measures	26.19	40.91	30.00	21.43	40.91	45.00	19.05	9.09	20.00	0.00	14.29	9.09	19.05	0.00	0.00
9. Prescribe and/or administer analgesics** and opioids to relieve repeated and prolonged NB pain	52.38	31.82	5.00	28.57	13.64	20.00	2.38	18.18	25.00	0.00	16.67	22.73	0.00	13.64	15.00

A/T: Assistant/Technician (n = 42); NU: Nurse (n = 22); PH: Physician (n = 20); PT: Physiotherapist (n = 2). Chi-squared and Fisher's exact test, 5% significance level. * skin to skin contact, non-nutritive sucking, wrapping, sweet solutions; ** glucose/sucrose, paracetamol, dipyrone, morphine, fentanyl, midazolam etc.

The data on the strategies mentioned by the health professionals used to relieve the pain of the newborn were related to the use of wrapping, sweet solution, prescription or administration of non-opioid/opioid analgesics and the use of opioids for NBs on mechanical ventilation.

It was noted that the use of wrapping before the painful procedure was cited as being performed often, usually or always by the majority of the nursing assistants/technicians (86.36%), nurses (100%) and physical therapists (100%), while in the case of the physicians half of the professionals interviewed reported rarely performing this intervention.

Regarding the use of sweet solution (oral sucrose or glucose) for pain relief in NBs subjected to potentially painful procedures, there was a larger proportion of physicians (100%) and physical therapists (100%) who reported using the oral glucose often, usually or always, in relation to the nursing assistants/technicians (73.80%) and nurses (86.36%). The orally administered sweet solutions mentioned by the professionals were glucose at 50% (53.48%), followed by glucose at 25% (29.06%), without standardization of the dose or frequency of use. When reporting the oral administration of glucose, the health professionals said they offered only "a few drops" of glucose orally.

It should be noted that, regarding the prescription or administration of non-opioid painkillers for pain relief in NBs, paracetamol was mentioned as being prescribed by the minority of nursing assistants/technicians (28.57%) and nurses (27.27%) and half of the physicians. The non-opioid analgesic used for pain relief most mentioned, by 50% of the physicians, was dipyrone.

Regarding the use of opioids for infants on mechanical ventilation, there was a higher proportion of nursing assistants/technicians (50%), nurses (31.80%) and physical therapists (50%) who mentioned never administering opioids, unlike that found in relation to the majority (60%) of the physicians who declared often, usually or always prescribing opioids for NBs on mechanical ventilation.

In relation to the prescription or administration of opioids (fentanyl) to relieve repeated and prolonged pain in NBs, there was a higher proportion of nursing assistants/technicians (80.95%) and physical therapists (100%) who said they never or rarely prescribed these drugs, while 75% of the physicians mentioned prescribing them often, usually or always in this situation. Nurses (59.09%), in turn, reported often, usually or always administering these opioids. In addition, the nurses mentioned always requesting the fentanyl prescription when premature NBs were undergoing placement of the peripherally inserted central catheter (PICC).

DISCUSSION

The study presents important results on the attitudes of health professionals related to the assessment and treatment of neonatal pain, and verifies the existence of gaps in practices that are reflected in the inadequate management of pain in NBs in the neonatal unit.

Although the majority of the health professionals had higher education and sought further qualifications through *lato sensu* and *stricto sensu* post-graduation courses, it is clear that continuing education has not contributed to the training or technical level in pain management of these professionals, as a fragmented and deficient practice in the care of newborns undergoing painful procedures was observed. The role of the physical therapist in the NICU was also highlighted, which consists of management of the motor (tactile, vestibular, auditory and visual stimulation) and respiratory characteristics (postural drainage, chest vibration, and breathing exercises) of the newborn, with these interventions contributing to pain relief. The training of nurses in pain management puts them in a position of being able to equip the mid-level professionals for the control and prevention of pain.

This scenario requires the inclusion of the management of neonatal pain in the curricula of undergraduate and graduate courses for health professionals, as well as constantly updating through continuing education to achieve a safe practice, with respect to the rights of the hospitalized NB.

Studies⁵⁻¹¹ have highlighted that the fragmented and deficient practices of physicians and nurses focused on the assessment and treatment of pain in neonatal units are due to gaps in the education and training received, despite current international guidelines^{3,4} indicating the use of non-pharmacological and pharmacological strategies for the NB. This study found a lack of evidence-based protocols and guidelines for the assessment of pain, with the use of scales, and employment of systematized non-pharmacological and pharmacological measures for the relief of the pain of the NB.

While the majority of the nursing assistants/technicians and nurses said they use facial expressions and body movements to assess NB pain, they reported not systematically evaluating the pain of newborns through scales during the assessment of the vital signs. The physiological parameters are non-specific, however, they are complementary to behavioral parameters, with the use of validated and reliable scales always recommended. With regard to the frequency of this evaluation, it can be said that there was no protocol to establish a routine in the unit, however there are recommendations²⁻⁴ that the assessment should be carried out before, during and after the procedure in order to monitor the effectiveness of the pain relief interventions.

A study by Akuma and Jordan⁷ shows that the majority of the nurses and physicians based their assessment of pain and stress on behavior and bodily reactions or changes in the vital signs of the NB, instead of using validated pain scales. Failure to use scales to assess pain in NBs can lead to the undertreatment of pain or indiscriminate use of medication, with avoidable risks for adverse reactions to these medications.⁷

There is a consensus that the objective evaluation of pain in NBs should be made using scales that include physiological and behavioral parameters, in order to obtain information about the individual responses to pain. There are several validated scales that can be applied routinely in the clinical practice by health professionals in neonatal units.^{1-4,12,14}

The adequate assessment of pain is paramount, since the decision to implement analgesic measures depends on this.¹⁻⁴ Furthermore, it is important to add that it requires skill and experience, as well as specific knowledge about the most appropriate scales for different gestational ages and contexts.^{1-4,14}

The majority of the health professionals who participated in this study reported usually or always using non-pharmacological interventions during the performance of a potentially painful procedure, as recommended by the Ministry of Health² and international bodies.^{3,4}

The interventions used by the health professionals that stood out in this study were: the use of oral glucose, non-nutritive sucking, wrapping and the use of non-nutritive sucking associated with oral glucose. However, the lack of registration of the use of these interventions, mentioned by the professionals of the units, does not allow verification of whether these interventions have actually been used to relieve NB pain.

Regarding the use of sweet solution, it was observed that the use of 50% or 25% glucose solutions were mentioned by the majority of the health professionals for the relief of pain in newborns, however, standardization of the dosage or frequency of this intervention was not mentioned.

Oral sucrose or glucose are being used more in procedures that generate light to moderate intensity pain, with or without other pain relief strategies. The recommendation for the use of oral 24% sucrose is from 0.1 to 1ml or 0.2 to 0.5ml/kg, two minutes before the procedure. Evidence-based protocols must be developed and implemented in the units.³

However, the administration of 1ml of 25% glucose or 2ml of 24% sucrose is recommended orally, with up to ten applications per day, on the rear part of the tongue, combined with non-nutritive sucking, two or three minutes before a painful procedure, such as heel or venous puncture.^{1,2} When glucose or sucrose is used as a pain relief strategy it should be prescribed as a medication and the effects as an analgesic should be monitored.^{3,4} Studies^{15,16} report that sweet solutions cause the release of endogenous opioids after oral administration, reducing the crying time, attenuating the facial expressions of pain and reducing the physiological response to the pain, when compared to distilled water or non-nutritive sucking.

Non-nutritive sucking with or without a sweet solution seems to work to increase the endogenous endorphins, although this mechanism is not completely understood.⁴ Non-nutritive sucking is typically used to preserve the well-being of the NB when painful invasive procedures are performed and can be used as a therapeutic measure, causing somatic and psychosomatic self-regulation of the NB. It has been recommended to decrease pain scores in procedures with mild to moderate pain and should be consistently used.³

Regarding the use of wrapping the NB prior to the procedure, the majority of the health professionals of this study reported using this intervention. Wrapping helps the self-regulation of the newborn during the painful and stressful procedures, having

the maintenance of the median line as a principle. Interventions that include changing the NB's position, nestling, wrapping in swaddling, maintaining the flexed position and providing postural support with manual contention facilitate the organization and self-regulation of the NB throughout acute pain.^{1,2,4} However, wrapping used in isolation, it is not effective in reducing pain in procedures with moderate to severe pain.

Regarding the use of pharmacological interventions for pain relief, this study shows that the health professionals recognized in practice the potentially painful procedures (venous, arterial and calcaneus puncture), however, there was a gap between the practice and the knowledge available regarding the use of these interventions. In general, it was found that the use of analgesics by the health professionals for the prevention and relief of pain in NBs in the neonatal unit investigated was insufficient and inadequate.^{5-7,15}

It should be noted that the majority of the health professionals never or rarely prescribed or administered non-opioid or opioid analgesics in NBs undergoing potentially painful procedures.

A study conducted in Italy with 103 NICUs showed that pain medication was routinely administered to NBs in 34.3% of the NICU for tracheal intubation, in 46.6% of them for mechanical ventilation, in 12.9% for tracheal suctioning, in 71.4% for the insertion of chest tubes and in 33% for lumbar puncture.¹⁶ Other studies^{5,7,13,16} also highlighted deficiencies in the use of sedatives and analgesics in neonatal units.

The majority of the health professionals mentioned never or rarely prescribing/administering fentanyl or morphine to relieve prolonged pain in NBs undergoing mechanical ventilation. Fentanyl was prescribed and administered at the time of placing the peripherally inserted central catheter (PICC).

National^{2,12} and international guidelines^{1,3,4} recommend that health professionals also use analgesia in other potentially painful procedures, such as multiple venous, arterial or capillary punctures, catheter insertion, chest drainage and elective intubation, among others. The use of opioid analgesics is an important treatment for the pain of critically ill NBs, with morphine (intermittent intravenous: 0.05-0.2mg/kg/dose every 4 hours; continuous infusion: to start the analgesic regimen with 5-10µg/kg/hour for full-term newborns and 2-5µg/kg/hour for premature NBs) and fentanyl (intermittent intravenous: 0.5-4.0µg/kg/dose every 2-4 hours; continuous infusion: 0.5-1.0µg/kg/hour for full-term newborns and premature infants) being the most used in the neonatal period.^{1-4,12} Tramadol (5mg/kg/day, divided into three (8/8 hours) or four (6/6 hours) doses, orally or intravenously, with the gradual withdrawal of tramadol recommended when its use exceeds 5 to 7 days) is rarely used as an analgesic of choice and methadone (dose: 0.05 to 0.1mg/kg orally) is used in the treatment of withdrawal from opioids.^{1-4,12}

It should be noted that the national guidelines² recommend that in preterm infants younger than 30 weeks of gestational age, the pharmacological treatment for pain should be evaluated carefully. The administration of an opioid can only be initiated when the premature NB presents two normal blood pressure

measurements, two hours prior to the pharmacological treatment. The international guidance^{3,4} also reinforces that these children should be carefully monitored.

A study⁶ conducted in Australia found that the majority (55%) of physicians mentioned prescribing opioid analgesics for NBs. Furthermore, these professionals believed that the morphine infusion should always be used in NBs undergoing mechanical ventilation.

It should also be noted that the majority of the health professionals mentioned never or rarely prescribing or administering non-opioid analgesics (paracetamol) in potentially painful procedures, showing that infants were still undergoing painful procedures without adequate analgesia.

Paracetamol is the only non-opioid analgesic that is safe for use in newborns, although it has little effect in processes of intense pain, due to being preferably administered orally and having to wait for about 1 hour for the start of its action.^{2,12} Dipyron is not recommended as an analgesic in the neonatal period,² although this medical practice is performed in neonatal units in Brazil.

Not all of the health professionals of the present study performed the registration of the non-pharmacological interventions (25% glucose) or possible complications of these interventions in the medical records, with this problem constituting one of the great challenges for the change in the practice in relation to the effective management of neonatal pain.

The assessment of the pain of the NB should be systematic and recorded when performed. For Hall and Anand¹² pain should be routinely assessed every 4 to 6 hours or if indicated by the specific clinical context, using objective pain assessment methods. Appropriate interventions should be prescribed and administered with the subsequent review and documentation of the effectiveness of the treatment.^{3-4,17}

It is up to health professionals to register and record in the medical records the actions taken and their results, for quality care in pain management. The records are a form of communication among the teams and between shifts, as well as being a source of information for auditing.^{3-4,17}

CONCLUSION

This study showed that the recommendations available in systematic reviews, clinical protocols and national and international consensuses for the relief of neonatal pain have not been translated into evidence-based practice to avoid the unnecessary suffering of newborns during painful procedures. Interventions that include a more effective participation of the parents, such as breastfeeding and the kangaroo position method are still actions little used by health professionals for the prevention and relief of pain in NBs. Lack of registration and documentation of pain also constitutes an important barrier to the effective management of neonatal pain, requiring an adequate measurement routine, as the fifth vital sign.

The attitudes of the health professionals did not fully reflect the knowledge acquired. The scientific evidence produced on this issue is not yet being effectively used in the clinical practice by health professionals, which is a major challenge for neonatology, especially regarding the evaluation and use of non-pharmacological and pharmacological measures. The implementation of protocols for pain management, the registration in the medical records and auditing can contribute to the systematization of the care to NBs with pain. Continuing education and *stricto sensu* and *lato sensu* post-graduate courses need to include the topic of the management, evaluation and treatment of neonatal pain. Care practices need to be changed and implemented according to the best available evidence, with actions and intervention projects recommended with the effective participation of health staff and the use of the institutional philosophy, making use of reference and methods of knowledge transfer, in a challenge and a commitment to continuing the present study.

It is necessary to train health professionals to use and prescribe opioids and sedatives in NBs undergoing mechanical ventilation or insertion of PICC and to deal with potential adverse events arising from the administration of these medications.

This study presented the following limitations: the non-participation of the heads of the services of the units and not having a larger sample of health professionals, as well as the failure to present the Likert scale with all 36 items related to the identification, assessment and treatment of pain. This study highlighted the need for further studies that discuss the institutional culture and work processes that objectify the management of pain as the fifth vital sign. The development and deployment of pain protocols in the units is also recommended, taking into consideration patient safety in medication use, ethical and bioethical aspects of care for the NB that feels pain, the teaching process for the identification, assessment and treatment of pain in the curricula of professional health, acquisition of knowledge and changing attitudes, without losing sight of the relationship between theory and practice.

Despite all the scientific evidence and national and international consensuses, many shortcomings are still present in the evaluation and treatment of neonatal pain.

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