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MULTIDISCIPLINARY TEAM'S KNOWLEDGE, ATTITUDE AND PRACTICE IN PAIN MANAGEMENT IN A NEONATAL UNIT

Mayara da Rocha Meredyk[1]
Roberta Costa[2]
Carolina Frescura Junges[3]
Thayná Ventura[4]
Marta Rosa de Lacerda Santos[2]
Milca Tatiana da Costa Pereira[2]
Lorenna Andrade Mendonça[2]
Manuela Beatriz Velho[2]

[1]Universidade Federal de Santa Catarina, Hospital Universitário Polydoro Ernani de São Thiago, Programa de Residência Integrada Multiprofissional em Saúde. Florianópolis, Santa Catarina, Brasil.
[2]Universidade Federal de Santa Catarina, Programa de Pós-Graduação em Enfermagem. Florianópolis. Florianópolis, Santa Catarina, Brasil.
[3]Universidade Federal de Santa Catarina, Hospital Universitário Polydoro Ernani de São Thiago. Florianópolis, Santa Catarina, Brasil.
[4]Universidade Federal de Santa Catarina. Florianópolis, Santa Catarina, Brasil.

ABSTRACT

Objective: to assess multidisciplinary team professionals' knowledge, attitude and practice regarding pain management in newborns admitted to a Neonatal Intensive Care Unit.
Method: this is a quantitative descriptive study of the Knowledge, Attitude and Practice survey type, developed with 37 healthcare professionals in a Neonatal Intensive Care Unit of a university hospital in southern Brazil, which adopts the Kangaroo Method as a basis of care.
Results: in the knowledge item, the majority of professionals recognized that pain is present in newborns (94.6%) and there was a unanimous understanding that, when not treated properly, can cause short and long-term consequences (100.0%). In their attitude, they recognize that all professionals are responsible for pain management (100.0%) and that they should prioritize it over invasive procedures (97.3%). In practice, professionals assess pain or use an assessment scale (97.3%) and perform this practice when checking vital signs or performing a physical examination (94.6%). However, there was a lower proportion of professionals who considered analgesia necessary when carrying out daily procedures such as changing diapers, weighing and checking vital signs (48.6%) or who recorded pain assessments (67.6%) or pain management in medical records (56.8%).
Conclusion: professionals recognize newborn pain, value management and apply measures to prevent and treat pain in invasive procedures. However, advances are needed in records as well as the incorporation of management into less complex daily procedures.

DESCRIPTORS: Pain. Newborn. Patient care team. Intensive care units neonatal.

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CONHECIMENTO, ATITUDE E PRÁTICA DA EQUIPE MULTIPROFISSIONAL NO MANEJO DA DOR EM UNIDADE NEONATAL

RESUMO

Objetivo: avaliar o conhecimento, atitude e prática dos profissionais da equipe multiprofissional sobre o manejo da dor no recém-nascido internado em Unidade de Terapia Intensiva Neonatal.
Método: estudo quantitativo descritivo do tipo inquérito Conhecimento, Atitude e Prática, desenvolvido com 37 profissionais de saúde em uma Unidade de Terapia Intensiva Neonatal de um hospital universitário na Região Sul do Brasil, que adota o Método Canguru como base de assistência.
Resultados: no item conhecimento, a maioria dos profissionais reconheceu que a dor está presente nos recém-nascidos (94,6%) e foi unânime a compreensão de que, quando não tratada adequadamente, pode causar consequências a curto e longo prazo (100,0%). Na atitude, reconhecem que todos os profissionais são responsáveis pelo manejo da dor (100,0%) e que devem priorizá-lo diante de procedimentos invasivos (97,3%). Na prática, os profissionais avaliam a dor ou utilizam uma escala de avaliação (97,3%), realizam esta prática ao verificar os sinais vitais ou realizar o exame físico (94,6%). Contudo foi menor a proporção de profissionais que considera ser necessária a analgesia na realização de procedimentos diários como troca de fralda, pesagem e verificação dos sinais vitais (48,6%) ou que faz o registro da avaliação da dor (67,6%) ou do manejo da dor no prontuário (56,8%).
Conclusão: os profissionais reconhecem a dor do recém-nascido, valorizam o manejo e aplicam medidas para prevenir e tratar a dor em procedimentos invasivos. No entanto, são necessários avanços nos registros, bem como na incorporação do manejo nos procedimentos diários de menor complexidade.

DESCRITORES: Dor. Recém-nascido. Equipe de Assistência ao Paciente. Unidades de Terapia Intensiva Neonatal.

CONOCIMIENTO, ACTITUD Y PRÁCTICA DEL EQUIPO MULTIDISCIPLINARIO EN EL MANEJO DEL DOLOR EN LA UNIDAD DE CUIDADOS INTENSIVOS NEONATALES

RESUMEN

Objetivo: evaluar el conocimiento, actitud y práctica de los profesionales del equipo multidisciplinario sobre el manejo del dolor en el recién nacido ingresado en la Unidad de Cuidados Intensivos Neonatales.
Método: estudio descriptivo cuantitativo del tipo encuesta de Conocimientos, Actitudes y Prácticas, desarrollado con 37 profesionales de la salud en una Unidad de Cuidados Intensivos Neonatales de un hospital universitario de la Región Sur de Brasil, que adopta el Método Canguro como base de atención.
Resultados: en el ítem conocimiento, la mayoría de los profesionales reconoció que el dolor está presente en el recién nacido (94,6%) y hubo unanimidad en que, cuando no se trata adecuadamente, puede provocar consecuencias a corto y largo plazo (100,0%). En su actitud reconocen que todos los profesionales son responsables del manejo del dolor (100,0%) y que deben priorizarlo frente a los procedimientos invasivos (97,3%). En la práctica, los profesionales evalúan el dolor o utilizan una escala de valoración (97,3%), realizan esta práctica al comprobar los signos vitales o realizar un examen físico (94,6%). Sin embargo, hubo una menor proporción de profesionales que consideran necesaria la analgesia al realizar procedimientos diarios como cambio de pañales, pesaje y control de signos vitales (48,6%) o que registran en la historia clínica las valoraciones del dolor (67,6%) o el manejo del dolor (56,8%).
Conclusión: los profesionales reconocen el dolor del recién nacido, valoran el manejo y aplican medidas para prevenir y tratar el dolor en procedimientos invasivos. Sin embargo, se necesitan avances en los registros, así como la incorporación de la gestión a procedimientos diarios menos complejos.

DESCRIPTORES: Dolor. Recién nacido. Grupo de atención al paciente. Unidades de cuidado intensivo neonatal.

INTRODUCTION

The neonatal period comprises the first 28 days of life after birth, a phase considered vulnerable to child health due to biological, environmental, social and cultural risks. During this period, between 60% and 70% of infant deaths occur, a fundamental indicator of the quality of care offered to this population. With the advancement of knowledge and technology, an increasing number of high-risk newborns are subjected to intensive treatment and invasive procedures to maintain life. For this reason, as a way to ensure better child growth and development, greater vigilance, monitoring and appropriate care are necessary during this period[1].

The Neonatal Intensive Care Unit (NICU) aims to care for critically ill newborns at risk of death, who require complex care and high-tech equipment, with a specialized multidisciplinary team[2]. The advancement of technology in the area of neonatal intensive care has provided an increase in survival for newborns, especially preterm ones. However, newborns can experience a painful and stressful period during their stay in the NICU, whether through touching, assessments, exams and other procedures intrinsic to treatment[3].

A study shows that newborns undergo, on average, 7.6 invasive procedures per day, reaching up to 12.7 on the day of admission to the NICU, due to the need to stabilize clinical condition, which results in negative effects such as stress, changes of vital signs and instability[4]. If, on the one hand, treatment in a NICU keeps newborns stable, on the other hand, when repeated procedures are necessary, without adequate pain assessment and treatment, they can have consequences for development[1,3].

Carrying out invasive procedures on newborns in a NICU, in the long term, has the potential to cause damage to neurological, cognitive, sensorimotor development and influence behavioral response[5]. Studies indicate a greater propensity for developing attention deficit during school years, anxiety and depression in adulthood, in addition to lower pain tolerance[5–7]. At the same time, neonatal pain control and effective treatment benefit physiological, behavioral, hormonal responses, and short- and long-term health[7].

Painful sensation perception corresponds to an unpleasant sensorial and emotional experience, both in newborns and in any other person. It manifests itself from nociceptive stimulation that is related to actual or potential tissue damage[5,7]. Pain can be considered a warning sign that triggers physiological and psychological reactions, leading humans to protect themselves. Pain perception does not depend on a previous painful experience, as pain is an intrinsic primary sensation, therefore, we can say that the first experience of a tissue injury is at least as painful as the subsequent ones[8–9].

Pain in newborns also follows this logic and, therefore, must be valued. Current evidence proves that newborns have anatomical, neurochemical and functional conditions for perception, integration and responses to painful stimuli, regardless of their level of maturity[9]. Studies indicate that nociception develops during pregnancy, around the 20th and 22nd week, and is associated with physiological, hormonal and metabolic factors in the 24th week[10–11].

With the deepening of physiological knowledge about neonatal pain, we can see that, in addition to newborns having all the anatomical, functional and neurochemical components essential for nociception, they still perceive pain with greater intensity than children and adults, because despite their afferent pathways are complete and functioning, inhibition pathways are still immature[10–11]. Furthermore, due to the subjective nature of pain, there are factors that can interfere with the perception and observation of the responses presented by newborns, including gestational age, birth weight and the evaluator[12].

As it is a specialized unit, the NICU must have a multidisciplinary team, with a work process that involves healthcare professionals with complementary experiences and skills, who share common health objectives. Furthermore, it is through interdependent collaboration, open communication

and joint decision-making that results of great value for patients, the institution and the team are obtained. With the integration of different specialties, the multidisciplinary team promotes more effective treatments and provides better clinical results. In this scenario, the Brazilian Health System (SUS – *Sistema* Único *de Saúde*) takes on the challenge of replacing the practice focused on curing the disease to incorporate plans and strategies aimed at the principles of universality, equity and comprehensiveness of care[13–14].

Thus, the present study aimed to assess multidisciplinary team professionals' knowledge, attitude and practice on pain management in newborns admitted to a Neonatal Unit.

METHOD

This is an evaluative study, with a descriptive quantitative approach, of the Knowledge, Attitude and Practice (KAP) survey type, developed with healthcare professionals who are multidisciplinary team members of a NICU in relation to pain management in the care provided to newborns. KAP studies aim to identify the knowledge that people have on a given topic, their emotions and opinions about it, and how they express this knowledge and attitudes through their actions[15]. The preparation of this research report was guided by the STrengthening the Reporting of OBservational studies in Epidemiology (STROBE) guidelines.

The study was carried out in the NICU of a university hospital, a reference in comprehensive and humanized care for critically ill or potentially critically ill newborns, located in southern Brazil. The health establishment investigated is recognized as an institution focused on the improvement and dissemination of neonatal clinical practices, through the effective implementation of the Kangaroo Method as a public health policy.

Sampling was intentional and non-probabilistic from the population. Professionals who worked in the service were identified, accounting for 23 physicians, 14 nurses, seven physiotherapists, one occupational therapist and 35 nursing technicians. Professionals with at least one year of experience in a NICU, working at the study site during the data collection period, were included, and professionals carrying out only administrative activities in the last six months were excluded. As non-inclusion criteria, professionals on sick leave, maternity leave, vacations or leaves. Data collection took place between August and September 2021 through personal contact with each participant in the workplace. A structured questionnaire was applied to professionals who agreed to participate in the study, and consultation of information sources was not permitted. The questionnaire addressed identification variables, training/qualification of professionals and length of experience, followed by the investigation variables of knowledge, attitude and practice. To identify participants, sociodemographic data (age and sex), training (course, specialization, graduate degree and access to information about pain in newborns) and professional performance (length of training, working in the institution and in neonatal units, participation in training on the topic of pain management in newborns) were collected.

The elaboration of variables to investigate knowledge, attitude and practice regarding pain management in newborns was based on the Likert scale or short answer questions. All answers were categorized as "adequate" and "inadequate" according to theoretical basis. In the knowledge variable, five response levels were used ("totally agree", "agree", "not decided", "disagree" and "totally disagree"), with the intermediate category "not decided" considered as an inadequate response, also four open-ended questions with short answers were used, categorized as "appropriate" and "inadequate". In the variables related to attitude, three levels of responses were used: "completely agree", "disagree" and "do not have an opinion". Again, the intermediate responses "do not have an opinion" were categorized as inadequate. Regarding professionals' practice in managing pain in newborns, four response levels

were used: “yes, always”, “yes, sometimes”, “never” and “do not know”, categorized as appropriate when the answers were “yes, always” and “yes, sometimes”.

Data were organized in an Excel spreadsheet and analyzed using STATA/SE 13. A descriptive analysis was carried out, with absolute frequencies, proportions and their respective 95% Confidence Intervals for the knowledge, attitude and practice outcomes, in the different professional categories, such as nursing technician, nurse and other higher education professionals (physician/physiotherapist/occupational therapist).

The research met the ethical precepts of Resolution 466/12 of the Brazilian National Health Council, and was approved by the Universidade Federal de Santa Catarina Research Ethics Committee.

RESULTS

A total of 37 professionals participated in the research and eight did not meet the inclusion criteria. There were five refusals and an invitation to participate was not made to 30 professionals who worked at night, due to operational difficulties in accessing this work shift. Sociodemographic characterization identified a mean age of 41.3 years and, in professional practice, a mean of 10.9 years of experience in the NICU and 8.6 years of experience in the unit investigated. Among the participants, 43.2% had a specialization in neonatology and 21.6% had a graduate degree (master’s or doctoral degree). In the investigation of training on pain management, 37.8% received information during training and 73.0% received training at the institution (Table 1).

Table 1 – Characterization of healthcare professionals in pain management in the Neonatal Intensive Care Unit of a university hospital. Southern Brazil, 2021. (n= 37).

	Mean (SD)	**Median**	**Minimum**	**Maximum**
Age	41.3 (7.8)	40	28	58
Years since graduation	17.7 (7.6)	18	6	32
Working time in NICU*	10.9 (8.5)	8	1	32
Time working at the UH NICU†	8.6 (8.1)	6	1	27
	n		**% (95%CI)**	
Gender				
Female	33		89.2 (73.5-96.1)	
Male	4		10.8 (3.9-26.5)	
Training				
Nursing technician	12		32.4 (18.9-49.7)	
Nurses	13		35.1 (21.1-52.4)	
Other higher-level professionals	12		32.4 (18.9-49.7)	
Received pain content in training				
Yes	14		37.8 (23.3-55)	
No	23		62.2 (45.0-76.7)	
Specialization				
Yes	16		43.2 (27.8-60.1)	
No	21		56.8 (39.9-72.2)	

Table 1 – Cont.

	Mean (SD)	Median	Minimum	Maximum
Graduate degree				
Yes	8		21.6 (10.8-38.5)	
No	29		78.4 (61.5-89.2)	
Received content of pain in professional performance				
Yes	27		73.0 (55.8-85.3)	
No	10		27.0 (14.7-44.2)	

*NICU: Neonatal Intensive Care Unit
†UH: University Hospital

In the knowledge stage, the results showed the understanding of a high percentage of participants (94.6%), data with statistical difference, that pain is present in newborns, regardless of gestational age, and there was a unanimous understanding that pain, when not treated properly, can cause harmful consequences in the short and long term for newborns. Furthermore, 70.3% of participants disagreed that newborns can associate painful events with breastfeeding or skin-to-skin contact when used for pain relief (Table 2).

When asked about the parameters to assess pain in newborns, 86.5% were able to name three parameters. Among the most cited characteristics were crying, expression (easy to pain) and changes in heart rate. Those who were unable to mention three parameters or responses such as hiccups and sweating were considered inadequate responses (data not presented in the tables). When assessing crying as the main pain parameter, 83.8% disagreed and 91.9% agreed that newborn pain is altered by exposure to the environment such as noise, lighting and touching. The vast majority of participants (97.3%) stated that they knew some pain assessment scale; 70.3% cited the Neonatal Infant Pain Scale (NIPS) or simply described the “unit scale”, with a higher frequency among nursing technicians (Table 2).

Regarding non-pharmacological measures for pain management, 75.7% were able to describe three measures. Among the most cited were non-nutritive suction, facilitated restraint and skin-to-skin contact. Massage and noise reduction responses were considered inadequate as well as professionals who were unable to mention at least three parameters. When describing a pharmacological measure for pain relief, 56.8% responded adequately, with the most cited being paracetamol, fentanyl and morphine. When asked about the existence of protocols in the institution, 91.9% of professionals responded appropriately that the unit has a pain assessment protocol in newborns and 83.8% a pain management protocol (Table 2).

Concerning professionals’ attitude in pain management, it is noted that most of the responses were adequate, reaching percentages above 94.6%, data with statistical significance. Of the total, 94.6% recognized that every healthcare professional is responsible for pain management; 97.3% participants agreed that they should prioritize pain management for all newborns undergoing invasive procedures, in addition to raising awareness; 100.0% of participants said that light and noise stimuli cause stress and are common in NICUs. In contrast, when asked about carrying out daily procedures such as changing diapers, weighing and checking vital signs, 48.6% of professionals did not consider these to be procedures that require pain relief measures in routine care (Table 3).

Table 2 – Healthcare professionals' knowledge about pain management in the Neonatal Intensive Care Unit of a university hospital. Southern Brazil, 2021. (n= 37).

	Total		Nursing technician (n=12)		Nurse (n=13)		Other higher-level professionals (n=12)	
	n	% (95%CI)	n	% (95%CI)	n	% (95%CI)	n	% (95%CI)
Pain regardless of gestational age								
Appropriate response	35	94.6 (79.7-98.7)	11	91.7 (54.6-99.0)	13	100.0 (-)	11	91.7 (54.6-99.0)
Inappropriate response	2	5.4 (1.3-20.3)	1	8.3 (0.9-45.4)	0	0.0 (-)	1	8.3 (0.9-45.4)
Pain when left untreated can cause consequences								
Appropriate response	37	100.0 (-)	12	100.0 (-)	13	100.0 (-)	12	100.0 (-)
Inappropriate response	0	0.0 (-)	0	0.0 (-)	0	0.0 (-)	0	0.0 (-)
NB* associates painful event with breastfeeding								
Appropriate response	26	70.3 (53.0-83.2)	9	75 (42.2-92.5)	8	61.5 (32.4-84.2)	9	75 (42.2-92.5)
Inappropriate response	11	29.7 (16.8-47.0)	3	25 (7.5-57.8)	5	38.5 (15.8-67.6)	3	25 (7.5-57.8)
Describe three parameters to assess pain in NB*								
Appropriate response	32	86.5 (70.4-94.5)	11	91.7 (54.6-99.0)	11	84.6 (52.1-96.5)	10	83.3 (49.2-96.3)
Inappropriate response	5	13.5 (5.5-29.6)	1	8.3 (1.0-45.4)	2	15.4 (3.5-47.9)	2	16.7 (3.7-50.8)
Crying as the main parameter in the assessment								
Appropriate response	31	83.8 (67.4-92.8)	10	83.3 (49.2-96.3)	10	76.9 (45.4-93.0)	11	91.7 (54.6-99.0)
Inappropriate response	6	16.2 (7.2-32.6)	2	16.7 (3.7-50.8)	3	23.1 (7.0-54.6)	1	8.3 (1.0-45.4)
Pain reactions altered by the environment								
Appropriate response	34	91.9 (76.7-97.5)	11	91.7 (54.6-99.0)	12	92.3 (57.1-99.0)	11	91.7 (54.6-99.0)
Inappropriate response	3	8.1 (2.5-23.3)	1	8.3 (1.0-45.4)	1	7.7 (0.9-42.9)	1	8.3 (1.0-5.4)
Describe the name of a pain assessment scale								
Appropriate response	26	70.3 (53.0-83.2)	11	91.7 (54.6-99.0)	9	69.2 (38.8-88.9)	6	50.0 (22.7-77.3)
Inappropriate response	11	29.7 (16.8-47.0)	1	8.3 (1.0-45.4)	4	30.8 (11.1-61.2)	6	50.0 (22.7-77.3)
Describe three non-pharmacological measures for pain relief								
Appropriate response	28	75.7 (58.6-87.2)	9	75.0 (42.2-92.5)	10	76.9 (45.4-93.0)	9	75.0 (42.2-92.5)
Inappropriate response	9	24.3 (12.8-41.4)	2	25.0 (7.5-57.8)	3	23.1 (7.0-54.6)	3	25.0 (7.5-57.8)
Describe a pharmacological measure for pain relief								
Appropriate response	21	56.8 (39.9-72.2)	6	50.0 (22.7-77.3)	8	61.5 (32.4-84.2)	7	58.3 (28.8-82.8)
Inappropriate response	16	43.2 (27.8-60.1)	6	50.0 (22.7-77.3)	5	38.5 (15.8-67.6)	5	41.7 (17.1-71.2)
Pain assessment protocol in the unit								

Table 2 – Cont.

	Total		Nursing technician (n=12)		Nurse (n=13)		Other higher-level professionals (n=12)	
	n	% (95%CI)	n	% (95%CI)	n	% (95%CI)	n	% (95%CI)
Appropriate response	34	91.9 (76.7-97.5)	12	100.0 (-)	10	76.9 (45.4-93.0)	12	100.0 (-)
Inappropriate response	3	8.1 (2.5-23.3)	0	0.0 (-)	3	23.1 (7.0-54.6)	0	0.0 (-)
Pain management protocol in the unit								
Appropriate response	31	83.8 (67.4-92.8)	12	100.0 (-)	9	69.2 (38.8-88.9)	10	83.3 (49.2-96.3)
Inappropriate response	6	16.2 (7.2-32.6)	0	0.0 (-)	4	30.8 (11.1-61.2)	2	16.7 (3.7-50.8)

*NB: Newborn

Table 3 – Healthcare professionals' attitude regarding pain management in the Neonatal Intensive Care Unit of a university hospital. Southern Brazil, 2021. (n= 37).

	Total		Nursing technician (n=12)		Nurse (n=13)		Other higher-level professionals (n=12)	
	n	% (95%CI)	n	% (95%CI)	n	% (95%CI)	n	% (95%CI)
Pain management by any healthcare professional								
Appropriate response	35	94.6 (79.7-98.7)	11	91.7 (54.6-99.0)	13	100.0 (-)	11	91.7 (54.6-99.0)
Inappropriate response	2	5.4 (1.3-20.3)	1	8.3 (0.9-45.4)	0	0.0 (-)	1	8.3 (0.9-45.4)
Every professional must prioritize pain management								
Appropriate response	36	97.3 (81.7-99.7)	12	100.0 (-)	12	92.3 (57.1-99.1)	12	100.0 (-)
Inappropriate response	1	2.7 (0.3-18.3)	0	0.0 (-)	1	7.7 (0.9-42.9)	0	0.0 (-)
All NB* undergoing invasive procedures must receive pain management								
Appropriate response	35	94.6 (79.7-98.7)	12	100.0 (-)	12	92.3 (57.1-99.1)	11	91.7 (54.6-99.0)
Inappropriate response	2	5.4 (1.3-20.3)	0	0.0 (-)	1	7.7 (0.9-42.9)	1	8.3 (1.0-45.4)
Daily procedures require pain management								
Appropriate response	19	51.4 (34.9-67.5)	6	50.0 (22.7-77.3)	6	46.2 (20.9-73.5)	7	58.3 (28.8-82.9)
Inappropriate response	18	48.6 (32.5-65.1)	6	50.0 (22.7-77.3)	7	53.8 (26.5-79.1)	5	41.7 (17.1-71.2)
Light and noise stimuli cause stress to NB and are common in NICUs‡								
Appropriate response	37	100.0 (-)	12	100.0 (-)	13	100.0 (-)	12	100.0 (-)
Inappropriate response	0	0.0 (-)	0	0.0 (-)	0	0.0 (-)	0	0.0 (-)

*NB: Newborn
‡ NICU: Neonatal Intensive Care Unit

In the investigation of professional practice, the results showed that professionals assess pain in newborns or use a pain assessment scale (97.3%), which they carry out this practice whenever they perform procedures such as assessing vital signs or performing physical examination (94.6%) or that assess newborn pain before and after painful procedures (97.3%). In the professional category, the role of nursing technicians and nurses stands out as professionals who record more information in medical records, such as pain scores and actions to relieve pain before or after a painful procedure as well as presenting higher percentages in use of pharmacological measures for pain relief (Table 4).

Table 4 – Healthcare professionals' practice on pain management in the Neonatal Intensive Care Unit of a university hospital. Southern Brazil, 2021. (n= 37).

	Total		Nursing technician (n=12)		Nurse (n=13)		Other higher-level professionals (n=12)	
	n	% (95%CI)	n	% (95%CI)	n	% (95%CI)	n	% (95%CI)
Assess or use a scale to assess pain								
Appropriate response	36	97.3 (81.7-99.7)	12	100.0 (-)	13	100.0 (-)	11	91.7 (54.6-99.0)
Inappropriate response	1	2.7 (0.3-18.3)	0	0.0 (-)	0	0.0 (-)	1	8.3 (1.0-45.4)
Assess pain every time checking VVSS* or physical examination								
Appropriate response	35	94.6 (79.7-98.7)	12	100.0 (-)	13	100.0 (-)	10	83.3 (49.2-96.3)
Inappropriate response	2	5.4 (1.3-20.3)	0	0.0 (-)	0	0.0 (-)	2	16.7 (3.7-50.8)
Assess pain before and after painful procedures								
Appropriate response	36	97.3 (81.7-99.7)	12	100.0 (-)	13	100.0 (-)	11	91.7 (54.6-99.0)
Inappropriate response	1	2.7 (0.3-18.3)	0	0.0 (-)	0	0.0 (-)	1	8.3 (1.0-45.4)
Record a pain score or indicator in medical records								
Appropriate response	21	56.8 (39.9-72.2)	9	75.0 (42.2-92.5)	11	84.6 (52.1-96.5)	1	8.3 (1.0-45.4)
Inappropriate response	16	43.2 (27.8-60.1)	3	25.0 (7.5-57.8)	2	15.4 (3.5-47.9)	11	91.7 (54.6-99.0)
Use non-pharmacological strategy during painful procedure								
Appropriate response	36	97.3 (81.7-99.7)	12	100.0 (-)	13	100.0 (-)	11	91.7 (54.6-99.0)
Inappropriate response	1	2.7 (0.3-18.3)	0	0.0 (-)	0	0.0 (-)	1	8.3 (1.0-45.4)
Record pain relief actions during a painful procedure in medical records								
Appropriate response	25	67.6 (50.3-81.1)	10	83.3 (49.2-96.3)	11	84.6 (52.1-96.5)	4	33.3 (12.0-64.7)
Inappropriate response	12	32.4 (18.9-49.7)	2	16.7 (3.7-50.8)	2	15.4 (3.5-47.9)	8	66.7 (35.3-88.0)
Prescribe or use pharmacological measures to relieve pain								
Appropriate response	32	86.5 (70.4-94.5)	12	100.0 (-)	13	100.0 (-)	7	58.3 (28.8-82.9)
Inappropriate response	5	13.5 (5.5-29.6)	0	0.0 (-)	0	0.0 (-)	5	41.7 (17.1-71.2)

*VVSS: Vital signs

DISCUSSION

The results of this study demonstrated that most professionals have knowledge regarding pain management in newborns. This knowledge is based on recent studies, even though newborns are unable to express their pain verbally, the literature indicates that they are capable of feeling it[4–5]. This was a positive result found, given the description in previous studies that some professionals do not consider newborns' ability to process the nociceptive stimulus or failure to identify pain. This understanding can lead to painful procedures without adequate treatment[6].

It is known that untreated painful experiences during hospitalization can cause damage to the neurodevelopment and behavior of these newborns in the long term[3,5–6]. These patterns of neurodevelopmental abnormalities are caused by physiological instability and changes in brain development as a systemic response to stress[16]. In the unit investigated, all professionals mention that untreated pain leads to consequences for newborns.

Response intensity to painful stimuli is directly linked to newborns' gestational age. Due to their immature nervous system, they already have transmission and formation of pain memory, and in effect, they respond through physiological and behavioral changes, with actions minimizing pain and reducing damage to the development of newborns[17]. For this reason, it is recommended to consider a therapeutic approach in any procedure recognized as painful, and that pain is assessed during and after each procedure so that the effectiveness of its control is achieved[18].

Still in the knowledge dimension, most professionals were able to mention three parameters to assess and manage pain in newborns. This is a practice recommended by the Ministry of Health; however, the Newborn Healthcare manual describes that assessing pain in the neonatal population is not an easy task and the barriers to overcoming this difficulty include the painful experience subjectivity and the existence of few reliable and valid instruments to measure pain presence and intensity[1]. Even though newborns are unable to express their pain verbally, other changes indicate the presence of painful stimulus, such as crying, changes in heart rate and tremors in the limbs, which demonstrates that they are capable of feeling it. Therefore, it is essential that healthcare professionals know how to identify and apply appropriate treatment[5–6].

The routine of a NICU cannot always facilitate pain management measures, but professional knowledge combined with practice mediates this management[19]. A study shows that healthcare professionals who care for newborns have an ethical responsibility to offer and guarantee pain assessment and treatment. However, studies that address assessment and treatment based on scientific evidence are still limited, and this gap is a major challenge in Brazil and the world[20].

In newborns, crying is recognized as a primary method of communication and mobilizes the adults involved in their care; however, this should not be the main parameter for assessing pain as crying can be triggered by various stimuli that are not necessarily painful, including hunger and discomfort. Crying as a measure of pain must be assessed in a global context, concomitantly with other assessment parameters[8]. The results obtained in this study indicate professionals' knowledge that crying alone should not be the main parameter for assessing pain.

Another result that demonstrates healthcare professionals' knowledge refers to the use of breastfeeding to reduce painful sensations. Today we know that newborns do not associate breastfeeding with pain perception when used as a non-pharmacological management for pain relief. A systematic review study supports the effectiveness and safety of breastfeeding as an analgesic measure, in addition to recognizing the benefits associated with physiological recovery after painful stimuli[21], in addition to the recognition and recommendation of the World Health Organization for its use during practices, such as immunizations[22]. Pain management is enhanced and offers better results when

treatments are combined, such as skin-to-skin contact, the provision of milk or glucose, non-nutritive sucking, and breastfeeding can be considered a set of all these elements, constituting an intervention indicated in painful procedures[23].

Pain perception assessment is subjective and becomes even more difficult in the absence of verbal report, indicating the importance of using scales as a facilitating tool for assessing pain in newborns[24]. In this study, when asked about their knowledge of a scale for assessing pain in newborns, professionals pointed to the NIPS, probably because this is standardized scale in the unit. In this aspect, the nursing technician category stood out, with the highest percentage of knowledge, due to the fact that pain scale assessment is part of the daily care routine provided among these professionals.

The NIPS is a pain assessment scale in infants, translated into Portuguese as *Escala de Avaliação da Dor no Recém-Nascido*, which was translated in full, adapted and validated for use in Brazil[25]. NIPS assesses, in newborns, five behavioral factors (facial expression, crying, breathing pattern, arms and legs) and one physiological factor (state of consciousness)[26].

In care practice, pain assessment needs to be repeated regularly and should be considered a fifth vital sign. The description of newborns' painful experience, in addition to facilitating an accurate medical diagnosis, also estimates an appropriate, effective and beneficial treatment to reduce the different types of pain in each newborn[1,27]. The Brazilian Society of Pediatrics recommends the use of more than one pain assessment scale in NICUs and that at least one of these instruments be a unidimensional behavioral scale[28].

Regarding non-pharmacological measures for pain relief, the study identified a high percentage of professionals who were able to mention up to three measures. Among the most cited were non-nutritive suction, facilitated containment and skin-to-skin contact. According to the Brazilian Ministry of Health and other studies, the most effective non-pharmacological procedures in pain management are the administration of sweet solutions orally, non-nutritive sucking, breastfeeding, skin-to-skin contact and decreased tactile stimulation[1,6].

It is worth noting that the application of non-pharmacological measures for pain relief must be careful, individualized and based on scientific knowledge. Facilitated containment and swaddling, when performed appropriately, offer comfort and not restrictive containment of newborns' movements, which only aims to facilitate the procedure[29]. The use of sweet solutions as an analgesic measure has evidence on reducing the pain score, when used with a small volume of glucose or sucrose on the anterior portion of newborns' tongue two minutes before the procedures[1,30]. Another way to reduce the pain of newborns undergoing painful procedures is by inhibiting hyperactivity and modulating their discomfort, and the use of non-nutritive suction promotes analgesia during sucking movements[1]. The combination of sweet solutions and non-nutritive suction, or combined with facilitated restraint, shows an additive and faster effect in reducing physiological and behavioral responses as well as in pain scores assessed by scales[10,29,31].

When assessing professional attitude, there is a satisfactory margin of adequate responses in the understanding that each and every healthcare professional must exercise and prioritize pain relief measures, that painful procedures require pain relief management as well as light and noise stimuli cause stress to newborns and are common in NICUs. However, when asked about pain management when carrying out daily procedures, it was possible to notice a division of opinions among healthcare professionals, and some of the interviewees understood yes, some no. It should be noted that this is a practice described in the Kangaroo Method manual, in Humanized Newborn Care, that daily procedures such as changing diapers, changing clothes, weighing, checking vital signs, among other routine procedures, represent low-grade nociceptive stimuli and are understood to have potential causes of pain for newborns[26].

Pain reactions are altered by the environment, capable of overloading newborns with sensory stimuli, through light stimuli as well as noise, which cause stress and are frequent in NICUs[27]. This was a result found both in knowledge assessment and in the assessment of the attitude of the healthcare professionals participating in this study. The resources used in the NICU generate an environment with great lighting. Continuous noise caused by life support equipment such as heart monitors, respirators, cribs, incubators, as well as the large flow of people, make the environment exhausting, which can compromise the development of newborns[17,27,32–33].

When assessing practice, all professional categories work in newborn pain assessment, and in this regard, nursing technicians' and nurses' work stands out, as they present a greater record of information in the medical record, records of assessment and pain relief actions in the face of invasive procedures. Nursing team professionals remain with patients for a large part of hospitalization, taking responsibility for carrying out a large part of the invasive procedures in the NICU, playing a fundamental role in recognizing and controlling newborns' pain and suffering[6], characteristics that are most evident when professionals have greater interaction and bonding with newborns and the family[34]. It should be noted that, although the nursing team is closer to patients when carrying out their care activities, this care is the responsibility of the entire multidisciplinary team[14].

The study presented limitations regarding the sample, selection bias (sampling), due to operational difficulties in approaching professionals who worked at night, in addition to being carried out in just one institution, which makes it impossible to generalize the results. On the one hand, the data reveal advances in healthcare professionals' knowledge and attitude in relation to pain management in newborns admitted to a Neonatal Unit adopts the Kangaroo Method as a basis of care. On the other hand, they indicate that the lack of execution of actions in professional practice is not necessarily due to a lack of knowledge or lack of training of healthcare professionals. This diagnosis is an important contribution of this study for managers and public policy makers, in reviewing strategies for effective implementation as well as the need to monitor assistance indicators.

The data presented encourage a new perspective, encouraging new investigations both for the dissemination and implementation of this public policy, and for carrying out studies that strengthen scientific evidence, contributing to the process of construction and consolidation of knowledge inherent to the scientific method. Based on the results found, it is suggested that qualitative or mixed-methods research be carried out to understand the obstacles that prevent adherence to pain management practices in newborns, considering advances in knowledge on the subject by healthcare professionals.

CONCLUSION

Conducting KAP studies focused on a specific topic of professional activity makes significant contributions to assessing practice and qualifying the assistance offered. This study found advances in professionals' knowledge that newborns feel pain, advances in practice with the frequent implementation of measures to prevent and treat pain in invasive procedures as well as in attitude, when professionals demonstrated involvement and appreciation for the topic investigated. It is worth highlighting that advances are needed in care practice, with greater recording of the assessment and measures used to manage pain, and including the incorporation of management into less complex daily procedures.

From another perspective, research in a reference institution for the Kangaroo Method, as a public policy that guides best practices in neonatal care, demonstrated a contribution to improving assistance in pain management in neonatology. The results reinforce the importance of continuing education, with the provision of professional training, adequate infrastructure and the implementation

of protocols that standardize pain management in hospitalized newborns, aiming to reduce damage and sequelae associated with prematurity and its treatment.

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NOTES

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CONTRIBUTION OF AUTHORITY

Study design: Meredyk MR, Velho MB.
Data collection: Meredyk MR, Velho MB.
Data analysis and interpretation: Meredyk MR, Ventura T, Velho MB.
Discussion of results: Meredyk MR, Costa R, Junges CF, Ventura T, Velho MB.
Writing and/or critical review of content: Meredyk MR, Costa R, Junges CF, Ventura T, Santos MRL, Pereira MTC, Mendonça LA, Velho MB.
Review and final approval of the final version: Meredyk MR, Costa R, Junges CF, Ventura T, Santos MRL, Pereira MTC, Mendonça LA, Velho MB.

APPROVAL OF ETHICS COMMITTEE IN RESEARCH

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CONFLICT OF INTEREST

The author Manuela Beatriz Velho is an Associate Editor of Texto & Contexto Enfermagem, but did not take part in any of the article's evaluation and approval stages.

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CORRESPONDING AUTHOR

Manuela Beatriz Velho.
manuela.velho@ufsc.br