

# Implementation of a protocol for pharmacological treatment of pain in hospitalized children

## *Implantação de protocolo para tratamento farmacológico da dor na criança hospitalizada*

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### ABSTRACT

**BACKGROUND AND OBJECTIVES:** The objective of this study was to describe the process of implementing a protocol for treating pain in hospitalized children, seeking to contribute to the standardization of strategies for the assessment and relief of child pain.

**METHODS:** Convergent Care Research guided by Knowledge Translation in a pediatric unit of a university hospital in southern Brazil. In interaction with convergence groups with 66 professionals members of the medical, nursing and physiotherapy teams, elaborated motivational strategies for the participation in the collective construction process and maintenance of knowledge about pain.

**RESULTS:** The following strategies were developed: creation of the *#criançasemdor* (*#childrenwithoutpain*) logo, distribution of a personalized kit with scales for pain assessment, illustrative folder, pain scales for the wards' clipboards, discussions of clinical cases and creation of an informative page on social network. As technical-scientific products, a pharmacological framework and a Standard Operating Procedure were prepared.

**CONCLUSION:** The collective construction process favored the involvement of professionals in the adopted strategies, which is fundamental for the changes to be incorporated into practice. In addition, Knowledge Translation has proven to be a useful tool for improving care for hospitalized children.

**Keywords:** Child, Pain, Pain management, Patient care team, Pediatric nursing.

### RESUMO

**JUSTIFICATIVA E OBJETIVOS:** O objetivo deste estudo foi descrever o processo de implantação de protocolo para tratamento da dor na criança hospitalizada, contribuindo com a padronização de estratégias de avaliação e alívio da dor infantil.

**MÉTODOS:** Pesquisa Convergente Assistencial norteada pelo *Knowledge Translation* em unidade pediátrica de um hospital universitário do sul do Brasil. Interação de grupos de convergência com 66 profissionais das equipes médica, de enfermagem e de fisioterapia para a elaboração de estratégias motivacionais para participação do processo de construção coletiva e manutenção do conhecimento sobre dor.

**RESULTADOS:** Foram desenvolvidas estratégias com a criação do logotipo *#criançasemdor*, distribuição de *kit* personalizado com escalas para avaliação da dor, *folder* ilustrativo, escalas de dor para as enfermarias, discussões de casos clínicos e criação de página informativa em rede social. Como produtos técnico-científicos, foram elaborados o quadro farmacológico e o Procedimento Operacional Padrão.

**CONCLUSÃO:** O processo de construção coletiva favoreceu o envolvimento dos profissionais às estratégias adotadas, fundamentais para que as mudanças possam ser incorporadas na prática. Além disso, o *Knowledge Translation* demonstrou ser uma ferramenta útil para a melhoria da assistência à criança hospitalizada.

**Descritores:** Criança, Dor, Enfermagem pediátrica, Equipe de assistência ao paciente, Manejo da dor.

### INTRODUCTION

Pain is recognized by the hospitalized child as a traumatic experience, which can be minimized by adequate professional strategies<sup>1</sup>. Its treatment depends on complex actions that involve identification and quantification according to the cognitive development, application of nonpharmacologic therapies, use of safe analgesic drugs and constant reevaluation. These actions are challenging and demand training and qualification of the multi-professional team to prevent and control pain<sup>2-4</sup>.

Untreated or undertreated pain can generate repercussions in the life of the newborn (NB)<sup>5</sup> and the child due to the deleterious effects on the nervous system, in the cognitive, emotional, and motor dimensions of brain development<sup>6,7</sup>. Early pain stimulus

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can cause greater sensitivity to pain during child development<sup>8</sup>, evolution to chronic pain or negative interference of the child in the social or even family context<sup>9</sup>.

The absence of evaluations through scales appropriate for children's age and development, as well as under-registration in hospital records reveal that health professionals have difficulties in the appropriate identification and treatment, with underreporting and disregard of pain, even during and after potentially painful procedures<sup>10,11</sup>. Many insecurities and difficulties arise from myths and practices not recommended by the literature, which must be better explored and elucidated to preserve well-being during hospitalization<sup>4,10,11</sup>.

The research hypothesis was that the implementation of a protocol for systematized treatment of pain in a Pediatric Unit (PU) based on scientific evidence could contribute to standardize evaluation and relief strategies, improving the performance of professionals to take an appropriate and safe conduct regarding child pain.

The objective of this research was to describe the process of implementation of a protocol for pharmacological treatment of pain in hospitalized children.

## METHODS

Study developed in a PU of a public university hospital, tertiary level, in southern Brazil, which has 20 beds of various medical specialties for children from zero to 12 incomplete years. Data was collected from March to June 2018 by 66 pediatricians, pediatric surgeons, orthopedic surgeons, nurses, nursing technicians, nursing assistants, and physical therapists involved in direct patient care. These professionals were informed about the research objectives, data collection procedures, confidentiality in the treatment of information, possible risks, and the possibility of interrupting participation at any time, with no consequences, also signing the Free and Informed Consent Term (FICT).

The theoretical reference adopted was the Knowledge Translation (KT), proposed by the Canadian Institutes of Health Research, for the process of protocol implementation for the pharmacological treatment of pain in children, defined as a dynamic and interactive process that includes synthesis, dissemination, exchange and ethical application of knowledge to improve care, provide more effective services and products, and strengthen the health system<sup>12</sup>. The Synthesis is the stage in which contextualization and concentration of available knowledge on the subject is carried out. Dissemination is the phase of identifying the public that receives the synthesized knowledge. The Interchange or Exchange is an interactive and collaborative process whose objective is to solve problems between researchers and final users of evidence. The Application of knowledge aims to improve health under ethical precepts and social and legal values<sup>13</sup>. Thus, the concept, still without a standardized translation in Portuguese, encompasses the creation and application of knowledge for the benefit of society, directing the results of scientific studies to improve care practices<sup>13</sup>.

A leadership group name KT managers was created with multiprofessional representatives considered supervisors/leaders, composed of 2 physicians and 3 nurses, with the objective of establishing goals, training, and therapeutic standardization for children pain relief, according to the sector's demands, and to monitor and evaluate the

use of the knowledge acquired during and after the implementation process of the child pain management protocol.

For the development of this theoretical framework, the "Knowledge-to-Action" model was chosen, being composed of two cycles: creation of knowledge (cycle 1) and creation of action (cycle 2). The former is responsible for the synthesis and refinement of knowledge, while the latter is responsible for the phases necessary for its application<sup>13</sup>.

As a methodological reference, the Convergent Care Research (CCR) articulated research and practice to introduce theorized innovations in health care through the researcher's immersion in the local situation<sup>14</sup>. The CCR seeks transformation and implementation of new practices based on theoretical and scientific knowledge to be implemented in the investigated health service, with the objective of involving health professionals<sup>14</sup>.

Convergence groups on pain management in hospitalized children were implemented in all work shifts. Professionals who didn't work directly in care or who were away during the data collection period were excluded. These groups had the objective of developing research in consonance with the clinical care practice and health education to encourage participation in the discussion and progressive construction of knowledge in the group<sup>15</sup>. The meetings were coordinated by the main researcher and took place during working hours at pre-established times and dates. Up to four meetings were held with each group, lasting 45 to 60 minutes each.

The explanation of the research objectives took place on the day of the first focus group, when a kit was given to each professional, consisting of a retractable badge holder and a pen personalized with the #criançasemdor logo, and a laminated badge card with the Neonatal Infant Pain Scale (NIPS)<sup>15</sup> and the Claro's Faces Pain Scale (EFC)<sup>16</sup>, scales adopted at the UP since 2007. The #criançasemdor logo was created with the online software Logomaker<sup>17</sup> (Figure 1) with the objective of giving visual identity to the interventional proposal.



Figure 1. The #criançasemdor logo

The retractable badge holder followed the norms of the hospital's *Centro de Controle de Infecção Hospitalar* (CCIH - Center for Control of Hospital Infection), containing the scales for pain measurement allowing for an extension of up to 60 cm for the evaluation of the children's pain. Thus, the professional would always have the necessary materials for the assessment of pain at hand and could use it in a fun manner, encouraging frequent reevaluations.

The NIPS was chosen due to its indication for NB, infants and children unable to self-report pain. It's a multidimensional instrument based on five behavioral indicators and one physiological indicator when facing a painful stimulus, especially acute pain<sup>18-20</sup>. Facial expression, crying, state of excitement or consciousness, arm and leg movements, and breathing pattern are considered<sup>20</sup>. The score ranges from zero to seven, being: zero, absence of pain; one and two points, weak or mild pain; three to five points, moderate pain; and six to seven points, severe pain<sup>19,20</sup>. EFC was adopted for children with age equal or superior to three years old and uses the character Cebolinha, which is very well known to the infant audience, created by the Brazilian cartoonist Maurício de Souza<sup>16</sup>. It's composed of five different facial expressions: no pain, mild, moderate, intense, and unbearable pain, with scores from zero to four, respectively. In addition to the playful character, this tool adapted to the Brazilian culture enables the identification of pain by the children themselves<sup>16</sup>.

In the convergent group meetings, up-to-date national and international scientific materials of multiprofessional scope on the identification, assessment, and treatment of pain in children were used. These materials were printed and displaced in the sector in an easily visible place. Lectures with the aid of audiovisual resources were given to provide reflection on practices not based on scientific evidence. In the discussion the following topics were analyzed: concept of pain<sup>21</sup>, pain as the 5<sup>th</sup> vital sign<sup>22</sup>, classification of pain as acute and chronic, characteristics of pain, effects of untreated pain, stress response to pain, child and adolescent's legal right to pain relief<sup>21,22</sup>, presentation of the NIPS<sup>15</sup> and Faces<sup>16</sup> scales evaluating child pain and guidance on how and when to apply them, pharmacological treatment and non-pharmacological measures used by the staff with

no need of prescription by the medical professional. An illustrative folder containing information directed to the practice was also distributed, and it stressed the importance of recording the intensity of pain, as well as the times when it should be evaluated.

In the following meetings, the teams studied the analysis of eight clinical cases with the profiles of children of the PU. Those contained information on anamnesis, physical exam, presence of painful apparatus and proceedings, frequent behavioral manifestations related to pain scenarios and pharmacologic aid for pain relief. The debate and critical analysis of the problem situations were based on the following questions: 1. In this case, do you believe there is presence or potential for the child to feel pain? 2. What did you identify to reach this conclusion? 3. After presence of pain was identified, what pain intensity assessment scale should you use? At what times should pain be assessed? 5. How should this pain be treated? 6. How should pain be annotated?

The informative page *#criançasemdor* was created in a social network with the objective of sharing scientific information, reports and materials used in the trainings. In it, health professionals were encouraged to discuss issues common in professional practice, as well as facilities and difficulties coming from the converging groups, moderated by the main researcher. It also became a means of disseminating scientific events on the subject.

## RESULTS

The pharmacologic procedures for pain treatment were systematized in the PU based on scientific evidence<sup>23-25</sup> and three pharmacologic charts were prepared (Tables 1, 2 and 3), with drugs

**Table 1.** Pharmacologic pain treatment for hospitalized children: analgesics and sedatives<sup>23-25</sup>

Drugs	Dose	Presentation	Safe concentration for direct intravenous (IV) administration
Paracetamol	Oral route (OR): 10 to 15 mg/kg. Maximum dose: 650 mg/day	100 mg/mL 200 mg/MI	-
Dipyrone	IV or OR: 10 to 15mg/kg	IV: 500 mg/mL Drops: 500 mg/mL Solution: 50 mg/mL	Dilute 1mL of dipyrone in 9mL of 0.9% saline solution to a concentration of 50 mg/mL
Ibuprofen	OR: 5 to 10 mg/kg Maximum dose: 600 mg/day	50 mg/mL 100 mg/mL	-
Ketoprofen	OR: 0.5 mg/kg 1 drop/kg Maximum dose: 300 mg/day	Solution: 1 mg/mL Drops: 20 mg/mL	-
Fentanyl*	IV: 1 to 3µg/kg	50 µg/mL	Dilute 1mL of fentanyl with 9mL of 0.9% saline solution to a concentration of 5µg/mL <sup>†</sup>
Morphine (analgesic without sedative action)	IV: 0.05 to 0.2 mg/kg	1 mg/mL 10 mg/mL	Dilute 1mL of morphine (1 mg/mL) with 9mL of 0.9% saline solution to a concentration of 0.1 mg/mL <sup>†</sup>
Ketamine (analgesic and sedative)	IV: 0.5 to 2 mg/kg Intramuscular (IM): 1 to 4 mg/kg	50 mg/mL	Dilute 1mL of ketamine with 9mL of 0.9% saline solution to a concentration of 5 mg/mL <sup>†</sup>
Midazolam (sedative)	IV: 0.1 to 0.3 mg/kg OR: single dose 0.25 to 0.5 mg/kg Maximum dose: 20 mg	IV: 5 mg/mL OR: 2 mg/mL	Dilute 1mL of midazolam with 9mL of 0.9% saline solution to a concentration of 0.5 mg/mL <sup>†</sup>
Etomidate (sedative)	IV: 0.2 to 0.4 mg/kg	2 mg/mL	Non diluted administration (pure)

\*Analgesic with low sedative action. Administer with medical presence. <sup>†</sup>Slow infusion.

**Table 2.** Interval and indication of analgesics and sedatives for the pharmacologic treatment of pain in hospitalized children<sup>23-25</sup>

Drugs	Minimum interval between doses		Indication
	Procedures	After procedures for maintenance in prescription	
Paracetamol	4 hours	4 to 6 hours	Mild pain Adjunct in the association with opioids
	Risk of hepatotoxicity in newborns and infants. In case of poisoning, use N-acetylcysteine.		
Dipyrone	4 hours	4 to 6 hours	Mild pain OR: from 3 months on IV: from 1 year on
Ibuprofen	6 hours	6 to 8 hours	Mild pain From 6 months on
Ketoprofen	6 hours	6 to 8 hours	Mild pain From 1 year on
Fentanyl	20 minutes*	2 hours	Moderate do severe pain Post-surgery Phlebotomy Central venous puncture Chest drain insertion and removal
	1 <sup>st</sup> choice in asthmatic crisis, post biliary tract surgery, hemodynamic instability, history of chronic constipation. Avoid when there are signs of hypovolemia, hypotension, or bradycardia. In the case of chest rigidity, use naloxone 0.01mg/kg.		
Morphine	Avoid for procedures. Fentanyl or ketamine are preferable.	2 hours	Moderate to intense pain Postoperative Maintenance of chest drain
	Do not use in case of hypotension, asthmatic crisis and postoperative biliary tract surgery		
Ketamine	In case of single dosage: 20 minutes In case of maximum dosage: 40 minutes	2 hours	Moderate to intense pain Phlebotomy Central venous puncture Chest drain insertion and removal
	Do not use in younger than 3 months of age		
Midazolam	20 minutes	2 hours	OR: children older than 6 months. Can be associated with Ketamine for procedures.
	Do not use in arterial hypotension		
Etomidate	5 to 10 minutes	1 hour	
	Do not use in sepsis because of the risk of adrenal insufficiency.		

\*Associate with ketamine in minimal dose in procedures.

**Table 3.** Interval and indication of antagonists for the pharmacologic treatment of pain in hospitalized children<sup>23-25</sup>

Drugs	Dose and presentation	Safe concentration for direct IV administration	Minimum interval between doses in procedures
Sugamadex (antagonist of non-depolarizing neuromuscular blockers)	2 mg/kg 100 mg/mL	10 mg/mL	Administer at most 2 doses each 2 to 4 minutes
Naloxone (opioid antagonist)	0.01 to 0.02 mg/kg 0.4 mg/mL	Non diluted and fast administration	5 to 10 minutes
Flumazenil (benzodiazepines antagonist)	0.01 to 0.03 mg/kg 0.5 mg/5mL	Non diluted and fast administration	5 to 10 minutes
Acetylcysteine N-acetylcysteine (paracetamol antagonist)	OR: 20 mg/mL (older than 2 years) IV: 100 mg/mL		
	OR: initial dosage of 140 mg/kg followed by doses of 70 mg/kg each 4 hours for 3 days IV: loading dose: 150 mg/kg in 3mL/kg of 5% glucose solution for 60 min; 2 <sup>nd</sup> dose: 50 mg/kg in 7mL/kg of 5% glucose solution for 4 hours; 3 <sup>rd</sup> dose: 100 mg/kg in 14mL/kg of 5% glucose solution for 16 hours. Dilution in 5% glucose solution.		



adapted to the national reality and to the hospital. The World Health Organization (WHO) guidelines were also used to guide analgesic pharmacotherapy, which establishes the strategy known as the analgesic ladder<sup>25</sup>. This therapeutic sequence provides guidelines for adequate analgesia considering the child's age and the intensity of pain, mild or moderate to severe. For children with mild pain, paracetamol, ibuprofen, and ketoprofen are recommended as the first option; in children with moderate to severe pain, opioids are recommended<sup>25</sup>.

Tables printed in the banner format were fixated in the UP proceedings room, where invasive interventions of varied levels of complexity are performed, including orotracheal intubation and cardiopulmonary resuscitation, and in the environment where prescriptions are written, allowing easy access to therapeutic options for pain management, doses, and indications according to specific situations. The facility in visualization provides daily reminders about the proposed pain management for the hospitalized child.

The Standard Operation Procedure (SOP) of the Systematization of Pain Management in Hospitalized Children was elaborated, an indispensable managerial instrument for the educational processes of patient assistance and security (Table 4). It includes quality care based on scientific evidence adapted to local reality with attributions to the multiprofessional team<sup>26</sup>. The SOP covers topics such as concept, purpose, professionals responsible for execution, indication and guidelines on how to apply the pain assessment scales in children, pain assessment times, pharmacological and non-pharmacological treatment, and guidelines on how and when to perform pain assessment by professionals.

**Table 4.** Standard operational procedure

Systematization of pain management in hospitalized children
<p><b>Concept</b> The systematization of pain management in hospitalized children encompasses the phases of identification, assessment, and treatment.</p> <p><b>Purpose</b> Avoid undertreatment of underestimated pain resulting from subjective assessments; reduce stress and trauma providing a rapid recovery and early hospital discharge of the child. Moreover, the promotion of adequate pain management in pediatrics will ensure the legal right of the hospitalized child and adolescent to not feel pain when there are means to avoid it, as stated in Resolution nº 41, of October 13, 1995, from the <i>Conselho Nacional dos Direitos da Criança e do Adolescente</i> (National Council for the Rights of Children and Adolescents).</p> <p><b>Responsible for execution</b> Professionals responsible for the direct care of hospitalized children:  <ul style="list-style-type: none"> <li>• Nursing team (assistants, technicians, nurses)</li> <li>• Medical team (Pediatrics, Pediatric Surgery, Neurosurgery, Orthopedics and other specialties)</li> <li>• Physiotherapy team</li> </ul> </p> <p><b>Indication</b>  <ul style="list-style-type: none"> <li>• To identify, assess the intensity and treat pain in children aged between zero and 12 years old hospitalized in the Pediatric Unit (PU).</li> </ul> </p>

With the strategies for individual and collective improvement, and with the instrumentalization of professionals through the banner and the SOP, the assistance to children with pain showed improvement. The prescribing professional, a physician, received conducts guided by quantitative pain assessment and detailed

knowledge of therapeutic options. The nursing professional received subsidies for early recognition of nociception and its repercussions for the child in pain, as well as greater safety in the administration of drugs. The physical therapist also received subsidies for early recognition of nociception and its repercussions for the child, as well as information for choosing the most appropriate physical activity modules for the child suffering from pain.

## DISCUSSION

The process of collective construction of knowledge was employed through the interaction between main researcher and actors/target audience for the reproduction and consolidation in the assistance practice<sup>12,26</sup>. The elementary properties of KT were respected and applied with intervention effectiveness, considering the interests and needs of the participants for professional decision-making on the subject<sup>12,13</sup>.

The figure of the main researcher as a facilitator was essential for the recognition, applicability, and conduction of the research process by the health team, allowing reference and trust relationships necessary for the success of the proposal<sup>27</sup>. The attributes of competence, responsibility, scientific mastery of the subject, effective communication, active listening, as well as approach and proximity to the multiprofessional health team are essential to establish partnerships, mobilize the actors involved, and motivate the knowledge transfer and incorporation process<sup>13,27</sup>.

The process of collective construction involved the professionals in the adopted strategies with success in the implementation of the protocol for the treatment of pain in hospitalized children, since the solutions to the institutional barriers were built together with the team, respecting experiences, reflections and advice on assistance practices. The method allowed the transformation of empirical actions in those based on scientific evidence, demystifying conducts that did not favor child care.

The complexity of KT turned out to be essential for the consolidation of changes. Positive results come from dedication, as well as rigorous and respectful compliance of the proposed stages of the process<sup>12</sup>. It's a useful tool for generating assistance revolutions that depend on several human relations attributes<sup>28</sup>. The interconnection of scientific evidence with the assistance of the child in pain was achieved as the end result of the methodological process. The selection, creation, and elaboration of different types of motivational strategies recommended by the KT from the management group, along with the integration of the multidisciplinary team, represented the main potentialities of this research. Despite the impact on care practice, the sustainability of these transformations represents the main limitation of the study. It's up to the research members to be involved and interested in frequently participating in the process of collective construction of knowledge, as well as to apply it daily in the care setting, being aware of the importance of professional conduct based on scientific evidence<sup>26</sup>.

## CONCLUSION

The implementation of the protocol for children pain management was based on the KT theoretical framework, which ma-

kes it possible to use the same strategy in any PU respecting its peculiarities so that more children can, when admitted to the hospital, have adequate pain relief, reducing trauma and negative effects on their development.

## AUTHOR'S CONTRIBUTIONS

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Data Collection, Conceptualization, Resource Management, Research, Methodology, Writing - Preparation of the original, Writing - Review & Editing, Supervision, Visualization

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## REFERENCES

- Costa T, Rossato LM, Bueno M, Secco IL, Sposito NPB, Harrison D, et al. Nurses' knowledge and practices regarding pain management in newborns. *Rev Esc Enferm USP*. 2017;51:e03210.
- Peirce D, Brown J, Corkish V, Lane M, Wilson S. Instrument validation process: a case study using the Paediatric Pain Knowledge and Attitudes Questionnaire. *J Clin Nurs*. 2016;25(11-12):1566-75.
- Bice AA, Gunther M, Wyatt T. Increasing nursing treatment for pediatric procedural pain. *Pain Manag Nurs*. 2014;15(1):365-79.
- Faccioli SC, Tacla MT, Rossetto EG, Collet N. O manejo da dor pediátrica e a percepção da equipe de enfermagem à luz do Modelo Sócio Comunicativo da Dor. *BrJP*. 2020;3(1):37-41.
- Sposito NPB, Rossato LM, Bueno M, Kimura AF, Costa T, Guedes DMB. Assessment and management of pain in newborns hospitalized in a Neonatal Intensive Care Unit: a cross-sectional study. *Rev Lat Am Enfermagem*. 2017;12(25):e2931.
- Friedrichsdorf SJ, Giordano J, Desai Dakoaji K, Warmuth A, Daughtry C, Schulz CA. Chronic pain in children and adolescents: diagnosis and treatment of primary pain disorders in head, abdomen, muscles and joints. *Children (Basel)*. 2016;3(4):42.
- Valeri BO, Holsti L, Linhares MB. Neonatal pain and development outcomes in children born preterm: a systematic review. *Clin J Pain*. 2015;31(4):355-62.
- Anand KJ, Coskun V, Thirivikraman KV, Nemeroff CB, Plotsky PM. Long-term behavioral effects of repetitive pain in neonatal rat pups. *Physiol Behav*. 1999;66(4):627-37.
- Anand KS, Grunau RE, Oberlander TF. Developmental character and long-term consequences of pain in infants and children. *Child Adolesc Psych Clin North Am*. 1997;6(4):703-24.
- Candido LK, Tacla MTGM. Assessment and characterization of pain in children: the use of quality indicators. *Rev Enferm UERJ*. 2015;23(4):526-32.
- Linhares MBM, Oliveira NCAC, Doca FNP, Marnez FE, Carlotti APP, Finley GA. Assessment and management of pediatric pain based on the opinions of health professionals. *Psychol Neurosci*. 2014;7(1):43-53.
- Canadian Institutes of Health Research. Guide to Knowledge Translation at CIHR: Integrated and End of Grant Approaches. 2012.
- Oelke ND, Lima MADS, Acosta AM. Knowledge Translation: translating research into policy and practice. *Rev Gaúcha Enferm*. 2015;36(3):113-7.
- Trentini M, Paim L, Silva DMGV. O método da pesquisa convergente assistencial e sua aplicação na prática de enfermagem. *Texto & Contexto Enferm*. 2017;26(4):e1450017.
- Lawrence J, Alcock D, McGrath P, Kay J, MacMurray SB, Dulberg C. The development of a tool to assess neonatal pain. *Neonatal Netw*. 1993;12(6):59-66.
- Rossato LM, Angelo M. Utilizando instrumentos para avaliação da percepção de dor em pré-escolares face a procedimento doloroso. *Rev Esc Enferm USP*. 1999;33(3):236-49.
- LogoMaker. c2004. Available from: <https://www.logomaker.com/pt/>
- Ge X, Tao JR, Wang J, Pan SM, Wang YW. Bayesian estimation on diagnostic performance of Face, Legs, Activity, Cry, and Consolability and Neonatal Infant Pain Scale for infant pain assessment in the absence of a gold standard. *Paediatr Anaesth*. 2015;25(8):834-9.
- de Melo GM, Lélis AL, de Moura AF, Cardoso MV, da Silva VM. Pain assessment scales in newborns: integrative review. *Rev Paul Pediatr*. 2014;32(4):395-402.
- Erkut Z, Yildiz S. The effect of swaddling on pain, vital signs and crying duration during heel lance in newborns. *Pain Manag Nurs*. 2017;18(5):328-36.
- International Association for the Study of Pain. [Internet]. IASP Terminology; c1994. Available from: <https://www.iasp-pain.org/Education/Content.aspx?ItemNumber=1698&navItemNumber=576#Pain>.
- Lisboa LV, Lisboa JÁ, Sá KN. Pain relief to legitimate human rights. *Rev Dor*. 2016;17(1):57-60.
- American Academy of Pediatrics. [Internet]. Available from: [www.aap.org](http://www.aap.org)
- Agência Nacional de Vigilância Sanitária. Bulário eletrônico. 2018. Disponível em: <http://portal.anvisa.gov.br/bulário-eletronico1>
- World Health Organization. WHO Guidelines on the pharmacological treatment of persisting pain in children with medical illnesses. 2012. Available from: [https://www.ncbi.nlm.nih.gov/books/NBK138354/pdf/Bookshelf\\_NBK138354.pdf](https://www.ncbi.nlm.nih.gov/books/NBK138354/pdf/Bookshelf_NBK138354.pdf)
- Sales CB, Bernardes A, Gabriel CS, Brito MFP, Moura AA, Zanetti ACB. Standard Operational Protocols in professional nursing practice: use, weaknesses and potentialities. *Rev Bras Enferm*. 2018;71(1):126-34.
- Abreu DMF, Santos EM, Cardoso GCP, Artmann E. Usos e influências de uma avaliação: translação de conhecimento? *Saúde Debate*. 2017;41(n. spe):302-16.
- Lorenzini E, Banner D, Plamondon K, Oelke N. Um chamado à knowledge translation na pesquisa em enfermagem. *Texto Contexto Enferm*. 2019;28:e20190104.