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Implementation Science - Special article

Original Article

Implementation of a knowledge translation and exchange intervention for pain management in neonates

Implementação de intervenção de tradução e intercâmbio do conhecimento para manejo da dor do neonato

Implementación de intervención de traducción e intercambio de conocimiento para manejo del dolor del neonato

Thaíla Corrêa Castral[1] https://orcid.org/0000-0003-1319-0483
Mariana Bueno[2] https://orcid.org/0000-0002-1470-1321
Julyana Calatayud Carvalho[3] https://orcid.org/0000-0002-3781-4409
Fay Warnock[4] https://orcid.org/0000-0002-4232-1844
Júlia Carneiro Godoy de Sousa[1] https://orcid.org/0000-0002-5595-3349
Laiane Medeiros Ribeiro[5] https://orcid.org/0000-0002-5041-8283
Ana Karina Marques Salge Mendonça[1] https://orcid.org/0000-0003-2718-1625

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Corresponding author
Thaila Corrêa Castral
Email: thailacastral@ufg.br

Guest Associate Editor (Peer review process):
Danila Cristina Paquier Sala (https://orcid.org/0000-0003-3723-6706)
Escola Paulista de Enfermagem, Universidade Federal de São Paulo, São Paulo, SP, Brazil

Abstract

Objective: To describe the implementation process of a multifaceted knowledge translation and exchange intervention to improve pain management practices, and to evaluate the adoption of this intervention by health professionals during painful procedures in neonates.

Methods: A quasi-experimental before-and-after study developed in a neonatal unit. The Evidence-Based Practice for Improving Quality intervention guided by the conceptual framework The Promoting Action on Research Implementation in Health Services was implemented in two stages (preparation and implementation). Its adoption was measured by clinical indicators related to pain management presented through descriptive statistics.

Results: After discussion on existing practices in the unit that needed to be changed, synthesis of current scientific evidence and local context data, members of the unit's Research and Practice Council developed and implemented coherent and achievable goals for the change of practice in pain management, selected knowledge translation and exchange strategies, determined the target audience and indicators, and implemented the interventions. There was a 32.8% reduction in the number of painful procedures performed, an increase of 26.6-50.7% in the use of pain assessment scales and of 25.1% in the administration of oral glucose.

Conclusion: The multifaceted Evidence-Based Practice for Improving Quality intervention is complex, and has processes that demand knowledge and skills, commitment from the various actors involved, availability of time and financial investment. The analyzed indicators showed that the intervention resulted in positive changes in clinical practice in the management of pain in neonates.

Resumo

Objetivo: Descrever o processo de implementação de uma intervenção multifacetada de tradução e intercâmbio do conhecimento para melhorar as práticas de manejo da dor, e avaliar a adoção desta intervenção pelos profissionais de saúde durante procedimentos dolorosos em neonatos.

Métodos: Estudo quase-experimental tipo antes e depois, realizado em uma unidade neonatal. A intervenção *Evidence-Based Practice for Improving Quality*, norteada pela estrutura conceitual *The Promoting Action on Research Implementation in Health Services*, foi implementada em duas etapas (preparação e implementação), e a sua adoção foi mensurada por indicadores clínicos relacionados ao manejo da dor, apresentados por meio de estatística descritiva.

[1]Faculdade de Enfermagem, Universidade Federal de Goiás, Goiânia, GO, Brazil.
[2]The Hospital for Sick Children, Toronto, ON, Canada.
[3]Universidade Paulista, Goiânia, GO, Brazil.
[4]University of British Columbia, School of Nursing, Vancouver, BC, Canada.
[5]Faculdade de Ceilândia, Brasília, DF, Brazil.

Conflicts of interest: none to declare.

Resultados: Após discussão sobre práticas existentes na unidade que necessitavam de mudança; síntese das evidências científicas atuais; e dados do contexto local; os membros do Conselho de Pesquisa e Prática da unidade elaboraram e implementaram metas coerentes e factíveis para mudança da prática no manejo da dor; selecionaram estratégias de tradução e intercâmbio do conhecimento; determinaram o público-alvo e os indicadores e implementaram as intervenções. Houve uma redução em 32,8% no número de procedimentos dolorosos realizados, e aumento entre 26,6 e 50,7% na utilização das escalas de avaliação da dor e de 25,1% na administração da glicose oral.

Conclusão: A intervenção multifacetada *Evidence-Based Practice for Improving Quality* é complexa, e possui processos que demandam conhecimento e habilidades, comprometimento dos diversos atores envolvidos, disponibilidade de tempo e investimento financeiro. Os indicadores analisados mostraram que a intervenção resultou em mudanças positivas na prática clínica no manejo da dor do neonato.

Resumen

Objetivo: Describir el proceso de implementación de una intervención multifacética de traducción e intercambio de conocimiento para mejorar las prácticas de manejo del dolor y evaluar la adopción de esta intervención por profesionales de la salud durante procedimientos dolorosos en neonatos.

Métodos: Estudio cuasi experimental tipo antes y después, realizado en una unidad neonatal. Se implementó la intervención *Evidence-Based Practice for Improving Quality*, norteada por la estructura conceptual *The Promoting Action on Research Implementation in Health Services*, en dos etapas (preparación e implementación), y su adopción fue medida mediante indicadores clínicos relacionados con el manejo del dolor, presentados por medio de estadística descriptiva.

Resultados: Después de discutir sobre prácticas existentes en la unidad que necesitaba cambios y realizar una síntesis de las evidencias científicas actuales y de datos del contexto local, los miembros del Consejo de Investigación y Práctica de la unidad elaboraron e implementaron metas coherentes y factibles para cambiar la práctica del manejo de dolor, seleccionaron estrategias de traducción e intercambio de conocimiento, determinaron el público destinatario y los indicadores e implementaron las intervenciones. Hubo una reducción del 32,8 % del número de procedimientos dolorosos realizados y un aumento de 26,6 a 50,7 % de utilización de las escalas de evaluación del dolor y del 25,1 % de la administración de glucosa oral.

Conclusión: La intervención multifacética *Evidence-Based Practice for Improving Quality* es compleja y contiene procesos que requieren conocimiento y habilidades, compromiso de los diferentes actores involucrados, disponibilidad de tiempo e inversión financiera. Los indicadores analizados mostraron que la intervención produjo cambios positivos en la práctica clínica del manejo del dolor del neonato.

Introduction

In recent years, the worldwide need to reduce the gap between knowledge and clinical practice has opened up the numerous barriers to the generation and implementation of high-quality scientific evidence and its application in public health policies.[1]

Significant resources have traditionally been devoted to produce and synthesize scientific evidence, but little is invested in the process of putting it into practice. Furthermore, less than 30% of healthcare professionals access clinical guidelines or systematic reviews to transform practice,[2] 30% of the healthcare provided is considered of little value and 10% may be harmful.[3]

As a result, patients receive ineffective or harmful treatments due to the long time taken to incorporate scientific evidence into clinical practice.[4,5]

As changing behavior in clinical practice is a complex process, the Translation and Implementation of Knowledge needs to be carefully planned and substantiated by the use of models, structures and/or theories in order to be successful.[6]

Knowledge Translation and Exchange (KTE) involves engagement and integration of those who will use the knowledge in all steps of research. Knowledge Translation and Exchange is defined as: "a dynamic and interactive process that includes synthesis, dissemination, exchange and ethical and reasoned application of knowledge to improve health, provide more efficient health services and products and strengthen the healthcare system".[7,8]

There are several challenges for the implementation of evidence in low- and middle-income countries, such as the incipient partnership between researchers, professionals, patients, families and institutions; scarce financial public resources; failure to disseminate clinical guidelines; political issues; lack of monitoring in practice; inadequate professional training; lack of access to evidence; difficulty in critically analyzing the evidence; insufficient time to participate in training; inappropriate individual and institutional attitudes and beliefs; lack of communication and trust between professionals and managers.[8,9]

Although in Brazil there are some initiatives to encourage and facilitate the use of scientific evidence in the decision-making process in health, these emphasize the synthesis of evidence, which by itself does not guarantee implementation in practice.[10]

In neonatal care, newborns (NB) are exposed to an average of 7.5 to 17.3 painful procedures/day

during their hospitalization, and 40-100% of these procedures are performed without treatment.[11,12] However, several systematic reviews demonstrate the effectiveness of strategies to assess and treat pain in neonates, and robust evidence demonstrates that untreated pain can have negative repercussions in the future.[13]

In addition to being an ethical responsibility towards the patient, the prevention and management of pain in neonates ensure hospitalization with lower risk of complications and less chance of long-term sequelae.[13,14]

In Canada, a multifaceted KTE intervention called Evidence-Based Practice for Improving Quality (EPIQ) was developed to improve quality of care, focusing on changing organizational culture and behavior. The EPIQ intervention was tested to reduce nosocomial infection and later adapted and used to reduce pain in pediatric and neonatal patients with successful results.[15-18]

We aimed to describe the implementation process of a multifaceted KTE intervention to improve acute pain management practices in a neonatal unit, and to evaluate the adoption of this intervention by health professionals when performing painful procedures in hospitalized NBs. It was hypothesized that the EPIQ intervention would improve healthcare professionals' adoption of evidence-based practices for neonatal pain management.

Methods

Quasi-experimental, before-and-after study of the implementation of a multifaceted KTE intervention to improve the practice of pain management in newborns carried out between February 2015 and March 2016. All participants (health professionals and parents of newborns) signed the Informed Consent form or Term of Assent (in the case of minor parents) before data collection.

The collection was performed in a neonatal unit in Goiás with 25 beds and a team of 62 health professionals, including 26 nursing technicians, six nurses, five physiotherapists, 22 physicians, one administrative assistant, one psychologist and one speech therapist. The unit has the title of Baby-Friendly Hospital, is a reference in the Kangaroo Method and exclusively serves patients from the Unified Health System (Brazilian SUS). The mother and the father have free access and permanence in the unit. This was a convenience sample defined by the time of the study and it differed in each stage of the study. Health professionals who provided direct assistance to the NB participated (minimum weekly workload of 20 hours), excluding those on vacation/leave. Newborns hospitalized in the neonatal unit during data collection and who underwent at least one painful procedure during this period were also included, excluding those who died. The independent variable was the EPIQ intervention (Evidence-Based Practice for Improving Quality), considered a multifaceted KTE intervention.[15-18] This intervention is guided by the conceptual framework PARIHS (The Promoting Action on Research Implementation in Health Services), considering three essential components for a successful implementation: quality evidence, favorable context for change and facilitation.[19] It is recommended to implement the EPIQ intervention in two stages; the first stage is essential for establishing the leaderships that will promote the changes selected as a priority, based on the local context and available scientific evidence; and the second stage is related to the development, implementation and evaluation of several KTE strategies (e.g. educational sessions, reminders, audit and feedback) during the realization of rapid cycles using the Plan-Do-Study-Act (PDSA) strategy or Deming's circle.[15-18] The description of the EPIQ intervention was summarized in chart 1 and later detailed in the data collection procedure.

The adoption of the EPIQ intervention by health professionals in the pre-test and post-test stages was evaluated by measuring four clinical outcomes related to pain management in newborns, namely: 1) total number of painful procedures observed; 2) number of times the pain assessment scale was used, divided by the total number of painful procedures performed x 100; 3) number of times the pain assessment scale was used, divided by the number of times established per shift x 100; and 4) number

Chart 1. Activities performed at each stage of the multifaceted EPIQ intervention

Stage 1: Preparation	
Activities	**Duration**
Research and Practice Council (RPC) formation and training Survey of local practice (baseline diagnosis) and identification of possible changes Review of current scientific evidence and local context Identification of barriers and facilitators to change	11 months
Stage 2: Implementation and change	
Activities	**Period**
Change planning and KTE strategies (e.g. reminders, educational materials, audit and feedback) Implementation of KTE strategies through rapid cycles of continuous quality improvement Change assessment	14 months

of painful procedures performed using oral glucose, divided by the number of painful procedures x 100. These indicators were evaluated by observing the behavior of health professionals while performing painful procedures on hospitalized NBs. The observation was made by research assistants with use of a checklist in the pre-test and post-test stages, except for pain assessment scales, which were not used in the unit before implementation. The same criteria as Carbajal et al. were used to define the painful procedures observed.[20] Data from the NB's medical records were also collected (e.g. date of birth, sex, weight, Apgar score and gestational age). In the pre- and post-test collection stages, researchers did not intervene in the unit. The stages and main events of data collection are illustrated in figure 1.

Initially, the Research and Practice Council (RPC) was established. It was composed of seven health professionals from the neonatal unit: two neonatal nurses; two neonatologists; a physical therapist; a nursing technician; a laboratory technician, in addition to the researcher coordinating the project and a master's student. The members met fortnightly in the unit for about two hours, totaling 20 meetings. Health professionals of the RPC acted as internal facilitators and were selected because they were recognized as leaders in the team, not necessarily because of the position they held in the unit. The two researchers participated as external facilitators and contributed in different ways to the implementation process (e.g. by collecting and sharing indicators, reviewing and synthesizing evidence, conducting training on KTE and newborn pain, conducting audits and feedback, and preparing educational materials).

After informed consent, all health professionals in the unit were asked to answer four questionnaires about the local context: 1) knowledge about pain management in the neonate, 2) Medical Outcomes Studies 36-item Short-Form to assess quality of life,[21] 3) Maslach Burnout Syndrome Inventory™ to measure work overload[22] and 4) Organizational Values Inventory to assess the organizational context.[23] The 54 professionals (90%) who wished to participate received the printed questionnaires, filled them out and voluntarily returned them to the researcher.

In addition, all NB hospitalized in the neonatal unit were observed daily (8:00 am to 8:00 pm) by five research assistants during a month, except for weekends and holidays because they were not available at these times. All painful procedures performed by professionals in the unit, as well as the use of scales and strategies in pain management were recorded during observation. Data from the local context (pre-test stage) with information on knowledge about pain, quality of life, work overload, organizational values, as well as procedures performed to assess and treat pain in newborns in the unit were presented and discussed by the researchers in a workshop with RPC members. On the occasion, training in pain management in neonates and the KTE method was also offered.

The workshop lasted a total of eight hours and was held in the neonatal unit. The same data were

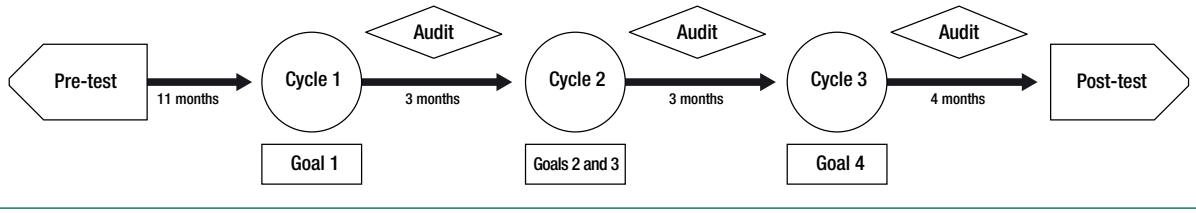

Figure 1. Rapid continuous quality improvement cycles for implementing changes, according to the EPIQ intervention

shared with the other members of the health team through posters available in the unit and conversation circles in small groups. After becoming aware of the local context (pre-test stage), health professionals identified the barriers and facilitators to change in pain management practice.

Data were collected during a meeting with the RPC, and through a questionnaire applied to team members who voluntarily participated in a didactic presentation on pain management in neonates. The 38 participants were asked to list three barriers and three facilitators to change pain management practices in the neonatal unit.

The review of scientific evidence regarding the assessment and treatment of pain in the neonate was performed by two RPC researchers during preparation and implementation. The searches were based on the demand of the RPC, and carried out in Pubmed, Lilacs and Cochrane Library, including systematic reviews, scientific articles, consensus, protocols and recommendations for pain management in neonates, in English, Portuguese or Spanish. Relevant articles were discussed in meetings with the RPC. From the discussion of existing practices in the unit that needed to be changed, the synthesis of current scientific evidence, and data from the local context, members of the RPC prepared and implemented one or two coherent and feasible goals for changing the practice in the management of neonate's pain with each rapid cycle. Three rapid cycles lasting three to four months each were performed. Members of the RPC selected KTE strategies, determined target audiences and indicators, and implemented the strategies in each cycle (Chart 2).

At the end of each rapid cycle, the indicators related to pain management practices in neonates developed by health professionals were audited. The audits were carried out by research assistants in five random days from Monday to Friday between 8:00 am and 8:00 pm, without the prior knowledge of the unit's professionals. Data from the audits were analyzed by the researchers and shared with the RPC during weekly meetings, so the group could decide on the permanence of the goal, development of a new goal, difficulties, and strategies to be ad-

Chart 2. Goals, KTE strategies, target audience and indicators established by the Research and Practice Council during implementation, according to each cycle

Cycle	Duration	Established goal	KTE strategies	Target audience	Evaluation indicator
1	3 months	- Sensitize 80% of the unit's multidisciplinary team for the management of pain in neonates	- Screening of the film "Be Sweet to Babies" - Dynamics of the Senses	- Health professionals and mothers	1) Frequency of participants
			- Didactic presentation with feedback showing the data in the local context (pre-test) through multimedia and poster exhibition - Creation of the "Baby without Pain" logo. The RPC selected the best logo created by the team, and the winner was awarded a basket of chocolates	- Health professionals	2) Perception of the usefulness and applicability of the evidence presented
2	3 months	- Apply and record the PIPP-R scale to assess acute pain related to oral aspiration procedures, blood collection and catheter insertion in 30% of newborns in the neonatal unit - Apply and register the EDIN scale three times a day in 30% of newborns in the neonatal unit.	- Reminders with the study logo in NBs' incubators - Training by the research nurse in small groups of unit professionals in the application of pain assessment scales - Individual bedside training - Printed scales made available in medical records and the incubator of each NB - Medical prescription for the use of scales as a reminder for professionals - Preparation of clinical protocols by the RPC to systematize the application of the PIPP-R and EDIN scales - Audit and feedback	- Health professionals (physicians, nurses and nursing technicians)	1) Total number of painful procedures performed; 2) Number of times the PIPP-R scale was used divided by the total number of painful procedures; 3) Number of times the EDIN scale was used divided by the number of times established per shift
3	4 months	- Administer oral glucose at 20% two minutes before painful procedures (blood collection and catheter insertion) in 30% of newborns in the neonatal unit	- Training by the research nurse in small groups of professionals in the unit for the preparation and administration of glucose - Daily preparation of the "pain relief kit" with 20% glucose by the unit's nursing technician for the use by health professionals - Distribution of an educational leaflet and reminders (e.g. brooches, pens, sweet popcorn) on the use of pain scales and glucose administration	- Health professionals	
			- Showing of a video produced in the neonatal unit on non-pharmacological interventions for pain relief - "Wall of Fame" with a photo of a NB in the unit receiving interventions for pain relief	- Health professionals and parents of newborns	
			- Development of a protocol for systematization of the use of glucose - Audit and feedback - "My Shift Takes Care of the Pain Contest", and the unit team with the highest number of records on the pain scale was awarded a basket of Christmas products	- Health professionals	1) Number of painful procedures performed with glucose divided by the number of painful procedures.

PIPP-R= Premature Infant Pain Profile Revised; EDIN=Newborn Pain and Discomfort Scale; NB= newborn; KTE= Knowledge Translation and Exchange

opted. The results were also shared with the health team in the form of posters displayed in the unit. The posters contained the study's logo, the goal and value achieved in the period, and a phrase to value and motivate the team to continue. The post-test evaluation took place through an audit carried out one month after the end of Cycle 3, following the same procedures performed in the pre-test audit. Descriptive statistics (mean and frequency) was used to demonstrate the results of clinical indicators related to pain management by health professionals.

The study complied with national ethical standards and received approval under opinion number 320.437 by the Research Ethics Committee (Certificate of Presentation of Ethical Appreciation: 12666513.9.0000.5078).

Results

Evaluation of the EPIQ intervention

The adoption of the EPIQ intervention was evaluated through two audits performed in the pre- and post-test stages to compare clinical indicators related to pain management in the neonate. These indicators were also measured during the implementation of rapid cycles to guide the RPC in decisions. In total, six audits were performed to measure clinical pain management indicators during implementation. Data are described in table 1.

The pre-test audit included 29 NBs; the majority male (62.1%), mean gestational age of 232.3 (±30.3) days, and mean birth weight of 2,003.4 grams (±1,158.4), average Apgar score was 6.2 (±2.3) and 8.1 (±1.4) at 1 and 5 minutes of life, respectively. In the post-test, 47 newborns participated; the majority female (55.3%), mean gestational age of 235.60 (±30.9) days, birth weight of 1,910.2 grams (±841. 6), Apgar score of 6.69 (±1.8) at 1 minute and 8.16 (±1.4) at 5 minutes of life.

We found that there was a 32.8% reduction in the number of painful procedures performed in the post-test compared to the pre-test, as well as an increase of 26.6 and 50.7% in the frequency of use of pain assessment scales PIPP-R and EDIN, respectively, and of 25.1% in the administration of oral glucose.

Table 2 presents the KTE goals and strategies, target audience and indicators established by the RPC during implementation. Most professionals reported that the evidence presented was extremely useful (60.6%) and consider it is possible to use some of the strategies for pain relief in neonates (89.4%) in practice. Among the identified barriers, professionals highlighted the lack of qualification on pain in newborns, work overload, non-use of pain assessment scale, which already exists in medical records. As for the facilitators, the professionals reported the parents' free access to the unit, motivation and interest of the team.

Discussion

The EPIQ intervention is complex and has several steps and processes that demand KTE knowledge and skills. In addition, it is necessary to involve different actors, in this case, unit managers, health professionals, researchers in the area, students and families. The planning and implementation of all steps demand time and financial investment.

To assist in the implementation of evidence in the health service, three pillars are fundamental in

Table 1. Clinical indicators of pain management evaluated in the different stages of the study

Steps of collection Duration (days) Indicators	Pre-test 25 (n=29)	Cycle 1 5 (n=18)	Cycle 2.1 5 (n=22)	Cycle 2.2 5 (n=63)	Cycle 3 5 (n=92)	Post-test 25 (n=47)
Total painful procedures	938	219	64*	38*	149*	630
Painful procedures/NB/day	2.5	2.5	0.8	0.6	1.6	1.4
PIPP-R pain scale records	0	0	30.8%	23.7%	18.1%	26.6%
EDIN pain scale records	0	0	26.2%	23.8%	57.6%	50.7%
Use of oral glucose	1.4%	2.4%	----	----	29.6%	25.1%

*Only the most frequent painful procedures defined by the RPC were observed: (oral, nasal and endotracheal aspiration, blood collection - venipuncture, arterial and calcaneal puncture - and insertion of venous and arterial peripheral catheter); n=number of newborns observed; NB=newborn, PIPP-R=Preterm Infant Pain Profile Revised, EDIN=Newborn Pain and Discomfort Scale

the EPIQ strategy. The first is the use of published literature, mainly the literature that synthesizes, evaluates and confirms the effectiveness of the intervention to be implemented, such as systematic reviews. The second is the survey of local data to identify existing practices in the unit where the change will be implemented. The third is related to sharing experiences regarding the change in practice and the results obtained in order to encourage, stimulate and sustain the implemented change.[15]

The indicators measured pre- and post-test indicate there was adherence of professionals to the EPIQ intervention. This was demonstrated by an improvement in pain management practices by health professionals, with a reduction in the number of painful procedures and an increase in the use of pain assessment scales and glucose administration.

A key element in the implementation was the RPC, considered a KTE strategy. It should be composed of individuals dedicated to supporting, publicizing and encouraging implementation, overcoming indifference or resistance that may be encountered in the process of changing the practice. Some aspects favored this participation, such as: prior discussion of the study objectives, identification of the most interested professionals, agreement on time availability, definition of frequency and duration of meetings. Adherence is an important aspect of fidelity in implementation and crucial in complex personalized interventions, since many factors can influence the delivery process.[24-26]

Another fundamental aspect was the external facilitation provided by researchers of the RPC, who were experts in KTE and pain in the newborn. Facilitation is considered an active component for implementation in clinical practice. The facilitator's role is to enable and encourage professionals to think systematically and help them create a way of working that encompasses the continuous improvement of their practice based on the best available evidence.[19]

According to the PARIHS model, the facilitator's level of expertise will determine his/her different functions in the implementation process, such as identifying key people, knowledge of the context (tensions, motivations, productivity, etc.), connecting people and services or institutions, evaluating interventions, holding workshops, among others.[19]

The implementation process using the EPIQ intervention becomes much more dynamic, since a variety of KTE strategies can be used from the assessment of barriers and facilitators and definition of goals for change.[27]

On the other hand, we experienced several challenges during implementation. In cycle 1, the main difficulty was the availability of time of professionals to participate in awareness workshops. Thus, other KTE strategies were used to make professionals aware of the importance of pain management in neonates, such as distributing brooches, pamphlets and showing a video. The family's participation in the workshops was especially relevant since parents have an active role in relieving the newborn's pain.[28]

In cycles 2 and 3, the diversity of pain rating scales and pain management interventions available in systematic reviews was a challenge. In addition, as practitioners did not have specific skills for critically evaluating evidence, researchers had to synthesize the evidence in an appropriate language for the target population.

In the preparation stage, a survey on the knowledge about pain management in the neonate, quality of life, work overload, organizational context, and barriers and facilitators perceived by health professionals was carried out. These data (pre-test), together with the scientific evidence gathered, allowed the RPC to understand the local context, reflect and prioritize the needs for change in practice, and adapt the evidence to the local context.

The context is a dynamic and active element that exerts impact on the intervention, the implementation process and users/target population.[29] It includes several factors (e.g.: culture, organizational infrastructure, relationships, previous experiences, communication, politics, etc.) that can contribute as barriers or facilitators in the implementation process.[19] In this study, we did not perform an in-depth analysis of the context given the lack of validated instruments for this purpose in Brazil, which may be considered a limitation.

An essential step in most implementation models is the identification of barriers and facilitators. Individuals involved need to identify modifiable and non-modifiable barriers related to behavior; identify potential users and contexts of practice; and prioritize the critical barriers to be modified or overcome. After selecting the modifiable barriers, implementation strategies and available resources must be selected.[2]

In this study we used several KTE strategies for implementing change. Several studies and systematic reviews evaluate the effectiveness of these strategies for successful implementation. Multifaceted KTE strategies, that is, those that combine several strategies are more effective in changing behavior.[30-32]

However, there are no effective KTE strategies in every context. The effectiveness of these strategies requires considering the objective of the action, the knowledge being shared, users/target population involved and the mechanisms of change and evaluation.[25]

Finally, examining the sustainability of the actions implemented is essential to guarantee the quality of long-term care. Sustainability occurs when, after about a year, the program or intervention becomes part of an organization's culture through policy and practice. Another points that should be considered are how much the intervention was adapted in this period (acceptable or expected), and what defines the intervention as fully implemented.[33,34]

In our study, because of limitations (funding, staff availability, etc), we evaluated the EPIQ intervention two months after the end of the implementation. As we consider this too short a time to understand its sustainability, future studies examining the sustainability of the intervention are essential in this scenario.

Finally, we consider that using this KTE intervention is innovative in Brazilian nursing and the evaluation of its adoption by health professionals, as well as the description of the implementation process can promote its application in other areas. In addition, the use of this intervention may strengthen the evidence for its use in developing countries.

Conclusion

The multifaceted EPIQ intervention is complex and has several steps and processes that demand knowledge and skills in KTE and quality improvement, commitment from the various actors involved, availability of time and financial investment. The analyzed indicators showed that the EPIQ intervention resulted in improvement of indicators of pain management in neonates in clinical practice, constituting a multifaceted intervention that can be implemented for positive changes in clinical practice, guided by the Theory of Knowledge Translation and Exchange.

Collaborations

Castral TC, Bueno M, Carvalho JC, Warnock F, Sousa JCG, Ribeiro LM and Mendonça AKMS contributed to the project design, analysis and interpretation of data, article writing, relevant critical review of the intellectual content and approval of the final version to be published.

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