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Evaluation of a parent-targeted video in Portuguese to improve pain management practices in neonates

(A parent-targeted video to improve pain management in neonates)

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ABSTRACT

Aims

To assess parents' knowledge on breastfeeding, skin to skin care, and sweet solutions as neonatal analgesic strategies, and to evaluate parents' perception on the feasibility, acceptability, and usefulness of the Portuguese version of the 'Be Sweet to Babies' video.

Background

Neonatal pain management during blood sampling is suboptimal and knowledge translation strategies are needed to improve clinical practices. The 'Be Sweet to Babies' video is a parent-targeted knowledge translation tool that shows the effectiveness of breastfeeding, skin to skin contact, and sweet solutions for procedural pain relief.

Design

Cross-sectional study.

Methods

Parents of infants hospitalized in an intensive care unit watched the video during their infants' hospitalization and then answered a survey. Descriptive analyses of the data were performed.

Results

100 parents were included. The majority did not know about the analgesic effects of breastfeeding (80%), skin to skin contact (69%), and sweet solutions (93%), and a limited number of parents stated their infants had received the strategies during painful procedures

(7%, 11%, 2%, respectively). After watching the video, all (100%) parents intended to use or to advocate for one of the strategies; most (90%) of the parents would use any of the methods. All parents (100%) would recommend the video, and considered the video useful, easy to understand, easy to apply in real scenarios. Length of the video was considered as ideal by 92%.

Conclusions

The Portuguese version of the 'Be Sweet to Babies' video is feasible, acceptable, and useful for parental education and is a persuasive knowledge translation tool. Further studies are needed to evaluate the effects of this parent-targeted intervention on the implementation of the analgesic strategies during clinical care.

Relevance to clinical practice

This paper highlights the importance of exploring evidence-based knowledge translation tools for improving neonatal care and outcomes.

Keywords: pain, neonate, nursing, knowledge translation

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WHAT DOES THIS PAPER CONTRIBUTE TO THE WIDER GLOBAL CLINICAL COMMUNITY?

- The 'Be Sweet to Babies' is an evidence-based video that is publicly accessible on YouTube, and shows the effects of breastfeeding, skin to skin care, and sweet tasting solutions for neonatal pain management. It is available in several languages, including Portuguese (Brazil).
- Parents are not aware on the analgesic effects of breastfeeding, skin to skin care, and sweet solution for procedural pain relief in neonates. Parents considered the video as feasible, acceptable, and useful, therefore it can be considered as an important parental educational resource, and a persuasive knowledge translation tool.
- Developing and testing evidence-based knowledge translation tools for improving neonatal pain practices worldwide is further required to enhance neonatal pain prevention, and management and therefore to improve neonatal outcomes.

KEYWORDS: pain, neonate, nursing, knowledge translation

INTRODUCTION

Neonates undergo multiple painful procedures during their first hours or days of life (Cruz, Fernandes & Oliveira, 2016). In spite of availability of strategies that are safe, effective, feasible, simple to use, and cost effective (Harrison, Bueno, & Reszel, 2015),

pain prevention and management interventions are poorly implemented in neonatal clinical settings worldwide (Cruz et al., 2016). Developing and evaluating knowledge translation tools to improve neonatal pain outcomes is needed and the 'Be Sweet to Babies' video (https://youtu.be/L43y0H6XEH4) (Harrison, 2016a) is a newly developed and yet little explored knowledge translation strategy. This is a parent-targeted resource that is publicly available on YouTube in several languages. The video clearly shows the effects of breastfeeding, skin to skin contact, and sweet tasting solutions on neonatal pain relief. Therefore, this research aims to assess parents' knowledge on neonatal pain relief strategies, and to evaluate the feasibility, acceptability, and usefulness of the video from the perspective of Portuguese speaking parents' of hospitalized neonates.

BACKGROUND

From the first hours to the first month of life, term and preterm infants undergo painful needle-related procedures for newborn and jaundice screening, and other blood sampling. Studies conducted in developed and developing countries clearly demonstrate that procedural pain prevention and management in newborn infants is suboptimal across the globe and in most settings newborns do not receive appropriate analgesia (Carbajal et al., 2008, Harrison, Loughnan, Manias, & Johnston, 2009, Johnston, Barrington, Taddio, Carbajal, & Filion, 2011, Stevens et al., 2011, Kyololo, Stevens, Gastaldo, & Gisore, 2014, Roofthooft, Simons, Anand, Tibboel, & van Dijk, 2014, Courtois et al., 2016). For sick and preterm infants, the number of painful procedures is considered as a strong predictor of poor neurological outcomes (Brummelte et al., 2012, Doesburg et al., 2013, Vinall et al., 2014). To optimize the outcomes of our smallest citizens, health care providers need to work with parents to improve the use of effective pain prevention and management interventions in neonatal care units (Harrison et al., 2015).

Because of decades of research, different strategies are demonstrated as effective on neonatal pain prevention and management. Rigorous high quality evidence exists of analgesic effects of breastfeeding (Shah, Herbozo, Aliwalas, & Sha, 2012), skin to skin care (Johnston et al., 2017), and sweet tasting solutions, especially sucrose, and glucose (Bueno et al., 2013, Stevens, Yamada, Ohlsson, Haliburton, & Shorkey, 2016) for newborn infants. These three strategies are safe, effective, feasible, simple to use, and cost effective,

and are recommended in international published clinical practice guidelines (CPG) (Lee, Yamada, Kyololo, Shorkey, & Stevens, 2014, American Academy of Pediatrics, 2016).

If mothers are able to breastfeed during needle-related procedures, breastfeeding can be easily implemented for healthy term and preterm infants before and during heel lance or venipuncture for routine blood sampling. In a systematic review of 20 studies, ten included papers examined the effects of breastfeeding as an analgesic strategy. Results indicated that breastfeeding significantly reduced behavioral and physiological indicators of pain, and composite pain scores during minor painful procedures such as heel lancing and venipuncture (Shah et al., 2012). Results of recently published randomized controlled trials continue to support the effects of breastfeeding on pain reduction during needle-related procedures in neonates (Obeidat & Shuriquie, 2015, Hashemi, Taheri, Ghodsbin, Pishva, & Vossoughi, 2016, Erkul & Efe, 2017).

Mothers or caregivers can provide skin to skin care to preterm and term infants before and during single painful procedures. This is a simple, cost effective intervention and was shown to be analgesic in a recently published systematic review (Johnston et al., 2017). Twenty-five studies were included and overall results indicated skin to skin care was an effective strategy that significantly minimized pain scores, behavioral changes and physiological responses during single painful procedures such as a heel lance in neonate infants (Johnston et al., 2017). Skin to skin contact between infants and their mothers has also been demonstrated to reduce near-infrared spectroscopy pain responses in preterm infants during venepunctures (Olsson, Ahlsén, & Eriksson, 2016).

Sucrose and glucose are the most commonly investigated sweet tasting solutions for neonatal pain relief. Very small amounts of solution offered by mouth before and during minor invasive procedures provide sweet taste induced analgesia in term and preterm neonate infants. Two large systematic reviews included 74 studies (7,049 infants) exploring the effectiveness of sucrose (Stevens et al., 2016), and 38 papers (3,785 neonates) evaluating the effects of glucose (Bueno et al., 2013) and results consistently indicate these solutions significantly reduce pain scores and behavioral responses to procedural pain from single events such as heel lance, venipuncture, and intramuscular injection. In a recently published review, a cumulative meta-analysis demonstrated the effects of sweet solutions on neonatal pain reduction compared to placebo or no treatment are evident since the first published trials in the early 2000s (Harrison et al., 2017).

In spite of consistent evidence, these strategies are not frequently implemented in neonatal units worldwide (Cruz et al., 2016). Parents can play an important role on advocating for their infants' pain treatment. The main factors that contribute to parental participation in neonatal pain management are counseling by health care staff, awareness on their own role, and motivation (Palomaa, Korhonen, & Pölkki,2016). On the other hand, several issues may hinder parental involvement. Lack of knowledge on infants' pain and pain relief is as an important barrier for parental participation on their neonates' pain management (Palomaa et al., 2016). Therefore, the development, evaluation, and implementation of knowledge translation tools are needed to improve neonatal pain management practices in clinical settings. An example of a novel knowledge translation strategy suitable for parents and families is the 'Be Sweet to Babies' video (Harrison, 2016a). This is a professionally produced video publicly accessible on YouTube which clearly shows the calming and analgesic effects of breastfeeding, skin to skin care, and sweet tasting solutions during heel lancing and venipuncture in newborn infants. The video was initially produced in English, and French and is currently available in several languages, including Portuguese (Brazil) (https://youtu.be/ZGLSNdYtppo) (Harrison, 2016b).

Although the internet favors a wide dissemination of scientific information it is important that this information is accurate, evidence-based, and practices portrayed are in line with best evidence (Harrison et al., 2016). The 'Be Sweet to Babies' is an innovative and persuasive tool developed to accomplish these goals. However, the use of videos as patient-targeted and patient-mediated knowledge translation tools has not been sufficiently explored to date (Stacey & Hill, 2013). Therefore the aims of this study were to assess parents' knowledge on breastfeeding, skin to skin care, and sweet tasting solutions as neonatal pain relief strategies, and to evaluate parents' perception on the feasibility, acceptability, and usefulness of the Portuguese version of the 'Be Sweet to Babies' video, the 'Seja Doce com os Bebês' video.

METHODS

Design

This is a cross-sectional study. A questionnaire composed of eight multiple-choice questions and a comment box was developed based on prior studies (Larocque, Harrison, & Reszel, 2015, Harrison et al., 2017). Questions on parents' knowledge on the analgesic effects of breastfeeding, skin to skin contact, and sweet tasting solutions, prior experience of using any of the three strategies with their infants, intention to use or to advocate for using any of the three analgesic strategies, acceptability and usefulness of the video, were included in the questionnaire.

Setting, and Ethics

The study was conducted in a 47-bed level III Neonatal Intensive Care Unit (NICU) of an university affiliated hospital in the city of São Paulo, Brazil. No written policies or protocols are implemented for neonatal pain management although pharmacological and non-pharmacological analgesic interventions are applied according to health care professionals knowledge and preferences. Local ethics review board approved the study protocol and the informed consent form prior to data collection commencement (School of Nursing of the University of São Paulo, protocol #45539515.9.0000.5392).

Recruitment, Enrollment, and Data Collection Procedures

Parents of hospitalized infants were eligible if they understood Portuguese and if their neonates were able to receive any of the three interventions shown at the video, i.e., clinically stable to be breastfed and/or placed in skin to skin contact and/or to receive sweet solutions by mouth according to infants' medical records.

Between September and December 2015, participants were screened and recruited on a daily basis by one of the researchers. Based on infants' medical records and on the bedside nurse's assessment, one of the researchers identified infants eligible to receive any of the three interventions. If the neonate was able to receive breastfeeding, skin to skin care, or sweet solution for painful procedures, the researcher approached the parent(s) to explain the study protocol. No limits on infants' days of life or length of hospitalization were imposed. If parent(s) agreed to participate, they signed an informed consent form.

The researcher then invited the parents into a private room attached to the NICU where the video was shown to parents in a tablet device with mobile internet access. Immediately after viewing the video, the researcher asked the parents to complete the survey. The total length of the Portuguese version of the video was six minutes and the data collection procedure lasted around ten minutes.

Data Analysis

Data were stored in a Microsoft Excel for Windows spreadsheet. Descriptive statistics were used to analyze data in the same software. A descriptive analysis of comments was performed.

RESULTS

During the data collection period, a total of 383 infants were admitted to the NICU (Figure 1). Eighty families were enrolled, and a total of 100 parents participated on the study; being 22 couples of mothers and fathers, 53 mothers, and 3 fathers (75 mothers, and 25 fathers). None of the included parents had seen the video prior to the research.

Questionnaires were fully answered by enrolled parents. The three analgesic strategies shown by the video were not known by the majority of the parents. Eighty (80%) parents were not aware of the use of breastfeeding as an analgesic method for procedural pain in infants. With regard to skin to skin contact, 69 (69%) parents did not acknowledge its analgesics effects for neonate infants. Finally, sweet solutions were not known by parents (93%) as an effective strategy for pain relief in infants.

Very few parents had previously used breastfeeding or skin to skin contact for their infants' pain relief (7% & 11% respectively) and only two parents reported that sweet tasting solutions had been used for their infants during painful procedures.

After watching the video, all included parents (100%) affirmed they would advocate for and/or implement one of the three analgesic strategies for their infants' pain prevention and management. The majority of the parents (90%) stated they would use any of the three strategies for their infants' pain relief, seven parents (7%) considered using either breastfeeding or skin to skin contact, two parents (2%) would prefer using breastfeeding, and one parent (1%) would use skin to skin contact.

All parents (100%) declared they would recommend the video to other parents. The video was considered as useful, easy to understand, easy to apply in clinical settings by the totality of the included parents.

In terms of length of the video, 92% of the parents considered it as ideal; 4% considered the video too short, and 4% considered the video too long. None of the included parents expressed discomfort by watching the video or indicated any negative aspects related to the video and its content.

Two parents provided comments. One parent suggested receiving more information on neonatal care in general especially for first-time parents, and another parent highlighted the fact that he/she really appreciated the video and its content.

DISCUSSION

Exploring the development and evaluation of tools to improve knowledge dissemination and utilization on neonatal pain management is needed worldwide. Therefore, the aims of this study were to assess parents' knowledge on neonatal pain relief strategies, and to examine parents' perception on feasibility, acceptability, and usefulness of a professionally produced video showing three different strategies to reduce neonatal procedural pain.

Presenting the '*Seja Doce com os Bebês'* video (Harrison, 2016b) was a feasible intervention to parents of hospitalized neonates. Mothers and fathers did not report discomfort related to the video or its content neither to be apart from their infants during the study participation.

The internet plays a significant role in the daily lives of mothers and fathers' of ill and preterm neonates and it is considered by the majority of parents as a valuable source of information (Orr et al., 2016). YouTube particularly may be a promising medium for disseminating information to health care professionals, and consumers (Harrison et al., 2014). The use of online information targeted at parents of infants has significant potential, and although there are currently limited numbers of public educational videos (Farkas et al., 2015), this is likely to be an area of rapid growth. Other parent-targeted publicly accessible online resources with information about pain management for infants include the HELPinKIDS series (https://youtu.be/q2_1SosdADI?list=PLjJtOP3StIuUAquruBhesHJAtMcGLE-Fv) (Taddio, 2013); 'The Be Sweet to Babies during immunization' video (https://youtu.be/FrKmAth4ZGc) (Harrison, 2016c); 'The Power of a Parents' Touch' video (https://youtu.be/3nqN9c3FWn8) (Campbell-Yeo, 2014); and the 'It doesn't have to hurt' video series (https://youtu.be/KgBwVSYqfps) (Chambers, 2013).

It is essential that clinicians guide parents in the appropriate use and critical assessment of online information (Orr et al., 2016) and the 'Be Sweet to Babies' is an example of a unique tool that provides clear evidence-based information on neonatal pain management. This is a professionally produced video targeted at parents and is currently available in eight languages (English, French, Portuguese, Spanish, Mandarin, Arabic,

German, and Inuktitut). The Portuguese version, named 'Seja Doce com os Bebês' (Harrison, 2016b) has been publicly available on YouTube since October 2014. The video has been updated and republished in 2016 and currently has reached over 12,000 views. Online educational videos provide an important, easily accessible resource for children and their parents (Farkas et al., 2015). However none of the parents included in this current study had previously seen the video, highlighting the challenges with using social media as a source of education. In addition, approaches to measure the reach of the targeted audience and the impact of the educational intervention in behavioral changes are not well established to date.

Breastfeeding, skin to skin care and sweet tasting solutions are effective, simple and feasible analgesic strategies for neonate infants recommended by guidelines and policies (Lago et al., 2009, Spence et al., 2010, Lee et al., 2014, American Academy of Pediatrics, 2016) even though their implementation into consistent neonatal care settings worldwide has not been well established (Cruz et al., 2016). Several factors might hinder the effective application of these strategies in clinical practice, such as infants' physiological stability, infants' ability to breastfed, availability of the mother to breastfeed or the mother or another family member to hold the infants skin to skin; lack of health care professionals' and parents' knowledge on neonatal pain management, uncomfortable or unfamiliar position for professionals performing procedures (especially when implementing breastfeeding and skin to skin care), parental readiness during painful procedures, availability of sweet tasting solutions, amongst others (Cong, Delaney, & Vazquez, 2013, Harrison et al., 2015).

Lack of knowledge on the analgesic effects of breastfeeding, skin to skin contact, and/or sweet tasting solutions was reported by the vast majority of parents included in this study. Likewise, the majority of the Canadian parents' who watched the 'Be Sweet to Babies' video did not previously know that breastfeeding and skin to skin care were analgesic strategies for neonates (Larocque et al., 2015). Sweet tasting analgesia effects, on the other hand, were known by most of the parents (Larocque et al., 2015). These results can be explained since sucrose is commonly implemented in Canadian neonatal intensive care units therefore parents are familiar with this analgesic strategy.

After receiving high quality evidence-based information through the video, however, parents in our study would advocate for, or implement one of the three strategies presented for their infants' pain prevention and management. Similar results were observed

in the study with Canadian parents, in which 96% of them would use the interventions or advocate for its implementation (Larocque et al., 2015).

The results of these studies combined indicate the video as a potential source of empowering parents on the involvement on their infants' care, specifically on pain outcomes. Prior research demonstrate parents desire to receive information and to be involved on their infants' pain management and comforting (Franck et al., 2011, Franck, Oulton, & Bruce, 2012, Orr et al., 2016), and that their presence in neonatal units predict the use of non-pharmacological analgesia for tissue-damaging procedures performed in their newborn infants (Johnston et al., 2011).

Recently, substantial efforts have been made to build up models or approaches of care to address infants' and their parents' needs (Trajkovski, Schmied, Vickers, & Jackson, 2012). Parental involvement is of vital importance in all aspects of neonatal care, which includes pain management. However, studies indicate that nurses' preferences regarding parents' participation on neonatal pain management range from exclusion to full collaboration (Axelin et al., 2015). Clinical staff may need greater preparation and support to better respond to parents' expressed desire for increased involvement in infants' comfort (Franck et al., 2011).

Family-driven interventions for neonatal pain relief, e.g. breastfeeding, and skin to skin care are effective, safe, and costless, and promote bonding and parental empowerment. Providing clear, accessible, and evidence based information is necessary in order to facilitate and to enable parents' participation of their infants' care. Video-based demonstrations have been used increasingly to teach consumers about health topics and to promote wellness through behavioral change (Farkas et al., 2015). Parents considered the video as useful, easy to understand, and easy to apply in real scenarios. Our results highlight parents' acceptability of the 'Seja Doce com os Bebês' (Harrison, 2016b) video and support parents' interest and willingness to be involved in their infants' pain management. Usefulness of the video was also confirmed according to parents' opinion. These results are consistent with data obtained from English speaking parents who watched the Be Sweet to Babies video (Larocque et al., 2015) and demonstrate the need of development and implementation of knowledge translation strategies on neonatal pain management targeted at parents.

Therefore, further studies are required to investigate the influence of parental information on neonatal pain outcomes (e.g. number of painful procedures, pain

assessment, and implementation of pain management strategies) as well as to explore the effects of web-based educational strategies on behavioral and practice changes for both families and health care professionals.

The lack of similar studies precluded further discussion on our data. However, as the 'Be Sweet to Babies' video is available in eight languages to date it is expected that similar studies are conducted in different countries and cultures to further confirm feasibility, acceptability, and usefulness of this innovative knowledge translation tool.

Although our study has numerous strengths such as testing an innovative and unique knowledge translation tool targeted at parents, no parental refusal on participating on the study, and ethical conduction of data collection and report, limitations need to be addressed. Firstly, a large number of families were not approached. Clinical instability of infants precluded their eligibility for using the analgesic strategies; therefore their families were not approached. In addition to that, the high number of admissions and discharges hindered approaching families in a timely manner. Secondly, this study did not explore the implementation of the three analgesic strategies for neonatal pain prevention and management neither parental involvement in their infants' care in the clinical setting. Exploring clinical outcomes of knowledge translation tools is challenging and future studies are required.

CONCLUSION

Parents are not currently aware of the effects of breastfeeding, skin to skin contact, and sweet tasting solutions of neonatal pain prevention and management. However, after receiving high quality, evidence-based information, parents would advocate for and/or implement one of the three analgesic strategies (breastfeeding, skin to skin contact, and sweet solutions) for their infants' pain prevention and management.

The Portuguese version of the 'Be Sweet to Babies video, the 'Seja Doce com os Bebês' video, is feasible, acceptable, and useful for parental education and it can be considered as a persuasive knowledge translation tool. Further studies are needed to evaluate the effects of the intervention on the implementation of the analgesic strategies in clinical scenarios.

RELEVANCE TO CLINICAL PRACTICE

High quality synthesized evidence of analgesic strategies for newborn infants is available, and the 'Be Sweet to Babies' ('Seja Doce com os Bebês') video is an example on how to synthesize and to translate knowledge. The video can be adopted in clinical settings as a feasible, acceptable, and useful educational resource mainly targeted at parents and families, with the ultimate goal to improve parental involvement and empowerment on neonatal pain prevention, and management practices.

Further developing and testing evidence-based knowledge translation tools targeted at consumers (e.g. parents, family members) and health care professionals is necessary and important for improving neonatal care and outcomes worldwide, especially related to pain prevention and management.

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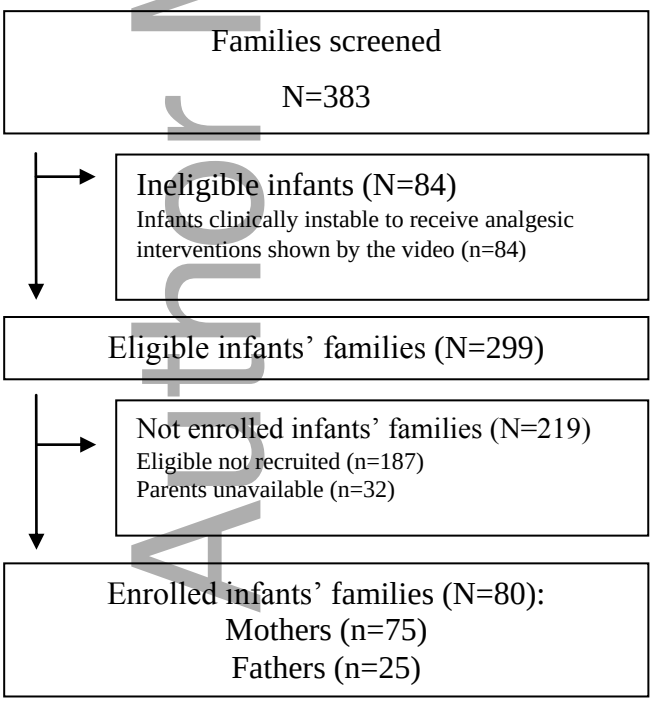

Figure 1 – Study flow of participants. São Paulo, Brazil, 2017.