A systematic review of the Non-pharmacological Management of Heel-Stick Pain in the Pre-term Neonates.

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Learner objectives

- The audience can understand different strategies of using the non-pharmacological interventions in the management of heel stick pain in preterm neonates from published articles.

- Conflict of Interest: No conflicts to report
Background

- Neonates in an intensive care unit experience many painful procedures including heel stick pain.
- Repeated and sustained pain may affect the neurological and behaviour-oriented development for the newborn.
- Pain management is essential in neonatology.
- Non-pharmacological treatments for pain alleviation are increasingly discussed.
Aim of systematic review

➢ To identify effectiveness of different non-pharmacological interventions in the literature regarding the alleviation of heel stick pain in preterm neonates.
Method: systematic literature review

- Sources of electronic data search: MedLine, CINAHL, and the Cochrane Library databases

- Inclusion year and search strategy
  
  Published between 2007-2012 years and contained the following key words: Pain Management; heel stick; Premature Infant; non-pharmacology
Quality examination of the studies selected

- Data were extracted according to pre-defined criteria by two independent reviewers and methodological quality was assessed and assigned to different quality levels.
The criteria of pre-defined review

- Studies use the research design of randomized controlled trials (RCT) to test the effects of non-pharmacological interventions for pain alleviation.

- Several non-pharmacological interventions include music, kangaroo-care, facilitated tucking, swaddling, non-nutritive sucking, olfactory and multisensorial stimulation, positioning, glucose and sucrose use for preterm neonates.

- English or Chinese articles

- Subjects in the study were ventilated and not ventilated preterm infants who were hospitalized in a neonatal intensive care unit.
Results-1

- We reviewed 14 studies that met our inclusion criteria of papers.
- Types of non-pharmacological interventions among 14 articles were:
  - Kangaroo care (n= 7; 50%)
  - Non-nutritive sucking (n= 2; 14.3%)
  - Facilitated tucking (n= 3; 21.4%)
  - Breast milk (either breastfed or bottle-fed) (n= 3; 21.4%)
  - 20% or 25% sucrose in bottle or syringe (n= 4; 28.6%)
  - 20% or 25% glucose in bottle or syringe (n= 3; 21.4%)
  - Sensorial saturation (n= 1; 7.1%)
Results-2

The distribution of countries among 14 reviewed articles

- Brazil (n=3)
- Canada (n=2)
- USA (n=3)
- Turkey (n=1)
- Italy (n=1)
- Switzerland (n=1)
- The Netherlands (n=1)
- Taiwan (n=2)
Results-3

- 7 interventions significantly showed differences in lower Neonatal Facial Coding System (NFCS), Premature Infant Pain Profile (PIPP) scores, the heart rates after received kangaroo care during the puncture, heel squeeze and the post phases of heel prick.
Results-4

- 10 intervention significantly showed differences in lower NFCS, PIPP scores, lower heart rates after received breast milk, 20% or 25% sucrose, 20% or 25% glucose in bottle or syringe through out the procedure.
Results-5

- 3 interventions significantly showed differences in lower Bernese Pain Scale for Neonates (BPSN) scores after received facilitated tucking.
Results-6

- 2 interventions significantly showed differences in lower PIPP scores after received Non-nutritive sucking (NNS) throughout the procedure.
Results-7

- 1 study significantly showed differences in lower Crying Requires oxygen Increased vital signs Expression Sleep (CRIES) scores after receiving sensorial saturation.
Conclusions

- Non-pharmacological interventions are effectiveness to relieve preterm neonates’ heel stick pain by using the following strategies: “non-nutritive sucking”, “sucrose”, “glucose”, “sensorial saturation”, “facilitated tucking” and “kangaroo care”.

Thanks for your attention