Is Kangaroo Care an Effective Intervention to Reduce Heel Stick Pain Response in Preterm Infants?

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Abstract

Background: Approximately 15 million babies are born prematurely each year. Preterm infants are at risk for procedural pain and discomfort due to their immature nervous system and immature developmental level. Pharmacological interventions (e.g., opioids, topical analgesics) have shown limited effectiveness against procedural pain in preterm infants; therefore, it is important to investigate non-pharmacological approaches to pain relief.

Objective: To evaluate the effectiveness of Kangaroo Mother Care (KMC) in reducing heel stick pain response in preterm infants.

Methods: We conducted a structured literature review of the databases PubMed and SCOPUS using the keywords kangaroo mother care, skin-to-skin contact, procedural pain response, heel prick and preterm infants. Exclusion criteria: non-English language studies, systematic reviews, meta-analyses, studies including term infants, infants with additional conditions (e.g., prematurity) and KMC as an adjunct therapy. After the title and abstract were reviewed, 104 articles were reviewed. Of the articles reviewed, 17 were excluded as they were systematic reviews (n=4), used KMC as an adjunct therapy (n=2), looked at an intervention other than KMC (n=4), looked at outcome measures other than pain response (n=2), looked at a procedure other than a heel prick (n=1), looked at maternal outcomes (n=1) or looked at term babies (n=3). The remaining 9 studies were included in analyses.

Summary of Results:

The studies included, by design, no direct comparison between the groups, KMC and controls. In the studies looking at behavioral pain response, however, the pattern of findings was consistent across studies. In all studies looking at pain response, there was no statistical difference in the pain response to heel prick between the groups.

Discussion

Strength of the Studies included:

Of the nine studies included in the analysis, six utilized a crossover design, which was an appropriate design for the intervention. The same infants received two heel pricks in both the intervention and control conditions. The pain responses from each condition were compared. As a result, the infants acted as their own controls, preventing baseline differences between intervention and control groups. The remaining three studies were case-control studies and randomly assigned infants to either the control or intervention group. Of these studies, two found no significant baseline differences between the two groups, which means that differences in pain response could more reliably be attributed to KMC treatment.

Limitations of the Studies included:

Of the nine studies included, two pilot studies and therefore results are only preliminary. Of the studies included, 26 subjects were treated with KMC as an intervention for procedural pain, with the remaining 7 subjects included in the control group. This means that the results of the study are only applicable to the subset of subjects that were treated with KMC as an intervention for procedural pain, and may not be generalizable to the broader population of preterm infants.

Conclusion

Kangaroo mother care is a simple, inexpensive, non-pharmacological intervention that reduces heel stick pain response in preterm infants. The findings of this study add to the growing body of research that demonstrates the effectiveness of Kangaroo Mother Care as an intervention for procedural pain, for sustained pain related to heel prick, and in infants with other conditions.

References


