

Skin-to-skin care for procedural pain in neonates.

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Abstract

BACKGROUND:

Skin-to-skin care (SSC), otherwise known as Kangaroo Care (KC) due to its similarity with marsupial behaviour of ventral maternal-infant contact, is one non-pharmacological intervention for pain control in infants.

OBJECTIVES:

The primary objectives were to determine the effect of SSC alone on pain from medical or nursing procedures in neonates undergoing painful procedures compared to no intervention, sucrose or other analgesics, or additions to simple SSC such as rocking; and the effects of the amount of SSC (duration in minutes) and the method of administration (who provided the SSC, positioning of caregiver and neonate pair). The secondary objectives were to determine the incidence of untoward effects of SSC and to compare the SSC effect in different postmenstrual age subgroups of infants.

SEARCH METHODS:

The standard methods of the Cochrane Neonatal Collaborative Review Group were used. Databases searched in August 2011: Cochrane Central Register of Controlled Trials (CENTRAL in The Cochrane Library); Evidence-Based Medicine Reviews; MEDLINE (1950 onwards); PubMed (1975 onwards); EMBASE (1974 onwards); CINAHL (1982 onwards); Web of Science (1980 onwards); LILACS database (1982 onwards); SCIELO database (1982 onwards); PsycInfo (1980 onwards); AMED (1985 onwards); Dissertation-Abstracts International (1980 onwards). Searches were conducted throughout September 2012.

SELECTION CRITERIA:

Studies with randomisation or quasi-randomisation, double or single-blinded, involving term infants (> 37 completed weeks postmenstrual age (PMA)) to a maximum of 44 weeks PMA and preterm infants (< 37 completed weeks PMA) receiving SSC for painful procedures conducted by doctors, nurses, or other healthcare professionals.

DATA COLLECTION AND ANALYSIS:

The main outcome measures were physiological or behavioural pain indicators and composite pain scores. A weighted mean difference (WMD) with 95% confidence interval (CI) using a fixed-effect model was reported for continuous outcome measures. We included variations on type of tissue-damaging procedure, provider of care, and duration of SSC.

MAIN RESULTS:

Nineteen studies (n = 1594 infants) were included. Fifteen studies (n = 744) used heel lance as the painful procedure, one study combined venepuncture and heel stick (n = 50), two used intramuscular injection, and one used 'vaccination' (n = 80). The studies that were included were generally strong and free from bias. Eleven studies (n = 1363) compared SSC alone to a no-treatment control. Although 11 studies measured heart rate during painful procedures, data from only four studies (n = 121) could be combined to give a mean difference (MD) of 0.35 beats per minute (95% CI -6.01 to 6.71). Three other studies that were not included in meta-analyses also reported no difference in heart rate after the painful procedure. Two studies reported heart rate variability outcomes and found no significant differences. Five studies used the Premature Infant Pain Profile (PIPP) as a primary outcome, which favoured SSC at 30 seconds (n = 268) (MD -3.21, 95% CI -3.94 to -2.48), 60 seconds (n = 164) (MD -1.85, 95% CI -3.03 to -0.68), and 90 seconds (n = 163) (MD -1.34, 95% CI -2.56 to -0.13), but at 120 seconds (n = 157) there was no difference. No studies provided findings on return of heart rate to baseline level, oxygen saturation, cortisol levels, duration of crying, and facial actions that could be combined for analysis. Eight studies compared SSC to another intervention with or without a no-treatment control. Two cross-over studies (n = 80) compared mother versus other provider on PIPP scores at 30, 60, 90, and 120 seconds with no significant difference. When SSC was compared to other interventions, there were not enough similar studies to pool results in an analysis. One study compared SSC with and without dextrose and found that the combination was most effective and that SSC alone was more effective than dextrose alone. Similarly, in another study SSC was more effective than oral glucose for heart rate but not oxygen saturation. SSC either in combination with breastfeeding or alone was favoured over a no-treatment control, but was not different to breastfeeding. There were not enough participants with similar outcomes and painful procedures to compare age groups or duration of SSC. No adverse events were reported in any of the studies.

AUTHORS' CONCLUSIONS:

SSC appears to be effective, as measured by composite pain indicators and including both physiological and behavioural indicators, and safe for a single painful procedure such as a heel lance. Purely behavioural indicators tended to favour SSC but there remains questionable bias regarding behavioural indicators. Physiological indicators were typically not different between conditions. Only two studies compared mother providers to others, with non-significant results. There was more heterogeneity in the studies with behavioural or composite outcomes. There is a need for replication studies that use similar, clearly defined outcomes. New studies examining optimal duration of SSC, gestational age groups, repeated use, and long-term effects of SSC are needed.

Comment in [Skin-to-skin care is an effective and safe intervention to reduce procedural pain in neonates. \[Evid Based Nurs. 2017\]](#)