

SKIN-TO-SKIN CONTACT AS PAIN MANAGEMENT INTERVENTION FOR CLUSTERED PAINFUL PROCEDURES IN HEALTHY FULL-TERM NEONATES



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BACKGROUND

- ✘ Healthy full term neonates face many painful procedures immediately after birth.
- ✘ Evidence exist that neonates perceive and respond to pain (Anand, 2008; Simons & Tibboel, 2006).
- ✘ Unrelieved procedural pain is related to detrimental physiologic and behavioral outcomes such as altered pain responses later in life (Grunau, Holsti & Peters, 2006; Hermann, 2006). Thus, pain need to be minimized.

BACKGROUND

- ✘ Skin-to-Skin Contact (SSC) is an effective non-pharmacologic intervention for managing pain of a single procedure (Johnston et al., 2014). SSC relieves pain from one injection (Chermont et al., 2009; Kostandy et al., 2013) or heel sticks (Bulfone et al., 2011; Okan et al., 2010). skin to skin contact is now known as non-pharmacologic analgesic (Mooney-Leber & Brummelte, 2017).
- ✘ The American Academy of Pediatrics (2007) has recommended SSC as a pain management strategy for term and preterm neonates.

PROBLEM AND PURPOSE

- ✘ Studies investigating repeated painful procedures can be found, but, each study tested one painful procedure per day (Cignacco et al., 2012; Gitto et al., 2012). Investigations of clustered painful procedures during the postnatal period were not found.
- ✘ There is a lack of information about SSC effects on clustered painful procedures.
- ✘ The purpose of this study was to investigate the effects of SSC on physiologic and behavioral pain responses during and after clustered painful procedures in full-term neonates.

METHODS

- ✘ **Design:** A pilot randomized controlled trial.
- ✘ **Setting:** Postnatal department of a tertiary urban hospital.
- ✘ **Sample:** Sixteen mother-neonate dyads were randomly assigned to either SSC group or control group.

METHODS CONT.

✘ Inclusion Criteria:

- gestational age 37-42 weeks
- birth weight equal or more than 2,500 grams
- 5-minute Apgar score of at least 7
- judged clinically healthy
- product of an uneventful and spontaneous vaginal delivery or planned caesarean section, and
- mothers agree to provide SSC

✘ Exclusion Criteria:

- evidence of congenital abnormalities or medical complications
- require oxygen administration or ventilatory support

METHODS CONT.

- ✘ After obtaining IRB approvals a convenience sample of 16 mother-neonate dyads was recruited and maternal consents were obtained.
- ✘ Neonates who met the study criteria were randomly assigned, using a pre-prepared sealed envelopes that was open in the mother's presence in her room, to the intervention group (Skin-to-Skin, SSC) or control group (receive standard comfort measures, C).

METHODS CONT.

- ✘ During the four study phases (Baseline, Heel stick, Injection, and Recovery) Heart Rate and Oxygen Saturation level were continuously recorded by Massimo Radical 7 pulse oximeter and downloaded into a laptop.
- ✘ A video camera was set up to record the whole procedure.
- ✘ From video taps, Behavioral State was assessed every 30 seconds by a research nurse trained to 0.95 reliability on the 12-state Anderson Behavioral State Scoring system (ABSS).

DATA ANALYSIS

- ✘ Descriptive statistical tests were used to describe the sample.
- ✘ The Wilcoxon Signed-rank test for testing differences in two groups when the data were cross-sectional was used. For longitudinal data analyses: (1) random effects logistic regression models for binary longitudinal behavioral states and (2) generalized estimating equations for Heart rate and Oxygen saturation were used.

RESULTS

- ✘ There were no significant differences between groups on all demographic variables
- ✘ Neonatal demographic characteristics:
 - 68.8% were female
 - 62.5% were white
 - 93.8% had a 5-minute Apgar score of 9
 - 56.3% were breastfed
 - All neonates had vitamin K injection



RESULTS CONT.

- ✘ Maternal demographic characteristics:
 - 55% had vaginal delivery
 - 50% had epidural anesthesia
 - Two mothers in each group reported that they were smokers during this pregnancy
 - one mother in the SSC group reported drug use during this pregnancy

RESULTS CONT.

- ✘ There were no significant differences between groups during Baseline in Heart rate, Oxygen saturation, and Behavioral state.
- ✘ During Heel stick: Heart rate was marginally significantly higher in the SSC group ($\beta = 9.16$, 95% CI [-0.45, 18.77], $p = 0.06$). Oxygen saturation was significantly lower in the SSC group in comparison to the C group ($\beta = -2.66$, 95% CI = [-4.41, -0.92], $p = 0.003$). There were no significant differences in the Behavioral state between the two groups ($\beta = 0.61$, 95% CI = [-0.90, 2.12], $p = 0.43$).

RESULTS CONT.

- ✘ During Injection: Heart rate was significantly higher in the SSC group than the C group ($z = -2.63$, $p = 0.01$). Oxygen saturation was also significantly lower in the SSC group ($z = 2.28$, $p = 0.02$). No significant differences were found in the Behavioral state ($Z=1.07$, $p=0.28$).
- ✘ During Recovery period: Heart rate was significantly higher in the SSC group than the C group ($\beta = 8.41$, 95% CI [0.78, 16.03], $p = 0.03$). Oxygen saturation was significantly lower in the SSC group ($\beta = -2.15$, 95% CI = [-3.84, -0.46], $p = 0.01$). Control group neonates tended to have a higher behavioral state than SSC neonates ($\beta = -0.78$, 95% CI = [-1.71, 0.14], $p = 0.10$).

CONCLUSION

- ✘ Heart rate data were similar to some previous studies. Heart rate tends to be higher during SSC. However, these differences were not clinically significant.
- ✘ Generally oxygen saturation is higher during SSC which is conflicting with this study findings. In the current study, these differences were not clinically significant. However, there is scarce knowledge about Oxygen saturation during SSC in full term neonates.

CONCLUSION CONT.

- ✘ Behavioral state data were similar to previous studies during recovery period. Only one previous study (Kostandy et al., 2013) used the ABSS in measuring behavioral state during one painful procedure.
- ✘ Further studies with a larger sample size are needed to establish SSC role in the management of pain from clustered painful experiences.

NOTEWORTHY POINTS

- ✘ At the time this study was conducted, the routine practice in the unit was to take all neonates to the nursery to perform these painful procedures.
- ✘ All mother-neonate dyads completed the study protocol.
- ✘ Only one nurse participated in this study.
- ✘ One neonate in the SSC group cried a lot during the painful procedure, the nurse told the mother “oh boy, am I glad that you are holding him. I’m not sure what he would of done without you”



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