

Comparing the Effect of Maternal Breast Milk Odor, Facilitated Tucking and Non-nutritive Sucking Applied to Preterm Neonates During Heel Stick on Pain and Physiological Parameters: A Randomized Controlled Trial

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Abstract : Background: While nonpharmacological approaches prove effective in mitigating heel stick-induced pain, only a few studies have delved into this aspect. None of the existing studies have simultaneously applied these nonpharmacological methods to alleviate heel stick pain. The objective of this study was to compare the effects of maternal breast milk odor, facilitated tucking, and non-nutritive sucking applied to preterm neonates before, during and after heel stick procedures on pain and physiological parameters. Methods: The study was a randomized controlled trial. 144 preterm infants (gestational age 31-36 weeks) requiring heel sticks were randomly assigned to four treatment conditions: control, non-nutritive sucking, facilitated tucking, and maternal breast milk odor. Pain and physiological parameters were measured by watching video recordings of infants undergoing heel-stick procedures and scoring pain at 1-minute intervals with the Premature Infant Pain Profile and Data Evaluation Form. Data were collected over eight phases: baseline, 1,2,3 minute before, during and 1,2 and 3 minutes after the heel stick. Results: There was a significant main effect of the intervention groups for physiological parameters and pain (heart rate: $F=7.5$, $p<0.001$; oxygen saturation: $F=16.39$, $p<0.001$; respiratory rate: $F=6.56$, $p<0.001$; pain: $F=61.45$, $p<0.001$). Neonates receiving facilitated tucking had significantly lower pain profile scores during heel stick (6.61 ± 1.44) than control (14.22 ± 3.61), maternal breast milk odor (12.22 ± 3.08), non-nutritive sucking (10.41 ± 1.71) ($p<0.001$). Conclusion: The facilitated tucking method is clinically better stability of physiological parameters and pain relief option for the heel stick.

Keywords : maternal breast milk odor, facilitated tucking, non-nutritive sucking, preterm neonates, pain, physiological parameters

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