

Maternal facilitated tucking *versus* nurse facilitated tucking for alleviation of pain during neonatal heel lancing: A randomised, two-period, cross-over trial

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Received July 24, 2025; Accepted December 9, 2025; Published April 27, 2026

Background and objectives: Preterm neonates undergo multiple painful procedures in neonatal intensive care units (NICU). It is difficult for nurses to utilise non-pharmacological pain control measures every time due to low nurse-patient ratio. Mother is a low-cost resource and can be integrated in management of neonatal pain. The current study was planned to compare maternal facilitated-tucking with nurse facilitated-tucking for pain alleviation following heel-lancing in preterm neonates.

Methods: A Randomised, controlled, two-period, cross-over trial was conducted in a level III NICU of a tertiary care hospital. Participants included preterm neonates (≤ 35 wk) admitted in NICU. Interventions included: facilitated-tucking provided to preterm neonates during heel-lancing by simulation-trained mothers or nurses. The tucking sequence was randomised (AB/BA sequence). The primary outcome was the premature infant pain profile - revised (PIPP-R) score. The study was registered under Trial registration: CTRI/2023/08/056592.

Results: Study neonates ($n=45$) had significantly lower PIPP-R following maternal tucking compared to nurse facilitated tucking: [10.1 (2.9) *versus* 11.8 (2.8); mean difference (95% CI): -1.7 (-2.8,-0.6); $P=0.003$]. No period effect and carry-over effects were observed. Pre-post intervention maternal confidence and parenting-self-efficacy scores were significantly higher, and stress levels were significantly lower.

Interpretation and conclusions: During heel-lancing of preterm neonates in the NICU, tucking performed by simulation trained mothers was associated with a significant reduction in pain compared to tucking performed by nurses.

Keywords Confidence level; Facilitated tucking; Heel lance; Perceived maternal parenting; Preterm neonates; Self-efficacy; Stress level