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Non-pharmacological managements of pain from heel stick in neonates: An evidence-based study

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Background: Studies indicated that neonates may receive painful procedure more than five times a day during their hospitalization. Infants may feel pain or physical discomfort while undergo these invasive medical processes. Consequently, the analgesic intervention may play an important role in pain management, which including drug and non-drug methods. Many studies have pointed out that using non-pharmacological analgesic measures can effectively relieve neonatal pain. However, studies that examine operating procedures of non-pharmacological pain managements while undergo heel stick were rare. The purpose was to establish standard operating procedures of non-pharmacological pain reduction for the newborn while taking blood samples from the heel.

Methods: This study was a crossover, quasi-experimental research design. 262 neonates were enrolled. Each infant in the experimental group was his/her own control group. The pain reduction measurements were performed by (1) providing nutritional sucking and nesting care before invasive medical procedures; (2) giving wrapped, containment care and non-nutritional sucking during heel stick; (3) offering containment care and non-nutritional sucking after the procedures. The interval of each measurement was 24 hours. Neonatal Infant Pain Scale (NIPS), heart rate, respiratory rate and duration of crying time were used to measure neonatal pain. Furthermore, the effectiveness of measurements was evaluated simultaneously.

Results: The results indicated that the pain scales was significantly decreased from 4.3 to 3.8 points ($p < .01$). The non-pharmacological pain managements was significantly decreased neonatal pain ($p < .05$). The change in the mean of heart rate, respiratory rate, and duration of crying time were significantly decreased while providing nutritional or non-nutritional sucking ($p = .02$). Neonatal heart rate, respiratory rate, and duration of crying time were also significantly decreased when nesting or containment care, wrapped infant were given ($p < .05$). There were no statistically significant differences between the executive time (before, during and after) of the processes ($p > .05$).

Conclusion: Pain is subjective, the fifth vital sign, and usually use as a daily physical assessment. It is not easy to observe neonatal pain. However, non-pharmacological analgesic measures were found to relief newborn pain, further research may apply the interventions to moderate neonatal pain during invasive medical processes. The results of the study can serve as a guiding principle for clinical nursing care.

Keywords: Pain, neonatal heel stick, non-pharmacological pain management

Biography

Pei-Hsin Yang has completed her MSN from Fooyin University in 2016. She is a nurse manager at neonatal intermediate unit (IMU) in Kaohsiung Chang Gung Memorial Hospital, Taiwan. Her specialties are premature and children with severe diseases. Her researches focus on neonatal and parental care.

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