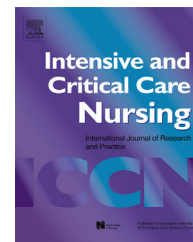




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ORIGINAL ARTICLE

The effectiveness of a standardised positioning tool and bedside education on the developmental positioning proficiency of NICU nurses



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Accepted 24 January 2016

KEYWORDS

Developmental positioning;
Education;
Neonatal intensive care unit;
Registered nurse

Summary In order to improve the developmental proficiency of neonatal intensive care unit nurses, a standardised infant positioning assessment tool and a bedside education programme were introduced to the registered nurses in a 46 bed level III neonatal intensive care unit in the western United States. A developmental positioning team collected pre-intervention positioning scores on 54 preterm infants. This was followed by a survey of the registered nurses beliefs and attitudes, the introduction of the standardised assessment tool and an informal education programme. Post-intervention positioning scores were collected on 55 preterm infants, and analysis of the data indicated there was a statistically significant change in mean positioning scores. Additionally, the registered nurses identified several barriers to the implementation of developmental positioning. This research indicates the use of a standardised infant positioning assessment tool and bedside education may be useful strategies for improving the developmental positioning proficiency of NICU nurses.

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Implications for Clinical Practice

- Implementing a standardised positioning assessment tool may improve the developmental positioning proficiency of NICU nurses.
- Informal bedside education may be an effective strategy to educate registered nurses.
- Improving developmental positioning remains a goal for practice.

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Introduction

Preterm infants are a particularly vulnerable population who require technologically advanced medical interventions, and highly specialised nursing care in order to survive and thrive. In the United States (U.S.), preterm birth impacts about 500,000 infants every year, is the leading cause of long-term neurodevelopmental disability, and has an estimated cost of \$26 billion dollars per year (Preterm Birth, n.d.). This problem is not limited to the United States; the World Health Organization estimates that preterm birth affects somewhere between 5% and 18% of the infants born in 184 countries, or about 15 million preterm births every year (Preterm Birth: Fact Sheet Number 363, 2013).

Infants born at less than 37 weeks gestation are considered preterm. This premature birth interrupts their intrauterine growth and development, and exposes them to an environment that is completely different from the womb. Their immature organs are not prepared for the “normal” newborn care environment of swaddling, breastfeeding and being held by their family for hours at a time (Symington and Pinelli, 2006). Extremely preterm (<28 weeks) and moderately preterm (28–32 weeks) infants frequently require complex and highly technical interventions for survival, and their caregivers must have advanced knowledge and skills to ensure these infants survive even though they may be at the edge of viability (Louw and Maree, 2005).

The tremendous physical, emotional and economic implications of prematurity (and the associated potential long-term negative effects) make it a significant worldwide problem (Preterm Birth: Fact Sheet Number 363, 2013). Additionally, the lack of significant progress in the prevention of preterm births leads one to believe that more focus should be aimed at decreasing the negative sequelae of preterm birth. Thus, more research is needed on maximising the proper growth and development of premature infants, particularly in the area of improving neurodevelopmental outcomes (Louw and Maree, 2005; VandenBerg, 2007).

Literature review

A literature search of CINAHL and PubMed using the keywords “developmental positioning” and “NICU” yielded 41 citations which generally focused on the outcomes of developmental positioning, or included developmental positioning as one element of a larger developmental care programme.

Developmental care interventions have been shown to positively impact the neurologic outcomes and growth and development of preterm infants, and best practices for developmental care have been established, however they are inconsistently implemented (Gibbins et al., 2010). One aspect of developmental care has been found to be especially beneficial; developmental positioning; developmental positioning (often called developmentally supportive positioning) is an intervention that has been proven to improve postural and musculoskeletal outcomes (Coughlin et al., 2010; Jeanson, 2013; Madlinger-Lewis et al., 2014; Zarem et al., 2013), as well as improve physiologic outcomes and

sleep states (Picheansathian et al., 2009). However, developmental positioning is not a standardised intervention. Various methods of providing developmental positioning have been studied; these methods include the use of commercially available positioning products, as well as the use of simple linen rolls to provide boundaries and supports or “nesting” materials for the infant (Coughlin et al., 2010; Hunter, 2010; Jeanson, 2013; Madlinger-Lewis et al., 2014).

There is evidence that developmental positioning is “acknowledged as a key element of care in the NICU”, but there is “inconsistent adoption and implementation of developmental positioning world-wide” (Coughlin et al., 2010, p. 104). Additionally, a false sense of security can occur when NICUs use positioning aids and can verbalise keywords such as “midline” and “containment” (Hunter, 2010, p. 2). There is a gap between what is known in the evidence and what is practiced in some NICUs, and although it is clear that developmental positioning is effective in improving outcomes, less is known about how to improve the developmental positioning proficiency of the nurses providing the care.

Louw and Maree (2005) developed a positioning and handling scale, and exposed the NICU nurses to developmental care principles via an educational workshop. The study had a small sample size ($n=11$) and reliability of the tool was not established. Findings indicated that improvement in developmental positioning and handling competencies was obtained after a formal exposure to developmental principles. In 2009, researchers surveyed nurses in three Italian NICUs to determine the educational needs surrounding developmental positioning (they used the term “postural care”); they had a response rate of 81.2%, and the nurses identified two obstacles to providing postural care: lack of supplies and lack of knowledge (Giometti et al., 2009). In 2014, a team in Taiwan developed a positioning assessment tool and provided audiovisual education to improve positioning outcomes. Unfortunately, this article is available only in Chinese, and details regarding the research were limited to the information found in the abstract (Chen et al., 2014).

Jeanson (2013) used bedside nurse education and a standardised Infant Positioning Assessment Tool (IPAT) to improve positioning consistency. The IPAT was developed between 2007 and 2010 by Coughlin, Lohman, and Gibbins and Children’s Medical Ventures (part of the Philips Corporation) (Coughlin et al., 2010). Children’s Medical Ventures manufactures developmental positioning products such as gel pillows for postural support and boundaries for containment, and they have copyrighted the IPAT for use. The IPAT is a pictorial tool demonstrating optimal developmental positioning in six areas of the body (head, chin/neck, shoulders, hands/arms, pelvis and knees/ankles/feet). Each area of the body is scored between zero and two points, with an ideal score being a score between 10 and 12.

Coughlin et al. (2010) developed the IPAT with three goals for use: as a reference and educational tool for teaching, as an evaluation instrument, and as a method of standardisation. Content validity of the tool was established using research evidence and the opinions of clinical experts and developmental care researchers. Reliability was established by having multiple independent reviewers compute

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