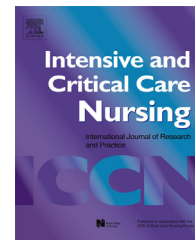




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ORIGINAL ARTICLE

Parental stress management using relaxation techniques in a neonatal intensive care unit: A randomised controlled trial



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Anxiety;
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Parent;
Prematurity;
Relaxation
techniques;
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Summary

Objective: The objective of this study was to investigate the effect of relaxation techniques on the stress/anxiety of parents with hospitalised premature infants, three months following discharge from the neonatal intensive care unit.

Study design: A randomised controlled trial was conducted in the neonatal intensive care unit of a tertiary maternity hospital including 59 parents, who were randomised into two groups: 31 in the intervention group and 28 in the control group. Parents in the intervention group practiced three different relaxation techniques, in addition to undergoing the same information-based training courses as did the parents of the control group.

Data collection: Data were collected 10–15 days post delivery and three months post discharge. The assessment measures included the Perceived Stress Scale, the State and Trait Anxiety Inventory 1 and 2 and salivary cortisol levels.

Results: The psychometric assessment at baseline was comparable between the two groups. The intervention group showed a significant reduction in trait anxiety ($p=0.02$) compared with

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the control group three months post discharge. The perceived stress decreased in both groups ($p=0.699$). No difference in salivary cortisol levels was detected. The multivariate analysis revealed that higher initial stress levels ($p<0.001$) and university/college education ($p=0.003$) were associated with higher parental stress, whereas moderate-to-high income satisfaction was associated with lower parental stress ($p=0.003$).

Conclusion: Further long-term follow-up of families with a neonatal intensive care unit experience could assess more delayed effects of stress management by relaxation techniques.

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Implications for Clinical Practice

- The application of relaxation techniques, in addition to providing information-based training, in parents of preterm infants admitted to a NICU was associated with a reduction in the parental trait of anxiety after the infants' discharge.
- Higher initial levels of stress in parents of preterm infants admitted to a NICU are associated with more significant parental stress at three months post discharge.
- Parental stress three months after the discharge of a preterm infant from the NICU is greater in parents with lower income satisfaction and higher education.

Introduction

Hospitalisation of a premature infant in the neonatal intensive care unit (NICU) is a highly stressful situation for the parents. Separation from the infant and difficulty in performing parenting activities in the critical care setting seem to be the most important sources of stress (Busse et al., 2013). Although researchers have reached a consensus on emotional imbalance, posttraumatic stress disorder (PTSD) has been proposed as an explanatory model (Chrousos, 2009; Shaw et al., 2009).

The persistent stress, as well as the anxiety and depression, experienced by parents of infants in the NICU for >2 months post partum has been implicated in the disruption of the mother–infant bonding (Busse et al., 2013; Flacking et al., 2012; Field, 2010; Liu et al., 2010; Giakoumaki et al., 2009; Olshtain-Mann and Auslander, 2008), thus potentially affecting the neurodevelopment of the premature infant (Treyvaud, 2014; Field, 2010). Due to the importance of supporting parents of premature infants, early intervention programmes have been implemented (Benzies et al., 2013; Charpak et al., 2005; Cockcroft, 2012; Flacking et al., 2012; Liu et al., 2010; Melnyk et al., 2008; Shaw et al., 2006). Such programmes mainly aim to improve the quality of the infant's environment, by providing psychosocial support and parental education. Some of these programmes may assess the therapeutic effect on the infant, but they do not generally evaluate their direct effect on the psychological status of the parents (Benzies et al., 2013).

The latter can be assessed either by specific questionnaires (Schappin et al., 2013) or more directly by measuring the salivary cortisol levels, which reflect the respective unbound hormone in the blood, thus assessing the stress-associated activity of the hypothalamic–pituitary–adrenal axis (HPAA) (Kirschbaum and Hellhammer, 1994).

Relaxation techniques constitute a novel method of controlling the perceived stress and anxiety, predicated on evidence-based procedures of promoting well-being

(Varvogli and Darviri, 2011; Manzoni et al., 2008). Progressive muscle relaxation, guided imagery, diaphragmatic breathing, biofeedback, and cognitive behavioural stress reduction have proven to be effective in reducing stress and anxiety accompanying either daily life or chronic illness. These methods have been added to the therapeutic armamentarium of health-care providers, in order to enhance their interactions with patients (Varvogli and Darviri, 2011; Manzoni et al., 2008). Nevertheless, very few studies have applied similar techniques to parents of NICU babies, with the primary aim of increasing milk production (Feijs et al., 2013; Feher et al., 1989) or preventing postpartum traumatic stress in first-time mothers (Shaw et al., 2013a, 2013b; Chuang et al., 2012; Rees, 1995).

The aim of this study was to investigate the effect of applying relaxation techniques, in addition to providing information-based training, on the stress and anxiety experienced by parents of hospitalised premature infants, three months following discharge of infants from the NICU. We hypothesised that relaxation techniques would favourably affect the aforementioned parameters and could help parents cope with possible challenges in infant care in the longer term.

Materials and methods

Study design

A randomised clinical trial was conducted in the NICU of a tertiary maternity hospital between February 2012 and May 2013. Parents of infants <37 weeks of gestational age, who were admitted to the same NICU, with fluency in Greek and no previous NICU experience, were invited to participate in the study. The exclusion criteria were as follows: (a) parents of premature infants with a birth weight of <1 kg or >2 kg, (b) parents of premature infants with major anomalies and fatal diseases, and

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