Feasibility of a Relaxation Guided Imagery Intervention to Reduce Maternal Stress in the NICU

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ABSTRACT

Objective: To test the feasibility of a relaxation guided imagery (RGI) intervention for mothers of hospitalized preterm infants and to explore the biobehavioral effects of RGI on their distress, responsiveness, and physiologic stress.

Design: Single sample, pretest–posttest design.

Setting: A large Level III NICU in Southern California.

Participants: Twenty mothers of hospitalized preterm infants (24–32 weeks gestational age).

Methods: Correlational analyses of RGI use with self-reported measures of distress (perceived stress, state anxiety, and depressive symptoms), awakening salivary cortisol level, and salivary cortisol awakening response collected from mothers at baseline and after 8 weeks of an RGI intervention.

Results: Nineteen mothers completed the study. Average use of RGI varied from 1.7 to 7.4 times per week (mean = 4.46, standard deviation = 2.7). Greater average use of RGI was correlated with lower awakening cortisol levels (r = -.38), greater cortisol awakening response (r = .36), and lower levels of distress (perceived stress [r = -.38], anxiety [r = -.43], and depression [r = -.41]).

Conclusion: Relaxation guided imagery may be a feasible and acceptable intervention to reduce mental and physiologic stress and improve responsiveness in mothers of hospitalized preterm infants.

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Mothers of hospitalized preterm infants are at risk for high levels of mental distress (stress, anxiety, and depression). The preterm birth rate in the United States has increased 21% since 1990 and remains high at approximately 11.7%; each year, an estimated 550,000 infants are born prematurely (Hamilton, Hoyert, Martin, Strobino, & Guyer, 2013). At the same time, medical advances have increased survival rates of all but the most extremely preterm infants (Mandy, 2011). After preterm birth, the stress of postpartum recovery is compounded by the psychological distress of having an infant hospitalized in a NICU. During the infant’s hospitalization, the mother may experience additional psychological trauma related to the infant’s repeated and unexpected medical crises (Miles, Holditch-Davis, Schwartz, & Scher, 2007; Shaw et al., 2013), which gives rise to high levels of stress, anxiety, and depression (Muller-Nix et al., 2004). These mothers are at risk for physiologic problems, including poor sleep quality (Dorheim, Bondevik, Eberhard-Gran, & Bjorvatn, 2009), neurohormonal disruption (Howland, Pickler, McCain, Glaser, & Lewis, 2011), and decreased maternal responsiveness (Muller-Nix et al., 2004). The identification of effective interventions to reduce this stress is critical to the long-term health and well-being of mothers and infants.

Nonpharmacologic mind–body interventions can be effective to reduce psychological stress. Relaxation guided imagery (RGI) is a mind–body intervention in which mental images are used to produce a relaxed mental state, lowering the physiologic stress response (Jallo, Bourguignon, Taylor, Ruiz, & Goehler, 2009). In a study on the effects of RGI in pregnancy, Janke (1999) found that women were receptive to this strategy, and there was some evidence of improved outcomes for women with preterm labor, including reduced daily stress, state anxiety, and increased infant birth weight. As a low-cost, easily used strategy,
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RGI may be effective to help mothers better cope with the stress related to a preterm birth.

Maternal Stress and Prematurity
With the birth of a child, a woman experiences stress related to major physical changes (Groer et al., 2005) and role transitions (Mercer, 2004). The birth of a preterm infant initiates significantly greater stress for the woman as she attempts to cope with the uncertainty of her infant’s health. New mothers, particularly mothers of preterm infants, have been shown to experience greater levels of psychological stress that lead to anxiety and depression (Miles, Burchinal, Holditch-Davis, Brunssen, & Wilson, 2002; Singer et al., 1999), less attentional capacity toward the infant (Wahler & Dumas, 1989), and fatigue (Groer et al., 2005). These untoward outcomes increase the risk for poor child health outcomes such as diminished physical health and language and behavior problems (Kahn, Zuckerman, Bauchner, Homer, & Wise, 2002), increased stress hormone levels (Ashman, Dawson, Panagiotides, Yamada, & Wilkinson, 2002), child maltreatment (Bugental & Happaney, 2004; Sachs, Hall, Lutenbacher, & Rayens, 1999), and increased child health care use (Mandi, Tronic, Brennan, Alpert, & Homer, 1999). In previous animal (Levine et al., 2005; Walker et al., 2004) and human (Pruessner, Hellhammer, & Kirschbaum, 1998) studies, investigators linked stress with disruption of the mother–infant relationship.

The Physiologic Stress Response
When an individual perceives psychological threat, a physiologic stress response is activated and causes a psychoneuroimmunology cascade designed to ensure survival (Sapolsky, Romero, & Munch, 2000). The psychoneuroimmunology response becomes counterproductive when an individual persists in a heightened state of perceived threat (McEwen, 1998), and it interferes with cognitive functioning and causes an inability to focus attention and retrieve information from memory (Vedhara, Shanks, Anderson, & Lightman, 2000). A mother’s ability to accurately attend and respond to her infant’s cues is critical to infant health, growth, and development (Wahler & Dumas, 1989). Thus, a heightened and chronic state of stress may interfere with a mother’s ability to provide optimal care to her infant. Physiologically prolonged heightened stress can be observed in altered hypothalamic–pituitary–adrenal axis functioning as greater awakening cortisol levels (Tu, Lupien, & Walker, 2006) and lower cortisol awakening response (CAR), the difference in cortisol levels between awakening and 30 minutes after awakening (Clow, Hucklebridge, Stalder, Evans, & The ñ, 2010). In preliminary research we found that mothers of hospitalized preterm infants who had high levels of depression symptoms also had greater awakening salivary cortisol levels and diminished CAR (Howland et al., 2011).

Relaxation Guided Imagery
Relaxation guided imagery is a mind–body intervention defined conceptually as a mental representation of reality that creates a healing relationship within the body and mind. Relaxation guided imagery represents a basic principle of psychophysiology (Reed, 2007). When the mental image is experienced, there is an associated emotion that links the feeling state with the mind and body, which can then lead to a physiologic change (Achterberg, Kenner, & Lawlis, 1988). Thus, RGI is a process that moderates communication between perception, emotion, and physiologic change (Kwekkeboom, 2001). During the past several decades, the use of RGI or relaxation alone has been reported to reduce stress, anxiety, and depression (Broadbent et al., 2012; Greene & Greene, 2012; Kwekkeboom, 2001; Mizrahi et al., 2012). Researchers who study women in the perinatal setting, including women in preterm labor, have suggested a positive influence of relaxation interventions on pregnancy prolongation and birth weight (Janke, 1999; Omer, Friedlander, & Palti, 1986), as well as state anxiety (Chuang et al., 2012) and stress (Jallo, Cozens, Smith, & Simpson, 2013). Relaxation interventions resulted in reduced levels of anxiety and perceived stress among primigravida women with high anxiety levels (Holmes, Arntz, & Smucker, 2007) and in decreased anxiety during the third trimester (Bastani, Hidarnia, Kazemnejad, Vafaie, & Kashanian, 2005), as well as a reduced rate of low birth weight. Daily RGI for 12 weeks starting in the second trimester lowered anxiety, daily stress, and depression scores in African American women (Jallo et al., 2009).

Although RGI has been tested during pregnancy, the use of RGI with mothers of hospitalized...
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