



# A survey of how mothers think about and use voice with their hospitalized newborn infant



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## KEYWORDS

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**Abstract** Short-term family-centered early intervention enhances a mother's capacity for attuned interaction with her hospitalized newborn infant which in turn impacts positively on infant neurodevelopment. This study determined the acceptability of a focus on mothers' own voices to support their hospitalized infant.

Sixty mothers of newborn surgical inpatient infants were surveyed about spontaneous vocal behavior in the NICU. Questions included age, education and first experience of parenting, contextualization of voice use relative to other nurturing behaviors, and mother's capacity to imagine or think of a reason for singing to her infant.

Sixty percent of mothers sang spontaneously in the NICU. There was strong evidence for an association ( $p < 0.001$ ) between imagining singing or thinking of a reason for singing, and actually singing. There was no evidence for an association between mothers' spontaneous voice use and their age, education or experience of parenting, and musical heritage. Barriers to singing included being too embarrassed or feeling too obvious in the NICU environment.

The snapshot of mothers' beliefs, thoughts and action in using their voices is valuable in creating an efficient family empowerment model.

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## Introduction

Compromised neurodevelopmental outcomes for medically complex newborn infants have led to

the call for early intervention before discharge from hospital (Laing et al., 2010). Only a few studies report the family interaction with hospitalized infants other than preterm and most are within the American medical system (Brown and Talmi, 2005). Prior to an intervention study, feasibility research about the pre-existing attributes and capacities of the parents with hospitalized infants can provide culturally pertinent evidence to inform that research protocol (Bowen et al., 2009). This study presents the pre-existing attitudes and behaviors of Australian mothers in using their voice to support their hospitalized newborn full-term infants. It was the first in a series of feasibility studies to test approachability, acceptability and viability of a maternal education protocol to promote attuned interaction between mothers and their hospitalized full-term or older infants.

## Background

Attuned interaction between mother and infant is the dynamic experience necessary for infant learning, socialization and psychological well-being (Weber et al., 2012). An Australian study of newborn surgical patients and their mothers found that the quality of mother–child interaction is compromised in children with major birth defects requiring newborn surgery (Laing et al., 2010). They recommended that early intervention should address “the lack of individualization of treatment to the mother’s particular learning or coping style” which impedes success in mothers’ engagement in a protocol (Brown and Talmi, 2005, p.674).

Short-term family-centered early intervention enhances a mother’s capacity for attuned interaction which impacts positively on infant neurodevelopment (Brown and Talmi, 2005; Laing et al., 2010; Newnham et al., 2009). Parent education protocols for preterm infants have focused on either post discharge (Spittle et al., 2010) or in hospital on homeostasis via kangaroo care (Conde-Agudelo et al., 2011), or maternal sensitivity (Newnham et al., 2009). Hospitalized infants at term age need to actively participate in attuned interaction as a vital component of neuropsychological and emotional development (Flom and Bahrck, 2007; Markova and Legerstee, 2006). Vocal interaction is a readily available platform for mother-infant dyads, regardless of physical restrictions. Vocal expressiveness is part of mother-infant attachment (Milligan et al., 2003) and is a source of connection between the mother and infant when other kinds of interaction are not possible (Shoemark, 2013, 2006).

In this study, mothers in the NICU were surveyed to assess the acceptability of voice use as a central platform for interaction, the pre-existing attributes which influence that acceptability and the capacity of mothers to consider voice use in the NICU to support their infant. The objectives were to report:

1. The association between mothers’ spontaneous use of voice with their newborn infants in the NICU and maternal age, education or experience of parenting
2. The association of a mother’s musical heritage with her use of voice in the NICU
3. The barriers mothers report to using their voice with their infant in NICU
4. The relationship between imagining singing or thinking of a reason for singing and actually singing

## Methods

The sample of 60 participants (Burgess, 2001) was drawn from the NICU at The Royal Children’s Hospital Melbourne; a non-perinatal NICU where all infants are transferred in for management of surgical or complex medical problems. Ethics approval was granted by the Institutional Review Board (HREC31068A). Mothers were eligible when their infants had been socially available for three days (i.e., no sedative medication). Eligibility was confirmed by the medical consultant-on-duty or nurse care manager. Mothers with known mental health issues or insufficient English literacy to complete the survey independently were excluded. The principal investigator recruited participants directly and provided verbal and written explanation of the project. After consent, each participant was given the pen and paper survey and envelope and instructions for collection. Participants were free to withdraw if they felt completion of the survey would take more time than they wished to spend on it, or if their infant’s status changed during the immediate timeframe.

The 15 question survey offered a snapshot report of spontaneous behavior of mothers in the NICU. To enable comparison with the broader population of mothers of healthy infants, questions about musical heritage were drawn from Custodero and Johnson-Green’s PUMIS (Custodero and Johnson-Green, 2008). Demographic questions included age, education and first experience of parenting to be associated with mother’s use of voice with her infant (Perry Black et al., 2009). A further question contextualized voice use in the

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