

Reflections from a Feasibility Study on Maternal Live Singing to Preterm Infants in the Neonatal Unit

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Dear Editor,

Research has shown that live singing (LS) can support the preterm infant's development and parents' wellbeing. Reported physiological effects of singing for preterm infants include reduced respiratory rate and heart rate^{1, 2}, increased oxygen saturation rate^{1, 2}, improved sucking rate², and increased weight gain^{2, 3}. Parents' perceived stress and anxiety levels reduced in response to LS², and a decrease in state-trait anxiety inventory (STAI) scores in response to maternal singing to preterm infants has been reported⁴. To foster similar maternal LS research in Ireland, a feasibility study was carried out as part of a music therapy (MT) project in partnership between the University of Limerick and the regional NICU at the University Maternity Hospital Limerick (UMHL). Ethical approval was granted by the University of Limerick Hospital Group's Research *Ethics* Committee (No: 144/19) in November 2019.

A total of four mother – pre-term infant dyads partook in this NICU study to examine the effects of maternal LS. All four mothers chose “Twinkle Twinkle Little Star” as their preferred song. The song then featured as part of the LS intervention by both researcher and mother who held the preterm infant in their arms. The intervention consisted of two 3-minute periods of singing with three 2-minute resting periods before, between and after singing (2m rest > 3m singing > 2m rest > 3m singing > 2m rest).

The findings showed an overall decrease in the mean heart rate of the preterm infants during the second time of the three-minute singing (pre, 142.50, SD 5.79; 2nd singing, 138.98, SD 1.42) and a reduction of maternal stress levels in all participants (pre, 3.5, SD 1; post, 1.5, SD 1). The oxygen saturation of the preterm infants varied and no conclusion could be drawn.

Analysis of qualitative findings from three questionnaires completed by mothers included themes relating to maternal wellbeing, wellbeing of the preterm infant, and programme evaluation. Some quotes about the LS included: “(live singing was) relaxing and reduced stress levels”, “(preterm infants) found it soothing” and “(their babies) went into deeper sleep”. Overall, despite the small sample size, the findings of this study on HR and maternal stress levels align with previous studies^{2,3}.

From this feasibility study we could infer that; 1. Effective communication between the researcher and the NICU staff was key in supporting study recruitment, 2. Flexibility was essential on behalf of the researcher in organizing suitable times for mother’s participation, 3. Special considerations required and mindfulness around the suitability of the NICU environment for the LS sessions, and 4. Challenges in ensuring privacy and limiting the potential impact of background noise within the shared clinical floor space in NICU.

This study enabled us to gather information on the short-term physiological outcomes of LS in the NICU as well as evaluating the practicality of implementing MT research in perinatal settings in Ireland. The findings suggest that adopting LS sessions in the NICU could potentially have beneficial outcomes for preterm infants and their mothers even after a single session.

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References:

1. Bieleninik Ł, Ghetti CM, Gold C. Music therapy for premature infants and their parents/caregivers: a systematic review and meta-analysis. *Nord J Music Ther.* 2016; 25:131–131.
2. Loewy J. NICU music therapy: song of kin as critical lullaby in research and practice. *Ann N Y Acad Sci.* 2015; 1337:178–85.
3. Ettenberger M, Rojas Cárdenas C, Parker M, Odell-Miller H. Family-centred music therapy with preterm infants and their parents in the Neonatal Intensive Care Unit (NICU) in Colombia – A mixed-methods study. *Nord J Music Ther.* 2017; 26:207–34.
4. Arnon S, Diamant C, Bauer S, Regev R, Sirota G, Litmanovitz I. Maternal singing during kangaroo care led to autonomic stability in preterm infants and reduced maternal anxiety. *Acta Paediatr.* 2014; 103:1039–44.