Article

Music therapy self-care group for parents of preterm infants in the Neonatal Intensive Care Unit (NICU): A clinical pilot intervention

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Abstract

Background: Parents of preterm infants face major mental health challenges in the Neonatal Intensive Care Unit (NICU). Family-centered music therapy actively integrates and empowers parents in their infant’s care. With the aim to better understand and address parental needs separately from their babies’, a music therapy (MT) self-care group was implemented as part of clinical practice at the hospital Clínica de la Mujer in Bogotá, Colombia.

Methods: The group is provided for both parents twice a week in the NICU. Music guided relaxations, breathing techniques, and self-expression are at the center of the MT group sessions. Parents complete a pre/post self-administered Numeric Rating Scale (NRS) including anxiety levels, stress levels, mood and motivation.

Results: Parents highly value the MT self-care group at the NICU. On average there is a 37% improvement in anxiety levels, 28% in stress levels, and 12% in mood, restfulness and motivation. Being able to relax, to distract themselves from their worries and having time for themselves are amongst the most frequently mentioned benefits.

Conclusions: Addressing parents’ needs separately form their babies’ treatment with culturally sensitive interventions aimed to improve parental mental health, is essential for continuing the development of family-centered music therapy interventions in the NICU.

Keywords: music therapy; preterm infants; family-centered care; parents; self-care; wellbeing; Neonatal Intensive Care Unit (NICU);
1. Introduction

Having a newborn child is seen as a transformational and often times positive experience. Having a preterm baby in the Neonatal Intensive Care Unit (NICU) however, can interrupt the transition into parenthood and cause parents to feel a surfeit of emotions, often leading to a sense of hopelessness, psychological distress, anxiety and symptoms of depression [1-5]. Uncertainties revolving around the infants’ health, being in an intimidating and alien environment, the financial demands of the hospitalization, and the physical appearance of the infant can all be potential stressors for the parents, putting their emotional and mental wellbeing at risk [5-7].

Mothers of preterm infants may show long lasting signs of posttraumatic stress, depressive symptoms, and anxiety [8-10]. If the trauma experienced during the perinatal period is not addressed adequately, it may negatively affect the relationship between the mother and the child, specifically on the mother’s availability to recognize infant cues and needs [11,12]. Recently, fathers have been taking a more active role in the NICU [13,14], and just like mothers, fathers are susceptible to various common stressors [15]. However, having to care for both their infant and their partner, the pressures of keeping up with employment obligations, and possible tensions related to cultural and societal expectations regarding ‘masculinity’ or gender roles are some of the primary stressors specific to fathers [13,16-18]. Unfortunately, follow-up on parental psychological wellbeing during and after hospitalization is not always included in neonatal care settings. There is a need for culturally appropriate interventions that take into account psychological distress and wellbeing among parents in the NICU [15,17,19,20].

Understanding and addressing parents’ needs as both connected to and distinct from their baby’s needs may help parents not only as individuals, but it may also positively impact their journey towards parenthood and the relationship they foster with their baby.

Family-centered Care and Family-centered Music Therapy in the NICU

Family Centered Care (FCC) is a growing approach to pediatric healthcare in which the family is recognized as the patients’ primary source of support and as a fundamental part of their wellbeing [21]. The principles of FCC include information sharing, respect and honoring differences, partnership and collaboration, negotiation, and care in context of family and community [22]. This approach in health care has become a fundamental pillar in contemporary neonatal care [23] and
Music therapy in the NICU is a well-established field of clinical practice and research [27-29]. Current literature suggests that music therapy is beneficial for both the neonates and caregivers [30-33]. Interventions directed on the neonate aim to promote physiological and behavioral self-regulation [31,34], feeding success [31,35,36] and improve sleep or quiet alert states [31,37]. Positive impacts of music therapy on parents include relaxation [34], the reduction of anxiety and stress levels [30,31,38], and improved parent-infant bonding [30,33,40,41]. Qualitative analyses show that through the use of music parents can feel empowered by having a more active role in their infants’ care [41-43], which is crucial for the transition into parenthood [44].

The recent shift in pediatric health care to actively integrate parents in their infants’ treatment should also consider their individual wellbeing. Family-centered music therapy in the NICU is rooted in FCC principles and stresses the importance of both infant and parental wellbeing as being essential in neonatal care settings [30,43,45,46]. In order to further develop clinical practice and to detect new ways to help parents cope with potential stressors and mental health risks, a music therapy self-care group for parents was implemented at the NICU the Clínica de la Mujer.

2. Materials and Methods

Context and Setting

The Clínica de la Mujer is one of Bogotá’s most renowned maternity hospitals. Its Level-III NICU has space for 19 incubators located in individual rooms, with a few rooms reserved for twins. Parents have 24-hour access to the unit and grandparents can visit the babies once a week. Kangaroo care is a standard intervention in the NICU and music therapy is part of an interdisciplinary therapy team including respiratory therapy, speech and language therapy, nutrition, social work and psychology/psychiatry. FCC principles and a strong commitment to humanized care build the foundations of the hospital’s care philosophy. Music therapy is provided twice a week for preterm and critically ill full term babies and their families, focused primarily on parent-infant bonding, infant self-regulation and parental mental health.

The music therapy self-care group for mothers and fathers has been implemented in July 2018 with the aim to improve parental wellbeing during the NICU stay. Initially, the idea for the group developed in response to many mothers’ comments regarding their difficulties during breast milk extraction; worries about
their babies’ health and the pressure to produce enough milk are common stressors among mothers in the NICU. It was hypothesized that a music therapy self-care group could help mothers to relax and thus reduce the stress perceived during breast milk extraction. After a few pilot sessions and in discussion with the parents and the health care team it became however clear that not only mothers, but also fathers could benefit from the self-care group. As a result, the group is open for mothers and fathers since August 2018. The group is provided twice a week, for 15-20 min. on Wednesday afternoon and for 30 min. on Friday morning.

Music Therapy Self-Care Group: Procedure and Interventions

The group takes place in the NICU’s breast milk extraction room before mothers are scheduled for their next time slot. Although participation in the music therapy self-care group is voluntary, the nursing and medical team highly encourage both mothers and fathers to attend. The group usually starts with a short verbal introduction with the purpose to explain the objectives and procedures for the new participants and to quickly assess current parents’ moods or any specific stressors.

Live music therapy is at the center of the interventions. The music therapist regularly uses a nylon-string guitar, voice, shakers, an ocean drum, and a ‘Samafón’¹ as the principal instruments. Short musical games with shakers, voices or movements serve as ‘ice-breakers’, seeking to activate the participants at the beginning of the session. Then, the music therapist provides verbal relaxation prompts focused on deep breathing, imagery (i.e. internally going to a place were participants feel safe and comfortable, or evoking a particular landscape such as standing on mountain top and looking over the horizon or sitting on the beach and contemplating the movement of the waves), and/or subtle movements with the objective to foster body awareness and to make conscious current moods, thoughts, or emotions. Subsequently, live music is provided, inviting parents to breath with the music. Alternatively, parents are encouraged to use their voices with the music by either humming or singing vowels or closed consonants in order to achieve increased lengths of exhalation and to creatively explore their musicality.

¹ The ‘Samafón’ is an instrument shaped similar to a lyre, but instead of the strings, five hollow metal tubes hang from the top to the base of the instrument, connected to each other with threads. Depending on the length of the tubes, notes are lower or higher and the instrument is normally tuned in variations of pentatonic scales. The tubes are played either individually or quickly one after each other with a mallet used for singing bowls and the sound is long lasting. Additionally, the instrument can be rotated easily holding it with one hand, creating ripples of sounds that project themselves in all directions.
Although there is debate on what music is best used for relaxation [46], the music during the interventions is typically improvised and based on elements such as slow tempo, repetition, and subtle melodic and harmonic variations or modulations. Often, chord intervals clearly indicating major or minor tonalities (i.e. major or minor thirds) are substituted with sus\(^9\) or sus\(^3\) chords, leaving it open to the music therapist’s clinical improvisation skills to modulate between major or minor tonalities.

Once the intervention concludes, parents verbally reflect upon their experiences, thoughts, and feelings during the group session. The music therapist discusses music-assisted self-care techniques that participants can use on their own time. Such tools include deep breathing techniques with music or voice, the use of recorded music for relaxation, and information sharing between parents.

**Evaluation and Measurements**

To evaluate the clinical pilot program and better understand the potential benefits of the music therapy self-care group for parents in the NICU, the music therapy team designed a self-administered pre/post Numeric Rating Scale (NRS). It is important to highlight that the results gathered form the NRS are strictly used to evaluate the clinical pilot program. The scale aims to detect changes in perceived levels of anxiety, stress, and wellbeing before and after the music therapy intervention. An “Additional comments” section on the post-intervention sheet provides the opportunity for parents to share more personalized experiences and recommendations in regards to the group. Figure 1 shows the NRS currently used:

**Figure 1.**

![Figure 1](image-url)

**Figure 1.** This figure shows the NRS the music therapy team designed to evaluate the clinical pilot program. (a) This is the pre-intervention sheet. Participants are given a few minutes prior to the intervention in order to fill it out. As it is shown, the music therapy team considered anxiety, stress, and three areas of wellbeing, including mood, restfulness, and motivation. (b) This is the post intervention sheet. The only difference is the ‘additional
Parents are assured that their names and personal information is not used during the evaluation of the program. In addition to the NRS, a few semi-structured interviews were conducted with the participating parents to further understand their experiences in music therapy.

3. Results

As stated above, the music therapy self-care group takes place twice a week. However, due to time restriction on one of the days, data collection only takes place before and after the thirty-minute session on Fridays. While the evaluation of the group is part of clinical practice, it is hoped that the current data collection will help in the establishment of a research protocol in the near future.

Table 1. Shows the basic features of the music therapy self-care group since its implementation from July 2018 to November 2018.

<table>
<thead>
<tr>
<th>Total number of sessions</th>
<th>Total number of participants</th>
<th>Total number of mothers</th>
<th>Total number of fathers</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>122</td>
<td>106</td>
<td>16</td>
</tr>
</tbody>
</table>

The results obtained with the NRS indicate a positive effect of the music therapy self-care group on parents’ perceived anxiety and stress levels, and on their mood, restfulness, and motivation (Figure 2). On average there is a 37% improvement in anxiety levels, a 28% improvement in stress levels, 6% improvement in mood, a 20% improvement in restfulness, and a 9% improvement in motivation. Being able to relax, to distract themselves from their worries and to have time for themselves are amongst the most frequently mentioned benefits parents left in the ‘additional comments’ section.

Bearing in mind the cultural norms, perceptions on gender roles, and employment obligations, there are not as many fathers present as mothers throughout the pilot program. Nonetheless, participating fathers regularly express having a positive experience with the group and encouraged that it be formalized in NICU care.

Figure 2.
Figure 2. This figure shows the bar charts of the pre and post-intervention results obtained with the NRS. Please note that the NRS scale was introduced at a later point after the start of the clinical pilot program. This is why the number of the collected is 30, but the total number of participants is 122. (a) This bar chart shows the perceived level of anxiety before and after the group sessions. A lower score indicates less perceived anxiety. (b) This bar chart shows the perceived level of stress before and after the group sessions. A lower score indicates less perceived stress. (c) This bar chart shows the perceived level of mood before and after the group sessions. A higher score indicates a better perceived mood. (d) This bar chart shows the perceived level of...
restfulness before and after the group sessions. A higher score indicates a better perceived feeling of restfulness. (e) This bar chart shows the perceived level of motivation before and after the group sessions. A higher score indicates a better perceived motivation.

**Discussion and conclusions**

Parents in the NICU face many challenges that may have potential negative and long-lasting mental health implications. These challenges put not only at risk the individual wellbeing of mothers and fathers, but might also affect the evolving relationship with their baby [1,10-12].

While the recent shift in NICU music therapy towards a more inclusive approach of parents is highly desirable, studies that focus on relevant parental outcomes are still scarce [50]. Also, parents’ needs should be understood as both connected to and distinct from their babies’ progress and treatment. The music therapy self-care group at the Clínica de la Mujer was implemented to consciously try to address some of the most common psychological challenges for parents, including stress, anxiety, mood, restfulness, and motivation. The group sessions provide a space for parents to work on their personal wellbeing using simple and transferable tools relevant for trauma amelioration, resilience and coping. Both mothers and fathers report a decrease in perceived levels of anxiety and stress, and an improvement in mood, relaxation and restfulness after the interventions.

Although no data was collected regarding our initial motive to reduce maternal stress and anxiety during breast milk extraction, a limited number of articles report a positive impact of recorded music on breast milk quantity and quality [46,47]. It has been documented that both recorded and live music in the NICU can reduce parental stress and anxiety and promote relaxation [27-30,34,51,52]. For the music therapy self-care group, live music was considered best practice due to the flexibility and ability to adapt the music depending on the parents’ responses and current needs. Moreover, live music allows for a group dynamic in which participants can interact and share their experiences with one another. Knowing that information sharing is at the core of FCC principles [21,22], the music therapist regularly encourages and facilitates participants to share their experiences after the intervention and to use the space to build a support system amongst one another. Considering the ‘collective’ nature of Colombian society,
active participation of parents was considered to be more culturally appropriate than individually using recorded music.

Understanding the process parents face in the NICU is complex. Although, the group specifically addresses areas that are commonly mentioned by parents and in pediatric healthcare literature, wellbeing is influenced by many different factors, making it difficult to define and measure [49]. Although this article highlights a clinical practice program, it hopes to provide further insight that may be beneficial for the development of culturally suitable interventions that specifically address parental wellbeing. Lastly, the pilot program aims to develop a research protocol in the near future to better assess the impact music therapy may have on parental mental health and on mother breast milk extraction.

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