**RESULTS**

Table 1. Number of Studies that found a given outcome, as reported in aggregate meta studies (meta analyses, integrative and systematic reviews, n=7).

<table>
<thead>
<tr>
<th>Physiological/Behavioral Outcomes</th>
<th>Significant</th>
<th>Effect Size</th>
<th>Medium/Large</th>
<th>Small/Low</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-term</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sleep (T)</td>
<td>4/6</td>
<td>0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heart Rate (HR)</td>
<td>3/6</td>
<td>0.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Respiratory Rate</td>
<td>2/6</td>
<td>0.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motor Quality</td>
<td>1/6</td>
<td>0.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lung function</td>
<td>2/6</td>
<td>0.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-term Development</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Summary of Findings**

Music therapy was associated with a reduction in RR in RCTs, Systematic reviews, Integrative reviews, Meta analyses obtained for 49 articles and 6, 216 studies were reviewed.

Within the extensive body of research focusing on the use of music therapy as an alternative intervention in the NICU, hardly any studies focus specifically on overall development of preterm infants. Instead the existing evidence is centered around specific outcomes whereby music therapy may be involved in short term effects in behavioral outcomes like pain response and stress relief which were particularly important after medical interventions such as heel prick for blood sampling. The significant decrease in pain response reported by most studies points to the fact that music therapy might also benefit the neurodevelopment of preterm babies.

Only a few of the studies selected for this review reported significant medium and long term effects of music therapy. Meanwhile some studies reported no significant effect of music therapy and the absence of any effect hence reflecting the necessity for follow up studies and further research.

The limitations of this review include: the absence of a quality assessment during selection of studies (except the type of study), the majority of results included in this review reflect immediate or short term changes, hence failing to provide adequate information on the long term development outcomes of pre-term babies, the exclusion of studies in foreign language and the relatively short year range.

**CONCLUSION**

The use of music therapy as an alternative intervention in the NICU might have beneficial effects on the development of preterm babies as measured by physiological and behavioral responses. However current evidence predominately indicates mixed effects. In other words, evidence is still lacking with regards to the long term effects of music therapy. Therefore, further interventions and longer evaluation of long term effects is necessary to determine the effects of music therapy on the development of preterm infants.

**REFERENCES**


**A Structured Review on the Effect of Music Therapy on the Development of Preterm Infants**

**Araya, A., Ekanem, O., Obeme, T., Ongolo-Zogo, C.**, School of Interdisciplinary Health Sciences, Faculty of Health Sciences, University of Ottawa

**INTRODUCTION**

A birth is considered pre-term when an infant is born prior to 37 weeks of gestation. This situation usually results in complications which have adverse effects on the health outcomes of the newborn. Due to innovations in medical technology, the likelihood of survival of preterm infants has significantly increased. In fact, preterm infants born prior to 23 weeks have a 17% survival rate where as premature infants born between 35 to 38 weeks have a 98% survival rate.

Preterm babies spend a significant amount of time in the Neonatal Intensive Care Unit (NICU). The NICU is a very different environment in comparison to the uterus and as a result, it can be disruptive to the development of preterm infants. Continuous exposure to a variety of painful procedures such as the heel lance procedure, and sensory stimuli such as light and sound in the NICU contribute predominantly to this disruption in development. In addition, stress induced by these conditions often lead to short term complications for preterm infants, such as sleep disturbance, decreased oxygen levels and increased heart rate.

Improving the developmental outcomes of preterm babies has prompted an extensive research interest in the use of alternative methods during neonatal care. An example of such alternative interventions is music therapy. Although, there is evidence suggesting a beneficial effect of music therapy in making NICU care, soothing preterm babies after painful procedures and stress reduction, its effect on the development of preterm babies remains unclear.

**METHODS**

**Search Strategy**

A preliminary search was carried out across 5 different databases: MEDLINE Ovid, PubMed, EMBASE, SCOPUS and the Cochrane Database of Systematic reviews. This preliminary yielded a total of 4,156 studies. After screening of titles and abstracts, and exclusion duplicates, 75 studies were selected for retrieval of full texts and 379 were excluded. These were excluded if they were irrelevant to the research question (n=340); could not be accessed via the Uottawa library (n=36) or were in a foreign language (n=36).

**Study Selection and Review**

The 75 articles selected for retrieval of full texts were subjected to inclusion and exclusion criteria, and reviewed by two independent reviewers. After review and consensus, 49 studies were excluded, and 26 studies were included for this review (19 single studies and 7 aggregated studies) (See Figure 1)

**Inclusion criteria**

Population - preterm babies

Intervention - Music therapy only (as broad as singing, live music, classical music, harm music, Mozart, recorded music, lullaby).

Studies looking at music therapy in combination with other therapies were excluded.

**Outcome**

Development as measured in behavioral and physiological responses, weight gain, neurodevelopment and pain relief.

**Study Type** - RCTs, Systematic reviews, Integrative reviews, Meta-analysis, Quasi-experimental studies.

**Year range** - 2000-2016

**Data Extraction and Synthesis**

A table of characteristics was created for included studies and a summary of findings synthesized.