

## **Live vs Non-Live Music Therapy Use in the NICU**

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When a baby is born weighing less than 5.5 pounds, the baby is classified as a low birth weight baby and this can lead to serious health issues. Premature birth is when a baby is born before 37 weeks of pregnancy and is the most common cause of low birth weight along with fetal growth restriction. Following birth, these infants are cared for in the Neonatal Intensive Care Unit, otherwise known as the NICU, where they receive around the clock care from experts. Depending on the health issues of the baby, he or she can stay for days, weeks, or even months. Sometimes NICU care involves the use of incubators, monitors, feeding tubes, IVs, and ventilators. More often than not, premature infants are not even allowed to be held, because being touched is too stressful for them (D'Agata et al., 2017). With so much stress on both the parents and the babies, researchers have been seeking various ways to calm the babies to improve their quality of care and maybe even get them released from the NICU faster. Music therapy, in various forms, has been growing in popularity. Research has shown that music therapy can destress infants and calm them during painful procedure, improving overall quality of NICU care (Schwilling et al., 2015; Shabani et al., 2016; Ullsten et al, 2017). Many researchers differ, however, on whether the use of live music and non-live music is more effective. The answer to this question is important because it determines the practicality of the intervention.

In one particular study, researchers analyzed the effects of live music on low-birthweight infants and found that exposure to live music reduced salivary cortisol levels and had beneficial effects on the physiologic parameters of stable preterm infants in the NICU (Schwilling et al., 2015). This study focused specifically on live music only and made no mention of a comparison to recorded music. The study also consulted a music therapist who specifically recommended a

live, harp-like, finish instrument called a kantele. This could become an issue because it becomes very impractical to play a kantele in the NICU. The method used in this study is so specific that it could possibly lack generalizability. Another study, therefore, aimed to generalize the live music intervention. This study utilized live lullaby singing as a method to calm NICU infants during painful procedures and produced positive results showing that one may not need a perfectly tuned kantele to exercise live music therapy in the NICU (Ullsten et al., 2017). The issue with this particular source is that it only studied two infants. It may be wise for future studies to perform this same study on a larger scale to ensure that the results are reliable. Live lullaby singing can also vary. The voice of the singer in this study may have been effective but the voices of mothers and caregivers in other NICU settings may not be as effective even if the method is more practical than live instruments.

While these two studies utilized live music, they made no mention of whether or not nonlive music was just as effective. Many studies have been done on music therapy using non-live music. In fact, in one study, researchers analyzed the effects of music therapy on infants during painful procedures. Instead of using live lullaby singing, however, a special song was composed and recorded for the experiment and played for the baby. The music comprised of a woman's singing voice and real womb sounds. After playing the song before, during, and after blood sampling was taken from 20 infants, the results concluded that non-live music therapy does reduce physiological responses of pain (Shabani et al., 2016). This method is far more practical than live music because this song that produced such positive results can be replicated exactly and played in many NICUs. While it is effective, however, there is no telling whether it is more effective than live music because there is little to no research comparing the two as researchers simply choose one or the other.

One article chose to use non-live music, as well. The researchers aimed to test its effects on increasing sucking success so that a NICU infant could begin breastfeeding earlier, gain weight, and get released from the unit faster. The music played was a recording of a woman singing a lullaby and instead of being compared to live music, it was compared to pacifier use. The results showed that while the recorded lullaby was effective compared to a control group, it was not as effective as the pacifier use (Yildiz & Arikan, 2012). There is a possibility that the music therapy was less effective than pacifiers because it was not live which is why it may be wise for the study to be replicated using live music. Another study analyzed the use of non-live music in regards to breastfeeding, except this study focused on the mother and breast milk secretion. Instead of a lullaby, the mother was played pre-recorded flute music through headphones for four sessions. After these sessions, her cortisol levels were measured, and she took perceived stress scale survey (PSS). The researchers then concluded that non-live music therapy did destress mothers of NICU babies and increased breast milk secretion (Jayamala et al., 2015). This study also provides a very practical approach to using non-live music therapy for destressing in the NICU which is simply playing the music through headphones. Both of these breastfeeding studies use non-live music successfully but make no comparison to live music. While non-live music is effective, as shown in these studies, live music is also effective as mentioned previously. The question that needs to be answered is which is more effective.

The purpose of the proposed study is to compare live music therapy with non-live music therapy in the NICU setting to determine which is more effective in destressing infants during painful procedures often experienced in the NICU. The hypothesis for this study is that there will be no significant difference in the effectiveness of live music therapy and non-live music therapy in the NICU on pain levels. If it is determined that both live music and non-live music are just as

effective, then there is freedom in choosing the most practical intervention. If one is more effective than the other, more research should go into making that method as practical as possible.

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