The Effectiveness of Music Therapy as a Non-Pharmacological Intervention in Medical Settings

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Historically, it has been documented that music can be used as medicine. Many techniques have been developed in the intersection of music and rehabilitation in various settings including hospitals, out-patient facilities, group homes, schools and more. In the 2011 membership publication for the American Music Therapy Association, it was reported that 11% of music therapists work in medical and surgical settings (American Music Therapy Association, 2011). Music therapists provide the strongest base for nonpharmacological intervention in medical settings, and the importance of this is growing. With pharmacological interventions and procedures comes anxiety from the patient, anxiety from staff members and family members, and extremely high medical bills that reflect the use of pain medication and anesthesia. Research has been conducted to examine the effects of music therapy in the hospital and surgical setting on measures such as pre-operative and post-operative pain, anxiety and physiological measures that may affect these.

Music therapy is the most crucial nonpharmacological intervention, which can be traced through scholarly documentation and publication. I find it also important to note that music therapy being used as a nonpharmacological intervention is most effective when there is the presence of a music therapist. “Music therapy is utilized in the perioperative setting, which includes the preoperative holding period, the intraoperative experience, and postoperative recovery” (Levan, H., 2016, p. 86). Stress and anxiety are two of the most reported symptoms that surgical patients experience. Miluk-Kolasa, B., Matejek, M., and Stupnicki, R. (1996) defined stress as “increased emotional arousal and anxiety, and produces somatic disorders such as headaches, increased blood pressure, augmentation of allergic states etc.” One of the most anxiety-inducing steps in the operation process is the induction of the anesthesia mask. These

symptoms effect physiological measures taken by hospital staff and researchers and are involved with the limbic system. Music can activate parts of the limbic system that deal with memory and emotion and can have a great impact on the creation of a positive environment. “In effect, emotional responses originating in the limbic system last longer than the evoking stimuli” (Miluk-Kolasa, B., Matejek, M., & Stupnicki, R., 1996). What this means for music therapists is that when they help a client elicit positive emotions and distract them from the stress-provoking environment, the emotions that were created within that therapeutic relationship between client, MT-BC and music, last longer than any stimuli that may evoke negative emotions in other places in the brain (like stressed caused by the induction of an anesthesia mask).

Golino et al. (2019) measured physiological parameters and self-reported levels of pain an anxiety of clients in intensive care who were exposed to either a relaxation or song choice experience. Their results indicated that the group receiving the experience led by the music therapist showed significant results and differences in support of music therapy in all measures except for oxygen saturation level. The researchers noted that there were two non-pharmacological interventions used in their study- music listening and music therapy. They made a statement evidencing that music listening shows benefits at some points during the preoperational period, but the benefits are not lasting like active music therapy may be. This is crucial in terms of advocating for the music therapy profession. “The goals of this intervention are to create a positive and empathic interaction between the music therapist and the patient, reduce anxiety and/ or pain perception, and encourage self-expression and the use of music and songs to cope with hospitalization, treatment, and recovery” (Golino et al. p. 51). Multiple clients in this research study who received the music relaxation experience with the music therapist fell

asleep, which is a remarkable outcome given the stress-and-anxiety-provoking environment, and the fact that anesthesia had not been used at this point.

Music listening is utilized frequently in medical settings, but it is easy to tune out to a pair of headphones stuffed into yours each during the preoperational period or during an MRI. It is important to recognize the vital difference that having a live person and established therapeutic relationship there with you during your process makes in comparison to a recording. Music therapists are trained to manipulate certain aspects of music to what is best for the client in that moment, so, they adjust things like dynamic, tempo, and style to match the environmental cues or signals that the client may be giving off. Miluk-Kolasa, B., Matejek, M., and Stupnicki, R. (1996) recognized the need for non-pharmacological intervention, but their research failed to explore the most effective that music can be as a non-pharmacological intervention, which is with the presence of a music therapist. Their results for the music-listening-only interventions used support the fact that overall, music has a positive effect on physiological symptoms of people who are anxiously awaiting surgery (p. 210), but the physiological ratings between music and non-music groups in this study failed to vary greatly. Flanagan, D. A., and Kerin, A. (2017) conducted a similar study and improved upon it by giving the patients a choice of what genre of music they would listen to. Those who did not get to choose were presented with calming music, but still no music-therapist-client-relationship was involved in this study. Remarkably, when looking at whether or not pain relief was achieved, “Four of the 6 studies (67%) showed a decrease in morphine-equivalent dosing for patients in the music intervention groups (p. 11).” This is a fabulous result for the means of non-pharmacological intervention. The benefit that music listening has over music therapy is that it can be present intraoperatively in situations that another person may not be present in the room, like during and MRI. However, all

pre-and-post-operative stress and anxiety can best be supported best by the presence of a music therapist.

When indulged in a hospital setting, there is constant stress and anxiety both from provoking stimuli and just the natural environment of a hospital. Being in this setting is particularly challenging for families in children's hospitals since typically the children there undergo various procedures, receive many injections, and constantly get told what they have to do throughout the hospitalization period. In music therapy classes, we talk about normalizing the environment for the child through music therapy by allowing them to have fun, to freely exist, and to have the opportunity to make choices about something while they are in this unfamiliar environment. Sometimes the best way to make this environment normalized is to include those who are closest with patient. Music therapist and Appalachian alumni, Ezequiel Bautista, presented in a music therapy seminar in which he briefly described that some of his most effective sessions are when he involves the child's siblings to tell him about the child. Research has been expanding upon the importance of not only normalizing the environment for the hospitalized child, but for their family as well.

Millett and Gooding (2017) explored the effects of two distraction-based music interventions with patients and their caregivers. Consequently, they looked the difference between preoperational active and receptive music therapy interventions. When working in a setting like a hospital, it is important to note that the music therapist is not just going to be serving the patient that is admitted to the hospital. The involvement of their family can be a crucial part to the client's process, as well as help the family stay connected to the individual, and understand what is happening to reduce stress on all ends of the line. Perioperative anxiety is defined as "unpleasant state of uneasiness or tension secondary to disease, hospitalization, the

planned use of anesthesia, and surgery" (Maranets and Kain, 1999, as cited in Millett and Gooding, 2017, p. 61). Perioperative anxiety can be shared between all individuals in the room whether that be the patient, family, anesthesiologist or surgeon. Millett and Gooding stated that "Young children who experience high levels of preoperative anxiety often exhibit behavior, experience more surgical complications, and are at a higher risk for developing a variety of negative postoperative consequences" (p. 460). I spoke with a music therapist from Italy who works in a children hospital this summer, and he made a statement about how much the presence of the music calms everyone in the room down before, during and after the operation. The absence of stress and anxiety gives room for success, and in the operative setting, music therapy can be that tool that lays the foundation for a successful operation and recovery. Millett and Gooding also give evidence that use of music therapy can affect the individuals in the waiting room and operation room with the patient, which overall effects the mood of the entire room including the patient. The passive intervention was music assisted relaxation which used the iso-principal and entrainment to match the client where they were physiologically and behaviorally, and gradually change aspects of the music like rhythm, tempo, volume, to bring the client down to a sense of comfort and relaxation. The active intervention was music alternate engagement, which included a variety of auxiliary percussion and melodic instruments that were used in conjunction with musical games and songs to distract the client from the stress-provoking stimuli at hand and in the near future. There was no significant difference in the effectiveness of either music therapy intervention, but a music therapist was present in both interventions to provide the support needed to both the client and their caregiver. In the end, the results from Millet and Gooding (2017) gave proof that music therapy interventions which include the presence of a music therapist are effective in reducing pre-and-post-operative anxiety for

children undergoing procedures and their caregiver. An interesting point-of-thought for research that was mentioned by the authors is that the use of music therapy can cause positive outcomes post-surgery.

"…Music alters pain pathways in the pediatric patient and therefore their perception of pain" (Levan, 2016, p. 86). The tertiary area of concern that has been mentioned, which should be addressed in pediatric patients, is the level of pain they experience. The use of music therapy as a non-pharmacological intervention allows the client to have a perceived level of control, which ultimately changes their perception of what they are experiencing, musically and physically, as well as emotionally which ultimately decides the outcome. These three factors are instrumental in perceptions of pain, and music can positively alter these three factors very effectively. It is astounding to think that through the continuing relationship of a client and music therapist in the hospital setting can result in less pain intensity, lasting reduction of pain, and a comforted feeling as well as control. Reflect, for a second, back to the one goal that music therapists have of normalizing the environment and giving the children choice in what they want through music. Levan (2016) made a statement that the pediatric client had an enhanced feeling of control in and after the second session. It almost makes it sounds too simple that one consistent thing, that being the music and music therapist relationship with the client, quickly enhanced the quality of life for this child in the hospital. (p. 90). Simply put, the healing and strengthening powers that music therapy can have amaze me, and with the aspiration to work in a children's hospital, all I can hope for is to be able to make a statement like that about my future clients.

Expanding upon the pediatric population, music therapy as a non-pharmacological intervention has been documented by Palmer, J. B., Lane, D., Mayo, D. Schluchter, M., and

Leeming, R. (2015) on women receiving breast surgery as a breast cancer treatment. Medication can manage the severity of anxiety surrounding the operational-period, but solely the heavy doses of anxiolytic drugs used can have negative effects like slowing down circulation and respiration. The authors make an important point that music is often seen as "music in medicine" when it is passive musical interaction, for example, listening to music through headphones during an MRI that is facilitated by non-music-therapy-staff (p. 3162). Though the use of live music is often preferred for its known benefits because of the adaptability it presents, recorded music can be beneficial for logistical reasons when thinking about music therapy in the operating room. In the study conducted by Palmer et al. (2015), the first group received live music with a preferred song preoperatively, and a therapist-selected song intraoperatively. The second group received a preferred recorded song preoperatively, and a therapist-selected recorded song intraoperatively. The last group received typical treatment and were provided with noise-blocking headphones. Significant results from the study include: there was a significance in less reported anxiety in both music groups compared to the typical care group, and the group that received live music reported feeling ready for discharge quicker than the other two groups. Important notes for research on this track are that this was the first study conducted with this exact population, and there is a limit in research that consider live music in the operation area. Many of the results in Palmer et al. (2015) were not significant, but this population differs greatly from previous populations mentioned in that, in the research, music therapy sessions only lasted five minutes, but the reality of adults going through cancer treatment is that they are more aware of all of the possible outcomes and what is going on than children might be. Regardless, when considering what type of music to use in therapy sessions, it is important to understand that for live and preferred music- "Because it delivers what is expected, preferred music may

stimulate the relaxation response through activation of the parasympathetic branch of the autonomic nervous system. Familiar melodies, rhythmic patterns, and song lyrics may provide a welcome contrast to distress by delivering the predictable in an unpredictable environment, thus restoring balance to the autonomic nervous system" (p. 3165). Homeostasis of the nervous systems and neural pathways is very crucial to success given the anxiety-provoking stimuli of medical environments and procedure protocols. Through no other connection than that with music can your brain be so positively affected.

Music therapists provide clients with the outlet to take the music they enjoy and create, and foster a comforting, therapeutic environment which allows all parts of them to thrive and heal. Though music has been recognized in medicine for years, music-in-medicine is more recognized to be passive musical engagement such as listening to music through headphones. On the contrary, the benefits of music therapy co-occurring with the relationship created with a therapist in the medicinal environment has been studied and importantly differentiated from music-in-medicine. There is a growing need for effective non-pharmacological intervention in the medical world in order to reduce hospital bills, reduce pain and anxiety without risking the function of biological processes, and to just simply normalize the environment for the patient and/or their family.

Music has the powerful ability to manipulate somatic and neurological processes. Miluk-Kolasa, B., Matejek, M., & Stupnicki, R. (1996) reported lower levels of anxiety with their group that was exposed to music, but the results did not differ much from the group that did not receive any music. Further, they informed us that the effects of music explored in an environment with a therapeutic relationship can last longer than a stress-provoking-stimuli. Though they failed to report information on this relationship, they provided a foundation for us

to understand why the group receiving music led by a music therapist in the Golino et al. (2019) study had more success as well as significant results. From this study, it is important to take away the difference in interventions mentioned by the researchers. Music listening and music therapy both provided benefits for the patients, but the lasting effects that the music therapy intervention had on the patients was most significant and is very important to recognize in advocating for the profession. This study also provided remarkable data in which clients who were exposed to music relaxation with a music therapist fell asleep without the use or need of anesthesia. Continuing, we explored Flanagan, D. A., and Kerin, A. (2017) who gave participants and opportunity to listen to preferred music, though the intervention only involved music listening instead of music therapy. Though they did report that 67% of their music groups required less morphine, Palmer et al. (2015) expanded the previous research by providing the outlet of preferred music in conjunction with live music by a music therapist. Limiting factors for this study were that sessions were very short and concise, but we learned that preferred music has an important role in normalization of the environment due to its familiarity, predictability, and emotional connection. Continuing along the topic of normalization, we are brought back to Levan (2016) which informs us that music can be involved with the three factors of pain, those being perceived level of control, the perception, and the emotional state of the patient (p. 90). Music may distract, which takes away perception, music may be totally in the hands of the client, which gives them control, and music therapy can be very much about expressing emotion, exploring emotion and eliciting emotion, which overall gives the client access to discover and control their state of being. These three factors, again, can be greatly swept over my music, which gives accessibility to the client to be one with their environment. Music can distract and may be the best distraction when it involves the family as is described in Millet and Gooding

(2017). There are many unpleasant states that may accompany a child's visit to the hospital. This environment is not only uncomfortable to the admitted child, but it effects the family and caregivers as well, which is why it is important to allow the entire family to be part of the process so they can be confused, learn, understand, and accept together. Music brings people together and relieves all boundaries that may be present. Their results from both groups indicated that music therapy relieved anxiety in both the patient and their caregiver.

Music creates the opportunity for neurological, somatic, and emotional reactions, as well as reduced anxiety, pain, and increased relaxation- sometimes total relaxation. The use of a tool like music therapy as a non-pharmacological intervention can be instrumental in setting the foundation for what care should look like. The medical setting is an anxiety-provoking, stressful environment with lots of questions and much fear, where the need for non-pharmacological intervention is growing more and more prevalent.

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