Effects of Music Therapy on Pain Felt by Burn Patients During Dressing Change

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Burn patients in hospitals experience tremendous pain, not only during their trauma, but also throughout their hospital experience. Burns can happen from chemical, thermal, radioactive, or electrical exposure to the skin (Rohilla, Agnihotri, Trehan, Sharma, & Ghai., 2018). The patient's condition is assessed daily to monitor healing and prevent infections. As part of the assessment process the patient's dressing must be removed and changed. Dressing changes can cause excruciating pain for the patient. A dressing change consists of removing the dressing, debriding the burn, applying antibiotic ointment, and the application of a new bandage. Despite being mandatory for the damaged skin to heal, the patient can experience extreme pain throughout the process which must be mitigated.

Problem Statement

Health care professionals tend to immediately relieve pain through pharmacological therapy (Manworren & Gilson, 2015). Burn patients have reported pharmacological therapy was an insufficient pain relief measure. Consistent use of opioids or analgesics not only have many side effects but may also lead to addiction. All of these potential factors put fear and anxiety into the patients who require pharmacological therapy for pain relief (Rohilla et al., 2018). It is important to start researching different ways to relieve pain through non-pharmacological therapies. Music therapy has offered a new way of relieving pain for patients with burns (Hsu, Chen, & Hsiep, 2016; Li, Zhou, & Wang, 2017; Rohilla et al., 2018). There is limited research surrounding music therapy and its use for pain relief during medical procedures. The aim of this paper is to present evidence on the effect music therapy can have on pain levels in patients with burns.

Synthesis of Literature

A randomized control trial conducted by Hsu et al. (2016) focused on the effects of music therapy during burn patients' dressing changes. The study focused on the impact of music intervention before, during, and after dressing changes on burn patients' pain and anxiety levels. The study observed 70 burn patients hospitalized at Chang Gung Memorial Hospital Burn Center in Taiwan. The style of crystal music was pre-selected for patients and played out loud through a CD player before, during, and after dressing change. Researchers found there was a significant decrease in pain and anxiety felt by the patients before, during and after the dressing change with intervention. Music therapy had a significant impact during the first three days of intervention, but the effects were not as strong as time went on. This demonstrated that while music therapy can be a beneficial adjunct to pain management, it cannot be used solely to decrease pain.

A systematic review and meta-analysis by Li et al. (2017) focused on the effects music therapy can have on burn patients during different treatment procedures, not just dressing change. Of the 17 studies included, only six of them explored the effects of music therapy on pain. Across the studies there was significant heterogeneity meaning there was great variance between the implementation and results of the studies. The pooled results showed there was a significant difference in the pain felt by the music intervention group compared to the control group. However, two other studies demonstrated inconsistent results suggesting that other interventions may make a bigger impact on pain than music therapy. In those studies music therapy did decrease pain, but there was not a significant difference to those in the control group.

Rohilla et al. (2018) focused on the effect of music therapy related to anxiety, pain, and use of opioids during dressing changes. The focus was to have patients self-select the music used in the therapy treatment from 10 instrumental pieces, and music therapy was delivered to patients

through headphones before, during, and after dressing change. The results showed that although the amount of pain medications used did not significantly decrease, patients required weaker analgesics opposed to stronger dosed opioids. Music therapy also helped to decrease the overall self-reported pain score and the median state anxiety scores decreased. This suggested that music intervention can help aid in the decrease of pain, anxiety, and opioid use.

Conclusion and Implications for Practice

While all three studies demonstrate the potential for music therapy to benefit pain management in burn patients, more research is needed to confirm the initial findings. The results demonstrated that music therapy can have a positive impact on pain levels experienced by burn patients, but the extent of this impact is not well understood. There is an overarching concern in today's society about the increasing use of strong opioids (Zolot, 2017). These studies showed that music therapy can decrease the extensive pain felt by burn patients during treatment procedures, like dressing changes, therefore minimizing the need for strong opioids (Rohilla et al., 2018).

Hsu et al (2016) showed that music therapy could not manage pain by itself. Music therapy helped patients manage pain with less aggressive pharmacological interventions, but some form of analgesia will be needed. While the results of the studies showed similar findings their implementation of music therapy differed in many ways. Some studies implemented the therapy through headphones, while others played the music out loud. The style of music played and who selected it also differed between studies. The answer behind the most beneficial use of music therapy has yet to be found. This showed that further research is needed to not only show the effect of music therapy on pain relief for burn patients during dressing change, but also on

which style of music therapy implementation is most effective as no two articles implement music therapy the same.

Before a determination of the best practice standards for decreasing the pain felt by burn patients during dressing change can be made there must be significant strides made in research. Each of the studies provided valuable information about different techniques and ways to decrease pain during a dressing change. While the extent of music therapy's effect is not entirely known, its implementation poses no risk of harm to patients. The main goal of nursing is to care for patients and their needs. Considering patient preferences, the nurse can suggest the use of this therapy if burn patients are struggling with pain management. If the patient chooses to undergo this treatment intervention they may experience some relief. With proper research in the future this method can be properly implemented into practice to alleviate patient suffering and increase their quality of life.

References

Hsu, K., Chen, L., & Hsiep, P. (2016). Effect of music intervention on burn patients' pain and anxiety during dressing changes. *Journal of the International Society for Burn Injuries, 42*(8), 1789-1796. doi:10.1016/j.burns.2016.05.006

Li, J., Zhou, L., & Wang, Y. (2017). The effects of music intervention on burn patients during treatment procedures: A systematic review and meta-analysis of randomized controlled trials. *BMC Complementary and Alternative Medicine, 17.* doi:10.1186/s12906-017-1669-4.

Manworren, R., & Gilson, A. (2015). Nurses' role in preventing prescription opioid diversion. *AJN The American Journal of Nursing*, *115* (8), 34-40. doi:10.1097/01.NAJ.0000470398.43930.10

Rohilla, L., Agnihotri, M., Trehan, S. K., Sharma, R. K., & Ghai, S. (2018). Effect of music therapy on pain perception, anxiety, and opioid use during dressing change among patients with burns in India: A quasi-experimental, cross-over pilot study. *Ostomy Wound Management, 64*(10), 40–46. doi:10.25270/owm.2018.10.4046

Zolot, J. (2017). Worsening opioid epidemic prompts action. *AJN The American Journal of Nursing, 117*(10),15. doi:10.1097/01.NAJ.0000525858.52569.e6

Appendix A

Annotated Bibliography

Hsu, K., Chen, L., & Hsiep, P. (2016) Effect of music intervention on burn patients' pain and anxiety during dressing changes. *Journal of the International Society for Burn Injuries*, *42*(8), 1789-1796. doi:10.1016/j.burns.2016.05.006

This study investigated the effects of music intervention on burn patients' pain and anxiety during dressing changes. The researchers focused on a population of 70 patients at the Chang Gung Memorial Hospital Burn Center in Taiwan. Music was played on a crystal piano during the clients' dressing change. After the dressing change the patients would then be asked to rate the pain and anxiety felt during the dressing change on a 0-10 numeric rating scale. The researchers noted that when music intervention was implemented the patients' pain and anxiety before, during, and after the dressing change was significantly decreased. This study did have some limitations including not having the opportunity to utilize a double-blind design because of how determining an appropriate placebo to a music intervention would be very difficult. This article was proven to be very useful in determining how musical intervention affects the pain felt by a burn patient during a dressing change. While this one article provided useful information, it cannotsolely carry the conclusion and best practice about music therapy with these patients.

Li, J., Zhou, L., & Wang, Y. (2017). The effects of music intervention on burn patients during treatment procedures: A systematic review and meta-analysis of randomized controlled trials. *BMC Complementary and Alternative Medicine, 17.* doi: 10.1186/s12906-017-1669-4.

This systematic review and meta-analysis compared the results of 17 different research articles to find a better understanding of the effects of music intervention on burn patients while undergoing treatment procedures. The articles included focused on the effects of music intervention on different variables such as pain, anxiety, blood pressure, and heart rate. Pain was assessed in different ways before and after the intervention and treatment. Pooled results showed significant differences in pain scores between the music intervention group and the non-music intervention control group. Some studies, however, showed inconsistent results. A limitation that the authors touched upon stated half of these studies were originally published in Chinese. The quality of music intervention and trained therapists in China was not sufficient and could have been improved. The results may not be comparable to the quality of music therapy and results gathered in the United States health care system. The review also compared articles with different age groups and treatment procedures which may alter the data as it is unfocused. This source was valuable as it showed further research on music therapy is needed to explain controversial results.

Rohilla, L., Agnihotri, M., Trehan, S. K., Sharma, R. K., & Ghai, S. (2018). Effect of music therapy on pain perception, anxiety, and opioid use during dressing change among patients with burns in India: A quasi-experimental, cross-over pilot study. *Ostomy Wound Management, 64*(10), 40–46. doi: 10.25270/owm.2018.10.4046

Research was conducted to understand the effects of music therapy on burn patients during a dressing change. The study took place on a burn unit at a tertiary care hospital in Northern India. A total of 10 participants took part in 104 dressing changes during a two-month period. Each patient had a dressing change every other day, while alternating between a regular dressing change and a dressing change while listening to music. The methods to collect data included rating their pain on a scale from 0 to 10 before, during, and after the dressing change. Their anxiety was also recorded 30 minutes before each dressing change with the Indian State Trait Anxiety Test that calculated their anxiety score after the patient verbalized how they felt. After each dressing change, hemodynamics and the number of opioids needed were also recorded. Limitations of the study included having a small sample size, lack of blinding, self-reporting pain and anxiety, and 8 out of 10 participants being men. Strengths of this study included being the first study to look at music therapy on burn patients in India. All patients were their own control as well and were able to self-select the music they received. This was a valuable source as it confirmed that music therapy is effective in reducing pain, anxiety, and opioid use in burn patients during a dressing change.

Author last name and year of publication	Research Question/Research Objective	Sample	Design	Independent Variable OR Intervention OR Issue	Dependant Variable/ Outcome	Significant Results	Limitations/ Gaps	Strengths
Hsu, Chen, Hsiep (2016)	Analyzed 70 burn patients and the effect of music intervention on reported pain and anxiety during dressing changes	70 patients at the Chang Sung Memorial Hospital Burn Center in Taiwan	Prospective randomized clinical trial	Music intervention during dressing changes	Pain, anxiety, discomfort of burn patients during a dressing change	- Patients reported significant decreases in pain and anxiety levels - The decreases in anxiety and pain leveled off after a couple of days	- Unable to conduct a double blind designed study - Very difficult to determine an appropriate placebo	- Results were consistent with other studies - Prospective design - Music used was what most found acceptable
Li et al. (2017)	Effect of music intervention on pain, anxiety, heart rate, and blood pressure for burn patients during treatment procedures.	17 studies met inclusion criteria. This included 804 burn patients. For analysis of pain (which is relevant to our paper) 6 studies and 206 patients	Systematic review and meta analysis.	Music therapy during treatment procedures	Pain, anxiety, blood pressure, and heart rate of burn patients in the ICU.	- Significant differences in pain scores between the music intervention group and control - Some suggested sensory focusing has greater impact on pain	- Some articles were originally published in Chinese. - Quality of music intervention/ trained musical therapists in	- PRISMA guidelines were followed - Cochrane Risk of Bias tool used to assure appropriate inclusion of studies

		were included.				relief than music distraction - Some stated music therapy did decrease pain, was not significant difference from those who did not receive the intervention. - Heterogeneity was demonstrated ($p < 0.001$).	China needs improvement. - Age groups/ genders differ across articles/ were not compared	
Rohilla et al. (2018)	Assess the effect of music therapy on pain, anxiety, opioid use, and hemodynamic variables during burn dressing change	10 participants above the age of ten on a burn unit, 104 dressing changes in two months	Quasi-experiment, Cross over Pilot study	Listening to music while changing a dressing	Anxiety, Pain, opioid use	- Opioid frequency was significantly lower in the experiment group ($p = .002$) - Overall Pain scores were significantly lower in experimental group ($p<0.001$)	- Lack of blinding - Limited sample size from many patients being on inotropic or ventilator support	- First study done in India exploring music therapy in burn patients - Each patient was their own control - Patients self-selected music Pain measured on NRS

						- Median Anxiety scores were significantly lower in the experimental group ($p<0.001$)		which was reported frequently as a useful tool