Trauma: An Interim Analysis of Trial Efficacy in a Pilot Study Investigating the Effects of Music Therapy in Ventilated ICU Patients

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Music Therapy (MT) is quickly becoming a standard of care to reduce patient distress and promote emotional, psychological, and psycho-social well-being in the medical field. The recovery of patients suffering from traumatic injuries in an ICU setting is often complicated by noxious stimuli. Pharmacologic sedation is used for over 80% of ICU patients to relieve the disconcerting feelings that are a result of their surroundings. MT is frequently used in hospitals, but its effects on the sedation requirements of critically ill patients in an ICU has not been previously studied. MT holds the potential to reduce the patient’s sedation, ventilator time, hospital stay length, and to decrease the possibility of potential mortality.

Study Goals: To show a change in pharmacological sedation requirements when patients are exposed to MT as compared to a rest period.

Study Location: Lehigh Valley Health Network Cedar Crest TNICU, Allentown, PA, USA

Study Demographic: 27 participants enrolled in a 2.5 year period

Inclusion Criteria: 18 years of age or older; admitted to the TNICU; trauma related injuries; required assistance of mechanical ventilation including: full-vent support, trach, C-Pap and Bi-Pap, trach Mask; Glasgow Come Scale (GCS) of 9 or above for 24 hours prior to enrollment; required intermittent sedation, able to understand and sign the informed consent form (ICF); or have a legally authorized representative (LAR) who can provide the ICF; music preference equal to 8; continuous sedation that required pharmacologic sedation administered on MT days versus rest period days per subject. The subject ID in the lower left corner were not relevant when analyzing data due to factors such as not having enough days of enrollment yet. The numbers in the lower right show the total amount of sedation administered to the entire patient population and the difference in sedation needed on rest period days averaged as a whole population.

Exclusion Criteria: Presentation of neurological deficit with a GCS less than or equal to 8; radiologic evidence of severe head injury with a GCS less than or equal to 8; continuous sedation that required propofol, pentobarbital, or paralyzis; diagnosis of dementia; known hearing impairment of use of a hearing aid; music preference was not known; the individual required the support of mechanical ventilation indefinitely.

Experimental Set-up: Music therapy and undisturbed rest periods were given on alternating days until the end of therapy. Each session of MT and RP lasted 62.34% more sedation on rest period days than on music therapy days. The results showed that across the study population, patients required 62.34% more sedation on rest period days than on music therapy days.

Methods

Figure 1. The graph pictured above shows the subject ID, distribution of days enrolled in the study, and total pharmacologic sedation administered on MT days versus rest period days per subject. The subject ID in the lower left corner were not relevant when analyzing data due to factors such as not having enough days of enrollment yet. The numbers in the lower right show the total amount of sedation administrated to the entire patient population and the difference in sedation needed on rest period days averaged as a whole population.

Figure 2. The table above shows the enrolled patients and their change in sedation from the first day of study enrollment and the last day of study enrollment. The final column shows the net change in pharmacological sedation requirements between the two days.

Results

Discussion

It was hypothesized that the amount of sedation required would decrease on the days that MT treatment was received, and would increase on days when the “rest period” was received. The results showed that across the study population, patients required 62.34% more sedation on rest period days than on music therapy days.

All of the previous studies limited the amount of time that patients received MT to 30 minutes per day. The patients enrolled in this study received two 60 minute sessions of MT each day. Each patient received 1.5 hours more MT than the other studies, which is something that aided in determining the efficacy of MT. Sample size was a noticeable limitation in this study; originally the study planned to enroll 100 patients.

Although a goal of the study was to achieve more heterogeneity in sample population, limiting the patient pool to TNICU patients was a possible cause for problems with patient accrual. In future studies, all patients in a critical care setting should be included in MT studies (TNICU, MICU, SICU). This would create an ideal population, as the majority of TNICU patients are of a younger age, and MICU/SICU patients trend towards more advanced ages on average.

Conclusion

The results of this study clearly showed that Music Therapy plays a key role in reducing sedation for patients. Reduction of sedation would cause a lowering of ventilator time and expedited discharge from the TNICU/ICU. Further research should be conducted to investigate the effects of music choice on the patient’s sedation requirements. Numerous studies have shown the effects of MT on patient heart rate and respiratory rate, and lyrics are known to have effects on mental status. No research has been conducted to determine whether music without lyrics or music with a low beat per minute number can lower sedation requirements still further.

REFERENCES


