Article

Therapeutic Use of Music and Television in Neurocritical Care

A Practice Survey

jhn

Journal of Holistic Nursing
American Holistic Nurses Association
Volume 34 Number 1
March 2016 6–12

10.1177/0898010115577974
http://jhn.sagepub.com
SAGE

DaiWai M. Olson, PhD, RN, CCRN
H. Hunt Batjer, MD
The University of Texas Southwestern, Dallas
Michael L. Zanders, PhD, LPC, MT-BC
Texas Woman's University, Denton
Kimberly Harrison, RN, BSN
The University of Texas Southwestern, Dallas
Jose I. Suarez, MD
Baylor College of Medicine, Houston

Introduction: Although health care providers often play music via radio, or play television, to calm and sooth patients, limited research is available to guide practice. **Method:** This study used a 17-item practice survey that was distributed electronically to neurocritical care society members in July 2014. Responses were collated and analyzed using SAS (Version 9.3). **Results:** There were 118 completed responses, including from 71 attending physicians, 9 resident or fellow physicians, 30 nurses, and 8 affiliate professional members. The majority of respondents sometimes or always play music (65%) and agree that music is therapeutic (70%). However, there was no clear practice pattern regarding when or why music or TV should be used as an intervention in the neurocritical care unit. **Conclusion:** The use of music and TV is a common intervention in the neurocritical care unit but lacks a strong scientific foundation and is associated with a high practice variance.

Keywords: *music therapy; milieu therapy; brain injury recovery*

Introduction

Music, in its many forms throughout history, is an ingrained component of the human experience. Music has been used to both soothe the savage breast and lead man to battle. Stories, theatre, and more recently television (TV) may be used to capture our attention or challenge our thinking. Inventions from the past century have made entertainment highly portable, and it is the rare hospital that does not have the ability to provide on-demand entertainment for patients.

The difference between music therapy and the use of music with therapeutic intent may not be adequately appreciated. Music therapy requires a defined and individualized goal that must, according to the American Music Therapy Association (2014), be provided by a credentialed music therapist. Furthermore, music therapists differentiate between music *as* therapy and music *in* therapy (Ruud, 2010). Hence, although a nurse, physician, or family member may play music as an intervention, that intervention is not music therapy (Bradt, Magee, Dileo, Wheeler, & McGilloway, 2010).

There is a growing body of literature that examines the utility of music therapy to reduce anxiety and stress during critical illness (Chlan, Weinert,et al.,

Authors' Note: Please address correspondence to DaiWai M. Olson, PhD, RN, CCRN, Associate Professor of Neurology and Neurotherapeutics, The University of Texas Southwestern, 5323 Harry Hines Boulevard, Dallas, TX 75390-8897, USA; e-mail: daiwai.olson@utsouthwestern.edu.

2013; Davis & Jones, 2012). Music therapy has been demonstrated to be effective in reducing postoperative pain, agitation, and narcotic requirements for critically ill cardiovascular and medical-surgical patients (Chlan, 2000; Good, 1995; Guzzetta, 1989; Su et al., 2013; White, 2000). Music therapy is effective to reduce anxiety, pain, and agitation in mechanically ventilated patients (Chlan, 2009; Chlan, Engeland, & Savik, 2013; Chlan, Weinert, et al., 2013; Davis & Jones, 2012; Han et al., 2010; Hunter et al., 2010; Korhan, Khorshid, & Uyar, 2011). However, a review paper from the Cochrane database found that only seven studies of music therapy included patients with acquired brain injury; and none included acute stroke patients who required mechanical ventilation (Bradt et al., 2010). Results from a multicenter randomized clinical trial were reported in the June 2013 issue of the *Journal of the American Medical Association* that provide support for music therapy to reduce anxiety in mechanically ventilated patients; the study was, however, limited to patients who were alert enough to provide self consent (Chlan, Weinert, et al., 2013). A recent study by O'Kelly et al. (2013) explored the response to music for patients with altered level of consciousness by comparing results from 20 healthy controls against 21 patients with altered level of consciousness. The findings suggest that even in a minimally conscious state, patients have the potential to respond to music.

Milieu therapy that includes both using stimuli such as music and reducing stimuli such as sound and light has been found to promote sleep and resit in neurocriitcally ill patients (Dennis, Lee, Woodard, Szalaj, & Walker, 2010; Dileo & Bradt, 2006; Olson, Borel, Laskowitz, Moore, & McConnell, 2001). However, these studies have not included acute stroke patients. Turning off TVs for noise reduction and lowering light levels at night promote sleep and are associated with less intensive care unit (ICU) delirium (Kamdar et al., 2013). Research supports the point that lower light and sound levels in the ICU are associated with lower stress and better sleep quality (Aaron et al., 1996; Konkani & Oakley, 2012; Olson et al., 2001; Topf, Bookman, & Arand, 1996).

To date, these studies exploring sound in the ICU have not included actute stroke patients, and yet the use of music and TV with these patients is largely considerd acceptable and appropriate practice. The lack of scientific evidence to support the use of music and TV when caring for acute stroke patients has resulted in a practice based primarily on studies in nonstroke patients and on personal experience and/or intuition.

The purpose of this survey was to explore providers' use of music and TV when caring for ICU patients who have an acute neurologic injury. The results from the survey will be instrumental in identifying and describing the most common practice patterns associated with using music and TV.

Method

To understand providers' use of music and TV when caring for patients with an acute neurologic injury while they are in the intensive care setting, a commercially available web-based survey was distributed to the following potential participants. All physicians (MD), nurses (RN), pharmacists (Pharm-D), physicians' assistants (PA), and other professional members of the Neurocritical Care Society (NCS) were invited to participate via e-mail. The invitation was sent after approval from the NCS Research Committee, and respondents were informed that this was a survey of practices when caring for their critically ill patients. Because the survey did not include protected health information, it met the criterion for exemption by the Institutional Review Board at the University of Texas Southwestern Medical Center in Dallas, Texas.

The final survey of 17 questions was available via a link to the ProProfs.com© website for 2 weeks in July 2014 (Table 1). The first five questions addressed demographics and the availability of equipment (radio or TV). Participants were then asked to use a Likert-type scale when responding to nine different statements addressing practice patterns and preference for music and TV use in the neurocritical care unit (NCCU). Question 15 was a true or false question asking if there was a policy regarding a designated rest period. The final two questions were optional and allowed for free-text responses regarding preferred type of music or TV for neurologically injured patients.

At the end of 2 weeks, responses were downloaded from the ProProfs.com website into a single spreadsheet (msExcel). Data, excluding free-text responses, were formatted with numerical values assigned to nominal fields and saved into a tab delimited (.csv) file before being uploaded to SAS

Table 1. Summary of Survey Questions in the Matinee Study

Item	Question or Statement	Response
1	Which of the following best describes your practice?	Multiple-choice
2	What percentage of the patients in your ICU have a neurological or neurosurgical diagnosis?	Multiple-choice
3	For how many years have you been in clinical practice?	Multiple-choice
4	Does your ICU have a written policy for music therapy?	Yes/no
5	Are there TVs and/or radios freely available for your ICU patients?	Yes/no
6	If the TV or radio is turned ON when I enter the room, I will turn it off.	Likert-type
7	If the TV or radio is turned OFF when I enter the room, I will turn it on.	Likert-type
8	I will play music (e.g., radio, iPod) for patients with acute neurologic injury.	Likert-type
9	I will turn on the TV for patients with acute neurologic injury.	Likert-type
10	Playing music is therapeutic for patients with acute neurologic injury.	Likert-type
11	Turning on the TV is therapeutic for patients with acute neurologic injury.	Likert-type
12	When I play music for a patient with acute neurologic injury, I do so at a specific time and for a specific purpose.	Likert-type
13	We need additional research on music therapy for patients with acute neurologic injury.	Likert-type
14	We need additional research on when to turn on the TV for patients with acute neurologic injury.	Likert-type
15	At my institution, we have a designated period of time "Quiet Time" during which sound is intentionally reduced.	True/false
16	If you play music for your patients, what type of music do you play the most often?	Free-text
17	If you turn on the TV for your patients, what type of shows do you turn on the most often?	Free-text

Note: ICU = intensive care unit.

Version 9.3 for Windows. Imputation was not required because there were no missing values. Statistical analysis is primarily descriptive. We examined descriptive statistics and central tendencies with Likert-type responses explored as ordinal data. We used general linear modeling to explore for association between one or more variables. The free-text responses for the final two survey questions were examined separately for themes.

Results

There were 118 completed surveys returned from approximately 1,400 members. Respondents included 71 (60%) attending physicians, 30 (25.4%) nurses, 9 (7.6%) resident/fellow physicians, and 8 (6.7%) affiliated professions (e.g., pharmacists). All of the respondents work in ICUs that admit patients with neurological or neurosurgical diagnoses, and 80 (67.8%) work in ICUs where over 75% of patients are neurocritically ill. There was a broad range of clinical experience: 43 respondents (37%) had fewer than 10 years of experience, 41 (35%) had between 10 and 19 years of experience, and 33 (28%) had 20 or more years of experience. Only 9 (8%) respondents indicated that they did not have a TV or radio available for use in the ICU, and only 4 (3%) respondents (2 nurses and 2 physicians) indicated that they have a written policy for music therapy whereas 74 (63%) stated that they have a Quiet Time period (Dennis et al., 2010; Olson et al., 2001).

Responses for the nine statements using the Likert-type scale were explored and found to have an approximately normal distribution, and therefore central tendency was reported as mean and standard deviation (Norman, 2010; Sullivan & Artino, 2013). Using a 5-point scoring system (0-4) with 0 indicating either *never* or *strongly disagree*, the mean values ranged from 1.5 to 3.2 (Table 2). The only statement for which the mode response was an anchor (in this case *never*) was the statement that if the TV or radio is off, the respondent would turn the TV or radio on. A majority of respondents indicated that they sometimes or always play music (65%), and they either agree or strongly agree that music is therapeutic (70%). A smaller portion of respondents indicated that they sometimes or always turn off the TV (57%), and only 34% indicated that they agree or strongly agree that TV is therapeutic. Respondents were primarily neutral (39%) with regard to playing music at a specific time or for a specific purpose. There was broad support for additional research in music therapy (93%) and for when to use TV (87%) for patients with neurologic injury.

Table 2. Summary of Findings From Responses to Likert-Type Statements

Statement (Abbreviated)[a]	*M*[a]	*SD*	*Mdn*	Mode
If the TV/music is on, I will turn it off.	2.1	1.2	3	Sometimes (n = 53)
If the TV/music is off, I will turn it on.	1.5	1.3	1	Never (n = 37)
I will play music for neuro patients.	2.3	1.2	3	Sometimes (n = 65)
I will turn on the TV for neuro patients.	1.9	1.2	2	Sometimes (n = 52)
Playing music is therapeutic.	2.8	0.9	3	Agree (n = 58)
Turning on the TV is therapeutic.	2.1	0.9	2	Neutral (53)
When I play music, I do so at a specific time and for a specific purpose.	2.1	1.0	2	Neutral (n = 46)
We need additional research on music therapy.	3.1	1.1	3	Agree (n = 53)
We need additional research on when to turn on the TV.	3.2	0.9	3	Agree (n = 53)

[a]Full statements are available in Table 1; Likert-type responses were scored 0-4.

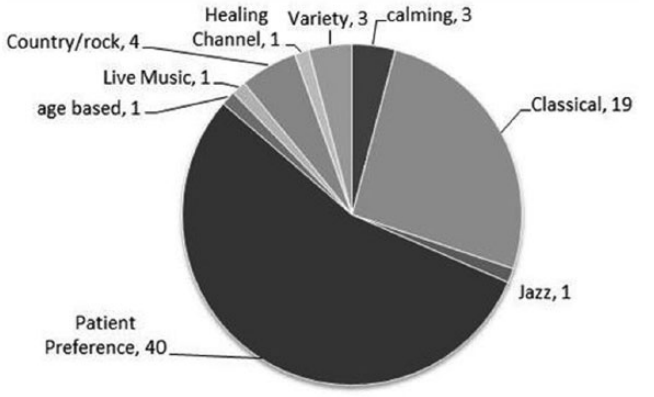

Figure 1. Comparison of Music Selection

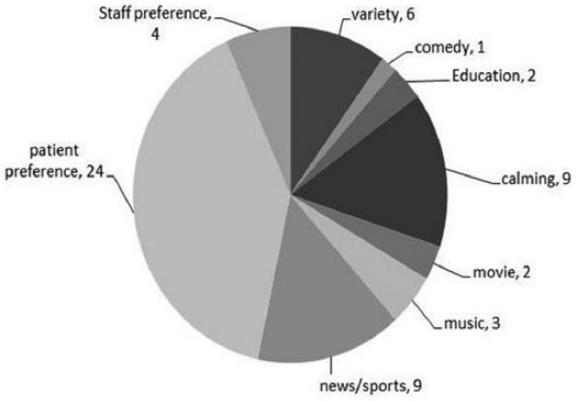

Figure 2. Comparison of Television Selection

There were 73 respondents (Figure 1) who answered the question "What type of music do you play?" Of these, 40 respondents indicated that the selection was based on patient or family choice (either current or premorbid preference), and 22 selected either classical (19) or calming/healing music. Only one respondent indicated live music and one respondent indicated that the selection of music varied based on the age of the patient. The remaining genres (e.g., country western, or hard rock) had fewer than three responses. There was no association between professional training (physician, nursing, other) and belief that music is therapeutic (p = .33) or that TV is therapeutic (p = .53). There was no association between years of clinical experience and belief that music is therapeutic (p = .54) or that TV is therapeutic (p = .83). There was a weak association between providers who worked in hospitals that had a designated "quiet time" and agreement that music is therapeutic (p = .07) or TV is therapeutic (p = .02).

Of the 60 respondents (Figure 2) who provided a response to the question "What type of TV shows do you turn on?" there were 24 who indicated that the choice was made based on patient or family preference, 6 who played some variety or combination of channels, 9 who selected either a calming channel (e.g., nature channel or hospital provided healing channel), and 9 selected news or sports. Two respondents (one physician with over 10 years in practice) indicated that the TV should never be turned on for patients with neurological injury, and three respondents (one physician and two nurses with over 20 years in practice) specifically stated that the TV channel is selected based on staff preference.

Discussion

The results of this survey support the hypothesis that in caring for neurocritically ill patients, there is widespread use of music and TV as an intervention with therapeutic intent. Holistic care seeks to heal

the whole person, and nurses who practice holistic care may use music or TV as a distinct therapeutic intervention or as a vehicle to promote an intervention: for example, using music as an aid to promote relaxation (Park et al., 2012; Street, Weed, & Spurlock, 2014). Over half of the respondents indicated that they worked in an environment with a designated "Quiet Time" period. Quiet Time is a milieu therapy that has been demonstrated to be effective in sleep promotion for NCCU patients (Dennis et al., 2010; Olson et al., 2001). The results above support that experience in milieu therapy may be a moderator for practice patterns in the therapeutic use of music or TV. However, this finding must be interpreted cautiously given that it was not an original hypothesis of this survey.

The survey results also indicate that there is no clear practice pattern and very little agreement as to what constitutes best practice for patients with neurological injury. Likert-type statements are typically developed with extremes or anchors as response parameters (Sullivan & Artino, 2013); in this survey, the anchors were either *never* and *always* or *strongly disagree* and *strongly agree*. The only Likert-type statement for which the mode (n = 37) response value was an anchor (*never*) was "If the TV/radio is off, I will turn it on." Moreover, even for this statement, there was no clustering of responses; the option "sometimes" was selected by 34 respondents. None of the eight remaining Likert-type statements had an anchor response as the mode (Table 2).

The wide variety of free-text responses to the questions about what type of music or TV should be played demonstrates both a richness and a limitation to current practice. The fact that 74 of the 118 respondents had something to say indicates that practitioners are, in fact, making decisions about music and TV with therapeutic intent. Clearly, there is diversity in practice. Unfortunately, there is inadequate breadth and depth of data from which to guide practice. Additional research is needed to provide fuller understanding of the dose (duration, frequency, genre, and timing) of music or TV with therapeutic intent. Only a minority of participants responded that a certain type of music or TV station was the absolute best choice. Only a minority of respondents strongly disagree that music (n = 1) or TV (n = 5) is therapeutic.

Responses indicate that there is both a need and support for additional research. Although a greater percentage of respondents would adjust the milieu by turning music or TV off (51.7% vs. 32.2%), the odds of making a change were not significant (odds ratio = 1.14, 95% confidence interval [0.78, 1.67]). While 81 respondents (70%) agree that playing music is therapeutic, only a small minority of respondents (n = 10, 9%) indicated strong agreement that they would play music at a specific time or for a specific purpose. There is a clear demand for best practice recommendations that incorporate music and TV into practice. The majority of respondents (104; 93%), agree that additional research is needed to guide the practice of playing music, and 101 (87%) agree that additional research is needed to guide practice for when to turn the TV on. Future research in critically ill patients may benefit from methodologies recently introduced into literature linking music and specific neurophysiologic responses (O'Kelly et al., 2013).

Limitations

The response rate of 118 members from a pool of approximately 1,400 is a recognized limitation. Distribution was via membership listserv, but it is unknown how many recipients viewed the e-mail invitation. The survey used had not been previously validated, and the format of the questions may have affected the response rate. The sample size is relatively small, and as such, further prospective adequately powered studies need to be conducted. Furthermore, like most surveys, there is the likelihood of recall bias. As with most practice surveys, there is a risk of recall bias because respondents completed the survey based on what they recall their practice to be. An observational study of practice may result in a different prevalence for the use of TV and music. A future survey exploring practitioners' intentions may provide insight toward current and evolving practice paradigms.

The distribution of physicians to nurses and affiliated professionals is similar to the published NCS membership survey results from 2011. Hence, while it seems reasonable that the results represent the diversity of professional membership, it is unknown if a larger sample would yield the same or similar results. Not including patients or family members, who may also play music or TV, may limit the interpretation of prevalence for using music as therapy.

A limitation of this survey is the lack of definition congruence across practitioners regarding music therapy, music as therapy, and music therapists. Music therapy requires the development of a therapeutic relationship between a music therapist and the patient. For both practical and ethical reasons, the music therapist is typically a consultant with education, training, and certification. Based on training, the therapist determines the music to be used in conjunction with clinical treatment. It is hoped that this study will provide a foundation for future research using music.

Conclusion

The lack of scientific evidence by which to guide clinical practice is exemplified by the variance in practice and the low level of agreement for any given practice statement. There is a clear-cut need and demand for additional research in the use of music or TV as an intervention to improve outcomes for neurocritically ill patients. The findings are important because they support the need for additional research to guide a practice (playing music) that has been, and will continue to be, used as an intervention aimed to affect some aspect of care for NCCU patients. Further research into therapeutic uses for music and TV is clearly indicated.

References

Aaron, J. N., Carlisle, C. C., Carskadon, M. A., Meyer, T. J., Hill, N. S., & Millman, R. P. (1996). Environmental noise as a cause of sleep disruption in an intermediate respiratory care unit. *Sleep, 19*, 707-710.

American Music Therapy Association. (2014). *What is music therapy? Definition and quotes about music therapy.* Retrieved from http://www.musictherapy.org/about/quotes/

Bradt, J., Magee, W. L., Dileo, C., Wheeler, B. L., & McGilloway, E. (2010). Music therapy for acquired brain injury. *Cochrane Database of Systematic Reviews*, (7), CD006787. doi:10.1002/14651858.CD006787.pub2

Chlan, L. L. (2009). A review of the evidence for music intervention to manage anxiety in critically ill patients receiving mechanical ventilatory support. *Archives of Psychiatric Nursing, 23*, 177-179. doi:10.1016/j.apnu.2008.12.005

Chlan, L. L. (2000). Music therapy as a nursing intervention for patients supported by mechanical ventilation. *AACN Clinical Issues, 11*(1), 128-138.

Chlan, L. L., Engeland, W. C., & Savik, K. (2013). Does music influence stress in mechanically ventilated patients? *Intensive and Critical Care Nursing, 29*, 121-127. doi:10.1016/j.iccn.2012.11.001

Chlan, L. L., Weinert, C. R., Heiderscheit, A., Tracy, M. F., Skaar, D. J., Guttormson, J. L., & Savik, K. (2013). Effects of patient-directed music intervention on anxiety and sedative exposure in critically ill patients receiving mechanical ventilatory support: A randomized clinical trial. *Journal of the American Medical Association, 309*, 2335-2344. doi:10.1001/jama.2013.5670

Davis, T., & Jones, P. (2012). Music therapy: Decreasing anxiety in the ventilated patient—A review of the literature. *Dimensions of Critical Care Nursing, 31*, 159-166. doi:10.1097/DCC.0b013e31824dffc6

Dennis, C. M., Lee, R., Woodard, E. K., Szalaj, J. J., & Walker, C. A. (2010). Benefits of quiet time for neurointensive care patients. *Journal of Neuroscience Nursing, 42*, 217-224.

Dileo, C., & Bradt, J. (2006). *Medical music therapy: A meta-analysis and agenda for future research*. Cherry Hill, NJ: Jeffrey Books.

Good, M. (1995). A comparison of the effects of jaw relaxation and music on postoperative pain. *Nursing Research, 44*, 52-57.

Guzzetta, C. E. (1989). Effects of relaxation and music therapy on patients in a coronary care unit with presumptive acute myocardial infarction. *Heart & Lung, 18*, 609-616.

Han, L., Li, J. P., Sit, J. W., Chung, L., Jiao, Z. Y., & Ma, W. G. (2010). Effects of music intervention on physiological stress response and anxiety level of mechanically ventilated patients in China: A randomised controlled trial. *Journal of Clinical Nursing, 19*, 978-987. doi:10.1111/j.1365-2702.2009.02845.x

Hunter, B. C., Oliva, R., Sahler, O. J., Gaisser, D., Salipante, D. M., & Arezina, C. H. (2010). Music therapy as an adjunctive treatment in the management of stress for patients being weaned from mechanical ventilation. *Journal of Music Therapy, 47*, 198-219.

Kamdar, B. B., King, L. M., Collop, N. A., Sakamuri, S., Colantuoni, E., Neufeld, K. J., . . . Needham, D. M. (2013). The effect of a quality improvement intervention on perceived sleep quality and cognition in a medical ICU. *Critical Care Medicine, 41*, 800-809. doi:10.1097/CCM.0b013e3182746442

Konkani, A., & Oakley, B. (2012). Noise in hospital intensive care units: A critical review of a critical topic. *Journal of Critical Care, 27*, 522.e1-522.e9. doi:10.1016/j.jcrc.2011.09.003

Korhan, E. A., Khorshid, L., & Uyar, M. (2011). The effect of music therapy on physiological signs of anxiety in patients receiving mechanical ventilatory support. *Journal of Clinical Nursing, 20*, 1026-1034. doi:10.1111/j.1365-2702.2010.03434.x

Neurocritical Care Society. (2011). *Member survey results.* Retrieved from https://www.neurocriticalcare.org/sites/default/files/pdfs/2011MemberSurveyWeb.pdf

Norman, G. (2010). Likert scales, levels of measurement and the "laws" of statistics. *Advances in Health Sciences Education, 15*, 625-632. doi:10.1007/s10459-010-9222-y

O'Kelly, J., James, L., Palaniappan, R., Taborin, J., Fachner, J., & Magee, W. L. (2013). Neurophysiological and behavioral responses to music therapy in vegetative and minimally conscious States. *Frontiers in Human Neuroscience, 7*, 884. doi:10.3389/fnhum.2013.00884

Olson, D. M., Borel, C. O., Laskowitz, D. T., Moore, D. T., & McConnell, E. S. (2001). Quiet time: A nursing intervention to promote sleep in neurocritical care units. *American Journal of Critical Care, 10*, 74-78.

Park, J. S., Park, S., Cheon, C. H., Jang, B. H., Lee, S. H., Lee, S. H., . . . Ko, S. G. (2012). Effect of oriental medicine music therapy on patients with Hwa-byung: A study protocol for a randomized controlled trial. *Trials, 13*, 161. doi:10.1186/1745-6215-13-161

Ruud, E. (2010). *Music therapy: A perspective from the humanities*. Gilsum, NH: Barcelona.

Street, W., Weed, D., & Spurlock, A. (2014). Use of music in the treatment of insomnia: A pilot study. *Holistic Nursing Practice, 28*, 38-42. doi:10.1097/HNP.0000000000000005

Su, C. P., Lai, H. L., Chang, E. T., Yiin, L. M., Perng, S. J., & Chen, P. W. (2013). A randomized controlled trial of the effects of listening to non-commercial music on quality of nocturnal sleep and relaxation indices in patients in medical intensive care unit. *Journal of Advanced Nursing, 69*, 1377-1389. doi:10.1111/j.1365-2648.2012.06130.x

Sullivan, G. M., & Artino, A. R., Jr. (2013). Analyzing and interpreting data from Likert-type scales. *Journal of Graduate Medical Education, 5*, 541-542. doi:10.4300/JGME-5-4-18

Topf, M., Bookman, M., & Arand, D. (1996). Effects of critical care unit noise on the subjective quality of sleep. *Journal of Advanced Nursing, 24*, 545-551.

White, J. M. (2000). State of the science of music interventions: Critical care and perioperative practice. *Critical Care Nursing Clinics of North America, 12*, 219-225.

DaiWai M. Olson, PhD, RN, CCRN, is an Associate Professor in Neurology and Neurotherapeutics and a Staff Nurse in the Neurocritical Care Unit.

H. Hunt Batjer, MD, is a Professor of Neurosurgery and the department Chair of Neurosurgery.

Michael L. Zanders, PhD, LPC, MT-BC, is an Assistant Professor of Music Therapy with over 16 years of clinical experience.

Kimberly Harrison, RN, BSN, is an assistant nurse manager and a staff nurse in the Neurocritical Care Unit.

Jose I. Suarez, MD, is a Professor of Neurology and the Head of the section of vascular neurology and neurocritical care.