
The effects of single-session music therapy interventions on the observed and self-reported levels of pain control, physical comfort, and relaxation of hospice patients

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Abstract

This article describes the process and results of a three-month music therapy clinical effectiveness study conducted with terminally ill patients. The purpose of this study was to quantify and evaluate the effectiveness of single-session music therapy interventions with hospice patients in three patient problem areas: pain control; physical comfort; and relaxation. Data from a total of 90 sessions conducted with a total of 80 subjects served by Hospice of Palm Beach County, Florida, were included in the study. Music therapy services were provided by five board-certified music therapists and one music therapist eligible for board certification. The subjects in this study were receiving regularly scheduled music therapy services from the hospice organization. The study used both behavioral observation and subject's self-reporting as methods of data reporting and recording. Subjects were

observed for, or self-reported, their levels of pain control, physical comfort, and relaxation, both before and after each music therapy session. The subjects were served in the environments where music therapy services would normally be delivered (i.e., home, hospital, nursing home, or inpatient acute-care unit of the hospice organization). Music therapy services included live active and passive music-based experiences. These were designed to build and to establish rapport with patient or family, to facilitate family interaction and patient control, to provide support and comfort, to facilitate relaxation, to enable reminiscence and life review, to provide a framework for spiritual exploration and validation, and to encourage the identification and expression of feelings of anticipatory mourning and grief. A total of six hypotheses stated that there would be significant pre- to post-session differences in each of the three variables: pain control, physical comfort, and relaxation, as measured during two different session and data collection scenarios. These scenarios included the independent observation

*and recording of the three subject variables and the subject's self-report of each variable. Reliability correlation coefficients were calculated for each of the different session and data-collection scenarios to help assess the correlation between primary and reliability observers. Pearson product moment correlations indicated reliability agreement coefficients of $r = .85$ and $r = .90$. One-tailed *t*-tests were performed on the collected data for subject pain control, physical comfort, and relaxation. Results of the *t*-tests were significant at the $p \leq .001$ (for observed pain control, physical comfort, and relaxation) and $p \leq .005$ (for self-reported pain control, physical comfort, and relaxation) levels. These results suggest that single-session music therapy interventions appear to be effective in increasing subject pain control, physical comfort, and relaxation during both data collection scenarios. Based on the results of these tests of the analyzed data, the hypotheses were all accepted. Tables illustrate pre- to post-session changes in levels of all three variables from both session and data-collection scenarios.*

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Copies of the data-collection forms are also included in the Appendix. The discussion section addresses limitations of this study and suggestions for future studies.

Keywords: hospice, music therapy, pain, comfort, relaxation

Introduction

As the concepts of hospice and palliative care for the dying have gained acceptance in both the medical community and general society, increased opportunities have developed for music therapists to work with patients who are terminally ill.¹ Music therapy has evolved to be seen as an effective complementary therapy to many traditional medical services and procedures, including those provided to persons with life-limiting illnesses.² Note that the inter-relationship between music and medicine, especially the use of music to provide comfort for persons in physical or spiritual need, also has a long and rich history.³ The use of music and music therapy in the care of the dying can thus be seen as a reconvergence of older health care models.⁴ In fact, not long after the first American hospices opened in the mid-1970s, music therapy was forecasted to prove to be an effective and powerful tool in working with the terminally ill.⁵ In Canada, in 1978, the first documented uses of music therapy in modern hospice and palliative care were described.⁶ These accounts served as a springboard for the development of hospice and palliative music therapy.⁷

This foresight has certainly been, and is continuing to be, realized. Music therapists continue to develop their work with the dying and are constantly designing innovative programs.⁸ In working with terminally ill patients, music therapists use a number of active and passive music-based experiences within the context of a therapeutic relationship with the patient and family or

loved ones.⁹ These experiences are designed to decrease pain perception, provide distraction from and increase verbalizations about the illness, express feelings and emotions, decrease fear and agitation or restlessness, provide comfort, promote control, reduce anxiety and helplessness, assist loved ones with issues regarding and relating to the patient, provide a framework for spiritual exploration and validation, and to help the patient work through issues relating to his or her illness and dying process.¹⁰

To conduct research and document the effects of music therapy interventions on patient problem areas, such as pain control, physical comfort, and relaxation, in hospice and palliative settings is challenging for the music therapist. To collect numerical data on these personal quality-of-life variables and to quantify the results can be difficult. The often rapidly changing needs of dying patients make it difficult to conduct a controlled study that qualifies as experimental research. For this reason, many published reports of hospice music therapy have been in the form of case studies. However, some authors have reported the results of quantitative studies in hospice and palliative music therapy.¹¹

One such report described the results of a study that used listening to patient-preferred instrumental music in affecting a total of 11 terminally ill patients' self-reported perception of pain relief, physical comfort, relaxation, and contentment. Although results were not statistically significant, contentment scores during the music listening were higher than during control and background hospital noise conditions.¹²

Of particular interest to the clinician is how, and to what degree, a single-session music therapy intervention affects a patient in palliative areas such as pain control, physical comfort, and relaxation. Hospice and palliative care attempt to provide comfort measures

for the patient in a timely and responsive manner as their needs arise. The research in this area is scant. One related study examined the effects of a single music therapy session on levels of salivary immunoglobulin-A, speech pause time, and patient opinion of the session in 40 hospitalized children with cancer. Results indicated that the use of a single music therapy session appeared effective and statistically significant in reducing the level of this stress hormone and positively affecting patient attitude.¹³

The purpose of the present study was to quantify and evaluate the effectiveness of single-session music therapy interventions with hospice patients in the three patient problem areas of pain control, physical comfort, and relaxation.

Method

Subjects

The subjects in this study included 80 patients receiving regularly scheduled music therapy services from Hospice of Palm Beach County, Florida, from June to August 2000. This total of 80 patients was the target goal for the study. Hospice of Palm Beach County maintains an average daily census of approximately 500 patients, who are served in their homes, area nursing and assisted-living facilities, local hospitals, and the C. W. Gerstenberg Hospice Center, a 24-bed acute-care unit. Subjects in the study included 33 males and 47 females, ranging in age from 38 to 97 years old. These patients had been certified by a physician as having a terminal condition. All subjects in the study were expected to die within six months of admission to hospice. Terminal diseases and conditions included a variety of cancers, renal failure, encephalopathy, dementia, AIDS, coronary obstructive pulmonary disease, cardiovascular accidents, congestive heart failure, and

Table 1. Patient variable #1: Pain control—Hypotheses 1 and 2

<i>1: Independently observed pain control—80 sessions</i>					
	Pre-test	Post-test			
Mean	65.84	84.55			
SD	28.13	20.19	t value 4.833	p £ .001*	df = 158
<i>2: Self-reported pain control—10 sessions</i>					
	Pre-test	Post-test			
Mean	56.67	89.83			
SD	20.72	9.22	t value 3.5819	p £ .005	df = 18
*There is a significant (at the p £ .05 level) difference in pre- to post-session music therapy levels of pain control as measured during two data-collection scenarios.					

others. The time spent as a hospice patient ranged from one day to over six months. The subjects who had been with hospice for over six months had all been recertified as still being appropriate for hospice under current Medicare guidelines.

Settings and sessions

Subjects were served and sessions took place in the environments in which music therapy services were normally delivered. The breakdown of session locations included 67 subjects served at the C.W. Gerstenberg Hospice Center, 10 subjects served in their homes, two subjects served in hospitals, and one patient served in a nursing home. The total number of sessions in the study was 90. The average number of sessions per patient was one, and 74 subjects received one session each. One patient received four sessions, two subjects received three sessions each, and three subjects received two sessions each.

Informed consent, subject confidentiality, and ethical concerns

All subjects participating in the study had a patient or family informed consent form signed by themselves or their legal representative. This form included information that the subject had the right to refuse or decline a music therapy visit at any time and that all subject information would remain confidential. All collecting and reporting of subject data were done in a confidential manner. No subject names, descriptions of specific subjects’ characteristics, or identifying information were used in the reporting or dissemination of any study results. Subjects were assigned an internal tracking number for use within the study only. The music therapy interventions used in study sessions followed all established ethical guidelines, policies, and procedures of Hospice of Palm Beach County, and included no invasive procedures. Hospice of Palm Beach County is fully accredited by the Joint Commission on

Accreditation of Healthcare Organizations (JCAHO).

Study principal investigator and clinicians

Clinicians involved in delivering the music therapy services included five board-certified music therapists and one music therapist eligible for board certification. These clinicians all worked full-time for Hospice of Palm Beach County. The music therapy manager of Hospice of Palm Beach County served as principal investigator and study author as well as a clinician for the study

Hypotheses

A total of six hypotheses stated that there would be significant pre-session and post-session differences (at the p £ .05 level) in each of the three variables: pain control, physical comfort, and relaxation, as measured during two different session and data-collection scenarios. These scenarios included

Table 2. Patient variable #2: Physical comfort—Hypotheses 3 and 4

<i>3: Independently observed physical comfort—80 sessions</i>					
	Pre-test	Post-test			
Mean	64.94	87.66			
SD	25.51	17.58	t value 6.5444	p £ .001*	df = 158
<i>4: Self-reported physical comfort—10 sessions</i>					
	Pre-test	Post-test			
Mean	55.10	87.30			
SD	25.63	15.96	t value 3.3728	p £ .005	df = 18
*There is a significant (at the p £ .05 level) difference in pre- to post-session music therapy levels of physical comfort as measured during two data-collection scenarios.					

the independent observation and recording of the three variables by an observer other than the music therapist conducting the session (*i.e.*, a trained volunteer) and the subject's self-report of each variable.

Dependent measures and data collection

Two forms (see Appendix), the observation of subject form and subject self-report form, were used in the data-collection process. The forms were based on ones used in a previously conducted study that examined the effects of music therapy on the pain control, physical comfort, and relaxation of terminally ill patients.¹⁴ The forms featured three 100-mm lines that connected two polar opposites to describe three subject problem areas—pain control, physical comfort, and relaxation. The use of a continuous line allowed for interval data to be recorded. The place marked on each 100-mm line was measured with a

metric ruler from right (0) to left (100), and a resulting number from 0 to 100 was recorded for each of the three variables both pre- and post-session. A “0” indicated the lowest level of pain control, physical comfort, and relaxation, and a “100” indicated the highest level of each variable. The forms were used to record data at the beginning and conclusion of each session (pre-test and post-test).

Additional persons collecting independent observational data included four volunteers who had been trained and oriented as volunteers at Hospice of Palm Beach County. These volunteers were trained in use of the data-collection forms by the author, but were not told the specific reason for the data collection, except to “ensure quality services to our patients and families.”

For the observation of subject form, the observer marked a place on each line as described above. The observation of subject form includes behavioral descriptors to help accurately

mark where on the continuum each subject presented for each of the three variables. For the subject self-report form, the following procedure was followed. The subject was asked to put a mark on the line at the point that best described how that subject felt at that present time in the areas of pain control, physical comfort, and relaxation. The subject was asked to put the mark on the line with a pencil or pen. If unable to use a pencil or pen, the subject was asked to point to a place on the line that best described how he or she felt at the moment.

As described in the hypotheses, two data-collection scenarios were included for each of the three dependent variables. These included the independent observation and recording of the three variables by an observer other than the music therapist using the observation of subject form and the subject's self-reporting of each variable using the subject self-report form. Distributions of data collection scenarios for the 90 sessions were as follows. Independent

Table 3. Patient variable #3: Relaxation—Hypotheses 5 and 6

<i>5: Independently observed tension or relaxation—80 sessions</i>					
	Pre-test	Post-test			
Mean	60.59	84.06			
SD	24.45	21.51	t value 6.4783	p £ .001*	df = 158
<i>6: Self-reported tension or relaxation—10 sessions</i>					
	Pre-test	Post-test			
Mean	65.00	97.43			
SD	20.86	4.54	t value 4.0181	p £ .005	df = 18
*There is a significant (at the p £ .05 level) difference in pre- to post-session music therapy levels of tension or relaxation as measured during four data-collection scenarios.					

observation of subjects occurred during 80 sessions and subjects' self-reporting occurred during 10 sessions.

Inter-observer reliability

Correlation coefficients were calculated to help assess the accuracy of the data-collection procedures. During eight of the 80 sessions, where independently observed subject responses served as the primary data, a second (reliability) observer recorded data on all three subject response variables, both pre-session and post-session. A music therapy intern (completing a six-month, 1,040-hour American Music Therapy Association internship at Hospice of Palm Beach County) served as reliability observer during these sessions. The intern was trained in the data-collection processes being used in the study. The reliability data were correlated with the primary data for each of the eight sessions. Pearson's product moment correlation indicated a coefficient of $r = 0.85$ between the primary and reliability observers.

During six of the 10 sessions, where subject self-reported data served as the primary data, the music therapist running the session collected reliability data on all three subject response variables, both pre-session and post-session. The reliability data were correlated with the primary data for each of the six sessions. Pearson's product moment correlation indicated a coefficient of $r = 0.90$ between the primary subject self-reported data and the reliability data.

**Independent variables:
Music therapy sessions**

Music therapy consisted of live active and passive music experiences designed to build and establish rapport with subject or family and to facilitate family interaction; active and passive music listening to provide support and comfort and to facilitate relaxation; live music listening combined with relaxation and imagery experiences to facilitate pain control; and the use of song choice, singing, song discussion,

and songwriting to facilitate reminiscence, life review, spiritual exploration and validation, and the identification and expression of feelings of anticipatory mourning and grief. For each subject, music therapy was provided on the basis of the subject's goals, as identified and targeted by the interdisciplinary care group (treatment team). For this reason of individualizing treatment, no single or standard music therapy approach was used with all subjects. The music therapy interventions were flexible in design and individualized, based on the needs of the subject and family as each session took place.

Results

One-tailed t-tests were performed with the collected data. On the basis of the significance of the results and statistical analysis, all hypotheses were accepted. Levels of statistical significance ranged between $p £ 0.005$ and $p £ 0.001$. Acceptance of these hypotheses suggests that single-session music

therapy interventions were effective in increasing subjects' pain control, physical comfort, and relaxation during both data-collection scenarios (independent observations of subject and subject self-reporting). Table 1 illustrates results from subject variable #1/hypotheses 1 and 2—pain control. Table 2 illustrates results from subject variable #2/hypotheses 3 and 4—physical comfort. Table 3 illustrates results from subject variable #3/hypotheses 5 and 6—relaxation.

Conclusions and discussion

On the basis of the analysis of the collected data, single-session music therapy interventions appeared highly successful in increasing observed and self-reported pain control, physical comfort, and relaxation. However, these results raised additional questions that could be researched in future studies. One limitation of this study was that its treatment strategy used many music therapy interventions and techniques. This combination represented a treatment package. In further studies, it may be useful to separate these approaches to facilitate more scientific control over specific treatment variables. Interventions such as passive music listening could be compared with active interventions such as singing or playing instruments. It may also be important to measure how long after a music therapy intervention a patient's gains are maintained. In addition, longitudinal studies in which patients receive music therapy over multiple sessions and a longer period of time may help document longer (than a single session) term benefits of music therapy. Perhaps, an optimal number of sessions (*i.e.*, a "music therapy dosage")

could be "prescribed," based on the needs and background of the patient. Music therapy could also be compared to other complementary therapies, such as art therapy, healing touch, hypnosis, and massage to measure the effectiveness of various modalities.

However, with these future considerations aside, being able to make a timely difference in patient pain control, physical comfort, and relaxation during a single session is certainly meaningful for a particular patient at a given time. In conclusion, this study illustrates that music therapy continues to be a creative and effective treatment modality available to clinicians providing palliative care to hospice and other terminally ill patients. Music therapy is a treatment service that can help patients be both creative and comfortable as they live more fully at the end of life.¹⁴ The challenge for the music therapist is to ensure that this treatment service provides as immediate and beneficial an outcome as possible for the patients he or she serves.

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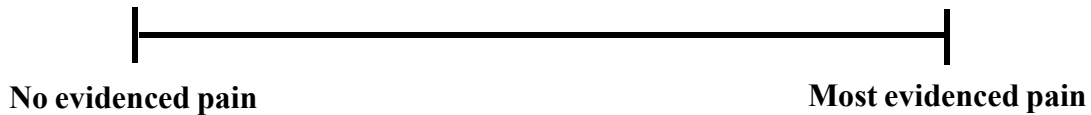
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Appendix 1.

**Music therapy clinical effectiveness documentation study
Observation of patient form**

Directions to observer: Please put a mark at, or indicate the point on the line that best describes how the patient overtly appears right now in the following three areas. Please include patient verbalizations, as well as observations of patient motor behavior, body posture, and facial affect. Use the behavioral descriptions as a guide for rating.

Pain



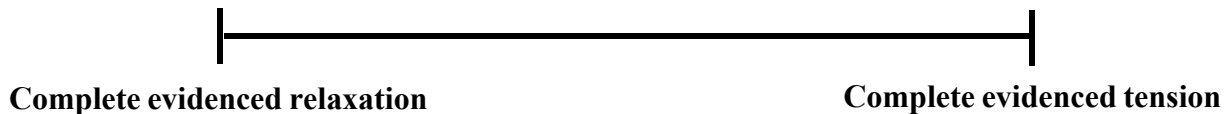
calm/states no pain some restless movement grimacing/flinching facial distortion moaning crying statements of worst pain/screaming

Physical comfort



calm/states no discomfort some restless movement grimacing/flinching body/posture distortion thrashing arms or legs moaning statements of worst discomfort

Relaxation



calm/states no tension some observed muscle tension grimacing clenching hand/arm flinching/withdrawing body contortion/fetal statements of worst tension

For use by HPBC music therapist

Pre-test _____ Post-test _____

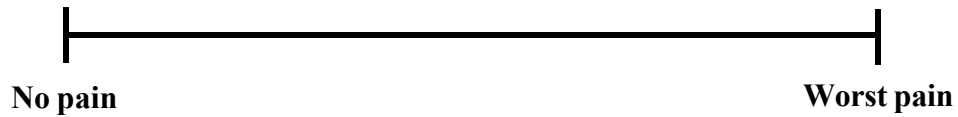
MT _____ Observer _____ PT ID _____ Date _____

Appendix 2.

**Music therapy clinical effectiveness documentation study
Patient self-report form**

Directions to patient: Please put a mark at, or indicate the point on the line that best describes how the patient overtly appears right now in the following three areas:

Pain



Physical comfort



Relaxation



For use by HPBC music therapist

Pre-test _____

Post-test _____