

# Music Intervention as a Tool in Improving Patient Experience in Palliative Care

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## Abstract

**Background:** The pain, anxiety, and stress associated with end-of-life care are paramount issues to address for both patients and their families. Reduction in these factors could translate to improved quality of life. **Objective:** We studied the effect of adding music to standard care for patients receiving a hospice or palliative care consult at 2 hospitals in the Care New England health-care system. In this mixed quantitative and qualitative study, we implemented live music intervention sessions. **Design/Measurements:** Outcomes include symptom burden pre- and post-intervention using the Edmonton Symptom Assessment Scale, opioid use in equivalent time periods before and after the music intervention, and qualitative personal narratives of patients' and families' experiences with the music. **Results:** There were significant decreases in pain, anxiety, nausea, shortness of breath, and feelings of depression along with significant increase in feelings of well-being. Opioid use in time periods after the music intervention trended toward decreased usage when compared to the equivalent time period before. Finally, compiled personal narratives of patients' and families' experiences of the music intervention demonstrated common themes of spirituality, comfort, relaxation, escape, and reflection. **Conclusions:** This project demonstrated the beneficial effects of music in a patient population that struggles with symptom management when only pharmacologic management is used. These data elucidate biological and psychosocial factors that are positively impacted by the intervention. With additional evidence in music as well as other artistic modalities, it is promising that arts-based programs in inpatient hospice and palliative care settings will continue to expand and flourish.

## Keywords

arts intervention, music intervention, palliative care, end-of-life, symptom management, pain management, narrative medicine

## Introduction

Arts interventions in health care have been shown to positively contribute to health outcomes.<sup>1</sup> Across health-care settings, modalities such as music, visual arts, reading, creative writing, and dance have improved emotional, psychological, and spiritual well-being as well as specific symptoms such as stress, mood, and pain.<sup>2</sup> Since patients in palliative care frequently struggle with symptom management, therein lies an opportunity to use music as a modality to improve symptomatology.

Music therapy has been used in many health-care settings across different patient populations, including dementia, neurorehabilitation, recovery from stroke, depression, and in chronic conditions.<sup>3</sup> Here, we designed and offered a music intervention by which a musician, but not a licensed music therapist, provides live music to patients and their families on the palliative care consult service. To better understand how a live music intervention impacts this population, we piloted a study that collected both quantitative and qualitative information.

## Methods

This pilot study aimed to examine palliative care patients' symptomatology in response to receiving music intervention

from behavioral, biological, and subjective experiential standpoints. All patients receiving a hospice or palliative care consult at Kent Hospital (Warwick, Rhode Island) and Women and Infants Hospital (Providence, Rhode Island) during the period of June and July 2017 were eligible to participate. Inclusion criteria required the ability of the patient or their surrogate to give written informed consent in English. The protocol was reviewed by the Internal Review Board of Women and Infants Hospital and abides by the standards of the Declaration of Helsinki for human subjects research.<sup>4</sup>

After consent was obtained, if the patient was physically and cognitively able to, they immediately filled out a modified version of the Edmonton Symptom Assessment Scale (ESAS),<sup>5</sup> which has been validated in the literature and demonstrates good test-retest reliability.<sup>6</sup> Our modified version of the ESAS contained 6 of the original 8 questionnaire items. The musician

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then ascertained the patient's musical preferences and performed the appropriate selections for the patient. The musician who performed the intervention (C.S.P.) had a variety of selections for the flute, ensuring a diverse assortment of musical genres to meet patients' preferences. The genre and specific pieces of music were chosen in collaboration between the patient, the musician, and the family (if applicable).

After the music intervention period, the patient immediately filled out another ESAS, along with an open-ended qualitative questionnaire, where patients or their surrogates were able to express their personal experience of the intervention.

Following the intervention, the use of opioids, if applicable, was obtained from the patient's medical chart. Time equivalent periods for opioid use were calculated as follows: For those patients who received their intervention during a prolonged stay, such that there were 24 hour inpatient periods before and after the intervention took place, 24 hours was used as the pre- and post-intervention time interval, respectively; for those who had a truncated time period either pre- or post-intervention, the concomitant time period was used accordingly. For example, if the intervention took place within 10 hours of a patient being admitted, only the subsequent 10 hours would be considered post-intervention. Accordingly, if a patient was discharged 10 hours after the intervention took place, only the previous 10 hours would be considered for analysis. This approach allows individualized analysis without the time constraints of having all patient encounters conform to 1 uniform length of stay. To analyze opioid usage, we converted everything to oral morphine equivalents using standardized conversion factors.<sup>7,8</sup>

Statistical analysis was performed using SPSS 22.0. A within-subjects repeated measures statistical analysis was performed to assess each symptom on the pre-intervention ESAS with their post-intervention counterparts, respectively. A within-subjects repeated measures analysis was also performed for morphine equivalents for the subgroup of patients using opioids.

Finally, we collected quotes and stories from patients and their surrogates about their experience with the music. Patients and their families were given the opportunity to reflect immediately after the cessation of the music. Furthermore, patients or their surrogates were given a qualitative survey with the following questions:

1. *How satisfied were you with the music?*
2. *Was there any piece of music that you particularly connected with?*
3. *Did the music improve your hospital stay?*
4. *We welcome any comments or suggestions to improve the program.*

## Results

A cohort of 46 patients was recruited over a 2-month period. Participants' demographic and clinical characteristics are summarized in Table 1. Six symptoms were assessed using an

**Table 1.** Patient Demographics.

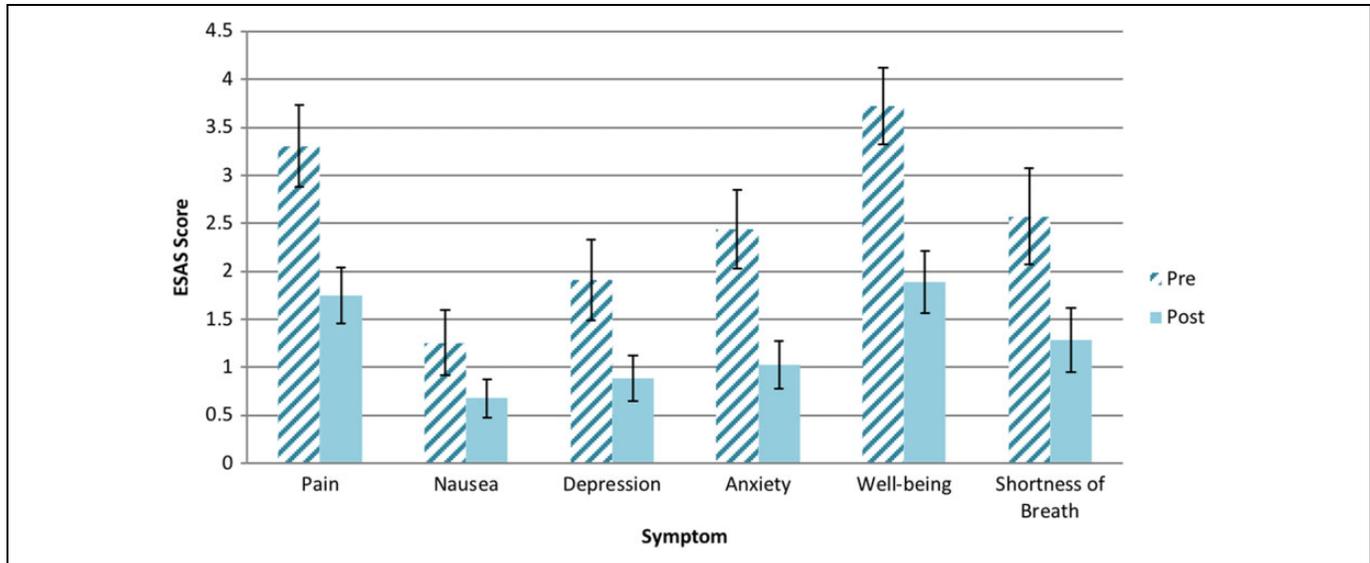
Characteristic	No. (%)
Total patients	46
Sex	
Male	9
Female	37
Age (year)	
Mean	66.8
Range	37-96
Primary Diagnosis	
Cancer	29
Gastrointestinal	2
Pulmonary	6
Cardiac	4
Renal	5

abbreviated version of the ESAS: pain, anxiety, depression, nausea, shortness of breath, and overall feeling of well-being. All items were scored on a 0 to 10 scale, with 0 meaning that the symptom is absent and 10 that it is of the worst possible severity. Of note, the item of well-being is scored with 0 indicating best possible feeling of well-being and 10 indicating worst possible feeling of well-being; thus, contrary to other symptomatology ratings, a lower score in this case indicates better outcomes.

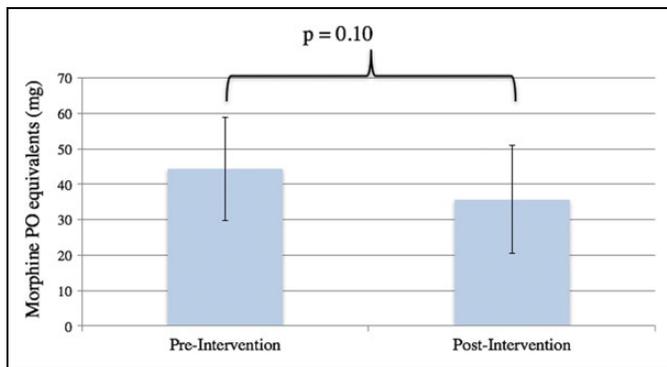
Of the 46 patients enrolled, 43 patients completed both the pre- and post-intervention ESAS; 3 were excluded from statistical analysis due to lack of completion of a post-intervention ESAS. A statistical power analysis was performed for sample size estimation. The power analysis provided evidence that 43 participants is above the minimum number of data points to yield a medium to large effect size of 0.5 with a 2-tailed, dependent *t*-test with  $\alpha = .05$  and power of 0.80. A within-subjects paired *t*-test revealed significant differences in pre- and post-intervention scores for all 6 items on the ESAS (Figure 1). Specifically, there were decreases in pain,  $t(42) = 5.33, P < .001$ , nausea,  $t(42) = 2.79, P = .008$ , depression  $t(42) = 2.95, P = .005$ , anxiety  $t(42) = 4.39, P < .001$ , and shortness of breath,  $t(41) = 3.33, P = .002$ , along with a significant increase in overall feelings of well-being,  $t(42) = 5.67, P < .001$ .

In the cohort, 33 patients used opioids and were included in the pharmacologic analysis (Figure 2). Of those, 19 patients had stays long enough to calculate 24-hour periods pre- and post-intervention. The other 14 patients' pre- or post-intervention time periods were ascertained via the medical record, and the equivalent time period was determined accordingly. Across the cohort, there was a trending toward significant decrease in opioid use,  $t(32) = 1.29, P = .10$ .

The comments, stories, and quotes collected in the qualitative survey were broadly categorized into themes. We did not preemptively impose the themes, but rather considered the entire body of recorded experiences, from which distinct themes emerged (Table 2). Of all quotes and stories collected, the themes of spirituality, comfort, connection, escape, and reflection came to light.



**Figure 1.** Edmonton Symptom Assessment System (ESAS) scores pre- and post-intervention.



**Figure 2.** Opioid use in adjusted time frame with subset of patients.

**Discussion**

Here, we demonstrated the beneficial effects of music in a specific patient population that often struggles with symptom management when only pharmacologic management is used. Offering live music with a musician who had a wide repertoire of music on hand was key in 2 regards. First, this approach ensured individualized music selection that gave patients the ability to choose their preferred music. In giving patients the ability to make a choice, this approach empowered patients, granting back the important impetus of control that many may have relinquished over the course of disease. Second, a live musician can interact with a patient and modify their music choice based on the patient’s wants and needs in a dynamic and intuitive fashion. Additionally, the musician was incorporated into the palliative care team and was advised to bring back to the team any concerns of issues beyond their scope of training.

Review of the survey results on symptomatology revealed significant results for all 6 symptom measures, consistent with previous literature.<sup>9-11</sup> The opioid results were also congruent

with the previous literature,<sup>12</sup> showing a trend toward decreased usage, indicating a mild analgesic effect of music. Although a recent review of the literature showed that music was associated with a decrease in opioid requirement,<sup>12</sup> the 13 studies included were not in palliative care settings, making our study the first to demonstrate this trend toward significance in this specific patient population. The decrease in opioid usage, although trending, is striking in light of how the study interplayed with clinical practice. Often, the musician was introduced to the patient alongside the visit by the palliative care physician (K.M.L.), and the intervention took place immediately following this interaction. Given that palliative care is commonly consulted for pain management and high symptom burden, one might expect opiate use to increase after the physician visit. However, we found this to be not the case and the opposite to be true for the majority of the patients.

The quotes and stories we gathered were striking and profound. We broadly categorized these quotes into 5 categories: spirituality, comfort, connection, escape, and reflection (Table 2). In line with previous literature, we saw that music encourages life review and reminiscence.<sup>13</sup> Patients’ reactions ranged from quietly enjoying the intervention to exuberant conversations prompted by the music. Some patients requested specific pieces and spoke about the significance of that piece in the context of their lives, be it a song played at their wedding or a tune they sang to their children at bedtime. Other patients provided preferences and left it up to the musician to pick an appropriate piece, allowing room to reflect on abstract feelings or emotions the piece evoked. Each encounter was idiosyncratic in that it served patients in a way that was most personally beneficial, be that an opportunity to use the music as a platform to reminisce about their lives or simply as a tool to reflect and relax.

There are notable limitations to this pilot study. Due to time limitations and limited patient census during the summer

**Table 2.** Narratives on the Patient Experience—Organized by Theme.

Theme	Quotes and Stories
Spirituality	<ul style="list-style-type: none"> <li>• “The music made me think of God, granting me peace, strength, and hope.”</li> <li>• “Brought me closer to God.”</li> <li>• “The Lord directed us here [hospital] and directed [the music] to us.”</li> </ul>
Comfort	<ul style="list-style-type: none"> <li>• “A beam of light.”</li> <li>• “Put me in another place – a happy place. I felt like I was in my own world.”</li> <li>• “It was calming, soothing; I didn’t think of anything for once. There is a tendency for my mind to scramble, but it all went away.”</li> <li>• “Lets you take your mind off of everything.”</li> <li>• “I feel it in my heart. Drugs [hand motion to mouth, IV] they put in you, but this touched my heart.”</li> <li>• “One thing about music is that it is a healer.”</li> <li>• “Puts you in a quiet place”.</li> <li>• “Created an open emotional space to connect with my heartfelt emotions and deeper thoughtful reflections.”</li> <li>• “I saw my mother [the patient] move during the music, even though she has very little hearing left. She responded to it!”</li> <li>• “Uplifting and nostalgic.”</li> <li>• “It brought me a sense of calm in an otherwise frantic world.”</li> <li>• “A sense of solitude away from my problems.”</li> <li>• “The song was knocking on my heart.”</li> <li>• “I got the news today that my cancer is very bad, and it stressed me out. This really helped. This relaxed me after receiving such jarring news.”</li> </ul>
Connection	<ul style="list-style-type: none"> <li>• “I used to play baby Mozart and Bach to my daughter when she was little. It’s been years but it brought me right back.”</li> <li>• “Patient motioned to his wife—“Come sit next to me honey and listen to this very romantic concert.” Wife’s father used to play a certain song on the record player; they both looked at each other to try to figure it out. This gave the patient and his wife the opportunity to reminisce and bond.”</li> <li>• “Daughters of patient opened up and reported the patient hummed Italian arias while doing the dishes reminded them of their childhood before their mother got dementia.”</li> <li>• “Husband of patient reflected on attending operas together and their travels together.”</li> <li>• “Daughter of patient had been taking care of her mother for the past 2 months and spent all her free time in the hospital, described the music as a “release.””</li> <li>• “This [hospital stay] has been a great experience thus far, and this was the knot that tied it all together.”</li> <li>• “The majority of [patient’s] family live far away, and us 3 are the only local ones. So it’d be a nice way to engage patients and pass the time, especially for those whom do not have family nearby.”</li> </ul>

(continued)

**Table 2.** (continued)

Theme	Quotes and Stories
Escape	<ul style="list-style-type: none"> <li>• “I haven’t seen my mom [patient] move like that in a while. She was swaying, softly tapping, being engaged with the music. It affected her very positively. She recognized the song.”</li> <li>• “Took me mentally and spiritually out of here [the hospital room]</li> <li>• Like walking in a forest.”</li> <li>• “Allowed me to escape the moment, especially the pain. As soon as you stopped playing, the pain returned, but for the moment, I was able to focus on the music and escape the pain.”</li> <li>• “Transported me to a different place.”</li> <li>• [This was a] creative opportunity for patients to express themselves and pass the time without TV.</li> <li>• “Put me in a quiet pasture.”</li> <li>• “Music takes you to a place you can’t describe.”</li> <li>• “Every day, something new [medically] comes up. This [music] is my only constant thing.”</li> <li>• “You know that you’re in a hospital environment, but by bringing in music, it offers warmth and comfort in an otherwise cold place.”</li> <li>• “It broke up the long tedious time frames where nothing goes on. It was a great break from the hospital monotony.”</li> <li>• “Frees me from everything on my mind. I feel trapped here. I mean, the view is nice, the nurses are nice, but I still feel so trapped. I’m thinking about a lot of things. This brought me a sense of quiet, even though I have to mentally return to here after [the music ended].”</li> </ul>
Reflections	<ul style="list-style-type: none"> <li>• “Offers a diversion.”</li> <li>• “Patient is a painter and shared her experiences with choosing appropriate music while she painted, opening up an avenue of discussion with her reflecting back on her life.”</li> <li>• “I want to go home in a happy mood. I want to spend as much time with my kids and grandkids as possible. I am now getting discharged in a good mood.</li> <li>• I would like something calm and reflective . . . When you played it [Bach], I felt very grateful today to be going home.”</li> <li>• “[The music] brought me a sense of greater things to do, to search your mind more. I’m eager to get home and pursue my own hobbies now!”</li> <li>• “Amid the patient’s mild mental status change, he recalled a memory of visiting a winery with his family the previous Thanksgiving. His son noted: “[The music] just reminded him of a happy event, outside the hospital. It made him happy to think of that.””</li> </ul>

months in which the study was conducted, only a small cohort of patients were recruited. Accordingly, due to this reason, we purposely did not recruit a control group; we wanted as many patients as possible to have the opportunity to experience the music intervention. Additional limitations include the fact that

we did not assess whether opiates were given immediately prior to the intervention. Furthermore, it is difficult to pinpoint whether the therapeutic benefits are attributable to the music itself or to the presence of the musician. Nevertheless, this is a key point in designing a live music intervention in the first place—the opportunity for the patient to have a dynamic, interactive experience.

In this study, we aimed to integrate behavioral and biological markers to study the effect of music on symptomatology. In a seminal article outlining the most important aspects of care for palliative care patients, the authors acknowledged that physical, psychological, social, and spiritual care are all paramount to a patient's and their family's perception of their well-being.<sup>14</sup> In conclusion, we see live music as an integrative platform to experience and express those needs. The music itself can enliven or relax, and the presence of a live musician offers a social component to the experience. The mechanism of music intervention can allow patients to be as proactive as they would like, with reactions of singing and clapping along to resting and reclining while just listening. Moreover, giving patients an intimate opportunity to engage and reminisce is a powerful and meaningful tool. Incorporating musicians into the complement of palliative care offerings may be able to improve the integrative experience of patients on the service. The medium of music and the arts and humanities at large is apt for this purpose and can provide great therapeutic value for patients and their loved ones.

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### Declaration of Conflicting Interests

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