Attitudes and Perceptions of Patients, Caregivers, and Health Care Providers toward Background Music in Patient Care Areas: An Exploratory Study

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Abstract

Background: Background music can be used to distract from ordinary sounds and improve wellbeing in patient care areas. Little is known about individuals' attitudes and beliefs about music versus ordinary sound in this setting.

Objectives: To assess the preferences of patients, caregivers and healthcare providers regarding background music or ordinary sound in outpatient and inpatient care areas, and to explore their attitudes and perceptions towards music in general.

Methods: All participants were exposed to background music in outpatient or inpatient clinical settings. 99 consecutive patients, 101 caregivers and 65 out of 70 eligible healthcare providers (93%) completed a survey about music attitudes and preferences. The primary outcome was a preference for background music over ordinary sound in patient care areas.

Results: Preference for background music was high and similar across groups (70 patients (71%), 71 caregivers (71%) and 46 providers (71%), $p=0.58$). The three groups had very low disapproval for background music in patient care areas (10%, 9% and 12%, respectively; $p=0.91$). Black ethnicity independently predicted lower preference for background music (OR: 0.47, 95%CI: 0.23, 0.98). Patients, caregivers and providers reported recent use of music for themselves for the purpose of enjoyment (69%, 80% and 86% respectively $p=0.02$). Age, gender, religion and education level significantly predicted preferences for specific music styles.

Conclusion: Background music in patient care areas was preferred to ordinary sound by patients, caregivers and providers. Demographics of the population are strong determinants of music style preferences.

Introduction

SILENCE has been historically viewed as a component of the normal medical care environment,¹ even in the absence of evidence for its benefits. Today, excessive hospital sound levels caused by alarms, pagers, and conversations, among other sources, have been recognized as being a problem. In fact, usual hospital noise levels (between 55 and 75 dB(A), with peaks of 120 dB(A)) are above the World Health Organization recommendation for maximum night-level sounds (30 dB(A) with peaks less than 40 dB(A)).^{1,2} The United States Occupational Safety and Health Administration recognizes that peaks of 120 dB(A) with a duration of more than 15 minutes could be physically harmful.³ Increased noise results in a distressing environment for patients, their care-

givers, and health care providers. For example, noise is recognized as a stressor for nurses and potentially could increase complications in patients.⁴

Due to the increased complexity of health systems and number of individuals involved in care, it does not seem feasible to have silence in patient care areas. Likewise, it is not usually possible to reduce ordinary sound levels without making large structural changes (e.g., noise-cancellation technology) and educating staff about noise awareness.⁵ A possible alternative would be to provide background music to distract from and reduce the perception of ordinary sounds, which could decrease stress and improve well-being.

A systematic review of randomized control trials (RCTs) reported that music reduced anxiety during normal care delivery and seemed to improve patient mood and tolerance to

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procedures.⁶ RCTs evaluating music and hospitalized patients suggested benefits in a variety of clinical care settings including myocardial infarction care,⁷⁻⁹ perioperative care,¹⁰⁻¹³ postanesthesia care, and mechanical ventilation care.^{14,15} Studies in other specific clinical scenarios showed that patients preferred background music over ordinary sounds. Ninety percent of pediatric dental patients reported that they enjoyed music and would listen to music during their next procedure.¹⁶ A single-blind crossover trial of 50 postanesthesia care unit patients exposed to music versus ordinary sound showed that most participants ($n=32$, $p<0.001$) preferred listening to music.¹⁷ Also, music was a frequent coping strategy in patients with cancer. A Canadian study of 292 cancer patients showed that after prayer (64%), music (43%) was the most common coping strategy.¹⁸ Despite this literature, little is known about cancer patients' attitudes and beliefs about music.

Studies assessing the caregiver perspective found that they frequently used music for a variety of reasons and that they did not perceive it as harmful for patients or themselves. Parents of pediatric oncology patients reported playing music at home for different reasons including: to entertain, keep the patient company, provide comfort, or to distract the patient from pain or nausea.¹⁹ People using a surgery/intensive care unit (ICU) waiting room reported decreased stress and increased relaxation when music was played in comparison with periods without music.²⁰

Few studies have assessed the preferences of health care providers regarding music and its impact on performance. In a Brazilian study of 49 emergency department staff members, 85% believed it improved their performance, and 96% favored keeping the background music in place.²¹ When surgeons were asked to perform a stressful nonsurgical task, there was an association with reduced autonomic reactivity and improved performance when the participant selected music as compared with when there was no music or experimenter-selected music.²²

Although studies suggest that patients, caregivers, and health care providers prefer background music to ordinary sound, music has not been regularly incorporated into patient care areas. At M.D. Anderson Cancer Center (MDACC) music has not been used in any inpatient or outpatient centers.

The main goal of this exploratory study was to assess the preferences for background music or ordinary sound in cancer patients, caregivers, and health care providers exposed to a music intervention in MDACC Palliative Care patient areas. Secondary objectives of this project were to describe general attitudes and beliefs of these subjects toward music and to explore participants' musicality and musical preferences.

Methods

This was a prospective study in which patients, caregivers, and health care providers in the outpatient Supportive Care Center (SCC) or the inpatient Acute Palliative Care Unit (APCU) at MDACC were surveyed regarding music preferences and attitudes. This study was approved by the Institutional Review Board of MDACC.

Patients

Patients and adult caregivers attending a regular clinical visit, along with patients hospitalized in the APCU, were in-

vited to participate in the study by the research coordinator upon arrival. Eligibility criteria included ability to understand, read, write, and speak English. Patients were included if they were 18 years old or older and had a diagnosis of cancer (including early-stage, recurrent, locally advanced, or metastatic cancer). All health care providers who gave clinical care to patients including physicians, nurses, administrative aides, and nursing aides were approached during their clinical activities, and cleaning crew members were also invited to participate. Because of the extremely low risk of adverse events, only verbal consent was required before completing the questionnaire. Participants with hearing impairments or history or evidence of cognitive impairment as determined by the palliative care physician were excluded. All participants anonymously completed the questionnaire. Patients' demographic information was obtained from their charts.

Background music selection and volume

Baseline sound level in corridors, front desk and family/waiting rooms in both outpatient and inpatient areas was 60 dB(A), a value within the average ranges previously reported.^{1,2} As music in patient care areas is uncommon, we assumed that all study participants had been previously exposed to ordinary sound in other patient care areas. To ensure that all surveyed participants had been exposed to background music, we installed a satellite music player and a multiple-speaker system in the corridors of patient care areas at the SCC and the APCU. Speakers were turned on everyday between 8AM and 5PM. Patients were exposed to background music while in corridors, at front desks, and in family/waiting rooms. Music was not piped into outpatient examination rooms or into inpatients' rooms. Inpatients were able to listen to ambient music when they transited through the unit or while they were in their rooms with the door open. Inpatients were exposed throughout their admission process. The appropriate volume selection was based upon the music therapist's recommendation and a literature review and was defined as a volume level loud enough to be noticed but not so high that it is necessary to raise one's voice to be heard clearly. The volume was the same in each clinical care area to ensure that study participants had similar exposure. Based upon the music therapist's recommendations we selected channels with "soft" and "relaxing" instrumental music without voices including jazz and classical music. This simulated a common clinical scenario where health care providers choose prerecorded music without the help of trained music therapists.

Outcomes assessment

The questionnaire is study-specific and was developed by the authors based on a review of medical and psychosocial databases (e.g., Medline, Embase, Cochrane Database, and references of relevant articles, among others), recommendations of music therapists involved in the care of palliative care patients, and the authors' knowledge of the research field and professional experience in the palliative care clinical care areas.^{5,17,19,21,23,24} Some of the questions have been used in prior studies.^{5,17,19,23} The patient survey consisted of 34 questions, the caregiver survey of 38 questions, and the health care provider survey of 43 questions, with each survey including different areas of interest such as: background music versus ordinary sound, attitudes about music in patient areas,

assessment of musicality and music preferences, and professional performance (only for providers). Participants were asked to answer each question by choosing among five predefined ordinal options, including a neutral option. Although our goal was to assess binary outcomes (e.g., preference for background music or ordinary sound), we included more categories to provide respondents with a wider spectrum of answers. For the final statistical analysis, the two positive and the two negative items were collapsed into one category each. The primary outcome of choice was preference of background music over ordinary sound. Secondary outcomes were the proportion of agreement with statements regarding the effects of music and the proportion of preferred music styles among participants.

Statistical considerations

We determined that a sample size of 100 for patients and caregivers was feasible and reasonable to conduct the study. Only 70 health care professionals were eligible for participation. Under the assumption that the approval rate for all three groups was at least 80%, we calculated that we would be able to estimate the proportion of participants who would prefer background music with a 95% confidence of the observed proportion $\pm 8\%$ for patients and for caregivers and $\pm 9\%$ for health care professionals with these numbers of respondents. We used logistic regression to identify demographic predictors of a preference for background music. We summarized information from the questionnaire separately for each of the three groups using frequency tables.

Data confidentiality and protection

Health information was protected, and the confidentiality of the data obtained from the database was maintained throughout the study. Each patient was assigned a study number, which was the only identifier used in the analytical file. Personal data were not disclosed in any form. Only MDACC personnel trained in maintaining confidentiality and the primary investigator had access to study records.

Results

Ninety-nine of 117 eligible patients (85%), 101 of 104 eligible caregivers (96%), and 65 of 70 eligible providers (93%), all of whom were exposed to background music while in patient care areas, completed the survey. Demographic characteristics of the population are outlined in Table 1. Median (interquartile range [IQR]) Edmonton Symptom Assessment System (ESAS) pain score for patients in the study was 4(2, 6). Thirty of 99 patients (30%) were inpatients. There were no statistically significant differences in demographic characteristics among patients surveyed in the outpatient and inpatient settings (data not shown).

In the prospective assessment, more than 60% of patients, caregivers, and providers noticed the presence of background music in patient care areas, with no difference between the groups. Preference for background music over ordinary sound was consistently the most frequent response among the three groups (71%), with no difference among the three groups in the proportion who agreed (Table 2). Specifically comparing inpatients and outpatients, there were no differences in the preference for background music over ordinary

TABLE 1. DEMOGRAPHICS

Characteristics	Patients N=99	Caregivers N=101	Providers N=65
Mean age (SD)	51 (14)	N=88 52 (16)	N=47 38 (11)
Gender (%)			N=64
Female	59 (60)	76 (75)	42 (66)
Ethnicity (%)			N=62
White	69 (70)	65 (64)	23 (37)
Black	17 (17)	20 (20)	14 (23)
Other	13 (13)	16 (16)	25 (40)
Religion (%)	N=91	N=96	N=59
Christian/Protestant	36 (40)	51 (53)	19 (32)
Catholic	26 (29)	23 (24)	16 (27)
Other	29 (32)	22 (23)	24 (41)
Marital status (%)		N=99	N=62
Married	59 (60)	73 (74)	34 (55)
Single	20 (20)	15 (15)	26 (42)
Other	20 (20)	11 (11)	2 (3)
Highest level of education (%)	N=97	N=99	N=62
High school/tech school	28 (29)	27 (27)	0 (0)
College	57 (59)	53 (54)	25 (40)
Post college	12 (12)	19 (19)	37 (60)
Cancer type (%)			
Breast	17 (17)		
Gastrointestinal	15 (15)		
Genitourologic	14 (14)		
Hematologic	12 (12)		
Lung	10 (10)		
Other	31 (31)		
		N=76	
Median time to diagnosis in months (IQR)	15 (6, 48.5)		
Provider (%)			
Physician			23 (35)
Nurse			15 (23)
Other staff			27 (42)
Years in Supportive Care Center [median, (IQR)]			2 (0,4)
Working hours (%)			N=64
Less than 40 hours			47 (73)
More than 40 Hours			17 (27)
Unit (%)			
Acute Palliative Care Unit	30 (30)		29 (45)
Supportive Care Center	69 (70)		36 (55)

sound (60% versus 75%, $p=0.12$). Most of the participants found background music more pleasant than ordinary sound, and there were no statistically significant differences among the three groups (patients 75%, caregivers 81%, providers 75%; $p=0.57$). A minority of the participants disagreed with the statement that background music should be kept in patient care areas, with no statistically significant differences among the groups (patients 10%, caregivers 9%, providers 12%; $p=0.91$; Table 2).

In the univariate analysis, there were no differences in demographic characteristics between the participants who preferred background music versus those who did not. Multivariate analysis identified that being of black ethnicity

TABLE 2. PARTICIPANT RESPONSES REGARDING BACKGROUND MUSIC

	Patients N=99	Caregivers N=101	Providers N=65	P value ^a
I noticed the presence of background music today [<i>n</i> (%)]	N=98	N=100		
Agree/Strongly agree	62 (63)	68 (68)	50 (77)	0.25
Neutral/Not sure	22 (22)	16 (16)	6 (9)	
Disagree/Strongly disagree	14 (14)	16 (16)	9 (14)	
In patient care areas I prefer background music to ordinary sound		N=100		
Agree/Strongly agree	70 (71)	71 (71)	46 (71)	0.58
Neutral/Not sure	19 (19)	13 (13)	9 (14)	
Disagree /Strongly disagree	10 (10)	16 (16)	10 (15)	
What is more pleasant to you in patient care areas, background music or ordinary sound?		N=100	N=64	
Background music is much/somewhat more pleasant	74 (75)	81 (81)	48 (75)	0.57
Neutral/Not sure	15 (15.2)	12 (12)	7 (11)	
Ordinary sound is much/somewhat more pleasant	10 (10)	7 (7)	9 (14)	
Background music should be kept in patient care areas				
Agree/Strongly agree	63 (64)	68 (68)	43 (66)	0.91
Neutral/Not sure	26 (26)	23 (23)	14 (22)	
Disagree /Strongly disagree	10 (10)	9 (9)	8 (12)	

^a χ^2 statistic.

predicted a lower preference for background music versus other ethnicities, when adjusted for age, gender, marital status, and education (odds ratio [OR] 0.47, 95% confidence interval [CI] 0.23–0.98).

There were no statistically significant differences in the percentage of agreement among the groups when asked about general attitudes regarding music in patient care areas (Table 3). A majority of participants agreed with the statement that “the effects of background music in patient care areas are positive,” and only a minority believed that the effects were negative. Most participants agreed that music can improve mood, lift spirits, boost energy and vitality, and reduce stress in patients. Fifty-six percent of participants agreed with the idea that music can relieve pain. Median (IQR) ESAS pain scores were similar for patients who believed that music can relieve pain and for those who did not (3.5(1, 6) versus 4(2, 6); $p=0.54$).

We prospectively assessed musicality preferences. A high proportion of participants reported frequent use of music for their own enjoyment or for stress reduction during the previous week, but the percentages were statistically different among the groups (patients 69%, caregivers 80%, providers 86%; $p=0.02$). Using multiple comparison tests we identified that providers used music for enjoyment more frequently than patients ($p=0.01$). Caregivers reported using music for patients less often than patients’ direct use (36% versus 68%, $p<0.001$). The main reasons for listening to music were for entertainment (72%), to feel better (40%), for inspiration (35%), for company (34%) and for comfort (34%). Patients reported infrequent use of music to distract from pain (8%) or nausea (4%). Patients who reported the use of music for pain had statistically higher pain scores (median (IQR) ESAS pain score: 7(4, 9) versus 3(2, 6); $p=0.01$). When looking at each reason in turn, there were no significant differences in responses among the three groups.

Individuals were asked to choose preferred music styles among a predefined list. The percentage of participants preferring pop, country, religious, and classical music differed

TABLE 3. GENERAL ATTITUDES OF PARTICIPANTS REGARDING MUSIC IN PATIENT CARE AREAS

	All groups combined	P value ^a for difference among groups
Overall, the effects background music produced in the patient care areas are positive [<i>n</i> (%; 95% CI)]	N=255	
Agree/Strongly agree	201 (79; 73–83)	0.49
Overall, the effects background music produced in the patient care areas are negative	N=253	
Agree/Strongly agree	19 (8; 5–11)	0.31
Noise in patient care areas contributes to patients’ stress	N=258	
Agree/Strongly agree	125 (48; 42–55)	0.47
Music can reduce stress in patients	N=258	
Agree/Strongly agree	220 (85; 80–89)	0.74 ^b
Music can improve mood	N=262	
Agree/Strongly agree	230 (88; 83–91)	0.15 ^b
Music can lift spirits and boost energy and vitality	N=260	
Agree/Strongly agree	233 (90; 85–93)	0.83 ^b
Music can enhance growth and recovery from injury and illness	N=260	
Agree/Strongly agree	174 (67; 61–72)	0.35 ^b
Music can help relieve pain	N=260	
Agree/Strongly agree	146 (56; 50–62)	0.66

^aCompares the response distribution among the three groups. All p values tested with χ^2 test, except when indicated.

^bFisher’s exact test.

TABLE 4. MUSIC PERSONAL PREFERENCES

	Patients N=99	Caregivers N=101	Providers N=65	P value ^a
What kind of music do you prefer to listen to at home? (%)				
Pop	27 (27)	31 (31)	31 (48)	0.02 ~
Country	44 (44)	48 (48)	11 (17)	<0.01 ~
Rock	28 (28)	32 (32)	18 (28)	0.82
Religious	29 (29)	44 (44)	15 (23)	0.02 ~
Classical	21 (21)	37 (37)	32 (49)	<0.01 ~
Rap	5 (5)	10 (10)	4 (6)	0.39
Jazz/blues	24 (24)	33 (33)	25 (39)	0.14
New age	10 (10)	7 (7)	8 (12)	0.49

^a χ^2 statistic; ~ Bonferroni test for multiple comparisons: providers prefer pop and classical music more frequently than patients, caregivers prefer religious music more frequently than providers, and both patients and caregivers prefer country music more frequently than providers ($p < 0.05/3$).

among the three categories (Table 4). Logistic regression models identified independent predictors of preference for specific music styles, including age, gender, ethnicity, education, and religion. Table 5 shows the OR of preferring each type of music style according to demographic characteristics. For example, the preference for pop music was less likely in participants of black ethnicity compared with those from other ethnicities (OR=0.36). But preference for religious music was 6 times more likely in participants of black ethnicity compared with those from other ethnicities (OR=6.02).

Comparing patients' music style preferences with caregivers' and providers' beliefs about the music styles preferred by patients we found that caregivers overestimate patients' preference for classical music and underestimate their preference for pop, country, and rock music. Providers overestimate patients' preferences for classical and jazz/blues music and underestimate their preference for pop, country, and rock music (Table 6).

Discussion

Our main outcome is that background music in patient care areas was preferred to ordinary sound by patients, caregivers, and providers. Most participants found music more pleasant than ordinary sound, and this finding was consistent throughout the study, as assessed by different positive and negative questions (Tables 2 and 3). Despite different demographic characteristics, all three groups report positive average evaluations of background music and very low disapproval

TABLE 6. FREQUENCY OF MUSIC STYLES PREFERRED BY PATIENTS VERSUS CAREGIVERS' AND PROVIDERS' BELIEFS OF PATIENTS' MUSIC PREFERENCES

	Patients preferences N=99	Caregivers' beliefs of patients' preferences N=101	P value ^a versus patients	Providers' beliefs of patients' preferences N=65	P value ^a versus patients
Pop (%)	27 (27)	14 (14)	0.02	2 (3)	<0.001
Country	44 (44)	31 (31)	0.05	8 (12)	<0.001
Rock	28 (28)	15 (15)	0.02	2 (3)	<0.001
Religious	29 (29)	34 (34)	0.51	17 (26)	0.66
Classical	21 (21)	47 (47)	<0.001	51 (79)	<0.001
Rap	5 (5)	4 (4)	0.75 ^b	0 (0)	0.16 ^b
Jazz/blues	24 (24)	25 (25)	0.93	26 (40)	0.03
New age	10 (10)	9 (9)	0.77	10 (15)	0.31

^a χ^2 statistic.

^bFisher's exact test.

rates, which suggests that this environmental intervention would be widely accepted if applied more generally. Interestingly, in the multivariate analysis, people of black ethnicity report a weaker preference for background music in comparison with nonblack participants. Further studies are needed to explore the reasons why people from black ethnicity appear less likely to prefer background music on average.

Regarding participants' attitudes toward music, it was surprising how often participants reported music use during the week prior to the assessment, although patients reported using music less often than caregivers and providers. Our study was not designed to assess this discrepancy, but it would be valuable to explore whether or not listening to music decreases in sick patients in further work. Only 35% of caregivers reported using music for patients the week before, as opposed to 68% of patients who reported using music for themselves. These findings suggest that caregivers might not be taking full advantage of music use for patients. Adding music to patient care may be a beneficial educational intervention.

Music was frequently used for a wide variety of reasons, such as for entertainment, to feel better, or for company, inspiration, or comfort. Although most participants in our study believed that music could have a role in treating pain (56%), only a low proportion of patients used it for this purpose (8%). This latter group of patients had statistically higher pain scores. In the literature there are reports describing music as having an impact on pain relief, although the effect appears to be small.^{25,26} Thus, more research is needed to understand

TABLE 5. ODDS RATIO OF MUSIC STYLE PREFERENCE ACCORDING TO DIFFERENT DEMOGRAPHIC CHARACTERISTICS [OR (95% CI)]^a

Music style	Age (per year)	Female versus male	Black versus nonblacks	Providers versus caregivers and patients	Christian versus non-Christian	Postcollege versus high school and college
Pop	0.97 (0.95–0.99)	-	0.36 (0.15–0.66)	-	-	-
Country	-	-	0.16 (0.06–0.42)	0.26 (0.10–0.70)	-	0.36 (0.16–0.83)
Religious	1.03 (1.01–1.05)	2.78 (1.33–5.81)	6.02 (2.62–13.89)	-	2.27 (1.22–4.26)	-
Classical	-	-	0.17 (0.06–0.51)	-	-	-

^aOnly statistically significant results included.

why very few patients use music for pain relief and to assess the analgesic effect of music on cancer patients in particular.

Our study also shows that personal preferences regarding music styles are influenced by a variety of factors such as age, religion, ethnicity, gender, and educational level. This result could explain why participants of black ethnicity preferred background music less in our study. It is possible that the musical style played was not of their preference. Further studies should address the best music style for patients in patient care areas and whether specific music styles should be used according to population demographic characteristics.

An interesting finding in this exploratory study was the inaccuracy of both caregivers' and providers' perception of patients' music style preferences. Patients often prefer to listen to music styles that are different from what caregivers and providers think they prefer (i.e., classical or jazz/blues). This suggests that patient music style preferences, not caregiver or provider preferences, should be considered when recommending music use for patients.

This study has several limitations. First, our study design did not include baseline assessments of music preferences before the intervention, so it is not possible to estimate the effect of the intervention in patient responses. Second, our finding of a preference for background music over ordinary sound in patient care areas may be influenced by both recall bias and by patient attachment to the clinical site (influencing answers toward "expected response"). However, several questions showed that participants favored background music over ordinary sound, a result that strengthens the case for the validity of our finding. Third, we did not measure the impact of music on general noise levels or ask patients whether they subjectively noticed increased sound levels with music. Nonetheless, this study was exploratory in nature, and thus these results must be interpreted with caution and are not generalizable to all populations and all clinical settings.

We conclude that patients, caregivers, and health care providers, after being exposed to background music in outpatient and inpatient palliative care settings, prefer background music to ordinary sound. We also conclude that demographic factors predict music style preferences. These findings suggest that music-related topics should be explored in the future, including daily variation of noise levels in patient care areas, the effectiveness of music in covering ordinary sound, the identification of the best music styles to be used in patient care areas, and the impact of music on quality of life.

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