

REVIEW AND CASE REPORTS

The Use of Music Therapy During the Treatment of Cancer Patients: A Collection of Evidence

癌症患者治疗期间使用音乐疗法：证据收集

El uso de la musicoterapia durante el tratamiento de los pacientes de cáncer: un conjunto de pruebas

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Cancer, leukemia, music therapy, mood, pain, instruments, relaxation

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The authors declare no competing interests.

ABSTRACT

Background: Music therapy is one of the oldest forms of creative art therapy and has been shown to have effects in different clinical and therapeutic settings, such as schizophrenia, pain, cardiovascular parameters, and dementia. This article provides an overview of some of the recent findings in this field and also reports two single case vignettes that offer insight into day-to-day applications of clinical music therapy.

Material and Methods: For the collection of clinical studies of music therapy in oncology, the databases AMED, CAIRSS, EMBASE, MEDLINE, PsychINFO, and PSYNDEX were searched with the terms “Study OR Trial” AND “Music Therapy” AND “Cancer OR Oncolog\$.” Studies were analyzed with respect to their design, setting and interventions, indications, patients, and outcomes. In addition, two case vignettes present the application of music therapy for a child with leukemia and an adult patient with breast cancer.

Results: We found a total of 12 clinical studies conducted between 2001 and 2011 comprised of a total of 922 patients. Eight studies had a randomized controlled design, and four studies were conducted in the field of pediatric oncology. Studies reported heterogeneous results on short-term improvements in patients’ mood and relaxation and reduced exhaustion and anxiety as well as in coping with the disease and cancer-related pain. Case descriptions showed similar effects in expressing emotions, opening up new goals, and turning the mind toward a healthy process and away from a disease-centered focus.

Conclusion: The use of music therapy in the integrative treatment of cancer patients is a therapeutic option whose salutogenetic potential is shown in many case studies such as those presented here. Study results, however, did not draw a conclusive picture of the overall effect of music therapy. In addition to further clinical trials, the evidence mosaic should be complemented with qualitative studies, single case descriptions, and basic research.

背景

背景：音乐疗法是最古老的创意艺术疗法形式之一，且已证实其在不同的临床和治疗情境中有疗效，比如对精神分裂症、疼痛、心血管参数和痴呆症。本文将概述该领域近期的一些发现，并报告两个单独的案例片段，提出对临床音乐疗法日常应用的见解。

材料和方法：为收集音乐疗法在肿瘤科的临床研究，已在数据库 AMED、CAIRSS、EMBASE、MEDLINE、PsychINFO 和 PSYNDEX 中用术语 “Study OR Trial (研究或试验)”、“Music Therapy (音乐疗法)” 和 “Cancer OR Oncology (癌症或肿瘤学)” 进行搜索。已对研究的设计、设置和干预、适应症、患者和结果进行了分析。此外，两个案例片段展示了音乐疗法对一名儿童白血病患者和一名成人乳腺癌患者的应用。

效果：我们发现在 2001 年至 2011 年期间，共有 12 项临床研究，涉及到对 922 名患者。八项研究为随机对照设计，四项研究针对小儿肿瘤科展开。研究报告了对患者情绪和放松方面的短期改善、疲惫和焦虑的缓解以及应对疾病和癌症相关疼痛的各种效

果。案例描述显示，对表达情绪、开创新目标，及心理转向健康过程并将注意力转离疾病而关注其它事项上具有类似效果。

结论：音乐疗法运用于癌症患者的综合治疗，其健康导向潜力已在许多案例研究，比如本文所展示的研究中证实，是一种可取治疗方案。但研究结果未能总结音乐疗法的整体效果。除进一步临床试验外，应以定性研究、个案描述和基准研究补充零散证据。

SINOPSIS

Fundamentación: La musicoterapia es una de las formas más antiguas de arteterapia que ha demostrado obtener efectos en diferentes ámbitos clínicos y terapéuticos, tales como esquizofrenia, dolor, parámetros cardiovasculares y demencia. Este artículo ofrece una visión general de algunos de los hallazgos recientes en este campo e incluye los resultados de dos simulaciones de casos únicos que ofrecen una visión para comprender las aplicaciones cotidianas de la musicoterapia clínica.

Materiales y métodos: La búsqueda de estudios clínicos sobre musicoterapia en oncología se hizo en las bases de datos AMED, CAIRSS, EMBASE, MEDLINE, PsychINFO y PSYNDEX con los términos “estudio O ensayo” Y “musicoterapia” Y “oncolog\$ O cáncer”. Los estudios se analizaron en relación a su diseño, ámbito e intervenciones, indicaciones, pacientes y resultados. Además, dos simulaciones de casos presentan la aplicación de la musicoterapia para un niño con leucemia y una paciente adulta con cáncer de mama.

Resultados: Hallamos un total de 12 estudios clínicos realizados entre 2001 y 2011 con un total de 922 pacientes. Ocho estudios tenían un diseño controlado aleatorizado y cuatro se realizaron en el campo de la oncología pediátrica. Los estudios notificaron resultados heterogéneos en las mejoras a corto plazo en el estado de ánimo y la relajación de los pacientes, y en la reducción del agotamiento y la angustia, así como en la

capacidad para hacer frente a la enfermedad y al dolor relacionado con el cáncer. Las descripciones de los casos mostraron efectos similares sobre la expresión de las emociones, la apertura a nuevos objetivos y el enfoque mental hacia un proceso saludable y alejado de un enfoque centrado en la enfermedad.

Conclusiones: El uso de musicoterapia en el tratamiento integrador de los pacientes de cáncer es una opción

terapéutica cuyo potencial salutífero se muestra en muchos estudios de casos, como los presentados en este trabajo. Sin embargo, los resultados de los estudios no dibujaban una imagen concluyente del efecto general de la musicoterapia. Además de ensayos clínicos adicionales, el mosaico de pruebas debería complementarse con estudios cualitativos, descripciones de un único caso e investigación básica.

THE LITERATURE REVIEW

Background

Music therapy is one of the oldest forms of creative art therapy and has been used in healing ceremonies in ancient practices as a specific medium of communication and expression. In fact, some of the earliest notable references in Western history are found in the writings of the ancient Greek philosophers Aristotle and Plato.¹ In contemporary Western history, one of the first connections of music to medicine was described in the 1749 book *Reflections on the Power of Music* by Richard Bocklesby,² who picked up the Greek tradition of music therapy and compared it to popular music of that time, namely the compositions of Handel. While concentrating on mental illnesses, he also noted the positive effects of music for the elderly by describing how it revived “their spirits every day with a good piece of music.”³

Although this episode nowadays seems more or less aphoristic, music therapy in the clinical setting quite early managed its way into one of the leading journals, *The Lancet*. In 1891, a series of letters described and discussed the approach of a group of musicians providing live music to patients in London hospitals who together with the physicians were asked to describe “the outcomes of experiments with ‘soothing’ and ‘exhilarating’ music.”⁴ From that point, music therapy established itself as a recognized health profession in the clinical context. One century later, music therapy was introduced in the field of palliative care in 1978 by Munro and Mount, who used “receptive and recreative methods to promote relaxation and encourage the expression of difficult feelings.”^{5,6} Today, several systematic reviews and meta-analyses have shown the effects of music therapy in different clinical and therapeutic settings, such as for the treatment of schizophrenia,⁷ pain,⁸ cardiovascular parameters,⁹ and dementia.¹⁰ In addition to these therapeutic fields, music therapy has seen a variety of applications in the treatment of cancer patients.¹¹

This article provides an overview of some of the recent findings in this field and includes two single case vignettes, which offer more insight into the application of day-to-day clinical music therapy.

Materials and Methods

For the collection of clinical studies of music therapy in oncology, the following databases were searched: AMED, CAIRSS, EMBASE, MEDLINE, PsychINFO, and PSYINDEX. The search terms were “Study OR Trial” AND “Music Therapy” AND “Cancer OR Oncolog\$.” Studies were then analyzed with respect to study design, setting and interventions, date of publication, indications, patients, and main outcomes.

Results

We found a total of 12 clinical studies conducted between 2001 and 2011, involving a total of 922 patients (Table). Eight studies were randomized controlled trials (RCTs), and four were observational studies. Four studies were conducted in the field of pediatric oncology, of which two were RCTs. Both type and grading of cancer were heterogeneous throughout all studies. Active music making (n=7) as well as listening programs (n=5) were applied as additional treatment after surgery or chemotherapy to improve the patient’s situation. Studies reported on short-term improvements in patients’ mood and relaxation and reduced exhaustion and anxiety as well as in coping with the disease and cancer-related pain.

TWO CASES OF THE ROLE OF MUSIC THERAPY IN THE TREATMENT OF CANCER PATIENTS

For the case vignettes, we decided to report on two contrasting sides of clinical practice with epidemiological importance: leukemia in pediatric oncology and breast cancer in adult oncology. Both patients were treated in the Community Hospital in Herdecke, Germany. Examples of the types of instruments used in the music therapy program are pictured in Figures 1 through 5. Patients or their legal representatives consented to have their de-identified data published in a case report. The reporting of single cases adhered to the description for cognition-based medicine applied in the single case.¹²

Case 1: Seven-year-old Girl With Leukemia

History and presenting condition. A 7-year-old girl was diagnosed with leukemia shortly before entering

Table Music Therapy Trials in Oncology: Setting, Interventions, and Outcomes

Authors (reference no.)	Year	N	Patients	Music Therapy	Cancer Type	Study Type ^a	Outcomes
Smith, et al (13)	2001	42	Male patients after radiotherapy from the Veterans Affairs hospital Tampa, Florida, US	Receptive MT (music listening) during radiotherapy	Abdominal	2-armed RCT: MT vs standard treatment	No significant differences between MT and standard treatment in anxiety scores
Walden (14)	2001	10	Patients from the Metropolitan Cancer Centers in Stockton, California, US	2 different kinds of MT interventions taken from "music making" and "music responding"	Various	Pre-post observational study	Significant improvements in mood
Barrera, et al (15)	2002	65	Children between 1 and 17 y (MW: 7 ± 4, 8 y)	Interactive MT	Various	Pre-post observational study	Significant improvements in mood
Hanser (16)	2006	70	Female patients	3 sessions of individual MT	Metastatic breast cancer	2-armed RCT: MT vs standard treatment	Significant immediate effects in relaxation, comfort, and joy; no between-group differences
Kemper, et al (17)	2008	47	Pediatric outpatients from Wake Forest Hospital, Winston-Salem, North Carolina, US	Music listening	Leukemia	Observational study with 2 interventions: T1: relaxation, T2: music listening	Significant improvements in relaxation and heart rate variability
Robb, et al (18)	2008	83	Patients from Indiana University Hospital, Indianapolis, US	AME	Various	3-armed RCT: AME vs music listening vs audio books	AME participants showed significant improvements in coping
Rose, et al (19)	2008	105	Patients from the Hospital for Tumorbiology, Freiburg, Germany	4 sessions of sound meditations within 3 wk	Various (50.5% breast cancer)	Pre-post observational study	Significant improvements in inner balance, nervousness, and exhaustion
Bufalini (20)	2009	39	Pediatric patients from the Ospedale Pediatrico Anna Meyer di Firenze, Italy	Interactive MT during lumbar injection and bone marrow aspiration and biopsy	Various	2-armed RCT: MT vs standard treatment	Significant improvements in anxiety scores
Nguyen, et al (21)	2010	40	Patients from the National Hospital of Paediatrics, Hanoi, Vietnam	Music medicine	Leukemia with lumbar puncture	2-armed RCT: MT vs standard treatment	Significant differences between MT and standard therapy in anxiety and pain scores
Shabanloei, et al (22)	2010	100	Patients of the Tabriz Hematology and Oncology Center, Iran	Music listening during bone marrow aspiration and biopsy	Various	2-armed RCT: MT vs standard treatment	Patients listening to music had lower anxiety and pain scores
Li, et al (23)	2011	120	Patients from the Surgery Department of Xi'an Jiaotong Hospital, China	Not specified	Breast cancer with mastectomy	2-armed RCT: MT vs standard treatment	Significant short- and long-term effects in various pain scales
Lin, et al (24)	2011	98	Cancer outpatients from an academic hospital in Taiwan	1 h of individual MT	Various	3-armed RCT: MT vs relaxation vs standard treatment	Positive effects of MT on anxiety after chemotherapy

Abbreviations: AME, active music engagement; MT, music therapy; RCT, randomized controlled trial; US, United States.

^a All groups receive standard cancer care and additional MT was applied for the intervention group.

school. She was admitted to the Community Hospital Herdecke in Germany, where her parents took turns staying with her.

Music therapy was prescribed concomitant with to her in-patient chemotherapy treatments, which lasted 6 months. The 30-minute sessions took place three times a week.

Chemotherapy had taken its toll on her body: a hat covered her bald head. The child appeared weak and expressed sadly that she had never been to school. She was excited about the music therapy, especially as she had little contact with any of the other children on the

ward due to the high risk of infection. Her doctors gave permission for her to visit the music therapy room with a surgical mask and while still receiving her intravenous medication.

Treatment. Once in the therapy room, the patient tried all kinds of instruments without hesitation. She finally selected a lyre with pentatonic tuning, chime bars in tune with the lyre, and wind chimes. The therapist accompanied her on the piano.

The patient also enjoyed improvising on the drums. She played a large jungle drum, a Darbuka, and

a Korean drum; the therapist—again playing the piano—responded to her rhythmic motifs using tunes based on Asian and Latin-American modalities. Drumming together with the therapist, the patient invented her own lyrics and melodies in creative dialogues with the therapist.

After a few sessions, the patient began bringing songs from her daily life into the sessions. The lyrics and melodies of these songs reminded her of home and past experiences. Soon, a small repertoire of fairytale and folk songs emerged, which the patient enthusiastically presented to her parents and took back with her to the ward.

Another meaningful experience involved playing the *crwth*, a bowed string instrument also known as the Irish harp (Figure 1). The patient conscientiously practiced bowing the open strings and then described the sensation of the resulting vibrations as they passed through the instrument into her body.

Outcome. At times, the patient sank into a world of her own sounds, a world not dictated by illness but one in which she was allowed to be “healthy.” The rhythmic and sweeping music styles seemed to invigorate her; she laughed and danced through the room.

On one occasion, the patient appeared weak and joyless at the beginning of a session. She walked over to a table with a set of chromatic chime bars and began playing immediately. Her music sounded off-key and atonal, which did not seem to bother her. On the contrary, she improvised a piece reflective of her mood. Soon she switched to other instruments and played these in a similar fashion, seemingly “unloading” herself. Once again, the therapist accompanied her on the piano, following the patient’s conflicted emotions as expressed through frictional sounds and pulsating rhythms.

Despite her lively and outgoing demeanor during the majority of the music therapy sessions, the patient frequently felt quite poorly. She struggled not only with the side effects of the chemotherapy but also with the emotional burden of being ill: the nurses reported that she cried in secret so as not to cause additional distress to her family. In attempting to shield her parents, she put herself under enormous pressure.

During her session of off-key playing, the patient appeared to let her imagination and with it her emotions, pain, anger, and fear run wild as reflected by her music. Afterward, she seemed relaxed. Her tension seemed to have dissipated.

Conclusion. In addition to their somatic problems, inpatient pediatric cancer patients suffer due to the loss of their regular settings and structures. Their clinical day-to-day experiences are dictated by medical care and procedures. They are also acutely aware of the extreme tensions to which their families are subjected. They frequently attempt to lighten their relatives’ emotional load.

Music therapy accompanied this patient along her journey as she navigated her disease; it provided her with a bit of normalcy while also offering an arena for interac-



Figure 1 A *crwth*, a bowed string instrument also known as the Irish harp.



Figure 2 Congas.

tion with all the feelings and emotions that she otherwise tried to hide.

Case 2: A 43-year-old Woman With Breast Cancer

History and presenting condition. A young-looking, petite 43-year-old woman diagnosed with breast cancer

was admitted to the Community Hospital Herdecke in Germany, where she was assigned to music therapy. She had a history of cancer with a mamma carcinoma in one breast and a diagnosis of Hodgkin's lymphoma at age 19 and again at age 24. The patient had received outpatient psychotherapy for a number of years. During her 3-week in-patient treatment, the patient had eight individual therapy sessions with an average length of 40 minutes.

Treatment. Initially, the patient did not want to play the instruments. During the course of treatment, she did manage to try out a percussion instrument (bongos). A positive turnaround followed the decision to focus on the patient's singing voice. Surprisingly, the patient did not dismiss the suggestion but agreed to vocal improvisations.

In the first session, the patient cried when she saw the instruments. She said, "This is too emotional for me" and explained that she did not want to play at all due to the unattainable standards set by her own perfectionism.

The human voice is the body's own instrument and can express both the mood and mental state of the singer, thus directly revealing something personal about oneself. This is one reason why many patients—unconsciously—are reluctant to sing.

After her first vocal improvisation, the patient related that she had experienced herself as a "whole" or "complete" person throughout the chanting. This perception utterly surprised, overwhelmed, and gratified her.

Over the course of the therapy, the patient and therapist worked extensively on the patient's vocal expressiveness and on songs to which she improvised her own part. Toward the end of her stay, she remarked that she wished to continue singing and that she was deeply moved by the novel feeling of inner connection to herself. While still at the clinic, the patient made inquiries about choirs and a singing teacher in her hometown.

Outcome. The patient played the bongos in a rigid manner, making it impossible for the therapist to join in on her playing and thus prohibiting the development of a musical relationship. The patient cried, "This is my problem, trying to hold on to the past." She believed that psychotherapy had helped her to recognise her problems but said that this was "not enough." She explained that in her daily experience, her mind and her emotions were two separate entities, and she seemed unable to synchronize the two.

A solo, monosyllabic melody based on very few tones grew out of the vocal improvisation. The therapist supported and accompanied the singing on the piano. Sitting in a corner of the room, the patient initially cried bitterly but carried on singing. During the course of the 20-minute improvisation, her chanting became lighter, the key changed from minor to major, and the range was extended. Melodic motives and repeatable phrases



Figure 3 Lyres.



Figure 4 Metallophone mallets.

emerged. The patient's singing matured into a musical form, becoming a creative, purposeful activity.

Conclusion. In music therapy, the patient was able to reconnect with her emotions, from which she previously had felt painfully cut off. Central to this experience were the vocal improvisations.

Often it is the chronically ill patients in music therapy who experience the strengthening and energizing results of their own creativity. Patients who regularly feel helpless in the face of their disease can, through the process of active music making, be assured of their own self-efficacy. Such experiences, the likes of which the patient described above enjoyed, can create positive perspectives that in turn can change the perceived significance of, and relation to, the illness.

DISCUSSION

Creative therapies like painting, speech therapy, healing eurythmy dance therapy, and music therapy frequently are used in the treatment of cancer patients.²⁵⁻²⁷ Particularly in the last decade, several studies have concentrated on the investigation of effects of music therapy in cancer patients. The use of music therapy in the integrative treatment of cancer patients is a therapeutic option whose salutogenetic



Figure 5 A steel drum.

potential is demonstrated in many case studies such as those presented here. Study results, however, did not draw a conclusive picture of the overall effect of music therapy. This might be due to methodological boundaries and pitfalls closely connected with the music therapy process. First of all, due to the special connection between music therapist and patient, blinding remains an unsolvable problem. Additionally, crossover studies, which are often performed in such situations, have high barriers mainly with respect to organizing and patient compliance. In particular, patients often decisively choose integrative inpatient treatment and thus might refuse to be randomized into a waiting control group. Therefore, more than in other disciplines, methodological considerations before planning a study are of high importance in music therapy.²⁵

In addition to clinical trials, the evidence mosaic should be complemented by qualitative studies and single case descriptions, which consider the patient-centered approach of music therapy.²⁶ In addition to the clinical setting, other types of health services for cancer patients such as home-based music therapy²⁷ also should be considered. Finally, the underlying mechanisms should be investigated to derive a more conclusive hypothesis.²⁸

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