

Applying music as a supplemental treatment in cancer care

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Abstract

Theoretical background: Applying music as a supplemental therapeutic method is a flexible, patient-directed and adaptable, non-invasive treatment. Several forms of musical interventions are able to reduce distress, chronic pain, anxiety and depression.

Aim: The purpose of this review was drawing attention to the possibility of applying music as a supplementary, supportive treatment for cancer patients. The article would like to give a broader view of different fields of applying music in cancer treatment.

Methods: A search was made in *Journal of Music Therapy, Music Therapy and Music Therapy Perspectives*. Besides PubMed and Web of Knowledge were used for searching relevant articles reported in English and containing the expressions “music” and “cancer” or “music” and “psychooncology”, or “music” and “oncology”, or “music” and “tumor”, or “music” and “tumour” in their titles. The searching process was closed in 2013. The articles were filtered by relevant content regarding the application of music in cancer treatment. The articles were considered as relevant 1) if they were focusing on any application of music in cancer treatment and 2) if they reported about original research results, so the reviews were filtered out of our selection. 61 articles were found of which 25 were considered as relevant for the review. The analysis of data was based on the following criteria: a) the aim of applying music with cancer patients, b) the applied method and period of intervention, c) number of participants and d) results.

Results: There is a significant improvement in quality of life of cancer patients receiving music as a supportive treatment. Both active and receptive forms of music therapy can be applied successfully either independently or with other therapies as a part of the supportive care.

Conclusion: Music applied by qualified music therapists in therapeutic circumstances can be suggested as a supportive treatment for cancer patients.

Keywords: music, cancer, distress, relaxation, depression, breast cancer, mastectomy

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1. Theoretical background

In the age of holistic approach of medicine the need for applying effective, non-invasive treatments is greater than ever. It is especially true in case of treating cancer patients when as the effect of isolation and treatment, physical and emotional changes even depression can be experienced very often (Addington-Hall, 2013). Applying music as a supplemental therapeutic method is a flexible, patient-directed and adaptable, non-invasive treatment (Gasenzer & Neugebauer, 2011). Several forms of musical interventions are able to reduce distress, chronic pain, anxiety and depression (Nyer et al., 2013). It is also very important that during music therapy sessions the patient and family members may discover again their probably long forgotten connections to each-other. Music therapy has a significant role as a supportive therapy in palliative care (Gutgsell et al., 2013). When applied in a proper way it can make the patients realize their own possibilities in participating in their healing process.

2. Aim

The purpose of this review was drawing attention to the possibility of applying music as a supplementary, supportive treatment for cancer patients. The review would like to give a broader view of different fields of applying music in cancer treatment. It focuses on the different possible applications of music therapy such as applying it independently or with other therapies, the application of live versus recorded music, improving life quality of cancer patients and of their family members, a special field of how to apply music therapy with children having cancer, and took a short look into the application of Bonny Method of Guided Imagery and Music (Burns, 2001). An analysis was made focusing on a) the aim of applying music therapy with cancer patients, b) the applied method and period of intervention, c) number of participants and d) results.

3. Methods

A search was made in *Journal of Music Therapy*, *Music Therapy* and *Music Therapy Perspectives*. Besides PubMed and Web of Knowledge were used for searching relevant articles reported in English and containing the expressions "music" and "cancer" or "music" and "psychooncology", or "music"

and “oncology”, or “music “ and “tumor”, or “music” and “tumour” in their titles. The searching process was closed in 2013.

The articles were filtered by relevant content regarding the application of music in cancer treatment. The articles were considered as relevant 1) if they were focusing on any application of music in cancer treatment and 2) if they reported about original research results, so the reviews were filtered out of our selection. Sixty-one articles were found of which 25 were considered as relevant for the review. The analysis of data was based on the following criteria: a) the aim of applying music with cancer patients, b) the applied method and period of intervention, c) number of participants and d) results.

4. Results

4.1. The multifunctional role of music

Music can provide the paediatric and adolescent patients, their family members, and beloved ones with opportunities to explore and show their psychosocial, emotional, and physical needs. Such needs can be addressed through the use of receptive/listening, re-creative, and compositional methods (Daveson, 2001).

Creativity inspired by music can help cancer patients to face the disease (Daykin, McClean, & Bunt, 2007). Soft music can be a useful supplement to analgesics as well (Huang, Good, & Zauszniewski, 2010). Music provides opportunities also for experiencing feelings of control during a time of loss-of control inflicted by the disease and ensuing experiences of illness (Rykov, 2008).

Some of the major goals of applying music in particular therapeutic applications in oncology settings can be: promoting expressions of emotions, relaxation, promoting expressions of spirituality or end of life concerns, promoting cognitive processing and expression of thoughts, serving as a social catalyst for family or group interactions, distracter, sensory stimulator, enhancement of immune functions, motivator for exercising and tool for learning (Kruse, 2003).

Chen, Wang, Shih, and Wu (2013) applied fifteen-minute music intervention on patients prior to radiation to investigate effects of music intervention on reducing pre-radiotherapy anxiety in oncology. Music therapy decreased State anxiety levels, Trait anxiety levels and systolic blood pressure in oncology patients who received the intervention.

The nature of the music experience can provide a significant amount of creative energy that is usually lost in the hospital environment. Music not only enriches the quality of one's life but may help provide the impetus to live (Fagen, 1982). A survey of patients undergoing radiotherapy reported that majority of people favour background music during this treatment (Mowatt, 1967). Although it can't be considered as a classical music therapy but music in itself may have some therapeutic effects.

Kruse (2003) made a survey aiming at the replies of 164 music therapists working in the United States with oncology patients or persons with cancer. She identified the common music therapy interventions used in oncology such as relaxation, song writing, instrument playing, song-leading, lyric analysis, guided imagery and music instruction. The results suggest that relaxation, song writing and instrument playing are the most widely used by music therapists working with cancer patients. Other fields of application cover improvisation, music games, musical life review, producing "patient-generated" music videos, toning, and music with art, theatre, or movement. Seventy percent of therapists stated that they prefer to use live music if possible.

Bailey (1983) compared the effects of live versus recorded music on hospitalized cancer patients. The patients were randomly selected and placed into two groups listening live or recorded music respectively. Each subject listened to 25 minutes of music. Mood states before and after the sessions were recorded on the Profile of Mood States (POMS) questionnaire (McNair, Lorr, & Droppleman, 1992). The live and recorded pre- and post-music scores were compared. The participants in the live music groups reported significantly less tension-anxiety and more vigor than did the participants of the recorded music group. Moreover live music subjects reported significantly more changes in physical discomfort, changes in mood, and changes in mood for the better and recommended music sessions for others. Results emphasize the particular effectiveness of using live music vs. recorded music to assist in relieving tension and promoting vigor. Probably it is owing to the importance of the "human element" inherent in live music. Kollár (2007) proved to get similar results on the course of regular live concerts organized on Hematology-Oncology Ward of Pediatric Clinics of Medical and Health Science Centre at the University of Debrecen.

It is not always easy to involve cancer patients in music therapy. The sessions must be prepared carefully and appropriate information must be given to the patients. O'Callaghan and Colegrove (1998) experienced that cancer patients are more willing to participate in music therapy sessions if the sessions are conducted in an open ward. This way the patients can hear the music before they actually meet the therapist. During therapy patients are asked about their musical preference, the sessions are interactive, and the therapist

don't go too deep in discussing different music therapy methods or discussing too much about the physical pain of the patients.

Music therapy applied together with proper human care proved to be very effective in the research of Lai, Li and Lee (2012) when music intervention with nursing presence provided a friendly music experience to the listeners as measured on psycho-physiological indices (pulse, heart rate, depression, anxiety and sleep quality).

Naturally in music therapy session the therapist has to face the possible resistance of the patients to be involved. In a new and strange environment, like a hospital every new experience demands extra effort from the patients to accommodate to unusual and thus stressful methods. Thus the first task of a music therapist is dissolving the fear, resistance and anxiety by facilitating the emotional reactions of the patients. A strange environment can be made more pleasant by applying familiar stimuli like songs what the patients like.

Bailey (1984) published some case studies describing the importance of the use of songs in music therapy with cancer patients. Different feelings and emotions evoked by the songs can provide frameworks for tension release, integration and pleasure. During the sessions patients and family members can experience feelings of inner peace, well-being, and relief which make them realize their own possibilities in participating in their healing process. Bailey also emphasize the importance of the three basic stages of a music therapy process, namely a) the contact phase, b) the phase of awareness, and c) the phase of resolution. In the first phase the therapist and the patient build a strong therapeutic relationship, in the second one the patient focuses more his/her own feelings, desires, and experiences under the guidance of the music therapist and in the last stage provides a feeling of relief and self-fulfilment for the patient.

Lee, Bhattacharya, Sohn and Verres (2012) investigated the possibilities of reducing distress effects of chemotherapy by using monochord sounds and progressive muscle relaxation for alleviating pain, enhanced body perception and relaxation. They used two randomized groups of patients treated by chemotherapy. The first group listened to monochord sounds and the second listened to progressive muscle relaxation during chemotherapy. Patients in both groups showed significant improvement in their physical and psychological states and in state anxiety, thus it can be ascertained that listening to monochord sounds and practising progressive muscle relaxation have a useful and comparable effect on gynaecologic oncological patients during chemotherapy.

Lai, Chao, Yang and Chen (2010) demonstrated the effectiveness of music therapy for lung cancer patients as low-cost end-of-life palliative care for dyspnoea.

Music therapy can be applied also together with other psychotherapies. Magill, Levin and Spodek (2008) investigated the conjoint effect of cognitive behaviour therapy (CBT) and music therapy and found that the application of the two methods in combination could reduce distress of critically ill cancer patients regardless of their stage of illness.

In another study it was proven that spiritual experiences evoked by music have a great impact on physical and emotional well-being of terminally ill patients. Thus the application of music in palliative care has also to be taken into consideration (Renz, Schutt Mao, & Cerny, 2005).

Music therapy proved to be effective not only for human cancer patients but also for animals having cancer. The effects of music on the immune system and cancer development were evaluated in rodents subjected to sound stress (Nuñez et al., 2002). According to the results music reduced the suppressive effects of stress on immune parameters in mice and decreased the enhancing effects of stress on the development of lung metastases provoked by carcinosarcoma cells. It also enhanced the immune parameters and the anti-tumour response in unstressed rodents.

4.2. Application of music with children having cancer

Cancer patients have to face with extremely high level of emotional distress during and even after the necessary treatments; therefore their immune and endocrine functions significantly decrease. It is especially true in cases of children. During the isolation what is an unpleasant but necessary part of the treatment these children may experience a number of negative emotional effects such as losing social contacts, suffering from lack of stimulation and having less opportunities for participating in less physical activities. Their emotional reactions given to such circumstances often include loneliness, depression, rejection, anger, and confusion. During the cancer treatment changes in the child's physical appearance occur, such as loss of hair, yellowing or peeling of the skin, lumps, scars, and bruises. These conditions often affect the child's self-concept negatively (Brodsky, 1989). Based on the pre- and post-music therapy measures Barrera, Rykov and Doyle (2002) experienced positive impact of music therapy on the child's well-being. Nguyen, Nilsson, Hellstrom and Bengtson (2010) were working with children having leukaemia. They investigated if music therapy influences pain and anxiety in children undergoing lumbar punctures. Their results showed lower pain scores, and heart and respiratory rates in the music group during and after the lumbar puncture. The anxiety scores were lower in the music group both before and after the procedure.

Kemper, Hamilton, McLean and Lovato (2008) investigated the effect of music on paediatric oncology outpatients. Patients with leukaemia participating in maintenance or consolidation outpatient treatment served as their control on a visit two. During visit 1, children rested for 20 min; during visit 2, for 20 min they listened to music designed to increase vitality and improve heart rate variability. Relaxation was more effective by using music. The heart rate variability parasympathetic parameter was significantly lower with music.

A music therapy program for cancer patients should not focus only on the patients themselves but also their family members. Slivka and Magill (1986) were working with children of cancer patients by using music therapy and social work methods. As tools of music therapy they applied song writing, playing musical instruments, and singing familiar songs. By their case studies the authors give a proof of the effectiveness of conjoint use of social work and music therapy. The verbal and nonverbal therapeutic methods can help the children to express their hidden feelings and thoughts and give the opportunity for experiencing intimacy lacking in their lives. As a result of such combined treatments the patients and their family members can experience a kind of social support, and they can get a greater opportunity for expressing their needs on both verbal and nonverbal levels. In another experiment (O'Callaghan, O'Brien, Magill, & Ballinger, 2009) mothers and fathers having haematological or metastatic diseases songs for their children. Parents' song lyric messages may support their children during the parents' illnesses and through the children's developmental transitions and possible bereavement. According to the results of Magill (2009) music therapy in palliative care strives to promote well-being and quality of life for patients and caregivers as well.

4.3. The application of Bonny Method of Guided Imagery and Music

Burns (2001) gives a report about the effectiveness of the Bonny Method of Guided Imagery and Music (GIM) in alleviating mood disturbance and improving quality of life in cancer patients. GIM is a music therapy method utilizing Western Art music to explore imagery and emotional expressions of patients. The developer is Helen Bonny, music therapist who created GIM as a possible alternative to LSD psychotherapy (Bonny, 1980). Blake and Bishop (1994) give a short but detailed summary of the method. A GIM Session consists of four parts. No. 1 is a verbal dialogue between the patient and the therapist. It gives the opportunity for the therapist to assess the pa-

tient's emotional status, ego strengths, coping mechanisms, and to identify a specific goal for the session. No. 2 is based on a relaxation exercise and an imagery induction. During the relaxation phase the patient can reach the level of an altered state of consciousness and may evoke feelings of vulnerability that can be frightening or agitating. In this part of the program the therapist prepares the patient for the music by giving an image which should be specific and reflective of the therapeutic goal. No. 3 is the music/imagery phase when the patient listens to the music and describes the emerging images or feelings. No. 4 is the final phase when the material from the session is processed. The interpretation and insight of the patient are in the focus of this part. The therapist helps to build connections between the patient's imagery experience and the session goal. It is essential for initiating integration into the patient's daily life and for reinforcing reclaimed or newly found inner resources. In the experiment of Burns (Burns, 2001) each of the experimental subjects participated in 10 weekly GIM sessions individually. All patients completed the Profile of Mood States (POMS) (McNair et al., 1992) and Quality of Life-Cancer (QOL-CA) (Padilla, Grant, Ferrell, & Presant, 1996) questionnaires pre-test, post-test before and after the treatment, and then came a 6-week-long follow-up. Individuals who participated in GIM sessions reached higher mood and quality of life scores at post-test than the members of the control group. Moreover, mood and quality of life scores continued to improve in the experimental group, even after sessions were complete. The results suggest that GIM was effective in improving both mood and quality of life in these cancer patients.

In the experiment of Waldon (2001) the oncology patients participated in a 10-week-long study consisting of 8 music therapy sessions applying both active ("music making") and receptive ("music responding") therapeutic methods. The Profile of Mood States-Short Form (POMS-SF) (McNair et al., 1992) was used to assess changes in participants' mood states. The results showed significant improvement of the participants' mood. Applying the "music making" method, comparisons between pre-test and post-test scores showed a statistically significant improvement in mood state. A similar significant effect was found in the "music responding" condition between the pre-test and post-test scores.

4.4. Application of music with breast cancer patients

Breast cancer is considered to be the most dangerous cancer among women worldwide. Both the disease and the treatment have a profound impact on the patients' psychological well-being and quality of life. The incidence of

depression is very frequent among breast cancer patients and it prolongs the duration of hospital stay. The study of Zhou, Li, Yan, Dang and Wang (2011) gives a report of the effective application of music therapy on depression and duration of hospital stay of female patients with breast cancer after radical mastectomy.

The relaxing effect of music is one of the most well-known and common applications of music therapy. Chuang, Han, Li and Young (2010) proved that music therapy can be clinically useful for promoting relaxation sensation and increasing parasympathetic nervous system activity in treated cancer survivors.

The study of Chuang, Han, Li and Young (2011) aims to determine if music therapy intervention improves autonomic function in anthracycline-treated breast cancer patients, and if so, whether such improvements persist after cessation of the music therapy sessions. The patients had undergone mastectomy or breast-conserving treatment and adjuvant chemotherapy; they attended weekly music therapy interventions for 8 weeks. Each of the sessions lasted 2 hours. Electrocardiogram traces (5 minutes) for heart rate variability analysis were recorded 4 times: prior to the first music session, after the fourth music session, after the eighth music session and 4 weeks after the completion of music therapy. The standard deviation of normal intervals and the total power of heart rate variability parameters, related to global autonomic function, were significantly higher after the eighth music session than prior to the first music session. Global autonomic function and parasympathetic activity did not change significantly 4 weeks after the completion of music therapy relative to the value measured prior to the first music session. The study could provide evidence of the benefits of music therapy for anthracycline-treated breast cancer survivors.

Li, Zhou, Van, Wang and Zhang (2011a) found music therapy as having positive effects on decreasing state anxiety score of breast cancer patients. They conducted a randomized controlled trial. The experimental group received music therapy in addition to routine nursing care. The control group received only routine nursing care without music therapy intervention. A standardized questionnaire and the State Anxiety Inventory were applied in the study. The state anxiety score was measured at pre-test (on the day before radical mastectomy) and at three post-tests (on the day before patients were discharged from hospital, the second and third time of admission to hospital for chemotherapy respectively). According to the result of the study the mean state anxiety score was significantly lower in the experimental group than those in the control group at each of the three post-test measurements. Li et al. (2011b) investigated also the effects of music therapy on pain reduction in patients with breast cancer after radical mastecto-

my under similar circumstances and they found that after music therapy, the main pain scores in the intervention group decreased considerably up to 2 months after radical mastectomy.

Binns-Turner, Wilson, Pryor, Boyd and Prickett (2011) give a report about a study involving 30 women undergoing mastectomy because of breast cancer to evaluate the effects of a perioperative music intervention on changes in mean arterial pressure, anxiety, and pain. Their results also support the suggestion of using music therapy in such cases since the researchers report about reduction of mean arterial pressure, anxiety, and even pain of the members of the group received music intervention. Table 1 gives an analysis of the articles mentioned above describing different methods of music interventions with cancer patients described above.

Table 1. Analysis of music interventions with cancer patients

Researchers	Aim	Method and period of the intervention	Participants	Results
Bailey (1983)	Comparing the effects on hospitalized cancer patients of live music singing and guitar playing to the effects of tape-recorded music of the same material	Music listening for 25 minutes	50 cancer patients	Results indicate the particular effectiveness of using live music to assist in relieving tension and promoting vigor
Barrera et al. (2002)	Preliminary exploration of the effectiveness of interactive music therapy in reducing anxiety and increasing the comfort of hospitalized children with cancer	Live, interactive and developmentally appropriate music-making for a 4-month-period of time. Pre- and post-music therapy measures were obtained from children and parents	65 children with cancer and their parents.	Significant improvement in children's ratings of their feelings from pre- to post-music therapy. Qualitative analyses of children's and parents' comments suggested a positive impact of music therapy on the child's well-being
Bimms-Turner et al. (2011)	Evaluating the effects of a preoperative music intervention (provided continuously throughout the preoperative, intraoperative, and postoperative periods) on changes in mean arterial pressure (MAP), heart rate, anxiety, and pain in women with a diagnosis of breast cancer undergoing mastectomy	Music listening during preoperative, intraoperative, and postoperative periods. 4 hours of music was available	30 women undergoing mastectomy for breast cancer	Perioperative music can reduce MAP, anxiety, and pain among women undergoing mastectomy for breast cancer

Researchers	Aim	Method and period of the intervention	Participants	Results
Burns (2001)	Exploring the effectiveness of GIM (Guided Imagery) in alleviating mood disturbance and improving quality of life in cancer patients	Imagery and music listening. 10 weekly sessions (45–55 min.)	8 cancer patients	Individuals who participated in GIM sessions scored better on both mood scores and quality of life scores at post-test than those participating in the control group. Additionally, mood and quality of life scores continued to improve in the experimental group, even after sessions were complete. Results indicate that GIM was effective in improving mood and quality of life in these cancer patients
Chen et al. (2013)	Investigating effects of music intervention on reducing pre-radiotherapy anxiety in oncology patients	15 min of music therapy prior to radiation	Music group: N = 100, control group: N = 100	Music therapy decreased State anxiety levels, Trait anxiety levels and systolic blood pressure in oncology patients who received the intervention prior to radiotherapy
Chuang et al. (2011)	Determining whether music therapy intervention improves autonomic function in anthracycline treated breast cancer patients, and if so, whether such improvements persist after cessation of the intervention	Singing, listening and playing music. 8 weekly music therapy sessions, each lasting 2 hours	12 women with breast cancer who had undergone mastectomy or breast-conserving treatment and adjuvant chemotherapy	Regular music therapy proved to be useful for promoting autonomic function

Researchers	Aim	Method and period of the intervention	Participants	Results
Chuang et al. (2010)	Determining whether music therapy affects or not the sensations of fatigue, comfort, and relaxation in cancer survivors, and affects the activities of the sympathetic and parasympathetic nervous systems as indicated by HRV parameters	Singing, listening and playing music. 2 hour long session	23 females (19 with breast cancer, two with ovary cancer, one with cervical cancer and one with bone cancer)	Music therapy can be clinically useful for promoting relaxation sensation and increasing parasympathetic nervous system activity in treated cancer survivors
Daykin et al. (2007)	Investigating the perceived effects of music therapy in a complementary and alternative medicine (CAM) in supporting cancer care	Playing and listening music. Semi-structured interviews with 23 individuals following their participation in one of six 'one-off' group music therapy sessions. Each session was attended by approximately eight to 10 participants and lasted for approximately one and a half hours	23 individuals at various stages following a cancer diagnosis	The data demonstrate the importance of sensitive, culturally aware facilitation of creative therapies in cancer care
Huang et al. (2010)	Examining effects of sedative music on cancer pain	Music listening for 30 minutes	126 hospitalized persons with cancer pain (N = 62 was the size of the experimental group)	Soft music was safe, effective, and liked by participants. It provided greater relief of cancer pain than analgesics alone

Researchers	Aim	Method and period of the intervention	Participants	Results
Kemper et al. (2008)	Assess music's effect on vitality and heart rate variability (HRV) of pediatric oncology outpatients	Patients who had leukemia and were in maintenance or consolidation outpatient treatment served as their own control at two visits. At visit 1, children rested for 20 min; at visit 2, for 20 min they listened to music designed to increase vitality and improve heart rate variability (HRV)	63 patients	Relaxation improved more with music than the rest. The HRV parasympathetic parameter was significantly lower with music than the rest
Lai et al. (2012)	Comparing the effects of music intervention nursing presence/recorded music sequence or recorded music/music intervention with nursing presence on blood volume pulse amplitude, the low/high frequency ratio component of heart rate variability, depression, anxiety and sleep quality in cancer patient caregivers; to compare the participants evaluation of these two forms of musical intervention	Music listening for 30 minutes	34 female cancer patients	Both music interventions were beneficial, as measured on psychophysiological indices. The music intervention with nursing presence provided a more friendly music experience to the listeners

Researchers	Aim	Method and period of the intervention	Participants	Results
Lai et al. (2010)	Investigating the efficacy of guided imagery (GI) with theta music on dyspnea in advanced cancer patients. Dyspnea outcome was measured with the Modified Borg Scale (MBS) for self-reported evaluation of dyspneic symptoms. Physiological parameters measured were pulse oxygen saturation (SpO ₂), end-tidal CO ₂ (EtCO ₂), heart rate (HR), and respiratory rate (RR)	Listening theta music and peaceful non theta music with or without guided imagery	53 cancer patients with dyspnea, 33% with lung cancer	GI/theta music is a useful intervention for palliative care of patients with dyspnea. Theta music alone was demonstrated to be effective, while soothing non-theta music was not effective. GI/theta music was more effective than theta music alone. GI/theta music should be considered low-cost end-of-life palliative care for dyspnea
Lee et al. (2012)	Investigating the relaxation effect of MC sounds for patients during chemotherapy compared with progressive muscle relaxation (PMR), an established relaxation technique	Music listening during chemotherapy	40 cancer patients	This study shows that both listening to recorded MC sounds and practising PMR have a useful and comparable effect on gynaecologic oncological patients during chemotherapy, with partially overlapping but also notably divergent neural correlates
Li et al. (2011a)	Investigating the effects of music therapy on anxiety of female breast cancer patients following radical mastectomy	Music listening twice a day (30 minutes per session). The total experimental time involving hospital stay following radical mastectomy was 13.6 ± 2.0 days and the two chemotherapy periods were 18.9 ± 7.1 days	120 female breast cancer patients (N = 60 was the size of the experimental group)	Music therapy is found to have positive effects on decreasing state anxiety score

Researchers	Aim	Method and period of the intervention	Participants	Results
Li et al. (2011b)	Exploring the effects of music therapy on pain reduction in patients with breast cancer after radical mastectomy	Music listening twice a day (30 minutes per session). Total intervention time involved the hospital stay after radical mastectomy (average 13.6 ± 2.0 days) and the two chemotherapy periods (each with an average of 18.9 ± 7.1 days)	120 female breast cancer patients (N = 60 was the size of the experimental group)	After music therapy, the main pain scores in the intervention group were reduced considerably up to 2 months after radical mastectomy
Magill et al. (2008)	Investigating the conjoint effect of cognitive behaviour therapy (CBT) and music therapy	20-minute, one-session intervention conducted jointly by a music therapist and a cognitive therapist. Music therapy part was consisted of listening to music and talking about the lyrics	39 critically ill cancer patients	Offering this combined therapy is feasible with critically ill cancer patients and may help reduce their distress regardless of their stage of illness
Magill (2009)	Investigating the role of music in palliative care music therapy is examined and representatively summarized, followed by a review of strategies provided by the author to home hospice patients and their caregivers	Use of precomposed songs, lyric improvisation and song composition, imagery in music and music listening for different periods of time	7 caregivers who had witnessed music therapy sessions prior to the death of their loved one	Music therapy in palliative care strives to promote well-being and quality of life for patients and caregivers

Researchers	Aim	Method and period of the intervention	Participants	Results
<p>Nguyen et al. (2010)</p>	<p>Evaluating if music medicine influences pain and anxiety in children undergoing lumbar punctures. The primary outcome was pain scores and the secondary was heart rate, blood pressure, respiratory rate, and oxygen saturation measured before, during, and after the procedure</p>	<p>10 minutes music listening before lumbar puncture</p>	<p>40 children with leukemia. (N = 20 was the size of the experimental group)</p>	<p>The results showed lower pain scores and heart and respiratory rates in the music group during and after the lumbar puncture. The anxiety scores were lower in the music group both before and after the procedure</p>
<p>Nuñez et al. (2002)</p>	<p>Measuring the effects of music on the immune system and cancer development were evaluated in rodents subjected to sound stress</p>	<p>Music treatment was produced by playing the Herbert Von Karajan Adagio tape through loudspeakers (less than 40 dB) from 9 a.m. until 2 p.m. daily during 8 days</p>	<p>20 male mice aged between 7 and 12 weeks</p>	<p>Music reduced the suppressive effects of stress on immune parameters in mice and decreased the enhancing effects of stress on the development of lung metastases provoked by carcinosarcoma cells. Music enhanced the immune parameters and the anti-tumor response in unstressed rodents</p>
<p>O'Callaghan & Colegrove (1998)</p>	<p>Exploring the relationships between various styles of music therapy introduction presented by one music therapy student and cancer patients' comfort levels, with whether the patients engaged or not in music therapy</p>	<p>Music listening: (a) they had heard music therapy (in the distance) before meeting the therapist; (b) their musical preferences were discussed; (c) live music was offered with no further mention of music therapy. Period: 3 months, frequency: 3 days a week</p>	<p>46 hospitalized cancer patients</p>	<p>The findings suggest that discussing patients' music preferences in the first meeting is highly related to patient engagement. Patients who heard about music therapy in the ward before meeting the music therapy student were much more likely to engage than patients who had not already heard it</p>

Researchers	Aim	Method and period of the intervention	Participants	Results
O'Callaghan et al. (2009)	Supporting parent-child communication during the parents' cancer hospitalizations	Lyric analysis. Comparable lyrical ideas in the parent song groups included: love; memories; yearning for children; metaphysical presence (now and afterlife); loss and grief; the meaning and helpfulness of the children in their lives; hopes for and compliments about their children; encouragement; requests; personal reflections; existential beliefs; and suggestions about to whom the children can turn	20 mothers and 7 fathers having hematological or metastatic diseases and their children.	Parents' song lyric messages may support their children during the parents' illnesses and through the children's developmental transitions and possible bereavement
Rykov (2008)	Reporting the meanings of a music therapy support group for adult cancer patients and survivors and describing a music therapy support group model	Singing, playing music, conducting. Eight weekly groups that met for two hours/week	10 adult cancer patients and survivors having diverse cancer diagnoses at different stages of the disease trajectory	Music therapy provided opportunities for experiencing feelings of control during a time of loss-of control inflicted by the disease and ensuing experiences of illness. Participants explored and expressed their own inherent creativity that some were not aware they were capable of. The positive effects of the music therapy support group were reported to be long-lasting

Researchers	Aim	Method and period of the intervention	Participants	Results
Waldon (2001)	Examining the efficacy of a music therapy protocol on mood states and levels of group cohesiveness in adult oncology patients	Music making and music responding. 8 music therapy sessions in 10 weeks (no data about the length of the sessions)	10 oncology patients in 2 groups	Results showed significant improvement in mood state scores (from pre-session levels to post-sessions levels) after involvement in all music therapy sessions. No statistically significant effects were found with respect to group cohesiveness measures
Wylie and Blom (1986)	Describing the music, relaxation process, guided imagery, and patient responses to imagery used with hospice patients	Listening music and then imagery. 11 weekly music therapy sessions, 45–60 minutes per each.	2 hospice patients (a woman with bladder cancer and a man with lung cancer)	It helped both patients relax and ease some physical discomfort. It provided both patients the opportunity to explore, be creative, control portions of their life, to reminisce, or to feel safe. Guided imagery and relaxation with music also taught them a technique that could be used at other times
Zhou et al. (2011)	Investigating the effectiveness of music therapy on depression and duration of hospital stay of female patients with breast cancer after radical mastectomy	Music listening twice a day (30 minutes per session). The total experimental time involving hospital stay following radical mastectomy was 13.6 ± 2.0 days and the two chemotherapy periods were 18.9 ± 7.1 days	120 female breast cancer patients (N = 60 was the size of the experimental group)	After music therapy, depression scores of the experimental group subjects were reduced distinctly, and the long-term therapeutic effects was proved

5. Conclusion

Although this article cannot be considered as a systematic review the research evidences point out the diverse application opportunities of music in the course of treating cancer patients. Making comparison the research works mentioned above is quite challenging for many reasons. First, the methodological quality of the interventions varies considerably. Secondly, a large portion of the literature refers to relatively few participants. Thirdly, the studies reviewed assess quite different interventions and it makes the comparison relatively difficult. Fourthly indicators used to measure the success of intervention were mostly surveys and self-report questionnaires. No studies were found documenting a relationship between music therapy interventions and costs of care. Nevertheless according to the results of studies processed in this review it can be ascertained that music therapy can be suggested as a supportive treatment for cancer patients. It can improve the quality of life, provide psychosocial, emotional and physical aid for children and adults having cancer, moreover it is suitable even for rebuilding family connections. Music itself may have therapeutic effects nevertheless when it is used in therapeutic circumstances under the control and by qualified music therapists the supportive effect to cancer treatment can be secured. Music therapy can be applied alone or together with other therapies. Active and receptive forms are also suggested in treatment of children, adults and even family members of cancer patients. The sessions can make people suffering from cancer to feel “real human beings” again.

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Conflicts of Interests Statement

The author declares that he has no conflict of interest.

Zene alkalmazása rákos betegek kiegészítő kezeléseként

KOLLÁR JÁNOS

Elméleti háttér: A zene kiegészítő terápiaként való alkalmazása rugalmas, kliensközpontú, adaptív és non-invazív eljárás. A zene többféle alkalmazásban használható a distressz, krónikus fájdalom, szorongás és depresszió kezelése során.

Cél: E tanulmány célja felhívni a figyelmet a zene daganatos betegek kezelése során kiaknázható kiegészítő, szupportív kezelési lehetőségeire. A cikk eme lehetőségek alkalmazásának szélesebb spektrumát kívánja bemutatni.

Módszerek: Keresést végeztem a *Journal of Music Therapy*, a *Music Therapy*, valamint a *Music Therapy Perspectives* számaiban. A keresést kiterjesztettem a PubMed és a Web of Knowledge olyan, angol nyelvű cikkeire is, amelyek címében szerepeltek a "music" és "cancer" vagy "music" és "psychooncology", vagy "music" és "oncology", vagy "music" és "tumor", vagy "music" és "tumour" szavak. A keresést 2013-ban lezártam. A cikkeket a zene daganatos betegek kezelésében betöltött szerepét illető relevancia szerint szűrtem. Relevánsnak ítéltém azokat a cikkeket, amelyek: 1. a zene daganatos betegek esetében történő bármilyen módon történő alkalmazásáról szóltak, és 2. eredeti kutatási eredményt tartalmaztak, így a review jellegű cikkeket nem vettem figyelembe. Összesen 61 cikket találtam, amelyek közül 25 megfelelőnek bizonyult ahhoz, hogy szerepeljen a jelen áttekintésben. Az adatok elemzése az alábbi kritériumokon alapult: a) a zenei beavatkozás célja a daganatos betegek esetén, b) az alkalmazott módszer és a beavatkozás ideje, c) a vizsgálatban részt vevő betegek száma és d) eredmények.

Eredmények: Szignifikáns javulás tapasztalható a szupportív kezelésként zenei beavatkozásban részesülő daganatos betegek életminőségében. A zeneterápia mind aktív, mind receptív formái sikeresen alkalmazhatóak akár önmagukban, akár más terápiákkal a szupportív kezelés részeként.

Következtetés: A képzett zeneterapeuták által, terápiás körülmények között alkalmazott zenei beavatkozások javasolhatóak szupportív kezelési céllal daganatos betegek kezelése során.

Kulcsszavak: zene, rák, distressz, relaxáció, depresszió, mellrák, masztectómia