

The Effect of Music Therapy for Improving Quality of Life in Patients with Cancer Pain: An Evidence Based Case Report

Yanuar Ardani¹, Ibrahim Achmad², Edward Faisal³, Vinandia I. Poespitarsari³, Rudi Putranto³, Hamzah Shatri^{3,4*}

¹Psychosomatic and palliative Division, Department of Internal Medicine, Faculty of Medicine Universitas Diponegoro - Dr. Kariadi Hospital, Semarang, Indonesia.

²Specialty Education Program, Department of Internal Medicine, Faculty of Medicine Universitas Indonesia, Jakarta, Indonesia.

³Psychosomatic and Palliative Division, Department of Internal Medicine, Faculty of Medicine Universitas Indonesia - Cipto Mangunkusumo Nasional Hospital, Jakarta, Indonesia.

³Clinical Epidemiology, Department of Internal Medicine, Faculty of Medicine Universitas Indonesia- Cipto Mangunkusumo Nasional Hospital, Jakarta, Indonesia.

*Corresponding Author:

Hamzah Shatri, MD., PhD. Division of Psychosomatic and Palliative, Department of Internal Medicine, Faculty of Medicine Universitas Indonesia - Cipto Mangunkusumo Nasional Hospital. Jl. Diponegoro no.71, Jakarta 10430, Indonesia. Email: hshatri@yahoo.com; psikosomatik.paliatif@gmail.com.

ABSTRACT

Background: Music therapy is a frequently used complementary and creative arts treatment in psychosocial cancer care. Particularly in advanced cancer populations and palliative care, music therapy has recently received high attention in both research and clinical care. This evidence-based case report is aimed to assess the effect of music therapy for improving quality of life in patients with cancer pain. **Methods:** the search was conducted on Pubmed, Cochrane Library, and EMBASE according to clinical question. The studies were selected based on inclusion and exclusion criteria. The selected study was critically appraised. **Results:** All selected studies significantly showed effectiveness of music therapy towards quality of life in cancer patient. **Conclusion:** Music therapy might be beneficial adjuvant for cancer patients.

Keywords: Music therapy, cancer, quality of life, pain.

INTRODUCTION

Cancer patients are often treated with combination of radiation therapy, chemotherapy, targeted therapy and surgery.¹ Several studies shown that 15%–40% of patients with cancer suffer from psychological disorders associated with anxiety and depression during therapy and more than 50% feel pain.^{1–3} Therefore, patients with this condition will experience an increased response to stress even after treatment, based on almost all literature. Stress itself will cause the immune system, endocrine function and

end to decrease the quality of life.^{1–9} In addition to treatment for the cancer itself, additional therapies for cancer to improve quality of life can be given.^{5–7,10} Psychosocial cancer care refers to the comprehensive approach that addresses the emotional, psychological, social, and spiritual needs of individuals affected by cancer. It recognizes that cancer not only affects a person's physical health but also has profound impacts on their overall well-being and quality of life. Music is one of the therapies that can be given and is an additional therapy that is often given as a part of

psychosocial cancer care. Music itself does not directly affect cancer treatment, but music can be a distractor and affect endorphins which are natural painkillers of the body that can affect mood and may affect feelings and maybe raise enthusiasm for treatment.^{1,2,7-9,11} Listening to music can affect a person's sensation of receiving painful stimuli.¹⁶⁻¹⁹ In the human body there is a Descending Pain Modulating System (DPMS) which can inhibit and modulate pain sensations that arise from various parts of the body.^{16,17,20} Music itself is a parasympathetic nerve stimulation which indirectly causes a sense of relaxation.^{16,17,20,21}

CASE ILLUSTRATION

A 41-year-old female patient, hospitalized in the internal medicine ward, the patient has been diagnosed with right breast cancer since December 2021, the patient is admitted to treatment because the body feels weak and has pain in the breast that never goes away.

The first symptom was a lump in the right breast followed by bleeding from the areola of the breast. Then the patient went to a local hospital, a biopsy was done and it was probably a malignant tumor.

The patient was referred to a referral hospital, where a repeat biopsy was performed to determine treatment. After the procedure, the surgical site and surrounding tissue slowly become larger and painful. During hospitalization, patients tend to be anxious, afraid, depressed and often feel pain that is difficult to control. The patient has also been given strong opioid drugs according to the protocol, while the pain usually increases at certain times, especially if the patient feels lonely when the accompanying family leaves the patient alone in the hospital.

METHODS

A comprehensive literature searching was conducted on May 9th 2022 to answer the clinical question mentioned by exploring several online databases such as PubMed, Cochrane Library and EBSCOHost. The keywords "music therapy", "quality of life", "cancer pain", combined with the Boolean operator "AND" and "OR" were used in the search strategy. Articles obtained were screened according to predetermined

selection criteria.

The articles were selected according to inclusion and exclusion criteria. Inclusion criteria included: (1) research articles including meta-analysis and systematic reviews to assess the effect of music therapy for improving quality of life in patients with cancer pain; (2) adult population with cancer pain; (3) determining the efficacy of music therapy as a therapy for cancer pain. Findings were filtered for the last 5 years. The exclusion criteria are clinical trials, case series, case reports, review articles, and other studies which were reported in language other than English and not relevant to PICO framework.

After meeting the inclusion and exclusion criteria, every article will be assessed for its validity, importance and applicability by using critical appraisal worksheet available from Centre of Evidence-Based Medicine (CEBM) University of Oxford in accordance to the type of article obtained. Level of evidence of each article would be classified according to the Oxford Central for Evidence-Based Medicine Classification. There were 169 articles obtained after searching through online database. The queries are described in **Table 1**.

After screening through title and abstracts, we filtered three articles that suited the formulated clinical question and PICO framework. Screening and reviewing processes based on the inclusion and exclusion criteria were done. After further full-text reading there were three articles found to answer the clinical question. Flowchart of the searching strategy is presented in **Figure 1**.

RESULTS

The study that included to be appraised are a systematic review and meta-analysis study by Yanfei Li et al, Miren Perez-Eizaguirre et al, and Friederike Kohler et al. Summary of the articles presented in **Table 2**. Critical appraisals of the studies are presented respectively in **Table 3**.

DISCUSSION

Music therapy is divided into 2 categories, active and passive. active means interactively engaged and encouraged to create or describe their experiences with music, while passive the patient simply listens to either live or recorded music.¹⁸

Table 1. Queries used to conduct literature searching in journal database.

Journal database	Keywords	Hits	Screened
PubMed/MEDLINE	((((music therapy[MeSH Terms] OR (music therapy[Title/Abstract])) AND ((cancer[MeSH Terms] OR (cancer[Title/Abstract]))) AND ((pain[MeSH Terms] OR (pain[Title/Abstract]) AND (systematicreview[Filter]))) AND ((quality of life[Title/Abstract] OR (quality of life[MeSH Terms])))	13	13
EMBASE	('music therapy'/exp OR 'music therapy':ab,ti) AND ('cancer'/exp OR cancer:ab,ti) AND ('pain'/exp OR pain:ab,ti) AND ('quality of life'/exp OR 'quality of life':ab,ti)	117	40
Cochrane Lib	ID Search Hits #1 (music therapy):ti,ab,kw 3056 #2 MeSH descriptor: [Music Therapy] explode all trees 947 #3 (cancer):ti,ab,kw 177972 #4 MeSH descriptor: [Neoplasms] explode all trees 87970 #5 (pain):ti,ab,kw 202477 #6 MeSH descriptor: [Pain] explode all trees 54750 #7 (quality of life):ti,ab,kw 134852 #8 MeSH descriptor: [Quality of Life] explode all trees 28372 #9 #1 or #2 3056 #10 #3 or #4 209330 #11 #5 or #6 208936 #12 #7 or #8 134852 #13 #9 and #10 and #11 and #12 39	39	1

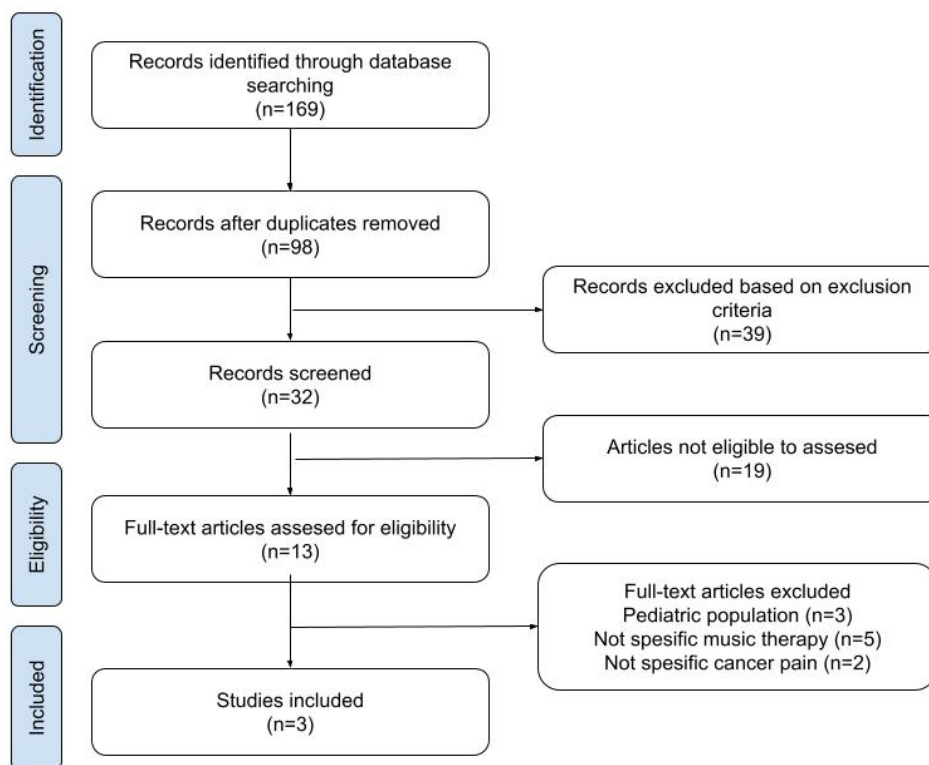


Figure 1. Flow diagram of literature searching

Listening to music has many special beneficial effects on cancer patients. Listening to music as a form of passive/receptive therapy can be easily introduced into clinical situations.¹⁸ For example, patients receiving radiotherapy

often experience anxiety, fear, stress, or feelings of loneliness. Listening to music during the treatment can help take the patient’s mind off the discomfort.¹⁸

A systematic review and meta-analysis

Table 2. Summary of articles used in study

Reference / Study designs	Subjects	Determinants	Methods	Inclusion criteria	Exclusion Criteria	Primary Outcome	Evidence Grade
Li et al, (2019) / SR-MA	19 trials (1548 patients) with cancer)	I: Music therapy	This research was conducted in China in 2018. The subjects in the study had various types of cancer, including breast cancer, ovarian cancer, malignant lymphoma, gastrointestinal cancer, leukemia, and lung cancer	<ul style="list-style-type: none"> - Population with current cancer diagnosis. - Control group received standard care, such as conventional treatment, supportive care, standard treatment, and routine services, whereas the experimental group received music therapy based on standard care. 	<ul style="list-style-type: none"> - Non-human studies. - Duplicate reports of a study. - Studies with insufficient data (e.g. protocols, conference proceeding or abstract, among others). 	Effectiveness of music therapy on the quality of life, anxiety, depression and pain of patients with cancer.	1a
Perez-Eizaguirre et al (2020) / SR	19 articles included	I : Music therapy	This study is a 2020 research and was performed in Spain. The subjects in the study experienced a diverse range of cancer types.	<ul style="list-style-type: none"> - The term "music therapy" must appear explicitly in the title. - Any study of intervention with human beings in palliative care (including hospices and palliative care units). - Music therapy is the first choice of intervention in the articles. 	<ul style="list-style-type: none"> - Other creative therapies. - Conferences and programme proposals. 	Not specified	1a
Kohler et al (2020) / SR-MA	21 articles included	I : Music therapy provided by a trained therapist. Active and receptive interventions.	This research was conducted in Germany in 2020. The subjects in the study had various types of cancer, including gynecological cancer, breast cancer, lymphoma, myeloma, ovarian cancer, leukemia, head and neck cancer, lung cancer, colon cancer, and uterine cancer.	<ul style="list-style-type: none"> Participants : adult cancer patients at all stages Interventions : music therapy provided by a trained therapist. Active and receptive interventions. Comparators : waiting list group, treatment as usual group, active control group Study designs randomized controlled trials or controlled clinical trials 	Not explicitly explained	Effectiveness of music therapy on psychological well-being, quality of life, physical symptom distress	1a

Table 3. Critical appraisal of systematic review and meta-analysis based on worksheet by Center of Evidence-Based Medicine.

	Li et al	Perez-Eizaguirre et al	Kohler et al
Q - What question (PICO) did the systematic review address? And use it to direct the search and select articles for inclusion?	Yes	Yes	Yes
F – Did the search find all the relevant evidence?	Yes	Yes	Yes
A – Were the criteria used to select articles for inclusion appropriate and critically appraised?	Yes	No	Yes
I – Were the included studies sufficiently valid for the type of question asked?	Yes	Yes	Yes
T – Have the results been totaled up with appropriate summary tables and plots?	Yes	Yes	Yes
H – Heterogeneity between studies assessed and explained?	Yes	No	Yes

conducted by Li et al², showed music therapy could improved overall quality of life, anxiety, depression, and pain. However, half of the trials selected in this article were conducted in China and significant statistical heterogeneity was observed in the analysis of music therapy effects on anxiety and depression.

While in a systematic review by Perez-Elzaguire et al⁸, showed significant improvements in the standardization of musical interventions. The studies show a concern for performing effective musical interventions, which are clearly reflected in the research in order to assess which are the most efficient. However, the specific musical aspects of these interventions need to be described in great depth for them to serve as a guide for preparing music therapy sessions. It is important to remember that these objectives are achieved through the music itself and through using it in the best possible way. Music serves as a channel for patient communication and its use is what distinguishes music therapy from other therapies. However, in the search for this systematization we must not forget the psychological and spiritual support on many occasions that music therapy provides in this type of population.¹⁹

In the systematic review and meta-analysis by Kohler et al⁴ showed that music therapy overall had positive effects on a broad range of outcomes, with techniques and effects varying

in different phases (during chemotherapy and radiation, surgery and transplantation, aftercare, and non-specific treatment phases). In the meta-analysis showed significant effect on psychological well-being, physical symptom distress, and quality of life.

To effectively implement music therapy in hospitals, it is crucial to integrate it into the existing multidisciplinary cancer care framework. Collaborative efforts involving healthcare professionals, music therapists, and administrators can facilitate seamless incorporation of music therapy interventions into patient care plans. Regular interdisciplinary meetings and joint assessments can ensure coordination and enhance the effectiveness of the therapy. Providing education and training to healthcare staff is also essential for successful implementation of music therapy. Conducting workshops, seminars, and training sessions on the benefits and techniques of music therapy can raise awareness and equip healthcare professionals with the knowledge to support and promote its use.²⁰⁻²¹

There are some limitations that should be considered in this study such as, several studies could not be included in meta-analysis due to insufficient data, high risk of bias in all studies, and small sample size in some studies. These factors might contribute to an underpowered analysis.

CONCLUSION

Of all three systematic reviews, results are consistently showed effectiveness of music therapy towards quality of life in cancer patient. As the diagnosis and treatment of cancer is often accompanied by challenging physical symptoms and psychological distress, even small improvements through music therapy may be relevant for patients with oncological diseases. However, long-term clinical trials with larger patient samples, are required in future studies, in order to demonstrate a more precise conclusion. Future studies should explore the differences in music therapy application, such as why patients chose a particular style of music, and what this meant to them. In addition, no fixed procedure for music therapy exists, and different people should be given different treatments. In published studies, both systematic reviews and original research lacked information on the holistic framework of music therapy, such as the optimal time for single music therapy, and most appropriate musical styles. Such theoretical results would ameliorate the scientific nature of the study and improve the possibility of clinical application. The accuracy of future meta-analyses could also be substantially improved if subsequent trials can consistently report high-quality and comprehensive evidence.

REFERENCES

1. Barih S, D'silva F. Effect of music therapy on pain and quality of life among cancer survivors. *Journal of Health and Allied Sciences NU* [Internet]. 2017;07(03):125–9. Available from: <http://www.thieme-connect.de/DOI/DOI?10.1055/s-0040-1708720>
2. Li Y, Xing X, Shi X, et al. The effectiveness of music therapy for patients with cancer: A systematic review and meta-analysis. *Journal of Advanced Nursing*. 2020;76:1111–23.
3. Bradt J, Dileo C, Magill L, Teague A. Music interventions for improving psychological and physical outcomes in cancer patients. *Cochrane Database of Systematic Reviews*. John Wiley and Sons Ltd; 2016.
4. Köhler F, Martin ZS, Hertrampf RS, et al. Music therapy in the psychosocial treatment of adult cancer patients: A systematic review and meta-analysis. *Frontiers in Psychology*. Frontiers Media S.A. 2020;11.
5. Bradt J, Dileo C, Myers-Coffman K, Biondo J. Music interventions for improving psychological and physical outcomes in people with cancer. *Cochrane Database of Systematic Reviews*. John Wiley and Sons Ltd; 2021.
6. Krishnaswamy P, Nair S. Effect of music therapy on pain and anxiety levels of cancer patients: A pilot study. *Indian Journal of Palliative Care*. 2016;22(3):307–11.
7. Warth M, Keßler J, Hillecke TK, Bardenheuer HJ. Musiktherapie in der Palliativmedizin. *Deutsches Arzteblatt International*. 2015;112(46):788–94.
8. Pérez-Eizaguirre M, Vergara-Moragues E. Music therapy interventions in palliative care: A systematic review. *Journal of Palliative Care*. 2021;36:194–205.
9. Kocot-Kępska M, Zajęczkowska R, Zhao J, Wordliczek J, Tomasiak PJ, Przekłasa-Muszyńska A. The role of complementary and alternative methods in the treatment of pain in patients with cancer - Current evidence and clinical practice: A narrative review. *Wspolczesna Onkologia*. Termedia Publishing House Ltd.; 2021;25:88–94.
10. Gutgsell KJ, Schluchter M, Margevicius S, et al. Music therapy reduces pain in palliative care patients: A randomized controlled trial. *Journal of Pain and Symptom Management*. 2013;45(5):822–31.
11. Musical interventions and music therapy in pain treatment- literature review. [cited 2022 May 19]; Available from: <http://orcid.org/0000.0003.4297.3241>.
12. Aalbers S, Fusar-Poli L, Freeman RE, et al. Music therapy for depression. *Cochrane Database of Systematic Reviews*. John Wiley and Sons Ltd; 2017.
13. Preksha D. Effect of music therapy on anxiety. [cited 2022 May 19]; Available from: <https://www.researchgate.net/publication/337672054>
14. Oliver A, Santos E dos. Effects of music therapy in depression and anxiety disorder. 2019; Available from: <https://www.researchgate.net/publication/332656259>
15. Erkkilä J, Brabant O, Hartmann M, et al. Music therapy for depression enhanced with listening homework and slow paced breathing: a randomised controlled trial. *Frontiers in Psychology*. 2021;12.
16. Thakare A, Jallapally A, Agrawal A, Salkar P. Music therapy and its role in pain control [Internet]. Available from: www.intechopen.com
17. Ferreri L, Mas-Herrero E, Cardona G, et al. Dopamine modulations of reward-driven music memory consolidation. *Ann NY Acad Sci*. 2021;1502(1):85–98.
18. Stanczyk MM. Music therapy in supportive cancer care. Vol. 16, *Reports of Practical Oncology and Radiotherapy*. Urban and Partner; 2011. p. 170–2.
19. Salimpoor VN, Benovoy M, Larcher K, Dagher A, Zatorre RJ. Anatomically distinct dopamine release during anticipation and experience of peak emotion to music. In: *Nature Neuroscience*. 2011. p. 257–64.
20. Ferreri L, Mas-Herrero E, Zatorre RJ, et al. Dopamine modulates the reward experiences elicited by music. *Proc Natl Acad Sci U S A*. 2019;116(9):3793–8.
21. Korhan EA, Uyar M, Eyigör C, Hakverdioğlu Yönt G, Çelik S, Khorshid L. The effects of music therapy on pain in patients with neuropathic pain. *Pain Management Nursing*. 2014;15(1):306–14.