

The Effects of Music Therapy Intervention on the Pain and Anxiety Levels of Cancer Patient: A Systematic Review

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Abstracts

Cancer constitutes one of illnesses which frequently causes pain and anxiety. The management of cancer pain comprises the pharmacology and non-pharmacology. The pharmacologic management, at some points, fails to provide a complete relief from the pain and instead gives rises to unwanted side-effects on the patients that necessitate the employment of non-pharmacologic management such as music therapy. The purpose of this systematic review is to discover the effects of music therapy on the pain and anxiety levels on the cancer patient.

Systematic Review encompasses literature obtained from library research and internet research using search engine such as PubMed, Medline, Proquest, dan Elsevier. The articles comprise the full text journals published between the years of 2009-2016.

87.50% out of 8 articles (1 systematic review) demonstrates that music therapy effectively alleviates the pain to 75.00% and lowers the anxiety level, and 12.50% of insignificant palliative effect in terms of the pain and anxiety. Music therapy is an effective non-pharmacologic therapy to alleviate or relieve the cancer patients of the resultant pain and anxiety.

Keywords: *Music Therapy, Pain, Anxiety, Cancer.*

Introduction

That all people experience anxiety and pain is very common. Pain itself is responsible for the immediate seeking for medical attention¹⁴. Pain can be defined as a subjective sensation of discomfort and emotional distress associated with an actual or potential tissue damage which comprises acute and chronic pain. Acute pain is viewed as a sudden onset which develops into a chronic pain when it is not well treated⁶. Pain is a symptom of an illness from which one suffers and may also be a sign of damaged tissue following an invasive procedure administered. The high frequency of pain can give rises to and elevate the anxiety level of a patient¹².

Anxiety is a spreading ill-defined unease related to the feelings of uncertainty and helplessness. The anxiety

level hinges on the individual response and the length of exposure to the stress-inducing situation or object¹⁷. Anxiety can be aggravating when it consistently intensifies to a point of debilitating and distressing effect on the one's life¹⁸. Anxiety tends to stimulate the secretion of *epinephrine* and *norepinephrine* that increase the blood pressure, heart beat, cardiac need of oxygen, breathing frequency and pain that one³.

Pain and anxiety constitute a provoker of frequent complaint in the case of advanced stage cancer such as breast cancer and so forth¹⁶. They generally range from the moderate to severe level that necessitates a proper management of medical administration by health practitioners including the nurses¹⁰. The management comprises the pharmacology and non-pharmacology. The pharmacologic management sometimes does not help to relieve or alleviate the pain and anxiety disorders completely in line with the research conducted by Ling Chun Chiang which found that the pharmacological administration encounters difficulty with the management of the pain and anxiety which patients of advanced stage of cancer experience in their terminal illness. Therefore,

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non-pharmacologic management of the pain and anxiety is needed to ramp up the pharmacological therapy applied to the cancer patients⁵.

According to Marion Good, non-pharmacologic therapy which the nurses can offer to decrease the pain and anxiety level comprising 3 ways: jaw relaxation, guide imagery, and music therapy¹⁴. Out of the three alternatives, music therapy is suggested to be the promising technique to alleviate the anxiety and pain level on the cancer patients. Music therapy is a non-pharmacologic intervention for the treatment of pain and anxiety which has been applied in the nursing practices since the year of 2005. The American Music Therapy Association states that music therapy is interventional technique to decrease the pain and anxiety, boost positive emotion, and reduce the psychological symptoms¹². All the reasons and information above considered, the writer is interested in conducting systematic review analysis in terms of the effects of music therapy on the anxiety and pain levels of the cancer patients.

Method

This research takes the form of systematic review. The sources were obtained from the library research and electronic search using search engine such as PubMed, Medline, roquest, and Elsevier with the following key words intended for the international journal, music therapy, patients, cancer, pain, and anxiety. Criteria guiding the selection of the sources are as follows: (1) Articles, scientific writings, and researches dealing with the music therapy used in the care of patients whose the focus is on the management of the pain and anxiety. (2) Patients indicated as the samples in the articles are those who complain the painful physical symptoms and anxiety from cancer (3) the research articles published between the year of 2009-2019, (3) the article reveals the experimental method employment.

Results

In this systematic review the initial step of the literature search began with the identification of 95 abstracts which boiled down to 12 articles of potential relevance to full-size evaluation. The further evaluation led to the selection of 8 articles which were considered having met the criteria to be included in the systematic review (1 article of systematic review). Out of 8 articles, 7 of them are classified as medium quality and 1 low quality.

The result of the research conducted by Huang, Good, & Zauszniewski on the effects of music therapy on the pain cancer patients experience reveals that a significant reduction or lower pain scale ratings is associated with the application of interventional technique compared to a group of patients which is not subject to the intervention ($P < 0,001$)⁸. This result is in conformity with the research conducted by Li *at al* which indicates that significant reduction of the pain level associated with the implementation of the intervention compared to the control group ($P < 0,001$)¹¹.

Chuang, Han, & Young conducted a research in terms of the music therapy intervention effect on the anxiety level of cancer patient which resulted in the enhanced relaxation or significantly reduced anxiety after the implementation of music therapy compared to a state before the implementation of the intervention $P = 0,03$ ($P < 0,05$), followed by the increasing sympathetic nervous system activity after the music therapy was implemented at $P = 0,04$ ($P < 0,05$)⁵. The result of the research conducted by Jasemi, Aazami, & Zabih consistently revealed that there was a significantly reduced level of anxiety and depression on the group subjected to the intervention ($P < 0,001$) as compared to the control group⁹.

Sharafi in his systematic review stated that there were two research showing a significant result that music could alleviate the level of anxiety of breast cancer patients ($P = 0,0006$, $P < 0,001$), one research showing significant lowering of the pain level of the breast cancer patients ($P = 0,0008$, $P < 0,001$), one research showing that music therapy did not significantly alleviate the pain level of cancer patients ($P = 0,002$, $P < 0,001$), one research showing that music therapy decreased the depression level of the breast cancer but statistically it was not significant ($P = 0,002$, $P < 0,001$), one research revealing that music therapy could reduce the anxiety and depression level of the breast cancer patients ($P = 0,0009$, $P < 0,001$), and one research showing that music therapy significantly decreased the level of pain, depression, and anxiety of the breast cancer patients ($P = 0,0008$, $P < 0,001$)¹⁶.

Chiang in his research on 117 cancer patients through the graphed data found that the anxiety and pain scores significantly decreased on the part of the intervention group after the implementation of music therapy on the first, second and third day, whereas there was no significant difference in the patients of the

control group⁴. This is in line with the result of research conducted by Bradt, J *et al* which showed that both music therapy and music medicine are of benefit to decrease the pain and anxiety of the cancer patients, yet 77.4% of the total sample showed music therapy has greater effect on reducing the pain and anxiety level on the level of the pain and anxiety than the music medicine². Furthermore, research conducted by Krishnaswamy & Nair revealed that there was a significant decrease in the level of pain after the music therapy was implemented on the intervention group ($P = 0,003$), and no significant reduction of the pain level with the control group ($P = 0,356$). When comparison is made between the intervention and control group, music therapy is found to have a positive effect on the reduction of the pain level of the cancer patients $P = 0,034$ ($P < 0,05$). Nonetheless, the anxiety level remains even after the intervention is performed showing that there is statistically no significant decrease ($P = 0,051$)¹⁰.

Based on the information above, it may be inferred that out of 8 articles (1 systematic review) 87.50% (of the 8 researches) state that music therapy has a potential effect on the lowering level of the pain, 75% (of the 8 researches) reveal that music therapy alleviates the anxiety level of the cancer patients and 12.50% (of the 8 researches) indicate that music therapy does not significantly reduce the pain and anxiety level of the patients.

Discussion

Music therapy is a non-pharmacologic therapy which health care providers such as nurses can implement to lower the level of the pain and anxiety of the patients. This has been evidenced by the existing repertoire of research. Music therapy constitutes an interventional nursing technique included in the nursing practice theory introduced by Marion Good¹⁴. Besides, music therapy is developed out of the nursing middle range theory which is introduced by Katharine Kolcaba in her comfort theory that a nurse should contribute to the fulfillment of the patients' needs for comfort and pain analgesia. One of the ways to meet the very needs is to conduct non-pharmacologic therapeutic techniques such as music therapy on the patients with the complaints of the pain and anxiety¹.

The result of this systematic review indicates that music therapy has a significant beneficial effect on the pain in people with cancer to 87.50% (of 8 researches),

and 75.00% (of 8 researches) on the level of anxiety in cancer patients. This is consistent with the finding made by Krishnaswamy & Nair that cancer patients frequently experience the concomitant symptoms of pain and anxiety. Since the pharmacologic therapy is decreased to prevent unwanted side effects non-pharmacologic interventions are needed as alternatives such as music therapy which is of benefit to effectively reduce the level of anxiety and pain in patients with cancer¹⁰.

Physiologically, music therapy can activate the natural analgesia in human body that leads to the alleviation of the pain which is known as Endorphine. Endorphine is a neurohormone provoking the pleasant sensations. When endorphine is released by the brain, the pain will be relieved along with the activation of the parasympathetic system which triggers the relaxation of the body. Aside from endorphine, *norepinephrine* and *serotonin* are also contributors to the pain relief through the modulated transmission of the descending impulse from the brain. The descending control system is a sensory nerve fiber extending from the mid brain (particularly the periaqueductal gray matter) and ending up in the interneuronal inhibitor which is located in *cornu dorsalis* of the *medulla spinalis*. With the stimulus of the soft music being played, the system will remain active that inhibits the transmission of pain stimulus (Phaneuf, 2009).

Music therapy can stimulate the axons or the nerve fibers on the ascending tracts to RAS neurons (*Reticular Activating System*). The stimulus is transmitted to the cerebral cortex, limbic system and *corpus callosum* through the autonomous nervous system and neuroendocrine system. When one is absorbed in the streams of soft music the limbic system will be aroused to secrete phenylethylamine (*neuroamin*) which controls the impulse and mood emotion. While on the autonomic nervous system, music stimulates the parasympathetic nervous system to work on the sympathetic nerves that engender the switching to alpha type brain wave to produce calming¹⁵.

The physiological explanation corroborates the result of the research that music therapy has a positive effect on reducing or relieving the level of anxiety and pain in patients with cancer. Nurses should employ a combination of pharmacologic and non-pharmacologic interventions to alleviate the pain and prevent the undesired side effects of the medication on the cancer patients. This provides a theoretical groundwork for the

management of the pain and anxiety in health care clinics that it is important for professional or credentialed nurses to develop a knowledge of other method effective in relieving the level of the pain and anxiety on the cancer patients such as the employment of music therapy. This is in agreement with the statement made by Huang, Good & Zauszniewski that music therapy is one of the interventional techniques to effectively alleviate the anxiety and pain which has evidence-based nursing theories⁸.

In the implementation of music interventions, some cares need to be taken to achieve the best result and ensure that the music therapy has an effect on the pain and anxiety. The therapy is applied with the use of wordlessly soft music, a sustained style/melody of 60-80 times in a minute without percussion or hard rhythm, advisably including harps, piano, orchestra, *slow jazz*, dan flute (Bradt, J *at al*, 2015). Besides, the volume should be controlled by the therapist with caution to keep it flowing at a sweet sounding level for 30 minutes where the patients are seated in a semi fowler position which is well-suited to the patients' needs. The player may include Handphone, CD player, or MP4 player coupled with the headphone or earphone¹³

Conclusion

Music therapy is a nursing interventional technique which has a beneficial effect on the pain, anxiety of the cancer patients which is of non-pharmacologic measures. Music therapy is a useful adjunct or complementary to pharmacologic agents for treatment that it is considered in no way a substitution or replacement to the pharmacological management of the pain. It is therefore a viable measure or action to go with the pharmacologic intervention such as music therapy. In nursing practices, music therapy should always be advisably implemented as the intervention to alleviate the pain and anxiety in cancer patients and included in the clearly defined standard of operation.

Conflict of Interest: There was no conflict of interest in writing this systematic review.

Sources of Funding: This study used private funds researchers and did not get funding from any party.

Ethical Clearance: This study taken ethical clearance from STIKes Widya Nusantara Palu Ethics Committee

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