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## The Effect of Music Therapy on Declining Anxiety of Cancer Patients Undergoing Chemotherapy: Literature Review

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### ABSTRACT

**Introduction:** Chronic disease in the presence of abnormal cells that grow faster than the normal limits of cells in general with the most commonly used medical treatment being chemotherapy. Chemotherapy treatment has several side effects, one of which is anxiety. However, there is one non-pharmacological therapy that can be applied to reduce the feeling of anxiety, namely music therapy. The purpose of writing this literature review is to identify the effectiveness of music therapy against decreased anxiety in cancer patients undergoing chemotherapy.

**Method:** The method used in writing is a literature review in the form of a literature review obtained from the PubMed, Google Scholar and Springerlink databases. After going through the selection stage using the Critical Appraisal Joanna Briggs Institute (JBI), 11 journals were obtained, 7 of which used randomized control and 4 journals used trial quasy experimental studie.

**Result:** The results of the literature review showed that music therapy to reduce anxiety while undergoing chemotherapy uses various types of duration, namely most of them do music therapy as much as 30 minutes per session, done 2-3 times a week and carried out for 64 weeks. The average instrument used is the State Trait Anxiety Inventory with an assessment of 5.4 - 24.58

**Conclusion:** From the results of the literature review, it is hoped that nurses and families can apply music therapy interventions to cancer patients undergoing chemotherapy.

**Keywords:** *Patient Cancer; Music; Chemotherapy; Anxiety*



## Introduction

Cancer is a generic term for most diseases which can affect any part of the body. One of the hallmarks of this cancer is the presence of abnormal cells that grow faster than normal cells in general, which can spread to other parts of the body and attack these organs (Pangribowo, 2019).

Cancer patients undergoing chemotherapy treatment will experience several side effects as a result of the treatment, one of which is the psychological impact that includes fear, high emotionality, rejection, self-blame and anxiety or commonly referred to as anxiety (Henri, 2018). Anxiety is a psychological state of a person which is filled with feelings of fear and worry about something that is not certain to happen, characterized by feelings of tension and accompanied by a physical response. Anxiety itself is a common symptom that arises as a result of a cancer diagnosis (Ii, 2021).

The World Health Organization or WHO states that cancer is one of the main causes of death worldwide. According to data from the Global Burden of Cancer (GLOBOCAN) from the WHO, it states that the number of cases that resulted in death due to cancer until 2018 was 18.1 million cases and there were also 9.6 million deaths in 2018. caused by cancer is estimated to continue to increase to more than 13.1 million cases by 2030 (Pangribowo, 2019).

Based on the Agency for Health Research and Development, Ministry of Health of the Republic of Indonesia as well as Routine Data from the Sub-Directorate of Cancer Disease Control, Directorate of Non-Communicable Disease Control, Directorate General of Disease Eradication and Environmental Health, Ministry of the Republic of Indonesia, it is stated that the prevalence of cancer based on doctor diagnoses per mile is equal to 2.06 per mile of cancer cases in urban areas, and 1.47 per mile in rural areas (Kementerian Kesehatan Republik Indonesia, 2018). Meanwhile, based on the results of basic health research in 2018, the prevalence of cancer in the East Java area was 2.2 miles per 1,000 population. If converted to the large population in East Java, the number of cancer sufferers is 86,000 (Kominfo Jatim 2020).

The current prevalence of cancer patients shows that, the treatment of choice for cancer includes surgery, chemotherapy, radiotherapy, biotherapy, and brachytherapy,

but the treatment that is often used is chemotherapy (Mou dkk., 2020). According to research Tang dkk., (2021) Approximately 60-70% of patients with cancer who undergo chemotherapy are at risk of experiencing nausea, vomiting, pain, anxiety and also decreased quality of life due to chemotherapy. Thus, chemotherapy can make most patients who have been diagnosed with cancer develop feelings or feelings of worry, then anxiety and fear to face the threat of death and pain while undergoing chemotherapy.

Anxiety is an unpleasant psychological condition due to physiological changes that cause psychological instability according to Rahmawati dan Santoso, (2021) Symptoms that can occur include tremors, hyperdirosis, increased heart rate, shortness of breath followed by behavioral changes such as restlessness, rapid speech, and a startled reaction. Anxiety itself theoretically occurs starting with an individual meeting with a stimulus in the form of a situation that influences the formation of anxiety or a threatening situation, which is directly processed through cognitive processes (Medan dan Area, 2018).

Stimulation of the autonomic nervous system causes symptoms in several bodies such as cardiovascular, musculoskeletal, gastrointestinal, and respiratory. The autonomic nervous system in some patients with anxiety disorders, shows increased sympathetic tone. Stimulation of the sympathetic nerves to the adrenal medulla (Sympathetic Adrenal Medullary) causes the release of a number of adrenaline and norepinephrine into the circulation, and these two hormones are then carried from the circulation throughout the body. The normal reaction in a healthy person in an emergency, life-threatening situation will stimulate the release of the hormone adrenaline, resulting in an increase in pulse rate, respiration and muscle tone. In an anxious state, a person's body response will stimulate a decrease in the production of the stress threshold. Anxiety also triggers irregular production of the hormone cortisol so that the hypothalamus increases the production of CRH or corticotropin hormone which in turn causes weakness and decreased endurance (Hall, 2019).

Thus, in general, cancer patients complain of feelings of anxiety and stress related to their illness, treatment and treatment, namely chemotherapy, and most patients with anxiety experience various difficult emotional responses (Nuwa dan Kiik, 2020). From the symptoms that arise if not treated immediately can make the patient experience severe depression, even the desire to commit suicide or death will arise

(Nurhalimah, 2020). According to research conducted by Sukartini dan Esti, (2020) states that cancer patients with high anxiety can increase feelings of sadness, the emergence of a sense of hopelessness, feel himself a failure and dissatisfied with his life, and have a lower value of his body.

Thus the role of nurses is very important and needed by patients to overcome and perform appropriate interventions in overcoming the anxiety experienced by patients. Nursing actions for patients who experience anxiety due to cancer are distraction and relaxation actions. (Nurhalimah, 2020) states that the action that can be done in a series of distraction techniques is doing Music Therapy. This study was conducted to determine whether music therapy has an effect on reducing anxiety in cancer patients.

## **Method**

The method used in the preparation of this literature review uses PICOS. The literature search was carried out from January to May 2022. This study used secondary data that had been carried out by previous researchers with patient respondents suffering from cancer. Secondary data sources are journal articles of national and international repute with predetermined titles. Data collection methods using electronic databases were carried out by PubMed, Google Scholar, Springerlink. Based on the results of a literature search through the three databases using keywords according to the inclusion criteria and finding as many as (n = 17). Researchers of 17 articles were re-screened, and found (n = 3) articles that were not full text and (n = 3) articles had no effect on reducing anxiety on the outcome, so the 6 articles could not be used. Thus, it was found (n=11) journal articles that had passed the screening and based on the feasibility of inclusion and exclusion criteria so that the journal articles could be reviewed.

## **Results**

The results of the literature review show that music therapy to reduce anxiety while undergoing chemotherapy uses various types of duration, namely most of them do music therapy for 30 minutes per session, performed 2-3 times a week and carried out for 64 weeks. The average instrument used is the State Trait Anxiety Inventory with an assessment of 5.4 - 24.58.

## Discussion

### 1. Respondent's Age

Based on the results of data on 11 journal articles that have been reviewed, there were 833 respondents with an average age of 51.7 for the 11 articles. The lowest average age of respondents in all articles is found in the study Imran, (2017) that is 45 and the highest average in the study Rossetti dkk., (2017) ie as many as 58.8. This is in accordance with the theory Tang dkk., (2021) namely in the study it was found that the experimental group started from the age of 30 years to 69 years, which means that it is included in the adult age to the elderly

According to the results of the data in Indonesia's Cancer Burden by Pangribowo, (2019) explained that the 55-64 year age group had a higher prevalence of 4.62%. Various results from studies do show that old age is one of the risk factors for cancer, but this cancer is not yet known with certainty the main factor that causes it.

The theory is appropriate in the research conducted by Nuwa dan Kiik, (2020) oleh namely stating that the age of a person who has cancer is at an average age of 50 years, with the lowest age being 36 years and the oldest being 69 years old which is included in the category of early elderly. If it is seen from the existence of this age which is related to a person's coping mechanism, namely, there is a contribution aspect in elderly patients with cancer to their survival, namely social support and spiritual aspects. Feelings of anxiety that arise at any time are caused by a process of adjustment to stressors.

According to research Fikri dan Fitriani, (2021) states that the age with the most cancer is 46-55 years, this is in accordance with the existing theory, namely the increasing age of a person to a more mature level, the thinking process will automatically be more mature, which means that there will be more burdens on the mind. experienced so that feelings of anxiety occur more in adulthood.

### 2. Gender

Based on the results of a review of 11 journal articles, the number of respondents was 883 with each percentage of women being 36.5%, namely 304 respondents and the percentage of men being 32.5%, as many as 271 respondents, which means that the gender with the most cancer is woman. In the results of the percentage calculation, it is



in accordance with the theory Rossetti dkk., (2017) namely explaining that the sex that experienced the greatest anxiety while undergoing chemotherapy was female as many as 51 respondents while male as many as 27 respondents.

Anxiety itself occurs due to side effects arising from the implementation of chemotherapy which can cause feelings of restlessness, anxiety, and fear of being diagnosed with cancer, so that it can interfere with normal developmental processes and mental health can become worse, this is also appropriate in theory Nuwa dan Kiik, (2020) with a comparison of female respondents as many as 49 respondents while male respondents as many as 11 respondents.

From the results of these data, it is appropriate that the incidence of cancer is mostly experienced by women, according to the results of the 2019 Riskesdas data according to Pangribowo, (2019), with a prevalence of 2.2% in men and 2.85% in women, with specific types of cancer experienced by women such as breast cancer and cervical cancer. This is in line with research from 11 articles reviewed, namely according to Nuwa dan Kiik, (2020) it was found that 49 female respondents out of a total of 60 respondents experienced anxiety due to the chemotherapy they were undergoing.

Iriagaç dkk., (2022) stated that women are the ones who most commonly feel intensive psychological stress at the time of diagnosis, feelings of anxiety and depression often occur in women because of the many types of specific cancers, namely breast cancer experienced by women which can cause about 15% of cancer-related deaths. Breast cancer is the most common malignancy in women worldwide, which greatly affects personal physical and psychological health (Chirico dkk., 2020).

Other research is Sari dkk., (2021) identified that anxiety during chemotherapy was greater in women than in men. Women are 60% more likely to develop the anxiety they experience throughout their lives. Women also showed more biological anxiety and stress reactivity than men. Anxiety experienced by men tends to have a lower risk, because men are more active and explorative than women.

### **3. Music Therapy Intervention**

Based on the results of reviews in journal articles, the authors have different meanings regarding the definition of music therapy itself, which include Sari dkk., D’Nursing and Health Journal (**DNHJ**), Vol 4, No 1 March 2023



(2021) stated that music therapy is one of the therapies that can be used as an intervention to reduce pre-chemotherapy anxiety, which this therapy has been widely used in the nursing environment as a strategy to reduce anxiety, increase sleep rest and improve physical and physiological function. (Lima dkk., 2020) Music therapy intervention (MT) is an intervention that can help activate cortical regions of the brain, promoting emotional management with intense feelings and stress that arise during chemotherapy.

Sound and music can cause positive changes in anxiety and pain experienced during chemotherapy, thus music therapy is used as a non-pharmacological therapy that can reduce anxiety, provide relaxation and have a positive effect on vital signs. Thus music therapy must be included in the unit of nursing practice which is needed by the patient to reduce the patient's physical, emotional and mental symptoms during the treatment process (Triand et al., 2020).

According to İriağaç et al., (2022) Audio music is a medium that is used to reduce the feeling of being boring while the patient is waiting. The waiting room where the patient is located is designed using the art of silence by covering the frame in the waiting room by using real natural scenery such as beaches and meadows as well as audio music that soothes the mind. Audio playback accompanied by a comfortable room design is carried out because there are about 65% of patients undergoing chemotherapy who want relaxing or enjoyable activities such as listening to music in the waiting room. Research conducted by Fikri and Fitriani, (2021) stated that the use of music therapy can help someone who has emotional problems in expressing the feelings they feel so as to make positive changes in their mood. This music therapy can also handle stress and feelings of anxiety, thus can be sedative, motivational, and intelligent in the chemotherapy process.

#### **4. Anxiety Assessment Instruments Used**

The assessment instrument used in the 11 articles contained several types of assessments with the same assessment objective, namely to measure the level of anxiety experienced by cancer patients before, during, and after undergoing chemotherapy. The most widely used instrument in 11 articles is the State Trait Anxiety Inventory instrument.

According to İriağaç et al., (2022) the State Trait Anxiety Inventory (STAI)

instrument was first developed by Spielberg in the 1970s, and this assessment consists of two parts as state anxiety and trait anxiety (general feeling). Each section consists of 20 questions. The first subscale, namely STAI state anxiety, evaluates anxiety by asking the subject about current feelings. The second subscale, the STAI trait anxiety, evaluates how the patient usually feels. Each answer is scored between 1-4 according to the severity of the symptoms. The state anxiety subscales by trait were assessed separately, and the possible scores for each subscale varied between 20 and 80, and there was a positive correlation between higher scores and higher levels of anxiety.

Chirico et al., (2020) stated that the State Anxiety Inventory (SAI) measuring instrument used is a valid and commonly used measuring tool for measuring emotional, which consists of 20 items, with each given a score on a 4-point Likert scale which includes (1, almost never ; 2, sometimes; 3, most of the time; and 4 almost always). Total scores ranged from 20 to 80, with higher scores indicating higher levels of anxiety. The State Anxiety Inventory (SAI) is used in this study because it can evaluate current feelings of anxiety, but not anxiety traits, but through items that measure subjective feelings of fear, tension, nervousness, worry, and activation/excitement of the autonomic nervous system.

## **5. Distribution of Anxiety Assessment Before and After Implementation of Therapy**

The distribution of the average value before music therapy was carried out from each journal article showed that before the implementation of music therapy there was a score with the lowest average of 38.7, namely research from Rossetti et al., (2017) while the highest average value from the State Trait Anxiety Inventory assessment, the value before music therapy was carried out was 113, namely from Al-Jubouri dkk., (2021). It can be seen that the State Trait Anxiety Inventory assessment itself has a total score of 160 but the highest average value before music therapy is performed is 113 which means that the value has a fairly large difference compared to the total value.

The decrease in the value of anxiety levels after doing music therapy showed the highest average value on the STAI assessment was found in the study Al-Jubouri et al., (2021) of 88.51 and the lowest average value in the study Trial et al., (2020) ie 26.95. According to research conducted by (Sari et al., 2021) using the STAI measuring

instrument stated that, the study which was divided into a treatment group and a control group while undergoing chemotherapy, there was a decrease in anxiety during music therapy with a decrease in the average score from 60.1 to 35.52. The decrease in anxiety was due to a positive and statistically significant effect in reducing the level of anxiety felt by the patient.

While in the research conducted by Imran, (2017) stated that the instrument used in his research was using STAI with the results obtained that there was a statistically significant difference in the subjects receiving music therapy with an average score of 35.6. It can be concluded that the assessment after music therapy, there is an increase in the assessment instrument. The State Trait Anxiety Inventory assessment has an average score of 26.95-88.51 out of a total score of 160. Meanwhile, the Hamilton Anxiety Rating Scale has a score range of 10-17 out of a total score of 56.

## **6. Distribution of The Effectiveness of Music Therapy on Anxiety**

The anxiety reduction data shows that all reviewed articles describe a decrease in anxiety with a range of values from articles using the STAI measuring instrument, namely 5.4 - 24.58. The study that showed the most significant value among the 11 articles was the study of Sari et al., (2021) with a value of 24.58.

Based on research conducted by Trial et al., (2020) stated that the health benefits obtained from music have increased, both psychologically and neurologically. It was found that music therapy can decrease adrenaline levels and neuromuscular activity, slow down breathing and pulse and lower blood pressure. Music itself can speed up and slow down brain waves, and can help coordinate muscle tension and movement, so that sound and music cause positive changes in anxiety and pain.

According to research by Nuwa and Kiik, (2020) states that music therapy given to patients with chemotherapy can affect the performance of the sympathetic nervous system and also the endocrine system, which is caused by the influence in the recording so that it stimulates both systems to reduce levels of the hormone cortisol or stress hormone. , thereby increasing comfort and reducing anxiety

## **7. Statistical Test Results**

Regarding the results of statistical tests from 11 articles, it shows that there is an influence in the provision of the music therapy intervention, where all respondents in

the article experienced a decrease in anxiety with a p value,  $P < 0.05$ , thus causing differences in anxiety levels. According to research Tang et al., (2021) showed an analysis of scores after chemotherapy that was significantly higher, namely an average score of 36.59 with a p value = 0.005 after chemotherapy, with this it has been proven that music therapy can reduce pain and reduce pain. anxiety in patients undergoing chemotherapy.

In the study of riağaç et al., (2022) stated that in the intervention group with audio used as implementation, the anxiety inventory score using the STAI instrument was detected to be 5.4 points lower with  $p = 0.001$ . Based on these results, it was found that the entire article had a P Value  $< 0.05$ , which means that music therapy has an effect on reducing anxiety in cancer patients undergoing chemotherapy. These results are consistent with the theory of Tang et al., (2021), namely music therapy is an effective approach to reduce anxiety in chemotherapy patients.

## Conclusion

The results of the study found:

1. Anxiety experienced by cancer patients while undergoing chemotherapy in the 11 articles reviewed was assessed using different assessment instruments in each article, including the State Trait Anxiety Inventor, Hamilton Anxiety Rating Scale, State Anxiety Inventory, Beck Anxiety Inventory, and Self -Anxiety Scale rating. Patients who experience anxiety while undergoing chemotherapy 63% are in the category of severe anxiety
2. All journal articles that have been reviewed show the effect of music therapy on reducing anxiety in cancer patients undergoing chemotherapy with p value  $< 0.05$ . Thus it can be concluded that the implementation of music therapy is effective to be given to cancer patients undergoing chemotherapy to overcome anxiety nursing problems.

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