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The Effect of Music Therapy on Children with Cancer Patients

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ABSTRACT
Cancer is an abnormal cell division that can attack other organs. Childhood cancer is a very malignant disease in the category of disease for children. There are about 650 cases of childhood cancer in Jakarta. This literature study aims to determine the effect of music on children with cancer. This study uses a research design with a literature review, using the keywords cancer, music therapy and children. The results of the study there were twelve selected articles, there were 3 categories, namely 5 articles for music therapy in cancer, 2 articles for music therapy in children, 5 article on the effects of music therapy for cancer children. Conclusion of this research concluded that music therapy does not heal physically but music therapy has an effect on mental (psychological) treatment, although it does not heal physically but psychological treatment can help physical healing.

Keywords: *Music therapy, Cancer, Children.*

1. INTRODUCTION

Cancer is a disease that attacks one human organ and spreads to other surrounding organs. The cause of cancer in children is the interaction of 4 factors, namely genetic, chemical, viral and radiation. Cancer is a disease characterized by uncontrolled cell division and the ability of cells to invade other biological tissues, either by direct growth in adjacent tissue (invasion) or by migration of cells to distant sites (metastasis) [1].

Cancer is a serious disease that affects children in the world. There are about 650 cases of childhood cancer in Jakarta. In general, one third of childhood cancers are leukemia. The other most common cancers are lymphoma (lymph nodes) and central nerve tumor. The type of cancer suffered in children is neuroblastoma (cancer that develops from immature cells in children), nephroblastoma (tumor of the kidney, especially in boys), medulloblastoma (tumor of the central nervous system). embryonal) and retinoblastoma (eye cancer in children), which cause effects such as lethargy, respiratory problems, sleep disturbances, pain and depression [2].

Music therapy is a medium used for clients or patients who need treatment, education or intervention in social and psychological aspects. [22]. Music therapy is divided into two, namely active-creative which is done by involving clients directly to participate actively in therapy sessions and passive-receptive which is done by listening to music [4].

Music therapy is one of the traditions of eastern medicine. The goals of Eastern medicine are generally to increase the body's strength, inhibit cancer growth, reduce pain and improve the body's main functions such as sleep, breathing, and movement. In contrast to western medicine which aims to remove tumors by surgery, kill cancer cells with chemicals (chemotherapy) or perform radiotherapy to destroy cancer cells. According to eastern medicine an imbalanced condition (body energy) can lead to diseases such as cancer [5].

In the world of eastern medicine, disease has a negative frequency that enters the human body, this frequency is called Chi (energy). Negative frequencies that vibrate will turn off by listening to music and singing songs using a certain frequency [2]. The energy produced by music through sound waves moving with the medium of air can be measured by acoustics. Sound waves have basic elements, namely duration, pitch, dynamics, and timbre, all of which correspond to the size, shape, and speed of the sound wave. A scientist calculates the intensity of sound using a unit called the decibel (dB), and counts the number of sound wave vibrations per second in hertz (Hz) [7].

A number of studies explain that music is very influential on children with cancer patients [3]. found that classical music can reduce pain in cancer, musical stimulation increases the release of endorphins thereby reducing the need for analgesic drugs. This issue attracted me to know more about the influence of music on cancer children. Based on the results of previous studies, six categories were obtained, namely reducing anxiety, making a good mood, making sleep soundly, reducing pain, stabilizing heart rate, and stabilizing breathing.

2. METHODS

The method in this study uses a literature review. Literature review is an important tool as a context review, because literature is very useful and very helpful in providing context and meaning in the writing that is being done and through this literature review the researcher can state explicitly and the reader knows why the thing to be studied is a problem that needs to be studied. Indeed must be researched, both in terms of the subject to be studied and any environment in terms of the relationship between the research and other relevant research [9].

Search data through journals, books and relevant information. The search was carried out from early April to completion. Keywords to search for the following journals were entered: (cancer OR oncology) and music therapy; with age limits from children to adolescents. The data search is complemented by a search for article reference lists. The data needed in research can be obtained from library sources or documents. Criteria guide source selection are as follows: (1) Articles, scientific works, and research related to music therapy used in pediatric cancer patients, focusing on the effect of music on children with cancer patients. (2) Patients indicated as sample in the article are those who complain of painful physical symptoms due to cancer (3) research articles published between 2002-2021.

Literature review requires high persistence so that the data and data analysis and the resulting conclusions are in accordance with the expected goals. This requires optimal preparation and implementation. Literature review research requires careful and in-depth analysis to obtain results. Thus research with literature study is also research and can be categorized as scientific work because data collection is carried out using a strategy in the form of a research methodology. The variables in the literature study are not standardized. The data obtained were analyzed in depth by the author. The data obtained are poured into sub-chapters so that they can answer the research problem formulation.

3. RESULTS AND DISCUSSION

Music psychology is a discipline between the realms of psychology and musicology. The psychology of music includes not only motor and effect aspects, but also cognition, especially in the dialectic between musical elements and human behavior in the psychological processes associated with their social environment. Music psychology is beneficial to music therapy because music therapy uses music and activities to address health issues. Music therapy has a role such as reducing pain even though it is gradual and slowly [10]. Therapy has benefits and principles, namely:

The benefits of music therapy are:

- Lowering blood pressure through rhythmic. Stable music gives a regular rhythm to the working system of the human heart
- Stimulate the work of the brain, listening to music with good harmony will stimulate the brain to carry out the process of analyzing the song.
- Increase immunity, the atmosphere caused by music will affect the human hormone system, if we listen to good or positive music, hormones will increase the body's immunity and will also produce.
- Provides balance to the heart rate and pulse.

Music therapy is closely related to sound or sound, while the basic principles of the sound are:

- The principle of resonance. The human body will respond if there is an incoming vibration or frequency. Every cell in the body is a sound resonator. New cells are formed in every organ of the body which causes the organ systems of the body to have their own frequency. When we are sick, the sound waves will give harmony to the infected area so that the frequency of each cell can be renewed.
- Rhythmic principle. Rhythmic reflects the human pulse. Different musical rhythms will have a different impact on the organ systems of the human body.
- Principle of pitch and timbre. The difference in pitch will have a different effect on the human organ system. Timbre (color of sound) also gives a different response, depending on the type of musical instrument. The human voice has different colors.
- The principle of sound and energy. Sound is an expression of energy, and the human body consists of energy systems. Then the body will be affected by various types of energy. Sound as sound waves can also be affected by

frequencies of various energies. Such as the frequency of color, aroma, electromagnetic, and so on. These vibrations can be beneficial to the body or even damage existing systems.

Search result In the search results using the keywords music therapy, children and cancer there are 12 articles discussing music therapy in cancer 5 articles, music therapy in children 2 articles and music therapy in children cancer 5 articles. The table contains several points as material for collecting data, including the author and year of publication of the article, research title, type of research, respondents, type of music therapy intervention, type of disease, duration and location of research, as well as research results in the 12 articles can be seen in Tables 1,2, and 3. In the 12 articles there are differences in the age of the respondents, the type of cancer, the type of disease, the influence of music, and the music used. In addition, the background of the disease and the background of the research place are variations in the study of this article so that it can enrich the study of articles related to the influence of music on cancer, the effect of music on children and the influence of music on childhood cancer.

Table 1 describes music therapy for cancer patients, there are 3 articles that describe music therapy for cancer with different types of cancer such as breast cancer, prostate cancer, and lung cancer. While the 2 articles about music therapy in cancer patients do not focus on the type of cancer to be treated. The median age of cancer patients treated is about 18-65 years. The duration of doing therapy is around 20-30, with the patient listening to music while going to chemotherapy or even after chemotherapy. The songs that are listened to are also varied, the average patient chooses the song according to taste or favorite song because the song is chosen according to the patient's comfort. There is 1 article that determines which songs will be used for therapy such as classical songs.

Music therapy in cancer patients has different effects according to the symptoms the patient suffers such as pain, anxiety, reducing depression, nausea, vomiting, stabilizing breathing and pulse. The different effects are also factored in the type of cancer suffered by the patient and the patient's age. Music therapy was found to have an effect on reducing pain (pain), reducing depression, reducing anxiety, reducing nausea and vomiting in adult cancers with different types of cancer. Music therapy in adult cancer patients does not play a role in curing cancer physically, but mentally reducing the patient.

Table 2 discusses music therapy in children. In the table above there are 2 articles that discuss diseases in children with different diseases such as chronic diseases and 1 article that does not focus on the type of disease the child suffers from. But in this article both explain the comparison between children who are in music therapy and without music therapy. The duration given is also different, in the first journal it describes the duration of treatment around 30-45 minutes before bedtime and in the second journal it does not explain the time because the music is playing while the child is waiting for treatment at the hospital. The function of music therapy in children's diseases is to make children sleep soundly and to reduce anxiety when children wait in line and when they are checked by a doctor. Both articles provide music according to the wishes of the therapist by listening to the music. The role of music therapy in children's disease is to make children sleep easily and sleep well, and reduce anxiety in children with different types of diseases, while children without music treatment have no effect.

Table 3 contains 5 selected articles, there are 159 participants involved in these studies with the average age of participants from 0-16 years. All participants were diagnosed with cancer and focused on: 3 studies focused on leukemia, 1 study focused on lumbar puncture cancer and 1 study focused on neuroblastoma, osteogenic sarcoma, lymphoma, ewing's sarcoma, and brain tumors. The duration when doing music therapy is about 10-45 minutes which is done before chemotherapy, after chemotherapy, and some use music therapy as learning for activities in the isolation room.

There are two ways to do music therapy, namely by listening to music and directly playing a musical instrument. The music used in music therapy is according to what has been determined and is what the children want. The selection of songs is done with their own wishes because to make the patient more comfortable when listening to the music. There is one article that explains that if a child is in a very sick position and is given music with a fast tempo, the pain will get worse. Then the therapist changed the song to a slower tempo and the result was that the patient was calmer. The music used is also in accordance with the patient's condition, if when he is sick and has difficulty sleeping, he listens to slow-paced music and when the patient feels anxious and depressed, music with a fast tempo can help the patient's mood feel better.

Table 1. Music therapy in cancer patients

No	Author	Title Study	Design Study	Respondents Research and the influence of music	Type of Intervention Music Therapy and Types of Disease	Intervention Duration, Location Description Study	Results
1	Zanah [11]	Effect of music therapy on complaints of nausea and vomiting in post chemotherapy patients due to cancer in the cytostatics unit	Quasi experiment with one group pretest-posttest approach.	11 respondents consisting of 9 breast cancer and 2 prostate cancer (40 years old = 5 people, 40-50= 6 people) **Inclusion criteria:** 1. Patients undergoing chemotherapy treatment for cancer experience nausea and vomiting 2. Patients who are willing to be respondents 3. The first patient to undergo chemotherapy **Exclusion criteria:** 1. Patients undergoing chemotherapy treatment for cancer who do not experience nausea and vomiting 2. The client refuses to do research / refuses to be a respondent. **Musical influences:** 1. nausea 2. vomit	**Intervention group:** Listen classical music **Type of disease:** Breast cancer and prostate cancer.	**Duration:** Approximately 15 minutes **Location:** At the Cytostatics Unit of Telogorejo Hospital, Semarang	The results in this study, music therapy can be used to reduce complaints of nausea and vomiting after chemotherapy.
2	Veranita et al. [12]	Effects of music therapy & Deep Breathing Exercise on reducing pain, pulse rate, respiratory rate in lung cancer patients	Quasi experimental pre-post test with control group with purposive sampling technique	86 respondents in the intervention group and 22 in the control group. **Exclusion criteria:** 1. have hearing loss not willing to be researched 2.the patient's condition acute, such as severe shortness of breath, cyanosis 3. restless Musical influences: 1. pain (pain) 2. breathing 3. pulse	**Intervention group:** listening to music **Control group:** Deep Breathing Exercises. **Type of disease:** Lung cancer	**Duration:** Administered for three consecutive days with a duration of 20 minutes. DBE intervention was given 2 hours after therapy music is performed 4 cycles for 5 minutes, before and after intervention respiratory rate was measured pain, post-intervention pulse rate.	The results of this study indicate that music therapy has an effect on reducing pain in lung cancer.

Table 1. Cont.

						DBE intervention was given 2 hours after therapy music is performed 4 cycles for 5 minutes, before and after interventionrespiratory rate was measuredpost intervention **Location:** Inpatient at the hospital Jakarta Friendship.	
3	Widiyono et al. [13]	Self-Selected Individual Music Therapy for Depression during Hospitalization for Cancer Patients: Randomized Controlled Clinical Trial Study	Randomized control trial (RCT)	70 Respondents intervention group (n = 35) and control group (n = 35) **Exclusion criteria:** 1. emergency patient 2. listen to music more than 20 minutes every day, 3. using anxiolytic drugs (such as thiopentyl and flumazenil) 4. antidepressants. **Musical influences:** Depression	**Intervention Group:** Listening to handpicked music therapy (SeLIMuT) **Control group:** Given treatment after the study was completed (after complete the post-test). **Type of disease:** Different types of cancer	**Duration :** More than 20 minutes a day. **Location:** Inpatient unit I RSUD dr. Sardjito Hospital in Yogyakarta and Bougenvile-Teratai Prof. Hospital unit. Dr. Margono Soekarjo at Purwokerto, Central Java, Indonesia.	The results in this study, music therapy can reduce depression in cancer patients with special music or with different types of music to have different effects.
4	Lin et al. [14]	A randomised controlled trial of the effect of music therapy and verbal relaxation on chemotherapy-induced anxiety	Randomized controlled trial (RCTl)	64 respondents, by age 18 and over **Criteria:** Receiving first or second chemotherapy treatment protocol, listening ability using headphones and complete written questionnaire in Chinese. **Musical influences:** Worry	**Intervention Group:** Listening to music music played during sessions listed between 55– 70 db for playing soft music **Control Group:** receive routine nursing care. **Music Type:** Different types of cancer	**Duration:** Approximately 30 minutes before chemotherapy **Location:** Outpatient chemotherapy clinic operated by a University medical center in southern Taiwan	The results of this study indicate that there is a very large influence on music therapy on anxiety after chemotherapy. This study uses two samples with a control group and verbal relaxation

Table 1. Cont.

5	Li et al. [15]	Effects of music therapy on pain among female breast cancer patients after radical mastectomy : results from a randomized controlled trial	randomized controlled trial (RCTI)	120 respondents **Inclusion criteria:** It requires female patients between the ages of 25 and 65 years with a pathological diagnosis of breast cancer who require having a radical mastectomy (including modified radical) mastectomy [MRM] and extensive radical mastectomy [ERM]). **Musical influences:** Pain (pain)	**Intervention group:** received music therapy from the first day after the radical mastectomy to the third admission to the hospital for chemotherapy in addition to routine care care, listening to music. **Control group:** Receive routine care care. **Type of disease:** Breast cancer	**Duration:** Music twice a day (30 minutes per session) morning (6am – 8am) and once in the evening (9pm -11pm) **Location:** Xi'an Jiao-tong University First Affiliated Hospital	The results of this study indicate that music therapy has an effect in reducing pain in breast cancer patients after radical mastectomy by reducing pain in the long and short term.

Table 2. Music therapy for children's illnesses

No	Author	Title Study	Design Study	Respondents Research and the influence of music	Type of Intervention Music Therapy and Types of Disease	Intervention Duration, Location Description Study	Results
1	Naulia et al. [10]	The Effect of Music Therapy on Sleep Quality among Children With Chronic Disease	pseudo experiment	30 respondents aged 8-18 years. **Criteria:** No criteria **Musical influences:** Makes sleep soundly	**Intervention group:** Listening to music **Control group:** No music provided **Type of disease:** Chronic disease	**Duration:** 30-45 minutes before bed **Location:** in the non-infectious room of RSUPN DR. Cipto Mangunkusumo	The results showed that music therapy had an effect on sleep quality and can improve the quality of life of children with chronic diseases.
2	Ariani et al. [16]	The Effect of Music Therapy on the Physiological Response and Anxiety Behavior of Children During Hospitalization	Quasi Experimental, Pretest Posttest Non Equivalent Control Group Design	36 respondents with 18 children in the intervention group and 18 children in the control group **Criteria:** No criteria **Musical influences:** Reduce anxiety	**Intervention group:** Listening to music **Control group:** Without listening to music **Type of disease:** Various types of childhood diseases	**Duration:** While the child is in the hospital. **Location:** At RSUD Cilacap and RSI Fatimah Cilacap.	The results of this study used music therapy as an effort to reduce anxiety in school-age children during hospitalization.

Table 3. Articles of music therapy in children with cancer patients

No	Author	Title Study	Design Study	Respondents Research and the influence of music	Type of Intervention Music Therapy and Types of Disease	Intervention Duration, Location Description Study	Results
1	Barrera et al. [17]	The Effects of interactive music therapy on hospitalized children with cancer : A pilot study	pre and post interventi on evaluation	65 respondents with pre-school age between 0 and 5 years (n = 33), school age 6-10 years (n = 16), and adolescents 11-17 years (n = 16) **Musical influences:** 1. Reduce Anxiety 2. Make a good mood 3. make sleep soundly	**Intervention Group:** 1. Teenagers – school-age children listen to selected music 2. Preschoolers listen to nursery rhymes 3. babies and toddlers listen to lullaby, lullaby **Control group:** 1. Game animation song 2. Poem 3. Playing a musical instrument 4. Sing. **Type of cancer:** Leukemia (N=45) Brain Tumor, Lymphoma, Osteogenic Sarcoma, Ewing's Sarcoma, and Neuroblastoma (N= 20)	**Duration:** 15 to 45 minutes **Location:** Sick Children's Hospital, Toronto, Canada	There was a significant improvement in children's assessment of their feelings from before to after music therapy. Parents feel improvement in playing performance after music therapy in pre-school children and adolescents but not in school-age children. Qualitative analysis of children's and parents' comments shows the positive impact of music therapy on child well-being
2	Polat et al. [18]	The effect of therapeutic music on anxiety in children with acute lymphoblastic leukaemia	pre-test, post-test quasi-experimental single group	28 respondents (5-17 years) **Inclusion Criteria:** (1) undergoing a second session of chemotherapy, (2) between 5 and 15 years old, (3) able to read and understand Turkish for children and their mothers (4) has no problems with hearing, and (5) does not have a history of mental illness, (6) not undergoing sedation therapy,	**Intervention Group:** Listening to therapeutic music (The Four Seasons) **Type of cancer:** Lymphoblastic Leukemia	**Duration:** range from 15 to 30 minutes **Location:** In pediatrics university hospital oncology unit in Turkey	In this study it was determined that post-test anxiety the size decreased to the pre-test size for all age groups and the difference between them was found to be statistically very large significant ($p<0.05$). $P<0.05$ is the standard level of significance. The findings of this study, which are consistent with previous studies report, supports the opinion that therapeutic music may have a positive effect on hospitalized pediatric oncology patients.

Table 3. Cont.

				(7) received 30 Sessions of intravenous chemotherapy over 90 minutes of infusion, administered for the same dose of the same chemotherapeutic agent. **Musical influences:** Reduce anxiety			
3	Nguyen et al. [19]	Music therapy to reduce pain and anxiety in children with cancer undergoing lumbar puncture : A randomized clinical trial	Randomized clinical trial	40 respondents (aged 7-12 years) with leukemia, followed by interviews with these 20 participants. The participants were randomly assigned to a music group (n = 20) or a control group (n = 20). **Inclusion Criteria:** All children have underwent LP in conjunction with their cancer at least once before. **Exclusion criteria:** 1. Have a hearing loss 2. Significant vision or cognitive impairment. **Musical influences:** 1. Reduce anxiety 2. pain 3. Stabilizes heart rate 4. Stabilizes breathing	**Intervention Group:** Listen to music by the patient's choice. **Control group:** No music **Type of cancer:** Leukemia Lumbar puncture cancer	**Duration:** 10 minutes listening to the song and 10 minutes of not listening to songs. **Location:** Oncology Ward at NHP, Hanoi	The primary outcome was pain score and the second is heart rate, blood pressure, respiratory rate, and oxygen saturation measured before, during, and after the procedure. Anxiety scores were measured before and after the procedure. Open interview Questions are conducted in conjunction with the completed procedure. The results showed lower pain scores and heart rate and respiration in the music group during and after lumbar puncture. Lower anxiety scores on music group before and after the procedure. Findings from interviews confirmed quantitative results through children's descriptions of positive experiences, including reduced pain and fear.
4	Sepúlveda-Vildósola et al. [20]	La musicoterapia para disminuir la ansiedad	Quasi - experimental, before and after	22 Respondents aged 8-16 years old **Exclusion criteria:** 1. In all cases informed consent was requested by parents or guardian and consent of the minor. 2. Patients with mental retardation 3. hearing loss, 4. anacusis	**Intervention Group:** Listening to music scientific melody proven to have a brain relaxing effect or stimulate calm (J. Thompson, Music for Brainwave Massage Brain Wave Massage) **Type of cancer:** Non-Hodgkin's Lymphoma,	**Duration:** Timing of intervention implementation in all case of more than 20 minutes. **Location:** at de Hospital Pediatrics	We included 22 patients. All patients experience both modern eating and high levels of anxiety before chemotherapy treatment in both day. There was a statistically significant reduction in anxiety in both group after chemotherapy, but with lower levels of anxiety in the intervention group.

Table 3. Cont.

				5. blindness 6. decreased visual acuity or reception 7. They underwent intrathecal chemotherapy. **Musical influences:** 1. Reduce anxiety 2. pain	Lymphoblast Lukemia, Meiloid Leukemia, and Hodgkin's.	from Centro Médico Nacional Siglo XXI,	There are additional advantages with the use of music py in the reduction of anxiety in pediatric patients receiving ambulation chemotherapy.
5	Cheung et al. [21]	Efficacy of musical training on psychological outcomes and quality of life in Chinese pediatric brain tumor survivors	Kuantitatif Randomized Control Trial (RCT)	60 respondents were children with tumors brain (ages 8-15 years). 30 children control group and 30 children intervention group. **Inclusion Criteria:** a. Children with cancerous tumors have an Epidemiological score Studies Depression Scale for Children(CES-DC) 16 or older and Modified Mini-Mental scores Scale (MMSE) 18 or more. b. Have received treatment cancer for at least 2 months. c. 7 to 16 years old. d. Can speak Cantonese and read Chinese script. e. The child who has never get music training whatever. **Exclusion criteria:** Children who have recovered or are there most likely fully recovered from cancer. **Musical influences:** Higher quality of life	**Group intervention:** Listening Musical training **Control group:** respondent visited by research assistant to do various activities free recreation like playing games cards, chess, watching video online, drama series, or movies. **Type of cancer:** child brain tumor	**Duration:** One session done for 45 minutes one time a week, in term 52 weeks time. **Location:** Research in do it at home each child. Those kids is a patient at pediatric oncology clinic a hospital acute general in Hong Kong.	There is a main effect that statistically the difference significant for the group intervention with score more quality of life high compared control group, for 52 intervention week with P value 0.049 (ANOVA test). While the P value of quality live using procedures Tukey test obtained value T1=0.983; T2=0.054; T3=0.000.

In 5 articles focusing on music therapy on cancer patients who have age limits and types of cancer. The role of music therapy is very influential on childhood cancer from pain (pain), anxiety, stabilizes the heart, stabilizes breathing, good mood, and sleeps well, while without using music it has no effect on children with cancer patients.

3.1. Music Influence

Based on several articles that have been collected with 3 categories, namely music therapy on cancer, the influence of music on children's diseases and the influence of music on childhood cancer, there are 6 effects of music therapy, namely 7 articles that explain anxiety, 5 articles about pain (pain), 2 articles on heart and breathing, 1 article on restful sleep and 1 article on good mood. Of these 3 categories, researchers focus on the effect of music on cancer patients' children:

3.1.1. Anxiety

Anxiety in cancer patients is felt when patients want to do chemotherapy, after chemotherapy and are doing chemotherapy. Anxiety in cancer patients is very influential during chemotherapy, because anxiety

triggers a stress response so that the brain releases many chemicals and hormones such as adrenaline. This condition increases the pulse rate and breathing rate so that the brain gets more oxygen. It will also weaken the immune system and make you more susceptible to viruses and diseases.

3.1.2. Pain

Pain in cancer patients is felt after chemotherapy and when the patient has finished surgery. The pain in cancer patients is due to the administration of chemo drugs by injection so that they feel a stinging pain when the needle is injected into the skin. Meanwhile, when the cancer patient finishes surgery, the patient will also feel pain when the anesthetic has run out

3.1.3. Breathing and Heart Rate

Breathing and heart rate in cancer can be associated with anxiety during chemo therapy. Anxiety can cause rapid breathing because the brain releases the hormone adrenaline making the lungs take oxygen quickly then the blood takes oxygen from the lungs and the heart pumps oxygen-filled blood to the brain which makes the immune system weak.

3.1.4. Sleep Well

When the child is post-chemo and surgery, the child has difficulty sleeping due to the illness he is suffering from. So music with a slow tempo makes children sleepy because the brain and heart rate will follow the tempo and the music so that children become more relaxed and will fall asleep faster.

3.1.5. Good Mood

Children of cancer patients feel that their mood is less controlled due to anxiety and fear during cancer treatment. Unstable mood because the children do not have activities that distract negative thoughts. So music is really needed to divert thoughts, and music is also in accordance with the needs of children with cancer patients.

3.2. Music Therapy

Music therapy in cancer patients is to reduce anxiety, pain, heart rate, breathing, good mood, restful sleep. Music therapy to improve immune function in children with cancer because when children listen to music or play music, the music waves are influenced by the frequency of various energies and stimulation of the nerves when playing musical instruments stimulates the brain so that the brain secretes endorphins-producing hormones happiness. Endorphin hormones are also very functioning to relieve pain, make the atmosphere happy, make sleep soundly, relax, prevent depression and anxiety [22].

Music therapy functions in cancer patients by activating nerves to relax so that it helps the patient's breathing become smoother, reduces the risk of heart attacks, makes blood pressure more normal, and muscles are more flexible (Flexible) [23]. Music therapy has an effect when the patient experiences unstable breathing, unstable heart rate and pulse rate because the heart rate follows the rhythm of the music which makes the heart stable. Different music rhythms will have different effects like a slow tempo song makes the listener calm and when the tempo is fast it can reduce stress.

4. CONCLUSION

Based on the results of research conducted with a literature review with 12 articles consisting of 5 articles about music therapy in children with cancer patients (Table 3), it can be concluded that music is very influential in children with cancer with types of leukemia, brain tumors, lymphoma, osteogenic sarcoma, ewing's sarcoma, neuroblastoma, cancer non-hodgkin's lymphoma, lymphoblast lukemia, meiloid leukemia, and hodgkin's, the results of these 5 articles explain the effect of reducing anxiety, reducing pain, stabilizing heart rate, stabilizing breathing, make a good mood, and make a good night's sleep. The results of this study have been strengthened by 5 articles on music therapy in special cancer patients and reinforced by 2 articles on music therapy in pediatric diseases. It has been found with 3 categories of articles that explain that music therapy affects all kinds of diseases, not only cancer but also other diseases such as chronic diseases in children. From this explanation, it can be concluded that music therapy does not heal physically but music therapy has an effect on mental (psychological) treatment, although it does not heal physically but psychological treatment can help physical healing. It has been found that in 12 articles that have been analyzed, it has been found that appropriate criteria for therapy, the therapeutic process, types of diseases, and the influence of music have been found. There are several things that have not been studied and still need to be studied by the article, such as there is no explanation of what stage has been treated, whether they have different levels when handling music therapy with patients experiencing stage one to stage four, no one has explained what frequency is. makes children of cancer patients feel comfortable, and does not explain what types of music the patient chooses.

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Table 1. Music therapy in cancer patients

No	Author	Title Study	Design Study	Respondents Research and the influence of music	Type of Intervention Music Therapy and Types of Disease	Intervention Duration, Location Description Study	Results
1	Zanah [11]	Effect of music therapy on complaints of nausea and vomiting in post chemotherapy patients due to cancer in the cytostatics unit	Quasi experiment with one group pretest-posttest approach.	11 respondents consisting of 9 breast cancer and 2 prostate cancer (40 years old = 5 people, 40-50= 6 people) **Inclusion criteria:** 1. Patients undergoing chemotherapy treatment for cancer experience nausea and vomiting 2. Patients who are willing to be respondents 3. The first patient to undergo chemotherapy **Exclusion criteria:** 1. Patients undergoing chemotherapy treatment for cancer who do not experience nausea and vomiting 2. The client refuses to do research / refuses to be a respondent. **Musical influences:** 1. nausea 2. vomit	**Intervention group:** Listen classical music **Type of disease:** Breast cancer and prostate cancer.	**Duration:** Approximately 15 minutes **Location:** At the Cytostatics Unit of Telogorejo Hospital, Semarang	The results in this study, music therapy can be used to reduce complaints of nausea and vomiting after chemotherapy.
2	Veranita et al. [12]	Effects of music therapy & Deep Breathing Exercise on reducing pain, pulse rate, respiratory rate in lung cancer patients	Quasi experimental pre-post test with control group with purposive sampling technique	86 respondents in the intervention group and 22 in the control group. **Exclusion criteria:** 1. have hearing loss not willing to be researched 2.the patient's condition acute, such as severe shortness of breath, cyanosis 3. restless Musical influences: 1. pain (pain) 2. breathing	**Intervention group:** listening to music **Control group:** Deep Breathing Exercises. **Type of disease:** Lung cancer	**Duration:** Administered for three consecutive days with a duration of 20 minutes. DBE intervention was given 2 hours after therapy music is performed 4 cycles for 5 minutes, before and after intervention respiratory rate was measured pain, post-intervention	The results of this study indicate that music therapy has an effect on reducing pain in lung cancer.
				3. pulse		pulse rate.	