



Literature Review



Effectiveness of Music Therapy Intervention on Pain Levels in Patients with Primary Brain Tumor

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A B S T R A K

Introduction: Headache is a symptom that always occurs in brain tumours. During the disease, the patient experiences moderate to severe pain. Headaches gradually become more frequent and severe, as do nausea and vomiting, memory disturbances, seizures, balance disturbances and the risk of death—effective pain management in tumours whose treatment requires pharmacological and non-pharmacological interventions. Music therapy is part of complementary therapy. Music therapy has advantages as an intervention that can be applied in a simple, non-invasive, non-pharmacological relaxation stimulant that is safe, inexpensive, and effective.

Objective: This review aims to explore and synthesize the scientific literature on music therapy as a non-pharmacological intervention to manage pain in primary Brain Tumor patients.

Methods: The articles were searched in the SpringerLink, Proquest, Google Scholar, and Scopus databases using keywords and boolean operators. Searches used AND, OR, and NOT to produce targeted search results. Inclusion criteria for pain in brain tumors, full text, published within the last ten years from 2012 to 2022, provide information on non-pharmacological strategies in managing pain in primary brain tumors and are written in English. From a total of 8238 journals found, 12 were selected.

Results: Based on a review of 12 selected journals, it was found that non-pharmacological management of music therapy effectively reduced pain in brain tumors. In conclusion, music therapy interventions effectively and safely reduce pain and increase patient comfort. Music therapy is a cheap, simple, non-invasive, and non-pharmacological method with no side effects; it can be used as an adjunct for analgesics and relaxation—the effectiveness of music therapy in reducing the pain of tumor or cancer patients.

INTRODUCTION

A brain tumor is a mass of abnormal tissue in which cells develop and multiply uncontrollably. There are more than 150 types of brain tumors, but they can be divided into two major categories: primary and metastatic. Brain tumors are not contagious, but they are among the most dreaded illnesses. Primary brain tumors can develop immediately within intracranial tissues, such as the meninges, Central Nervous System (CNS), or the brain itself. Glioma is among the most prevalent types of primary brain tumors. Glioma is a cancer that develops from glial cells. There are four types of glial cells: astrocytes, oligodendrocytes, microglia, and ependymal cells. However, only three types of glial cells can develop into tumors: astrocytes, oligodendrocytes, and ependymal cells. (Michael et al, 2015).

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It is estimated that 23,380 new cases of brain tumors will be diagnosed in adults in 2014, resulting in 14,320 fatalities; this accounts for 1.4% of all new cases of cancer and 2.4% of all cancer deaths. The aggregate five-year survival rate is 33.4% (Perkins et al., 2016). Incidence is marginally higher in men than in women between the ages of 55 and 64. The lifetime probability of being diagnosed with a brain or nervous system tumor is approximately 0.6% (De Robles et al., 2015).

Brain tumors are the second most malignant type of tumor, after blood tumors (leukemia). In recent years, the incidence of brain tumors in Indonesia has increased. The increase in the prevalence of brain tumors indicates a grave hazard to the Indonesian population. Based on data from 2011 to 2015, the average age-adjusted annual incidence of brain tumors in the United States is 3.21 per 100,000 population, with the maximum incidence among those aged 75 to 84 years. Males are 1.58 times more likely than females to develop brain tumors, with an age-adjusted incidence of 4.00 per 100,000 population compared to 2.53 per 100,000 population (Ostrom et al., 2018). In terms of race or ethnicity, the incidence is highest among whites and lowest among American Indians or Alaska Natives, with an incidence that is roughly 40 percent lower. North America, Australia, and Northern and Western Europe have the highest incidence of glioblastoma globally. In the United States, the incidence of brain tumors is 9.23 per 100,000 people (Gittleman et al., 2018).

Brain tumors have different characteristics than tumors elsewhere; although histologically benign, they can turn malignant because of their adjacent position or because they are located in vital structures and closed cavities that are difficult to reach (Jiang et al., 2017). These brain tumors can be primary tumors or metastases from tumors in other body organs (Tan, Itchins et al., 2020).

Glioblastoma multiforme (GBM) is considered the most malignant brain tumor, with a high proliferative capacity and invasive characteristics that result in rapid development and high malignancy rates. GBM is classified as grade IV by the World Health Organization (WHO), and the patient mortality rate in the first year after diagnosis is close to 80% (Strepkos et al., 2020). GBM is also the most common and fatal primary malignant brain tumor in adults. (Bi et al., 2020), Furthermore, the 5-year survival rate of patients diagnosed with GBM is less than 6% (Sabbagh et al., 2020).

85–90 Brain tumors are the second leading cause of death among all cases of tumors that occur in men aged 20–39 years. Men have higher brain tumor mortality (National Committee for Combating Cancer, 2017). During the 2009–2013 period, there were 173 cases. Brain tumors account for about 85–90% of all central nervous system cancers.

With cases of brain tumors increasing every year, it is necessary to have clinical treatment methods. Therefore, the treatment modalities for brain tumors are surgery, radiation therapy, and systemic treatment, including chemotherapy, targeted therapy, hormonal therapy, immunotherapy, and combinations (Hottinger et al., 2016).

Radiotherapy with or without temozolomide adjuvant chemotherapy is the standard treatment for GBM after surgical resection. (Stupp et al., 2002; Tan et al., 2020). The tumor treatment field, which provides a low-intensity alternating electric field, can also be used with the adjuvant temozolomide. Although there are many reports on immunotherapy and gene therapy for GBM, their effects still need to be fully confirmed due to inconsistencies in treatment methods and evaluation criteria.

The symptoms experienced by brain tumor patients, such as headaches gradually becoming more frequent and severe, nausea and vomiting, impaired memory, seizures, balance disorders, and the risk of death (Han & Jiang, 2021). The percentage of the adult population with active headaches is 47% for general headaches, 10% for migraines, 38% for TTH, and 3% for chronic headaches. TTH is the most common form of headache and causes more significant disability than migraine. Usually, brain tumor patients will experience shock, fear, anxiety, feelings of grief, anger, sadness, and withdrawal. Feelings of anxiety occur because of fear of the impact that may occur, for example, changes in body image and death (Muntaka Yasirul, 2017). Brain tumors also cause visual disturbances due to the tumor's location or increased intracranial pressure (Nuijts et al., 2019). Pain that is not treated will impact anxiety, depression, helplessness, hopelessness, the desire to end life, and fear in patients and their families. 80-90% of pain can be managed with proper cancer pain management according to WHO guidelines, such as the

proper use of medication, administration of relaxation and distraction therapies, and classical music therapy, which has been researched by several experts (Saragih, 2010).

Music therapy is part of complementary therapy in cancer treatment, which is done alongside medical therapy. Music therapy has advantages as an intervention that can be applied as a simple, non-invasive, non-pharmacological relaxation stimulant that is safe, inexpensive, and effective. Based on this background, the authors are interested in reviewing journals related to "Effectiveness of Music Therapy Intervention on Pain Levels in Patients with Primary Brain Tumors: A Literature Review."

METHOD

This research was conducted according to the Preferred Items for System Literature Review and Meta-Analyses (PRISMA) statement guidelines (Page et al., 2021). These articles were searched in the SpringerLink, Proquest, Google Scholar, and Scopus databases using keywords and Boolean operators. Searches used AND, OR, and NOT to produce targeted search results. The inclusion criteria for journal articles in this scoping review are that they are accessible, full text, published in the last ten years (2012–2022), provide information about music therapy interventions in dealing with pain in brain tumors (patients with cancer), and are written in English. Exclusion criteria were (1) types of research such as reviews, protocols, systematic reviews, meta-analyses, case reports, opinion articles, or letters; and (2) no complete articles (e.g., abstracts, protocols). Initially, article titles and abstracts were filtered to exclude irrelevant articles. Next, the full text of the articles was reviewed, and the relevant articles were included in this systematic review. From the search results, 8238 articles were found. The articles are selected based on the title, abstract, and keywords. There were 12 processed articles after the authors manually filtered out two duplicates and two articles that only focused on tumors in general. Two articles were not included because research protocols must meet the inclusion criteria. So there were 12 articles considered suitable for inclusion in the final data set. The procedure used to select the included paper is shown in Figure 1. Study Selection

8238 articles were located in the search results. The articles are chosen according to their titles, abstracts, and keywords. After being manually filtered by the authors, there were two duplicate articles, two articles solely on tumors, and twelve processed articles. Two articles did not meet the inclusion criteria because they were research protocols. So that 12 articles were deemed appropriate for inclusion in the final data set. Figure 1 depicts the procedure used to select the included papers. Examine Selection

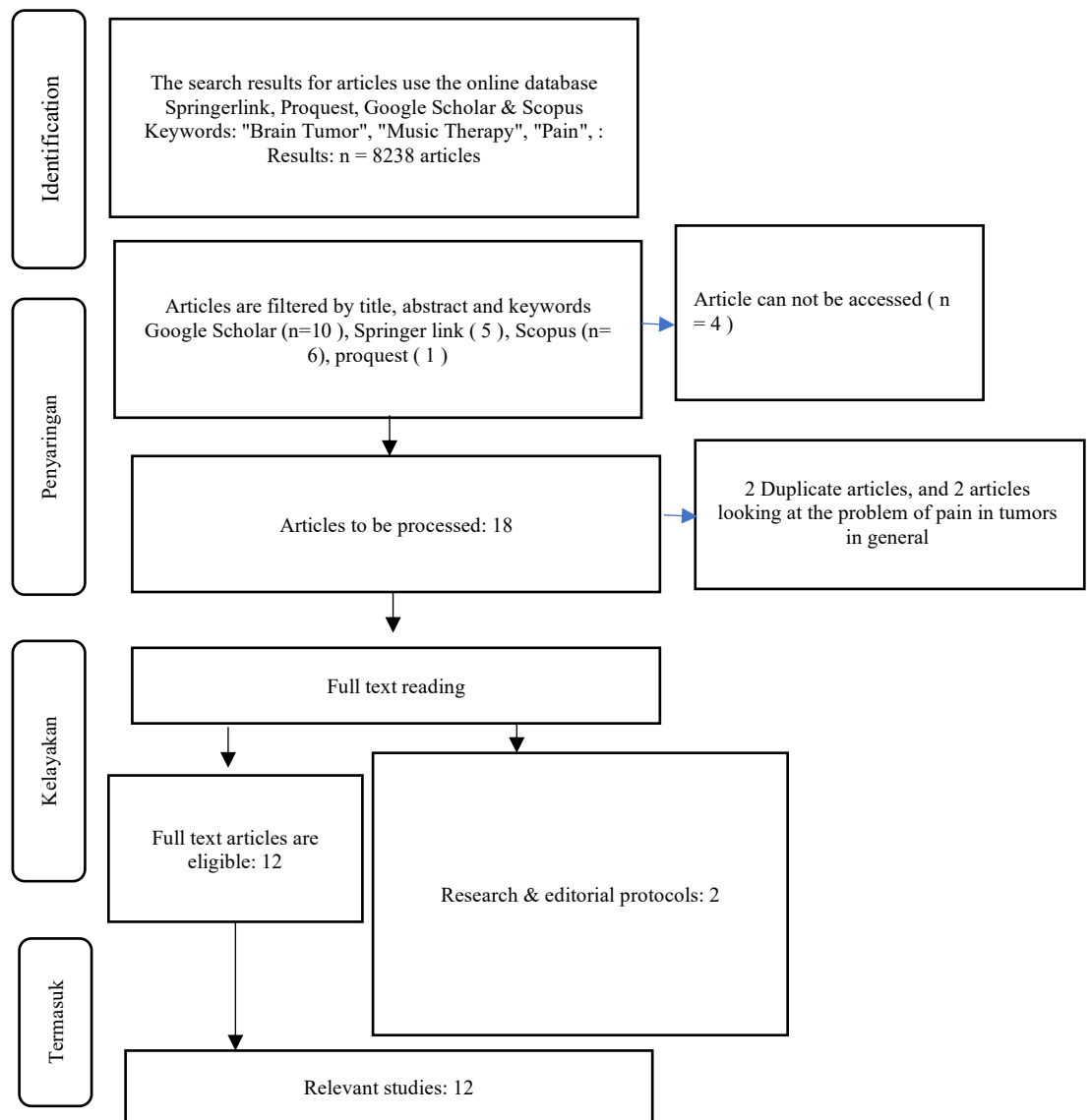


Figure 1. PRISMA Flowchart Study Selection (Page et al. , 2021)

NO.	Author, Year	Method	Intervention	Result
1	Terri S. Armstrong, PhD, et al, 2006	<i>prospective, cross-sectional, descriptive survey</i> The sample included 101 adult patients with primary brain tumors who presented to the neurooncology outpatient clinic of a comprehensive cancer center in the southwestern United States for an initial consultation.	Four tools were used to collect data: the demographic data tool, the Functional Assessment of Brain-Cancer Therapy (FACT-BR), the CAM therapy questionnaire, and the clinical information sheet. The demographic data tool describes the sample in terms of gender, ethnicity, age, education level, marital status, religious background, employment status, and income. These data are used to determine potential variables that may be associated with the use of QOL and CAM therapy. The FACT-BR subscale is designed in a self-report format, but can be done through interviews. The FACT-BR, developed by Cella et al., consists of 33 ordinal scales covering five subscales (social/family well-being, physical well-being, and relationships with doctors, emotional well-being, and functional well-being). Respondents were instructed	In conclusion, patients with brain tumors always use CAM therapy, with good social status, a person will use more than 1 CAM therapy. Broadly speaking, CAM therapy is used by patients with brain tumors

NO.	Author, Year	Method	Intervention	Result
			<p>to circle the number in response to the statement. Likerttype responses ranged from 0 (not at all) to 10 (a lot). Statements are worded both positively and negatively to facilitate reliable responses. The questions were written at the sixth grade reading level. Convergent and discriminant validity, divergent validity and internal consistency were all established in the initial studies. FACT-BR was established as a valid tool to measure QOL in patients with malignant brain tumors. In addition, the retest correlation coefficient for FACT-BR was high ($r=0.78$; $P<0.001$).</p> <p>The third instrument is the CAM therapy survey. Verhoef et al. developed this tool specifically for brain tumor patients due to lack of information in the field. Verhoef et al. piloting CAM therapy tools in a group of 20 patient volunteers to establish content validity, and to clarify item and sentence structure. It was found to be valid and reliable in the initial study. The fourth instrument, the clinical assessment tool, includes information on disease status (ie, improving, stable, recurrent) and treatment status (ie, first postoperative visit, first postradiotherapy visit, postchemotherapy visit, or routine follow-up visit). This was adopted from a tool developed by Verhoef et al. in their study of the use of CAM therapy in patients with brain tumors</p>	
2	Terri S. Armstrong, PhD, dan Mark R. Gilbert, MD Terri S. Armstrong, PhD, dan Mark R. Gilbert, MD, 2008	cross-sectional design 186 patients participating in the Glioma Outcomes Project. This study was limited to patients with grade IV glioma.	In one study exploring CAM use by cancer patients, 87% reported using some type of CAM [15]. Of these, 81% took vitamins, 54% used herbal products, 30% used relaxation techniques, and 10% used home remedies.	In patients with systemic cancer, mind-body modalities such as meditation and relaxation therapy have been shown to be helpful in reducing anxiety and pain; Acupuncture and hypnotherapy can also reduce pain and nausea. Evidence in patients with systemic cancer suggests that mind-body therapy may be beneficial in improving symptoms such as nausea and fatigue.
3	<i>Chiu H.Y.; Hsieh Y.J.; Tsai P.S, 2017</i>	Randomized controlled trials (RCTs) a total of 29 RCTs yielding 36 effect sizes were included.	Acupuncture involves inserting fine needles into designated anatomical locations, known as acupuncture points. Chinese meridian teachings identify 361 acupuncture points on the human body. Certain techniques may combine it with the application of heat, known as moxibustion, or the use of pressure. The insertion site is targeted for a specific therapeutic purpose. During a typical session, between 5 and 15 needles may be inserted, but most acupuncturists are	Acupuncture as pain therapy in the treatment of cancer, neck and back pain and functional dyspepsia. benefit from better designed experimental studies, larger cohorts, and a more objective way of measuring pain reduction and symptom improvement.

NO.	Author, Year	Method	Intervention	Result
			trained in up to 150 insertion sites on the human body. A variety of techniques and approaches exist in acupuncture – variations include pulses, herbal therapy, electrical stimulation, and the “microsystem” approach, which identifies a more focused target, Needling has been considered a variant of acupuncture that uses denser needles, is less invasive, and for some providers , easier to learn. Needles range in various metal compositions	
4	<i>Effect of Music Therapy on Pain and Anxiety Levels of Cancer : A Pilot Study</i> Author : Priyadharshini Krishnaswamy danShoba Nair (2016)t al., 2018	The population in this study consisted of 14 people, 7 people for the test group consisting of 5 women and 2 men and 7 people for the control group consisting of 3 women and 4 men. Inclusion criteria for selecting subjects were cancer patients who had agreed to the study. In addition, the patient had moderate to severe pain (numerical pain scale [NRS] rating of 4–10) and was administered morphine 3 hours before the intervention.	The nursing intervention given was listening to music for 20 minutes through headphones and connected to an mp3 music player. All subjects were made to listen to the same music. The music chosen is Veena and Flute music which is a combination of traditional Raga Anandabhairavi Indian music which is believed to have a therapeutic effect. After that, the patient was assessed for pain and anxiety scales using the NRS (Numerical Pain Rating Scale) and HAM (Hamilton Anxiety Rating Scale) scales. In the control group, they were given music therapy for 20 minutes and given the opportunity to talk with each other for 20 minutes.	It can be concluded that there is a reduction in pain post-intervention in the test group compared to the control group (P = 0.034). The reduction in anxiety levels in both groups after the intervention was not statistically significant. This can be seen in the value (P = 0.200).
5	Nuzul SriHertanti, Sri Setiyarini, dan Martina Sinta Kristanti(2015).	The population in this study were 46 people, divided into two groups, namely the SeLIMuT group (n=23) and the control group (n=23) Inclusion criteria: patients diagnosed with stage III and/or IV cancer by a doctor, experiencing mild to severe pain, aged 18 years and over, not hearing impaired, likes music, and willing to be involved in research	SeLIMuT therapy is a procedure for providing music therapy that is easy, inexpensive, and effective by listening to stable slow tempo music, low sound levels and soft dynamics, as well as consistent textures (voice and instrumental combinations). This therapy is given for 15-20 minutes and gives the patient the freedom to choose the music they like and combined with deep breathing, the SeLIMuT intervention is given four times over two days through an MP3 player and earphones. Intervention Blankets are given as complementary therapy after the respondent takes analgesic medication according to the doctor's dosage, approximately 1-2 hours after the pharmacological therapy hour. Each therapy session lasts 15-20 minutes. Before and after therapy, measurements of pain and deep breath for 1 minute. The control group did not receive any therapy.	The results of this study the SeLIMuT group, the pre-post pain difference score with the mean (SD) was 2.144 (0.91), the score post- pain score with the mean (SD) which is 1.16 (1.26) smaller than the pre- pain score, ie 3.30 (1.81). This means that there is a decrease in pain experienced by patients after receiving SeLIMuT
6	Samrika Barih dan Fatimah D`Silva (2017)	The population in this study consisted of 50 people with cancer aged 30-70 years, regardless of gender, and those with moderate to severe pain	The intervention given was that the treatment group was given music therapy for 15-20 minutes twice a day (morning and evening) for 5 days in one period. Pain was then assessed using the	The results of the study showed that there was a decrease in pain when the participants had music therapy interventions. This is evidenced by a

NO.	Author, Year	Method	Intervention	Result
		were selected using a purposive sampling technique. The control group consisted of 25 people.	NRS scale before and after the intervention for both groups for 5 days and quality of life was assessed with the McGill questionnaire on the 6th and 10th days after intervention. The control group did not receive any intervention.	statistical value of ($p < 0.05$) and for quality of life can improve the quality of life of cancer patients after music therapy intervention with value ($p < 0.05$)
7.	Kathy Jo Gutsell, RN, MT-BC, Mark Schluchter, PhD, Seunghee Margevicius, MA, MSN, Peter A. DeGolia, MD, Beth McLaughlin, MD, Marie Harris, MD, JD, Janice Mecklenburg, CNP, CHPN dan Clareen Wiencek, PhD, CNP, CHPN (2013).	The population in this study amounted to 200 people consisting of a control group and a treatment group. Each group numbered 100 people and consisted of 174 people with cancer and 26 people without cancer. Inclusion criteria were 1) a diagnosis of advanced disease potentially limiting life, 2) 18 years or older, 3) pain of three or greater measured on a zero to 10 numerical score scale (NRS), 4) unable to understand English, and 5) is alert and orientated to people and places and is able to rate pain on a numerical scale.	The intervention given was after obtaining the consent of the respondent. Patients were assessed using the NRS, FLACC and FPS questionnaires. If the participant's pain score was still three or more NRS, the researcher opened an envelope containing a serial number to divide patients into certain groups. If the patient experiences pain < 3 , then he will be excluded from the study respondents. The researcher told the patients To perform music therapy in the intervention group and then proceed with the intervention. After placing a "Do Not Disturb" sign on the door and preparing the patient and the environment (adjusting lights, blankets, turning off cell phones, etc.), the therapist will play a sea drum instrument and give the patient the choice of whether or not to listen to sea drum music, to incorporate it into the intervention because some patients express aversion to it and find that it hinders their ability to relax. The therapist then facilitates a single 20-minute music therapy intervention directed at decreasing pain. The intervention, for all participants, began with verbal instructions for autogenic relaxation. The music therapist asks the patient to pay attention to breathing for about one minute. The therapist then leads the patient in autogenic muscle relaxation by asking the patient to pay attention to the muscles of the scalp and allow them to release, and move downwards with the same focus on specific muscle groups, ending with the feet. Next, the patient is invited to imagine a safe place of his own choosing. The therapist asks the patient to imagine what he or she sees, smells, hears, feels, and feels on the skin and feels in a safe place. The music therapist then informs the patient that he or she will play the sea drums, if chosen, and then proceed with the harp. Respondents received the same piece of harp music. These harp music pieces were selected based on the therapist's clinical experience, in which patients	The results showed that there was a greater decrease in pain. changes in Face, Feet, Activity, Crying, scores Consolability did not differ between the treatment group and the control group

NO.	Author, Year	Method	Intervention	Result
			<p>described them as calming, peaceful, and relaxing. All of the pieces are played at a soft volume in a slow tempo and are described as follows: 1) improvisation in G Mixolydian mode with a duple meter, 2) four precomposed pieces in the key of C which can be described as "light classical music" and are not well known to most. great listeners: "Andante" by Waddington in duple meters,' 'Passing Bye' and 'Revery' by Grandjany in duple meters, and "Barcarolle" by Grandjany in triple meters. At the end of the music, the therapist gently invites the participant to leave the safe haven of their imagination and return to the hospital. Then the music therapist leaves the room and tells the same CNS to return to the patient to reassess the pain using the same three measures: NRS, FLACC Scale, and FPS. After completing the posttests, the therapist re-enters the patient's room to verbally process the music therapy intervention and offer follow-up care. Researchers gave each study participant an intervention CD for future use and provided a CD player upon request. Interested readers may contact investigators to request recordings of the intervention. The control group was given the same music therapy as the treatment group, but no relaxation therapy was given.</p>	
8.	<p>Author : Joke Brad & Noah Potvin & Amy Kesslick & Minjung Shim & Donna Radl & Emily Schriver & Edward J. Gracely & Lydia T. Komarnicky Kocher (2015).</p>	<p>The population of this study amounted to 31 people. Patients are eligible if they are currently receiving inpatient or outpatient care; proficient in English; and have no cognitive impairment, psychotic disorder, or hearing loss. The mean age was 53.8 years and 67.7% were female.</p>	<p>The music therapy provided are certified music therapists and each lasts 30 to 45 minutes. The goal of the session is to help the patient manage stress, mood, and pain and to provide psychosocial support. After a brief discussion of current issues, the music therapist offers music based on the patient's needs. He invites participants to play and/or play instruments (e.g., xylophone and small percussion instruments) along with familiar songs or improvise. These experiences are followed by additional songs, co-created instrumental or vocal improvisations, songwriting, or music-guided breathing exercises. The therapist provides many opportunities to verbally process the emotions and thoughts evoked by music. Meanwhile Music Treatment (Medical Music) At the beginning of the study, participants were asked to list their musical preferences on a demographic information sheet. Based on this information, we</p>	<p>The results showed that music improves symptom management, embodies hope for survival, and helps connect with self Prior to illness, but can also access memories of loss and trauma. In the qualitative data there are 8 themes consisting of symptom management (listening to music and improving pain, the patient's mood. The second theme is memory (music brings back memories), the third theme is hope for the future. The fourth theme is interpersonal connectivity (participants appreciate the presence of a music therapist who cares about they). The fifth theme is emotional expression and processing, the sixth theme is musical aesthetics, the 7th theme is participants' familiarity and comfort and the 8th theme</p>

NO.	Author, Year	Method	Intervention	Result
			<p>create individual playlists. The music therapist met with each participant at the start of the session to provide an iPod with the patient's playlist. The music therapist confirmed the patient was able to operate the iPod, but made no further assessment. Participants are asked not to engage in other activities while the music is playing. The music therapist then leaves. The session lasts 30-45 minutes. 31 respondents completed 2 sessions of music therapy and music therapy treatment for 2 weeks. In this study compared music therapy interventions and music interventions with medication. in two groups each with music therapy intervention with music and medication.</p>	<p>listen to music in solitude. Music therapy sessions help participants feel joy and creativity. Interactive music creation also allows for emotional expression. Some participants preferred familiarity and ability predictive listening to pre-recorded music.</p>
9.	<p>Kathy Jo Gutsell, RN, MT-BC, Mark Schluchter, PhD, Seunghee Margevicius, MA, MSN, Peter A. DeGolia, MD, Beth McLaughlin, MD, Marie Harris, MD, JD, Janice Mecklenburg, CNP, CHPN dan Clareen Wiencek, PhD, CNP, CHPN. (2013)</p>	<p>A Randomized Controlled Trial using the population in this study amounted to 200 people consisting of a control group and a treatment group. Each group numbered 100 people and consisted of 174 people with cancer and 26 people without cancer. Inclusion criteria were 1) a diagnosis of advanced disease potentially limiting life, 2) 18 years or older, 3) pain of three or greater as measured on a zero to 10 numerical score scale (NRS), 4) unable to understand English, and 5) is alert and orientated to people and places and is able to rate pain on a numerical scale.</p> <p>- The control group was given the same music therapy as the treatment group, but was not given autogenic relaxation therapy which is an integral part of music therapy.</p> <p>was seen in the music therapy group (mean difference [95% CI] 1.4 [! 2.0, ! 0.8]; P < 0.0001). Mean change in Face, Feet, Activity, Crying, Consolability scores did not differ between the treatment and control groups (mean difference 0.3, [95% CI] 0.8, 0.1; P > 0.05)</p>	<p>The intervention given was after obtaining the consent of the respondent. Patients were assessed using the NRS, FLACC and FPS questionnaires. If the participant's pain score was still three or more NRS, the researcher opened an envelope containing a serial number to divide patients into certain groups. If the patient experiences pain <3, then he will be excluded from the research respondents. The researcher told the patients To perform music therapy in the intervention group and then proceed with the intervention. After placing a "Do Not Disturb" sign on the door and preparing the patient and the environment (adjusting lights, blankets, turning off cell phones, and so on), the therapist will play a sea drum instrument and give the patient the choice of whether or not to listen to sea drum music, to incorporate it into the intervention because some patients express an aversion to it and find that it inhibits their ability to relax. The therapist then facilitated a single 20-minute music therapy intervention directed at decreasing pain. The intervention, for all participants, began with verbal instructions for autogenic relaxation. The music therapist asks the patient to pay attention to breathing for about one minute. The therapist then leads the patient in autogenic muscle relaxation by asking the patient to pay attention to the muscles of the scalp and allow them to release, and move downwards with the same focus on specific muscle groups, ending with the feet. Next, the patient is invited to imagine a safe place of his own choosing. The therapist asks the patient to imagine what he or she sees, smells, hears, feels, and feels on the skin and feels in a safe place. The</p>	<p>The results showed that there was a greater decrease in pain in the treatment group compared to the control group</p>

NO.	Author, Year	Method	Intervention	Result
			<p>music therapist then informs the patient that he or she will play the sea drums, if chosen, and then proceed with the harp. Respondents received the same piece of harp music. These harp music pieces were selected based on the therapist's clinical experience, in which patients described them as calming, peaceful, and relaxing. All of the pieces are played at a soft volume in a slow tempo and are described as follows: 1) improvisation in G Mixolydian mode with a duple meter, 2) four precomposed pieces in the key of C which can be described as "light classical music" and are not well known to most. great listeners: "Andante" by Waddington in duple metres, 'Passing Bye' and 'Revery' by Grandjany in duple metres, and "Barcarolle" by Grandjany in triple metres. At the end of the music, the therapist gently invites the participant to leave the safe haven of their imagination and return to the hospital. Then the music therapist leaves the room and alerts the same CNS to return to the patient to reassess the pain using the same three metrics: NRS, FLACC Scale, and FPS. After completing the posttests, the therapist re-enters the patient's room to verbally process the music therapy intervention and offer follow-up care. Researchers gave each study participant an intervention CD for future use and provided a CD player upon request. Interested readers may contact investigators to request recordings of the intervention.</p>	
10	Seema Vinayak, Farnaz Dehkhoda dan RohinVinayak(2017).	<p>purposive sampling The population in this study were patients who had blood cancer for at least six months or were undergoing chemotherapy and radiation therapy and were hospitalized. Samples were taken from all patients, meeting the inclusion criteria, who were treated for blood cancer by chemotherapy or radiation therapy at a hospital in the city of Gorgan of Iran. 180 adult blood cancer patients (equally male and female) receiving chemotherapy or radiation therapy were selected by purposive sampling and randomly assigned to three groups viz. two intervention groups (ie active or</p>	<p>The nursing intervention given to the intervention group received 20 sessions of active or receptive music therapy with 15-30 minute sessions each. The type of music in receptive music therapy is pop music that is liked by patients and the instrument used in active music therapy is guitar. After that the participants were given a McGill pain analogue scale questionnaire. Scores were obtained before and after music therapy.</p>	<p>The results showed that both types of music therapy had a significant impact on pain among cancer patients because there was a significant change from pre-test scores to post-test scores in both the music intervention groups. Using multiple post-hoc Bonferroni test comparisons, the difference was statistically significant ($p < 0.01$). Active music therapy was most effective compared to receptive music therapy.</p>

NO.	Author, Year	Method	Intervention	Result
		receptive music therapy) and a control group. The participants were in the age range of 20 to 40 years having received chemotherapy or radiotherapy for at least six months, were not suffering from chronic psychological disorders and were interested in music. The control group only received routine medical treatment in the form of chemotherapy and radiotherapy. participants were given a questionnaire McGill pain analogue scale. Scores were obtained before and after music therapy.		
11.	AmiaRosandi Suwardi , Desi Ariyana Rahayu, Jurnal Keperawatan Jiwa Volume 7 No 1, Hal 27 - 32, Mei 2019	Quasi-experimental design. Using the three group pre and post test design with design controls. The population in this study were cancer patients who experienced pain. A sample of 75 respondents used a purposive sampling technique, which consisted of the intervention group and the control group. Data analysis using Kruskal Wallis and Wilcoxon. The results showed that the average pain level in the intervention group after being given murottal therapy was 13.00. This shows a decrease in pain levels after being given murottal therapy, a decrease in pain levels after being given murottal therapy	A sample of 75 respondents used a purposive sampling technique, which consisted of the intervention group and the control group. Data analysis using Kruskal Wallis and Wilcoxon. The results showed that the average pain level in the intervention group after being given murottal therapy was 13.00. This shows a decrease in pain levels after being given murottal therapy	There is an effect of giving murottal therapy on reducing pain levels in cancer patients at the Sultan Agung Islamic Hospital in Semarang with a p value = 0.000 (p-value <0.05)
12.	Khanh T. Nguyen ¹ Jinnan Xiao ² Dorothy N. S. Chan ¹ Mengyue Zhang ¹ Carmen W. H. Chan	Design penelitian yang digunakan adalah <i>identify eligible randomized controlled trials (RCTs)</i> Two reviewers independently assessed eligibility, extracted data, and evaluated methodological quality. Meta-analysis was done. Subgroup analysis was conducted for intervention types, the person selecting music, music delivery method, timing, and session duration. Results Nine RCTs were identified, among which six were	The findings showed no significant difference between the patient's choice of music and the researcher's choice of music, recorded music, and live music, while duration of 15-20 minutes/session and given immediately before chemotherapy was more effective on anxiety than 30-45 minutes and given during chemotherapy.	that music intervention can reduce anxiety however, has no effect on depression (p=0.79).

NO.	Author, Year	Method	Intervention	Result
		eligible for the meta-analysis. All studies were at a high risk of bias, and the overall quality of evidence was low to very low Music intervention may be a beneficial tool for anxiety reduction and QoL among cancer patients receiving chemotherapy.		

RESULT DAN DISCUSSION

A total of 12 research articles were reviewed in this scoping review. The research studied came from within and outside the country, including the United States, the city of Gorgan in Iran, and Yogyakarta. Music therapy is part of complementary therapy for effectively managing pain in tumors. In patients with cancer, music therapy can relax patients and has been shown to help reduce anxiety and pain; Acupuncture and hypnotherapy can also reduce pain and nausea. The results of the SeLIMuT study showed a more significant reduction in pain. The decrease in pain marked by changes in the Face, Legs, Activity, Crying, and Controllability scores did not differ between the treatment group and the control group. The results showed that music improves symptom management, embodies hope for survival and helps connect with self before illness, but it can also access memory loss and trauma. In the qualitative data, there are eight themes: symptom management (listening to music and improving pain and the patient's mood. The second theme is memory (music brings back memories); the third is hope for the future. The fourth theme is interpersonal connectivity (participants value the presence of music therapists who care about them). The fifth theme is emotional expression and processing; the sixth theme is the aesthetics of music. The seventh theme is participants' familiarity and comfort, and the eighth theme is listening to music in solitude. Music therapy sessions help participants feel joy and reactivity. Making interactive music also allowed for emotional expression. Some participants preferred the familiarity and predictability of listening to pre-recorded music. Some of these music therapy studies have given 15-20 minutes 2x a day (morning and evening) for five days in 1 period and give patients the freedom to choose the music they like and combine it with deep breathing techniques and muscle relaxation. The patient is invited to imagine a comfortable, beautiful place he has chosen. Then ask the patient to imagine what he saw, smelled, heard, and felt in the place he imagined. As healthy music therapy, there were given 4x for two days through MP3 players and earphones and given music therapy after the respondent took analgesic medication according to the dose from the doctor, with a time of 1-2 hours after the pharmacological therapy was taken, then music therapy was started. Another study of music therapy was given for 15-20 minutes. Before and after therapy, pain measurements were taken and then assessed using the NRS scale before and after intervention and deep breathing for 1 minute. The session's goal is to help the patient manage stress, mood, and pain and provide psychosocial support. Music therapy significantly impacted pain among cancer patients because there was a significant change from pre-test to post-test scores in both the music intervention groups. The difference was statistically significant using multiple posthoc Bonferroni test comparisons ($p < 0.01$). Active music therapy was most effective compared to receptive music therapy. Music therapy includes giving marital therapy to reduce pain levels in cancer patients at the Sultan Agung Islamic Hospital in Semarang with a $p = 0.000$ ($p\text{-value} < 0.05$), that music intervention can reduce anxiety. However, it does not affect depression ($p = 0,79$). This means that patients experience a decrease in pain after receiving music therapy. Patients with brain tumours always use CAM therapy; with good social status, a person will use more than 1 CAM therapy. Brain tumour patients use CAM therapy.

This literature review aims to assess the effectiveness of music therapy in reducing pain in patients with brain tumours.

Pain Manifestations in Brain Tumors

The most common symptoms of brain tumours are headache, seizures or epilepsy, and focal neurological deficits. Other symptoms that arise can be symptoms of hemianopsia and homonymous hemianopia, aphasia and dysphasia when it affects the dominant lobe, impaired sensory and motor function, balance disorders, and can even cause respiratory problems if the tumour is pressing on the medulla oblongata. Untreated pain will impact shock, fear, anxiety, feelings of grief, anger, sadness and withdrawal, anxiety, depression, helplessness, hopelessness, desire to end life, and fear in patients and their families. Feelings of anxiety occur because of fear of the impact that may occur, for example, changes in body image and death. Brain tumours also cause visual disturbances due to the location of the brain tumour itself or due to increased intracranial pressure. 80-90% of pain can be managed with proper cancer pain management by WHO guidelines, such as using medication appropriately, providing relaxation and distraction therapy, and classical music therapy, which several experts have researched.

Complementary Therapy In Pain

Music therapy is part of complementary therapy in cancer treatment which is side by side with medical therapy. Music therapy has advantages as an intervention that can be applied in a simple, non-invasive, non-pharmacological relaxation stimulant that is safe, inexpensive, and effective. Giving music therapy is non-pharmacological management which is research-wise able to reduce pain intensity. Music therapy is one of several nursing actions recommended in the Nursing Intervention Classification (NIC) for non-pharmacological pain management. Music therapy aims to reduce pain, express feelings, increase self-confidence, reduce fear, reduce anxiety and stress, increase independence and communication, and eliminate sadness and depression, as well as provide an increase or improvement in physical, emotional, cognitive, and social health for someone who listens to it. Music can reduce the activity of sympathetic neurons, blood pressure, pulse and respiration and positively affect muscle relaxation and mental distraction.

Music Therapy on Brain Tumor Pain

The procedure for administering music therapy is easy, inexpensive, and effective by listening to stable slow-tempo music, low sound levels and soft dynamics, and consistent textures (combination of sound and instrumental). Listening to music can also reduce sympathetic nervous system stimulation. Responses from decreased activity are decreased heart rate, respiratory rate, metabolic rate, decreased oxygen consumption, decreased muscle tension, decreased epinephrine secretion levels, decreased stomach acid, increased motility, decreased sweat gland work, and decreased blood pressure. According to Priyadharshini, the results of research on brain tumour patients to reduce pain are listening to music for 20 minutes through headphones and connected to an mp3 music player. All subjects were made to listen to the same music. The music chosen is Veena and Flute music, a combination of traditional Raga Anandabhairavi Indian music, which is believed to have a therapeutic effect. After that, the patient was assessed for pain and anxiety scales using the NRS (Numerical et al.) and HAM (Hamilton et al.)

The choice of the type of music that is most often used as music therapy is classical music and instrumental music. Classical music positively affects psychological aspects such as feeling relaxed, calming, relaxing and reducing stress. Classical music can activate the right side of the brain, which is related to creativity, and can make one's mind calmer. The left brain can also be activated by this classical music, where the left brain is closely related to the formation of a child's intelligence. Instrumental music is shooting music or caressing music, which can create a feeling of comfort and calm. Instrumental music can evoke positive feelings. This type of instrumental music tends to awaken someone to dare to explore (Yunus et al. R, 2019). The most widely applied music therapy technique is passive music therapy, in which the patient listens to recorded music through an MP3 player with headphones, earphones or speakers. Passively listening to music is cheaper, easier and more effective. Patients are expected to live and listen carefully to music adapted to the conditions of their health problems. The important thing that must be considered in passive music therapy is choosing the right type of music according to the patient's needs. Music that is capable of relaxation must have a tempo similar to or below a person's pulse at rest (72 beats per minute or less), predictable

musical dynamics, a melody that moves like water, pleasant harmonies, rhythmic regularity and quality tones from stringed instruments, piano, flute or music combined specifically. A music therapist (facilitator) can be absent when giving music therapy; assistance may be needed when starting it. Determining the type of music to be used as therapy, the facilitator can provide choices and try to play various types of music to the patient. Several studies have shown how music therapy helps reduce pain in patients with invasive procedures. Music therapy with a tempo of 60-80 bpm with duration during invasive procedures (15-30 minutes) significantly affects pain intensity. The mechanism of music therapy can affect reducing pain intensity, which can be explained as follows; Music that is heard will cause stimulation for the release of endorphins produced from the pituitary gland, which is a type of natural opiate in the body that is useful for reducing pain intensity, affecting memory and mood. In addition, reduced excretion of catecholamines from the adrenal medulla can reduce pulse rate, blood pressure, free fatty acids, and oxygen consumption. Decreased catecholamines will reduce levels of adrenal corticosteroids, adrenocorticotrophic hormone and corticotrophin-releasing hormone produced during stress.

Music does have effects such as distraction, relaxation, familiarity, and endorphin release. Distraction effect because the patient can divert attention to other things, and his attention is not focused on the pain. The relaxation effect can provide a calming effect. The familiarity effect the patient can feel more comfortable. The endorphin release effect can stimulate the brain to secrete endorphins (Greer, S, 2017). This study proves that blanket intervention affects the pain level of palliative cancer patients. The effectiveness of blankets against nuzul Sri Hertanti, Sri Setiyarini, Martina Sinta Kristanti Indonesian Journal of Cancer vol. 9, no. 4 October - December 2015 reduction of pain in palliative cancer patients is supported by previous research related to the effect of music on cancer pain that has been conducted by Huang et al., Cholburi et al., Beck, and Zimmerman et al. 3,(2014). This research proves that music is effective in reducing tumour or cancer pain. Cepeda et al.'s study also proved the same result and stated that music selection can affect pain reduction. (Cepeda, MS. 2016). Preferred music can effectively divert the respondent's attention to the music's harmony, rhythm, and dynamics because the music chosen is well-known and has an emotional attachment to the patient (Mitchell, LA, 2016).

CONCLUSION

Several studies in this literature review illustrate that music therapy effectively reduces pain in patients with primary brain tumours. Based on research results, music therapy is an effective and safe method for reducing pain and increasing patient comfort. Music therapy is a cheap, simple, non-invasive, and non-pharmacological method with no side effects; it can be used as an adjunct for analgesics and relaxation—the effectiveness of Music Therapy in reducing pain in palliative cancer patients and brain tumours. Nurses are expected to be able to provide music therapy to palliative cancer patients with pain during recess and before going to bed at night, as well as educate patients and their families about music therapy so they can carry out this therapy independently at home. The lack of matching in the selection of research samples is a weakness in this study, so future researchers are expected to be able to conduct research examining the effect of music therapy on each level of pain and the location of brain tumours.

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