Implementation of Mozart Classical Music Therapy for Pain in Post-Op Tibia Fracture Patients "Literature Review"

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Article Info	Abstract
	Tibial fracture is a condition where the continuity of the bone is broken due to direct or indirect trauma. Tibial fractures are one of the most common types of lower extremity fractures throughout the world. Therefore, appropriate management strategies are needed to reduce the incidence of tibia fractures and the impacts they can cause. To determine the effect of implementing Mozart classical music therapy on pain in post-op patients with tibia fractures. Descriptive analytical literature review design. Data was obtained through article search results using two electronic databases, namely Google Scholar and Garuda Portal, 167 articles were identified with a total sample size of 79 respondents. Analysis uses a map of extracted data in a grid synthesis table including author, year of publication, country, aim, sample, design, duration, results and research conclusions. This research shows that Mozart classical music therapy has been proven to have a significant effect on reducing pain in post-op patients with tibia fractures. Based on this literature review, it can be concluded that Mozart classical music therapy has proven effective in reducing pain in post-op patients with tibia fractures.

Introduction

Fractures are a health problem that often arises and is one of the cases in health facilities throughout the world (Arif & Sari, 2019). Fracture is a condition that causes sufferers to experience pain and limited mobility (Transyah et al., 2021). Fractures can occur in various age groups and are generally caused by traffic accidents with the number of fractures globally estimated at 2.9 million people (Mayenti & Sari, 2020).

Based on data from the World Health Organization (WHO) in 2019, the incidence of fractures has increased, where in 2017 the number of fracture sufferers recorded was around 15 million people with a presentation of 3.2%. In 2018, the number of fractures was around 20 million people with a presentation of 4.2%, and increased to 21 million people due to traffic accidents in 2019 with an incidence rate of 3.8% (Anggraini & Suryani, 2022). In the United States the number of fracture cases recorded in 2001 was ≥640,000 cases (Yadnya & Wijaya, 2022). Meanwhile, the incidence of fractures in Indonesia is quite high, where in 2018 it was recorded that around 8 million people suffered from fractures, of which 36.9% were upper extremity fractures, 65.3% were lower extremity fractures, and 11% were tibia and fibula fractures. . This is quoted from data from the Department of Health of the Republic of Indonesia (DepKes RI) (Sandra et al., 2020). Meanwhile in 2014 in South Sulawesi, the Health Service reported that

there were around 9,354 outpatient fracture cases and around 3,842 inpatient cases in 44 hospitals in the districts and cities of South Sulawesi (Wange & Arniyanti, 2021).

Fractures with a high incidence every year require appropriate treatment, one of which is surgery (Sandra et al., 2020). Surgery or surgery is a form of treatment carried out through an invasive procedure by making an incision in the part of the body to be treated. The part of the body to be treated is then opened with corrective action and closed again with stitches. Every surgical procedure performed can result in several common problems, including discomfort for the patient and tissue trauma that causes pain (Arianti et al., 2020).

Pain is a sensory or emotional experience related to actual or functional tissue damage. The pain experienced by fracture patients is sharp, stabbing pain (Risnah et al., 2019). Apart from that, pain is also a common nursing problem in fracture patients. Almost all surgical patients experience pain, and 80% report severe pain. Surgery will be performed on every patient who has a broken bone followed by administering painkillers to reduce pain during the procedure. When the analgesic no longer works, the patient will complain of pain again, this is proven by the large number of patients who still report pain even though they have been given painkillers (Firdaus, 2020). Therefore, the right approach is needed to deal with pain.

Broadly speaking, pain management approaches are grouped into two categories, namely pharmacological treatment and non-pharmacological treatment. Pharmacological treatment is the use of pharmacological substances or drugs, such as opioid analgesics, to reduce the pain response (Novita, 2020). Opioid analgesic drugs are made from opium plants such as morphine which functions as a pain reliever by binding to opioid receptors in body cells (Pujianto & Zainuddin, 2019). In general, pharmacological pain management is more successful than non-pharmacological approaches. However, pharmacological approaches have a higher price and can cause side effects (Sunarsih & Ernawati, 2017) such as itching, diaphoresis, redness of the skin, dry mouth, nausea and vomiting, indigestion, constipation, and headaches (Ikatan Pharmacist, 2019). On the other hand, non-pharmacological techniques are cheaper, easier to use, more efficient, and free of side effects (Sunarsih & Ernawati, 2017). Among the non-pharmacological approaches that can be given are relaxation and distraction techniques.

Distraction is a situation where the patient's focus is diverted to something else, so that the patient's awareness of the pain they feel can be reduced. The distraction technique most often used in the healing process includes Mozart music therapy (Arif & Sari, 2019). Mozart's music has high artistic value because of its simplicity and purity. In addition, the tones and melodies in Mozart's music with high frequencies are able to stimulate the brain (Kusumawati, 2018). When music is listened to, the body will produce morphine-like molecules which the body uses to block the transmission of pain impulses in the central nervous system, thereby reducing the perception of pain. Music also works on the limbic system which will be transmitted to the nervous system to regulate the contractions of the body's muscles. Music has been shown to have physiological impacts such as lowering blood pressure, reducing anxiety and depression, and slowing heart rate. According to various studies from dental practices in Europe, music therapy has been proven to help reduce pain (Novita, 2020).

Based on research conducted in the hospital operating room. Dr Reksodiwiryo Padang, in 37 post-op patients with tibia fractures, the univariate (pretest) results were 7 and (posttest) 5, bivariate using the Wilcoxon test obtained a Z value = - 3.552a (p <0.05) and an Asym value. Sig (2-Tailed) = 0.001 (p<0.05), this shows that there is an influence of classical music therapy on the level of pain in post-op fracture patients (Sandra et al., 2020). Other research was also carried out at the hospital. Dr Achmad Mocthar Bukittinggi on 15 post op tibial fracture patients. The results of analysis using the Wilcoxon test obtained a p value of 0.0001, which means that Mozart music therapy is effective in reducing pain intensity in post-operative fracture patients (Arif & Sari, 2019). Based on the background above, this literature review

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was carried out to identify a number of research evidences, so as to provide a summary of evidence regarding whether Mozart's classical music has an effect on pain in post-op patients with tibial fractures.

Methods

This research uses a literature review research design. Inclusion criteria included in this review include: 1) all studies that used samples of post-op fracture patients who experienced impaired pain comfort; has full text; 2) speak English and Indonesian; 3) research conducted in all countries; 4) all research designs that are in accordance with the research objectives, both qualitative and quantitative; and 5) published by national and international databases. The data source in this review was obtained through search results for articles regarding Mozart classical music on pain in post-op patients with tibia fractures, using two types of electronic databases, namely Google Scholar and the Garuda Portal. In the Google Shcolar database, keyword 1 "Mozart Classical Music" was entered and 4,390 articles were found. Keyword 2 "Post op fracture pain" was found in 45.20 articles. Keyword 3 "Tibial fracture" was found in 15,600 articles. Keyword 4 was combined with keywords 1, 2 and 3, namely "Mozart classical music AND Pain AND Tibial fracture" and 166 articles were found. After searching for articles, limiting the number of articles to LIMIT publication dates (2017-2023) resulted in 127 articles, excluding 47 articles that did not have full text, 29 duplicate articles, resulting in 43 articles. Furthermore, the exclusions that did not match the research results were 40 articles, the remaining 3 articles were the main references in preparing this research.

In the Garuda Portal database by entering keyword 1 "Mozart Classical Music" 49 articles were found. Keyword 2 "Post op fracture pain" found 47 articles. Keyword 3 "Tibial fracture" found 20 articles. Keyword 4 was combined with keywords 1, 2 and 3, namely "Mozart classical music AND Pain AND Tibial fracture" 2 articles were found. After searching for articles, limiting the number of articles to LIMIT publication dates (2017-2023) resulted in 2 articles. LIMIT relevance found 1 article.

Results and Discussion

Based on the results of the search and selection of articles, 3 (three) studies were found that were in accordance with the research objectives regarding Mozart classical music therapy for pain in post-op patients with tibia fractures using a literature review approach. Two studies used a Quasy Experiment design study (Mayenti & Sari, 2020); (Firdaus, 2020), one study used Pre Experimenta Design (Arif & Sari, 2019).

No	Author & Year	Purpose	Sample	Design	Duration	Result	Conclusion
1.	(Mayenti & Sari, 2020)	To assess the effect of Mozart's classical music in reducing fracture pain	30 respond	Quasy Experiment design	10 Days	The results showed that from 30 respondents, with accidental sampling techniques. The study was analyzed univariately and bivariately with the Wilcoxon test and the Whitney Man Test. Testing to	The average degree of pain in the experimental group before treatment was 6.71 and after treatment was 2.66. While the average pain in the control

No.							group before was 6.35 with a value in the post control group of 6.48
						reduce the degree of fracture pain in the control and experimental groups obtained the mean value of pre experiment 6.71, post experiment 2.66, pre control value 6.35 and post control 6.48 with ρ value 0.001, meaning that there is an effect of giving classical Mozart music on fracture pain.	
2.	(Firdaus, 2020)	To determine the Effectiveness of Mozart's Music Therapy on Reducing the Intensity of Pain in Postoperative Fracture Patients	30 respond	Quasy Experiment design	10 days	The results showed that there were 30 respondents divided into 2 experimental groups with 15 people and controls with 15 people carried out an Independent T Test intervention with data analysis using the Mann Whitney test obtained a control group value with a P value of 0.129 greater than the alpha value (p > 0.05) while in the experimental group with a P value of 0.001 smaller than the alpha value (p < 0.05) so that it can be	There is an effect of giving mozart classical music therapy to reduce pain in postoperative patients in the Dahlia Room of Arifin Achmad Hospital Pekanbaru with P values of 0.001 < 0.05.

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3.	(Arif & Sari, 2019)	To determine the Effectiveness of Mozart's Music Therapy on Reducing the Intensity of Pain in Postoperative Fracture Patients	15 respond	Pre Experimenta Design	6 months	concluded that there is a significant difference between the groups Control and experimentation after treatment	
						The results showed that from 15 respondents tested through non-parametric statistical test analysis using Wilcoxon with a confidence level of 95% (α = 0.05) obtained a p value of 0.001, thus p value> α (0.001>0.05). So it can be concluded that Mozart's music therapy is effective in reducing the pain intensity of postoperative fracture patients.	After research was carried out on From March to September 2018 with 15 respondents, it can be concluded that Mozart therapy is effective in reducing the pain intensity of postoperative fracture patients.

The results of the case study are presented as follows:

The results of research (Mayenti & Sari, 2020) reported that from 30 respondents, the degree of fracture pain in the control and experimental groups showed a mean value of pre-experiment 6.71, post-experiment 2.66, pre-control value 6.35 and post control 6.48 with a ρ value of 0.001, meaning there was an influence of music. Mozart's classic for fracture pain. This happens because by listening to music the body can produce endorphins which can inhibit the transmission of pain impulses in the central nervous system, so that the sensation of pain can be reduced. These findings are in line with previous research which reported that there were differences in pain scale results before and after implementing Mozart classical music therapy in post-operative patients (Novita, 2020).

The second research was conducted by (Firdaus, 2020) who obtained the average pain intensity results by data analysis using the Mann Whitney test. The control group had a P value of 0.129 which was greater than the alpha value (p>0.05) while the experimental group had a P value of 0.001. smaller than the alpha value (p<0.05). This means that providing Mozart classical music therapy has an effect on reducing pain in post-operative patients. Reducing pain using music is very effective because music can divert attention and anxiety which can increase the intensity of pain felt by the patient. By listening to music the brain stimulates the release of endoprins

which function to reduce the pain felt in the affected part of the body. The results of this study correlate with previous findings which reported that the average pain intensity before being given Mozart classical music therapy was a pain scale of 7 (severe) and decreased to a pain scale of 3 (light) after listening to music with objective data. The patient looked calmer and relax (Ephilia & Wirawati, 2023).

Further research was carried out by (Arif & Sari, 2019) who stated that from 15 respondents who were tested through non-parametric statistical test analysis using Wilcoxon with a confidence level of 95% ($\alpha = 0.05$), the p value was 0.001, thus p value$> \alpha$ (0.001>0.05). So it can be concluded that Mozart music therapy is effective in reducing the pain intensity of post-operative fracture patients. This happens because music can divert the patient's concentration on pleasant things. Apart from that, the effect of listening to music can also reduce unpleasant thoughts in patients, therefore music has been recognized as a non-pharmacological treatment by medical personnel (Sandra et al., 2020). These results are in line with previous research which stated that one of the classical music that is widely used in research is classical music by Mozart. This classical music by Mozart, apart from stimulating intelligence and stimulating right brain performance, also stimulates neural plasticity. Mozart's classical music also has a musical structure that matches human brain cell patterns (Transyah et al., 2021).

Conclusion

Three articles were identified in this review, where one study reported the degree of fracture pain in the control and experimental groups, the mean pre-experimental value was 6.71 and post-experimental 2.66, the pre-control value was 6.35 and the post-control value was 6.48. One study found that the control group had a P value of $0.129 \geq$ the alpha value (p$>$ 0.05), while the experimental group had a P value of $0.001 \leq$ the alpha value (p $<$ 0.05), and in another study the p value was 0.001. . This research shows that Mozart classical music therapy is proven to have a significant effect on pain intensity before and after intervention in the experimental group. This can be seen from the condition of the patients before and after the intervention in the experimental group, where after being given Mozart classical music therapy, the patients looked calmer and more relaxed.

Suggestions

It is hoped that Mozart's classical music therapy can be used as an alternative material as a non-pharmacological effort that is useful for reducing pain intensity in post-op patients with tibia fractures.

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