# Music Therapy to Reduce Pain Intensity in Post Fracture Surgery Patients : Systematic Review 

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#### Abstract

Introduction: Fracture is a loss of continuity of bone, either total or partial, is usually caused by trauma, which is characterized by a history of trauma fracture, pain and swelling in the broken bones, deformity, musculoskeletal dysfunction, breaking the continuity of the bone, and neurovascular disorders. Purpose: The purpose of this study is to identify the effectiveness of music therapy in reducing pain scale on postoperative patients with fracture so it can be added to the understanding of nursing in caring for patient with postoperative fracture pain. Method: This systematic review was carried out according to the PICO model. Keywords in the search for evidence based in this literature review include: "pain scale", "music therapy", "postoperative", "fracture". Database searches or databases were carried out in December 2022 using Google Scholar, PubMed, Neliti, and Genius. Result: Music therapy applied to the patient with postoperative fracture can reduce the pain scale level. Discussion: One of the treatments from the nursing field that can help reduce pain scale level in patients with postoperative fracture pain is music therapy. Conclusion: Based on the analysis that has been done by the author, it can be concluded that music therapy helps to reduce the pain in postoperative fracture by the activation of brain stem reticulum because a signal to inhibit pain is sent to the spinal cord, and this causes the gateway to close.


Keywords: pain scale, music therapy, postoperative, fracture
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## INTRODUCTION

Fracture is a bone discontinuity that can be caused by trauma and non-trauma. This is based on the opinion of experts such as Smeltzer and Bare (2012), fracture is a break in bone continuity and is determined according to its type. Fractures occur when bone is subjected to stress greater than it can absorb. The National Center for Health Statistics (NCHS) conducted research and stated that in the United States within one year there were 1.3 million fracture patients receiving treatment in hospitals and nearly 7000 patients died (Michelle, 2010). In Fitra and Yusnita's research (2021), fractures were the most common occurrence at Arifin Achmad Hospital in the Dahlia Room. Data were obtained from the Medical Record (RM) for the last three years, fractures occurred in 2014 as many as 303 incidents, in 2015 there were 208 incidents and in

2016 during 4 months from January to April as many as 114 incidents. Every fracture will always undergo surgery followed by administration of analgesics to reduce pain during the surgical process. When the analgesic working period is over, the patient will complain of pain. This is evidenced by the fact that many patients still complain of pain even though they have received analgesic therapy (Darsono, 2011). The pain felt by patients with these complaints is actually normal because the body is injured and the healing process is not perfect. Significantly pain can slow recovery (Potter \& Perry, 2006). Broadly speaking, there are two management methods for dealing with pain, namely pharmacological management and
non-pharmacological management. Pharmacological management that is commonly used is opioid analgesics, the
purpose of giving opioids is to relieve pain (Smeltzer \& Bare, 2003). Nonpharmacological management for dealing with pain consists of various physical handling measures including skin stimulation, skin nerve electrical stimulation, acupuncture (Tamsuri, 2007). Distraction is an act of diverting attention to other things besides pain so that the patient does not focus too much on pain (Andarmoyo, 2013). Music distraction can distract from pain so that a person feels relaxed (Marmi, 2012 in Fitra and Yustina, 2021). One of the non-pharmacological actions is by giving music therapy which can reduce physiological pain, by diverting one's attention from pain. Music that suits an individual's mood from the start is the best choice (Potter \& Perry, 2006). Classical music therapy can stimulate the body to release endogenous opoids, namely endorphins and enkephalins which have morphine-like properties, namely to reduce pain (Huges, 1975 in Fitra and Yustina, 2021). One of nursing interventions that are usefull to manage pain in post operative fracture patients is music therapy. Music therapy in part of complementary therapy to relieve pain using music as a distraction. The purpose of this study is to understand the effect of music therapy for pain management in postoperative patients with fractures. Hopefully it can provide insight related to pain management for postoperative fracture patients.

## METHOD

This systematic review was conducted according to the PICO model. PICO is a clinical information search method which is an acronym of 4 components: P (patient, population, problem), I (intervention, prognostic factor, exposure), C (comparison, control), and O (outcome). (Liberati, et al, 2009). The PICO in the literature review is P : fracture patients, I : music therapy, C : article with control and experimental group as well as independent group for post and pretest, O: pain reduction. Keywords are short words that can describe the contents of an article or document (Figueroa, et al. 2014). Keywords
make it easy for every article reader to be able to quickly find out the essence of the article. Keywords in the search for evidence based research in this literature review include: pain scale, music therapy, postoperative, and fracture.

A search for databases or databases in this literature review will be conducted in December 2022. The databases used include Google Scholar, PubMed. Neliti, and Genius. The author opens Google Chrome then types the keywords Google Scholar, PubMed. Neliti, and Genius. one by one in the new menu tab. Detailed explanations regarding search results based on search engines can be seen in table 1 .
Inclusion criteria is criteria when it is fulfilled causing the candidate of object to be the object of this research. Inclusion criteria including journal with English or Indonesian languages, journal article from the past 5 years, relevant with the topic, original. While exclusion criteria is criteria outside inclusion.

Search Results and Study Selection


This reserach is review study that is systematically done by collective article that are relevant with the theme which is "Effect of Music Therapy to Reduce Pain in Postoperative Patients With fracture ". This research was done by reviewing experiment or study that was done in 2018-2022 with keyword "Music Therapy", "Fracture", "Terapi Musik", "Fraktur", "Pain Scale", "Post-opertive". A total of 21 article was collected from Google Schoolar ( $\mathrm{n}=12$ ), PubMed $(\mathrm{n}=6)$, Neliti $(\mathrm{n}=2)$, Genius $(\mathrm{n}=1)$. Tittle of the articel journal that are not relevant, journal that exceed past 5 years are excluded 4 article. After that article with tittle not relevant were excluded 2 , and lastly article that irrelevant are 5 . So in the end the chosen article are 10 .

## RESULT

Article List from Searching Result A total of 10 articles used as samples were identified and presented in the following table 2.1.
Pain management on fracture patients after post operation is one of the most common findings that nurses need to pay attention to routinely, as pain can disturbed patient comfort and impaired their daily activity. One of the nursing interventions that can be done to reduce pain according to 10 article journals above is using music therapy. This study below shows results about the previous article that was already chosen in the form of a table 3.1.

## DISCUSSION

Health problems that are often encountered and become a problem in health care centers around the world, one of which is fracture (Budhiartha, 2009). A fracture is a break in a bone, usually caused by trauma or physical exertion. The strength and angle of the force, the state of the bone, and the soft tissue around the bone will determine whether the fracture is complete or incomplete (Price and Wilson, 2006). According to Helmi (2012), the clinical manifestation of this fracture is pain. Pain in patients with fractures is sharp and stabbing, sharp pain is also usually caused by bone infections due to muscle spasms or pressure on sensory nerves. The main cause of fractures is the result of traffic accidents. Complications that often occur in fracture surgery are infection, delayed union, nonunion and mal-union, damage to blood vessels or anterior compartment syndrome, nerve trauma especially to the common peronial nerve, and movement disorders of the ankle joint. In addition, nursing problems that often occur in post-fracture surgery clients will cause pain (Muttaqin, 2005).
Based on research conducted by Harefa (2010), related to music therapy on pain intensity and the results of the study indicate that the most recommended music for therapy is Mozart music therapy. This is because Mozart's music has a balanced tempo and harmonization of tones, unlike rock, dangdut or other types of music. Pain can be treated pharmacologically and nonpharmacologically. Pharmacologically using drugs (narcotics), non-opioids or NSAIDs (Nonsteroid Anti-Inflammatory Drugs), adjuvants, and non-analgesics, while nonpharmacologically usually with skin stimulation, electrical stimulation of transcutaneous skin nerves, acupuncture, placebo
administration, relaxation techniques , guided imagination, biologicalfeedback, hypnosis, and therapeutic touch (Tamsuri, 2007). One of the nonpharmacological actions is by giving music therapy, which can reduce physiological pain, by diverting one's attention from pain. Nurses can use music creatively in a variety of clinical situations. Patients generally prefer listening to music. Music that suits the mood of the individual from the start is the best choice (Potter \& Perry, 2007).

## CONCLUSION

Based on the analysis that has been done by the author, it can be concluded that music therapy is proven to be able to reduce pain in postoperative patients due to fractures.

## SUGGESTION

The results of this literature review are expected to be a basic reference for health workers, especially nurses, to use music therapy interventions as a form of nursing care in treating postoperative fracture patients.

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Table 1.1 Data Search

| Data Research | Data Sources | Year | Number of Article | Total |
| :--- | :--- | :---: | :---: | :---: |
| $02-10-2022$ | Google Scholar | 2022 | 12 | 21 |
| $02-10-2022$ | PubMed | 2022 | 6 |  |
| $02-10-2022$ | Neliti | 2022 | 2 |  |
| $02-10-2022$ | Genius | 2022 | 1 |  |
|  |  |  |  |  |

Table 2.1 Article List

| Author | Year | Title | DOI |
| :---: | :---: | :---: | :---: |
| Oktaffrastya Widhamurti <br> Septafani, Sonu Eky Reza <br> Rahman, Henny <br> Purwandari  | 2021 | The Effect of Keroncong Music Therapy On The Reduction Of Pain Intensity In Post-Trauma Patients | $\begin{aligned} & \text { DOI: } \\ & 10.30994 / \text { sjik.v10 } \\ & \text { i1.712 } \end{aligned}$ |
| Muhammad $\quad$ Arif, Yuli Permata Sari | 2019 | Efektifitas Terapi Musik Mozart Terhadap Penurunan Intensitas Nyeri Pasien Post Operasi Fraktur | e-ISSN $:$ $2540-$ <br> 9611 $:$ $2087-$ <br> p-ISSN   <br> 8508   |
| Candra Kusuma Negara, Achad Murjani, Anna Martiana, Fajar Kurniawan | 2019 | Guided Imagery Using ClassicalMusic On The Reduction In Pain Level of Fracture Patients | e-ISSN: $2527-$ <br> 8819  <br> p-ISSN: $2527-$ <br> 8800  |
| Muhammad Firdaus | 2020 | Efektifitas Teknik Distraksi Musik Klasik Mozart untuk Mengurangi Nyeri Pada Pasien Post Operasi Fraktur Di Ruang Dahlisa RSUD Arifin AchmadPekanbaru |  |


| Ade Fitriani, Fidya Anisa <br> Firdaus, Fidiyanti <br> Amatilah, Haryani | 2021 | The Effect of Music Therapy to Lower <br> Pain Scale among Post- Operating <br> Patients | DOI: <br> https://doi.org/10. <br> $\underline{56359 / g j . v 2 i 1.13 ~}$ |
| :--- | :--- | :--- | :--- |
| Alvaro Ortega, Felipe Gauna, <br> Daniel Munoz, Gerardo <br> Oberreuter, Hayo A.Breinbauer, <br> Loreto | 2019 | Music Therapy for Pain and Anxiety <br> Management in Nasal Bone Fracture <br> Reduction: Randomized Controlled <br> ClinicalTrial | DOI: <br> $10.1177 / 0194599$ <br> 819856604 |
| Carrasco |  |  |  |

Table 3.1 Literature Review

| Author | Title | Intervention | Sample | Design Method | Outcome |
| :---: | :---: | :---: | :---: | :---: | :---: |





|  |  |  |  |  | effect of keroncong music therapy on reducing theintensity post- traumatic pain at the Nganjuk Regional General Hospital. |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Muhammad Arif, Yuli Permata Sari | Efektifitas <br> Terapi <br> Musik <br> Mozart <br> Terhadap <br> Penurunan <br> Intensitas <br> Nyeri <br> Pasien Post <br> Operasi <br> Fraktur | Mozart <br> Music <br> Therapy | 15 <br> patients, in the <br> room <br> Ambun Suri floor <br> 1 and 2, RSUD <br> Dr.Achm ad Mochtar <br> Bukitting gi April- <br> October <br> 2018 | Pre-experimental design using onegroup pretest posttest. Later the researcher will give a sheet fro numeric rating scale 0-10. <br> For the prevention researcher do the intervention by giving mozart music therapy for 30 minutes. | - Before the intervention or mozartmusic therapy mostly respondent pain scale ison scalesevere, 11people (73.3\%) <br> - After the intervention using mozart music therapy morethan half ofthe pain pain scale decrease to <br> moderate <br> people (53.3\%) <br> - Mozart music |


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| Ade Fitriani, <br> Fidya Anisa <br> Firdaus, <br> Fidiyanti <br> Amatilah, <br> Haryani | The Effect ofMusic <br> Therapy to LowerPain Scale among Postoper ative Patients | Music therapy | people who were assigned randomly with 68 participants in the interventi on group and 68 participants in the control group | Experiment on 17 <br> respondents, for the <br> intervention musictherapyclassical usingobservation andquestionnaireExperiment on 36respondents. fortheinterventionclassical musicusing observationExperiment on 15 <br> respondents, forthe <br> intervention <br> therapy music <br> using numeric <br> rating scale and <br> observation <br> Experiment on 15 <br> respondents, forthe <br> interventionclassical therapymusicExperiment on 20 | - Respondentspain beforeandgiving classical aftermusic therapy (pianostrains)withanaveragedifference of$0.90 \quad$ and pvalue$=0.000$,whereis a decreasein painafterthe intervention- The majorityofpatientsexperiencingmoderate painas manyas 36(100\%) |
| :---: | :---: | :---: | :---: | :---: | :---: |


|  |  |  |  | respondents, for the intervention music classical therapy using NRSExperiment on 34 respondent, for the intervention music and therapy pain response usingNRS and FPSR |  |
| :---: | :---: | :---: | :---: | :---: | :---: |


|  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Candra | Guided | Guided | Responde | Quasi- | There is an |


| Kusuma Negara, <br> Achad Murjani, <br> AnnaMartiana, <br> Fajar Kurniawan | Imagery <br> Using <br> Classical <br> Music On <br> The <br> Reduction $n$ <br> In Pain <br> Level of <br> Fracture <br> Patients | therapy image usingclassical music mozart | nts in this study were patient post fracture surgery in the Hospital (22 responde nts) after they fulfilled all the inclusion criteria. <br> The research was held on 07 may- june7 2018. | experimental pre- test and post-test group approach. The researcher will conduct a pain assessment 5 minutes prior before therapy. The guided therapy image uses classical music with intensity of $60-80 \mathrm{~dB}$ and a volume of 40 50\% <br> for 20 minutes. Using earphones with frequency 1 times a day for 2 days at the same time, giving after <br> 24 hours after fracture surgery. After that the pain will measure again <br> 10 minutes post therapy. |  |
| :---: | :---: | :---: | :---: | :---: | :---: |


| Alvaro Ortega, FelipeGauna, DanielMunoz, Gerardo Oberreuter, Hayo A.Breinbauer, Loreto Carrasco | Music <br> Therapy for Pain and Anxiety Manage ment in Nasal Bone Fracture Reductio | Music therapy | Patients were recruited who were diagnosed with displaced nasal bone fractures with | Patients were randomized with a sequence of permuted blocksfrom a mobile application for smart phones (Randomizer) and designated to 1 of the 2 groups which are control group | - No significant difference in diastolic blood pressure was found between the music and control groups ( $\mathrm{P}=$ |
| :---: | :---: | :---: | :---: | :---: | :---: |



|  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Muhammad Firdaus | Efektifitas <br> Teknik <br> Distraksi <br> Musik <br> Klasik <br> Mozart <br> untuk <br> Mengura <br> ngi Nyeri <br> Pada <br> Pasien Post <br> Operasi <br> Fraktur Di <br> Ruang <br> Dahlisa <br> RSUD <br> Arifin <br> Achmad <br> Pekanbaru | For experiment group was given classical music therapy mozart | 30 <br> samples, divided into two groups. 15 people for the control group and 15 people for the experime nt group. Classical music therapy was givenfor 15 minutes for | Design this study is quasy experiment with non randomizedcontrol group pretest posttest design in1st 10th 2017Marchin Ruang <br> Dahlia <br> RSUD <br> Arifin Achmad Pekanbaru | There is a <br> significant <br> difference between <br> the painscale of <br> thecontrol <br> groupand experimentalgroup.- By givingclassical musicmozarttherapyhelpsto reducepain forpostoperativepatient indahlia roomRSUD ArifinAchmadPekanbaru |


| Chichi Hafifa <br> Transyah, Reska <br> Handayani, <br> Alfajri Aulia <br> Putra | Pengaruh <br> Terapi <br> Musik <br> Klasik <br> Terhadap <br> Tingkat <br> Nyeri <br> Pasien Post <br> Operasi <br> Fraktur | Music classical therapy | Purposive <br> sampling as much <br> 10 <br> people, <br> responde <br> nts are <br> patients <br> who <br> experienc <br> ing pain <br> due to <br> postopera <br> tive fracture <br> on the <br> extremities | The research design is a preexperimental approach to GroupPretestPosttest design. <br> Measuresthe pain scale firstin patients usingthe <br> NumericRating <br> Scale thenlistens to classicalmusic through theMF4 already provided. The classical music is listened to for about 20 minutes, after that painscale is measuredagain. |  |
| :---: | :---: | :---: | :---: | :---: | :---: |


| Suhartiningsi, <br> Erna Noviana, <br> Ageng Abdi <br> Putra | Efektifitas <br> Terapi <br> Musik <br> Instrume <br> ntal <br> Terhadap <br> Perubahan <br> Skala <br> nyeri Pada <br> Pasien | Instrumenta 1 musictherapy | Purposive sampling using as many as 26 peoplein Ruang Bedah RSUD Dr. R. <br> Soedjono Selong | Design is <br> group pretest-posttest design. <br> Sampling usingPurposive sampling ofpeople. The <br> observation method <br> was usedto observe <br>   <br>  pain | Instrumental music therapy iseffective in changing the pain scale of patients with fractures. <br> - Fracture pain levels are feltby respondents |
| :---: | :---: | :---: | :---: | :---: | :---: |



|  |  |  |  |  | the fracture <br> pain level <br> felt by <br> respondents after  <br>  (post <br> test) given <br> instrumental music  <br> therapy treatment  <br> moderate pain as  <br> manyas 4 <br> (15.4\%) people  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Rhona Sandra, Siti Aisyah Nur, Honesty Diana Morika, Wira MelycaSardi | The Effect ofClassical Music Therapy On Pain Levels Post OP <br> Fracture <br> Patients In The <br> Surgical <br> Ward Of <br> Dr. <br> Resodiwi <br> ryo Padang <br> Hospital | Classical music therapy | 16 <br> responde nts sample that fulfill the inclusion criteria was taken. <br> Patient is postopera tive fracture patient inthe hospital. | This research usepraexperiment design with one group design pretest and posttest. <br> This research was conducted in August 2019 in Bangsal Bedah RS.Dr. ReksodiwiryoPadang The patient will be given intervention with music therapy |  |


|  |  |  |  |  | patient (reduce). This procedure ishelpful |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Fitra Mayenti, Yunita Sari | Efektifitas <br> Teknik <br> Distraksi <br> Musik <br> Klasik <br> Mozart <br> untuk <br> Mengura <br> ngi Nyeri <br> pada <br> Pasien Post <br> Operasi <br> Fraktur | Distraction technique music classic Mozart | 30 people with 15 control groups and 15 experime ntal groups with instruments NRS (Numeric Rating Scale) |  | There is an influence of giving classical music mozart to fracture pain. <br> - In the control group pre with standard deviation of 0.68 and post control with a standard deviation of 0.66 and P Value for thecontrol group 0.129 which means P value $>0.05$. <br> - In the grouppreexperiments with standard deviation of 0.53 and post experiment with standarddeviation |



