

## EFFECT OF MOZART CLASSICAL MUSIC THERAPY ON PAIN INTENSITY REDUCTION IN POST-OPERATIVE FRACTURE PATIENTS AT CENDANA 3, RSUP DR. SARDJITO

Umi Rahmawati<sup>1</sup>, and Iswanti Purwaningsih<sup>2,\*</sup>

<sup>1</sup>Nursing Diploma Study Program, Karya Husada Health Polytechnic Yogyakarta, Indonesia

<sup>2</sup>Karya Husada Health Polytechnic Yogyakarta, Indonesia

Corresponding author: Iswanti Purwaningsih ; Email: [iswanti.purwaningsih@gmail.com](mailto:iswanti.purwaningsih@gmail.com)

### ABSTRAK

Nyeri yang dirasakan pasien apabila tidak ditangani akan menghambat pemenuhan kebutuhan sehari-hari dan memperpanjang masa perawatan di rumah sakit. Mendapatkan gambaran terapi musik Mozart klasik untuk menurunkan intensitas nyeri pada pasien pasca operasi fraktur. Metode penelitian karya tulis ilmiah ini menggunakan studi kasus deskriptif dengan satu subjek pasien sesuai kriteria inklusi. Dengan instrumen penilaian lembar observasi NRS. Berdasarkan penelitian yang dilakukan pada hari pertama skala tertinggi sebelum penanganan adalah 6 dengan NRS dan skala terendah sesudah penanganan adalah 2. Pada hari kedua skala tertinggi sebelum penanganan adalah 4 dan skala terendah sesudah penanganan adalah 1, dan hari kedua skala tertinggi ketiga sebelum penanganan adalah 1 dan skala terendah sesudah penanganan adalah 0. Ada pengaruh terapi musik Mozart klasik terhadap penurunan intensitas nyeri pada pasien pasca operasi fraktur.

**Kata kunci:** fraktur, terapi musik klasik Mozart, nyeri

### ABSTRACT

*The pain felt by the patient if not treated will hinder the fulfillment of daily needs and prolong the period of treatment in the hospital. To get an overview of classical Mozart music therapy to reduce pain intensity in postoperative fracture patients. This scientific paper research method uses a descriptive case study with one patient subject according to the inclusion criteria. With the NRS observation sheet assessment instrument. Based on research conducted on the first day the highest scale before treatment was 6 with NRS and the lowest scale after therapy was 2. On the second day, the highest scale before therapy was 4 and the lowest scale after therapy was 1, and the second day The third highest scale before therapy is 1 and the lowest scale after therapy is 0. There is an effect of classical Mozart musik therapy on reducing pain intensity in postoperative fracture patients.*

**Keywords:** fracture, Mozart classical musik therapy, pain

### I. INTRODUCTION

Health problems that many found and be wrongone problem at the center of the service center health worldwide one is fracture (Aini & Reskita, 2018). Fractures are broken bones usually caused by trauma or physical exertion. Power and angle of energy, bone condition, and soft tissue around the bone will determine whether a fracture has occurred is it complete or not. According to (Kurnia & Suwardianto, 2011), Clinical manifestations of this fracture are: painful. Pain in patients with fractures is sharp and stabbing, painful sharp also usually caused by bone infection due to muscle spasm or pressure on sensory nerves. The main causes of fractures are due to a traffic accident (Flemming et al., 2013). Frequent complications in fracture surgery namely the occurrence of infection, delayed union, non-union and mal-union, breakdown vessels or syndromes anterior compartment, nerve trauma especially in the common peroneal nerve, and impaired joint movement

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ankle. Besides that, trouble frequent nursing postoperative fracture clients will arise pain (Lestari, 2017). Pain after surgery is normal. Painful perceived by surgical clients increases as the influence decreases anesthesia. Clients are more aware environment and are more sensitive to comfort. Possible incision area be the only source of pain. Wraps or casts that are tight and stretched muscles due to the position when the client is on the operating table causes the client feel uncomfortable. Significantly pain can slow recovery (Potter & Perry, 2006). Distraction is diversion the patient's attention to other things with thereby lowering alertness for the pain he felt. One Among the distraction techniques is by mozart music therapy. Listening to music can give great results effective in reducing pain postoperative patients (Potter, 2006). Mozart's music therapy has liberating power, treat, and even have power that can heal (Firdaus, 2020; Freye & Lammers, 2019).

Musical distraction is able to divert attention from pain so that a person feels relaxed (Arif & Sari, 2019; Mayenti & Sari, 2020). music therapy is effective because it can divert pain and anxiety that can trigger an increase in pain, by listening to music the brain releases endoprine hormones which function to reduce pain intensity (Handiyani, 2013; Nuriya et al., 2023). This study aims to explore the effectiveness of Mozart classical music therapy in reducing post-operative pain for fracture patients. Through a systematic approach in nursing, it is expected to provide valuable insights into the potential of music therapy as a complementary method for pain management. The findings may promote the integration of music therapy into clinical practice, enhancing non-pharmacological strategies for post-operative care.

## II. METHODS

### Study Design

This research utilizes a quantitative research design, specifically a pre-experimental approach with a one-group pretest-posttest design. The focus of this study is to assess the effectiveness of Mozart classical music therapy in reducing post-operative pain in fracture patients. This design was chosen to observe changes in pain intensity before and after the intervention, without the use of a control group. A descriptive case study approach is employed, aiming to systematically document the impact of music therapy through the nursing process, which includes assessment, diagnosis, intervention, implementation, and evaluation.

### Sample

The sample for this study consists of post-operative fracture patients admitted to Cendana 3, RSUP Dr. Sardjito. Inclusion criteria are patients aged 18 years and older, who have undergone orthopedic surgery for a fracture, report post-operative pain, and provide informed consent. Exclusion criteria include patients with hearing impairments or conditions like pneumonia that may interfere with the intervention. Purposive sampling is used to select eligible participants who meet these criteria and are available during the study period.

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## Instrument

The primary instruments used in this study are the Pain Intensity Scale (Numerical Rating Scale - NRS) and Mozart Classical Music Therapy. The NRS is employed to measure pain intensity before and after the music therapy intervention, with patients rating their pain from 0 (no pain) to 10 (worst possible pain). The music therapy consists of a pre-selected collection of Mozart classical music, played for patients for 30 minutes to promote relaxation and pain relief.

## Data Collection

Data collection involves three main steps: Pre-Test Data, where pain levels are assessed before the intervention using the NRS; Intervention, where Mozart classical music is played for 30 minutes to the patients; and Post-Test Data, where pain levels are reassessed after the therapy session. These data points allow the researcher to compare pain levels before and after the intervention and evaluate its effectiveness.

## Data Analysis

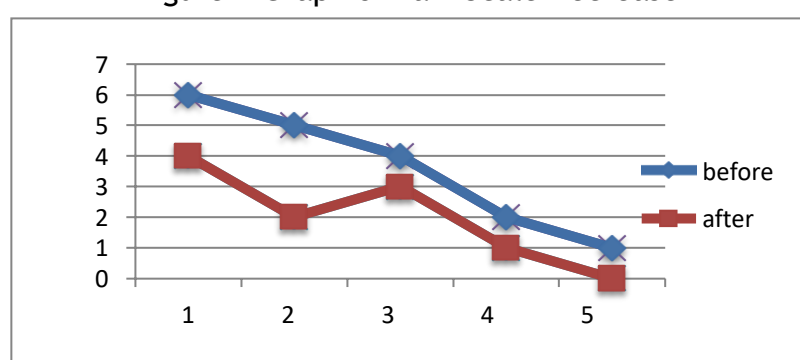
For data analysis, both descriptive and inferential statistics are applied. Descriptive statistics, such as mean and standard deviation, are used to summarize the pain intensity scores before and after the intervention. A paired t-test is conducted to determine if there is a statistically significant difference between the pre- and post-test pain scores. Additionally, Cohen's d will be used to measure the effect size, indicating the practical significance of the results.

## Ethical Consideration

In terms of ethical considerations, participants will provide informed consent, ensuring they understand the study's purpose, procedures, and their right to withdraw at any time. All patient information will be kept confidential, and data will be anonymized. Ethical approval will be obtained from the Ethical Review Board at RSUP Dr. Sardjito. The music therapy used is non-invasive and poses minimal risk to participants. If any discomfort arises, appropriate adjustments will be made to ensure patient safety and comfort.

## III. Results

Figure 1 Graph of Pain Scale Decrease



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The interpretation of the data presented in Figure 1 indicates a significant reduction in pain intensity following the application of Mozart classical music therapy. This can be observed by comparing the Numerical Rating Scale (NRS) pain scores before and after the therapy sessions over the course of three days.

On the first day, prior to receiving the Mozart music therapy, the highest pain score recorded was 6, indicating moderate pain. After the music therapy intervention, the pain intensity decreased, with the lowest recorded pain score being 2, signifying mild pain. This substantial reduction suggests that the music therapy had an immediate calming effect on the patients, helping them manage their post-operative pain effectively.

On the second day, the initial pain level was lower, with the highest score before therapy being 4, which is still considered moderate pain. However, after the therapy session, the pain decreased further, with the lowest pain score being 1, corresponding to minimal pain. This suggests that the effect of Mozart classical music therapy was consistent over multiple sessions, continuing to provide relief from post-operative discomfort.

Finally, on the third day, the pain intensity was significantly reduced, with the highest pain score before therapy being 1, indicating only slight discomfort. After the music therapy, the pain score dropped to 0, signifying no pain at all. This final result demonstrates that the Mozart classical music therapy not only alleviated pain but also brought patients to a state of complete comfort and relaxation.

The data supports the effectiveness of Mozart classical music therapy as a non-pharmacological intervention for reducing post-operative pain in fracture patients. The progressive decrease in pain scores over the three days indicates that the therapy had a cumulative effect, with repeated exposure leading to further reduction in pain intensity. This suggests that regular sessions of music therapy may provide lasting relief for patients recovering from surgical procedures, potentially enhancing their overall comfort and post-operative recovery process.

These findings can encourage the integration of music therapy into standard clinical practices as part of a holistic approach to pain management, offering a non-invasive, safe, and effective alternative to pharmacological interventions. Furthermore, the results highlight the potential of music therapy to not only manage immediate pain but also contribute to long-term comfort and well-being for patients undergoing post-operative recovery.

#### IV. DISCUSSION

in this study, researchers implemented the respondents with a time of 30 minutes. The selection of the most ideal duration of Mozart classical music therapy is 30 minutes, which can be analyzed from the comparisons made (Yanuar & Wantonoro, 2015). There is a comparison of pain scale reduction based on the duration of therapy, within 10 minutes there is a slight decrease in the pain scale, in this duration the respondent just feels relaxed (Djamal et al., 2015; Nurdiansyah, 2016; Nur et al., 2020). At a duration of 20 minutes there was a slight decrease in the respondent's pain scale.

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Music has a profound effect on the autonomic nervous system (ANS), which is responsible for regulating involuntary bodily functions, including blood pressure, heart rate, emotional responses, and the control of pain sensations (Rilla et al., 2014). The autonomic nervous system is divided into two main branches: the sympathetic nervous system, which activates the body's fight-or-flight response, and the parasympathetic nervous system, which helps the body relax and recover. Listening to music, particularly when done in a state of relaxation, can activate the parasympathetic nervous system, promoting calmness and reducing the body's stress response (Anita, 2018; Widianti, 2022).

When a person listens to music, especially soothing or classical music, it triggers a complex neural process. Music has the ability to influence emotional states by stimulating areas of the brain that are involved in emotional regulation and processing. One of these areas is the limbic system, which includes structures such as the amygdala (which processes emotions), the hippocampus (involved in memory and emotional responses), and the hypothalamus (which plays a role in regulating the body's response to stress). The limbic system is highly sensitive to sensory inputs like sound, and it can alter the body's emotional and physiological states, including pain perception (Fitamania et al., 2022; Parinduri, 2020).

As music interacts with the brain, it can stimulate the secretion of endorphins, the body's natural pain-relieving chemicals. Endorphins, which are neurotransmitters produced by the brain, have properties similar to morphine, in that they help reduce the perception of pain. They are often referred to as "natural morphine" because they act as analgesics, reducing the intensity of pain and improving feelings of well-being. The release of endorphins during music therapy can help patients experience a significant reduction in pain, anxiety, and stress.

Listening to music in a state of full relaxation allows the body to reach a balanced and tranquil state, activating the parasympathetic nervous system and reducing physiological responses such as heart rate and blood pressure. This relaxation response, combined with the mood-enhancing effects of music and the release of endorphins, makes music therapy a powerful tool in managing both emotional and physical pain.

Research, including findings by (Mayenti & Sari, 2020), suggests that music can influence the emotional processing and pain regulation pathways in the brain. By stimulating these processes, music therapy offers a non-invasive and accessible way to manage pain, especially in post-operative or chronic pain settings. It is a complementary therapy that not only enhances relaxation but also fosters a sense of emotional well-being, making it particularly useful for patients undergoing surgeries or dealing with chronic conditions that involve pain.

In summary, music acts on the autonomic nervous system to induce a state of relaxation, reduce stress, and alleviate pain by triggering the release of endorphins. Its impact on the limbic system creates a positive feedback loop, where music influences emotions, and in turn, emotional regulation affects the body's physical responses, helping to manage pain and promote recovery. This makes music an effective and holistic tool for managing both

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emotional and physical discomfort, particularly in medical settings

## V. CONCLUSION

The results of this study are expected to be motivation to further improve internal hospital program minimize pain in postoperative patients fracture surgery, 4) Can apply Mozart therapy as an alternative to minimize pain not only in hospital but at home when already out of the hospital. It can be concluded from the results of this study that classical mozzart music therapy can reduce pain intensity in postoperative fracture patients. Proven by: Pain scale in postoperative fracture patients before classical Mozzart music therapy was performed on a pain scale of 6 (moderate) with a Numeric Rating Scale scale. The pain scale in postoperative fracture patients after classical Mozzart music therapy decreased to no pain (0) with the Numeric Rating Scale. Mozzart Classical Music Therapy can reduce pain intensity in postoperative fracture patients.

## ACKNOWLEDGEMENT

The author would like to thank the lecturers and supervisors for their guidance and support for this research. And thank the respondents who are willing to be involved in this research

## CONFLICT OF INTEREST

The respondent's understanding of the implementation carried out, in this case study, the respondent needs more explanation so that they understand the purpose of the implementation. Adjustment of patient activities, in this case the respondent's rest time during the day

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