

Section: Medical Surgical Nursing

Mozart music therapy to address sleep pattern disorders in adults with post-operative collum femur fracture

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Abstract

Femoral neck fractures are a common lower extremity injury site with a high risk of fracture in the elderly. In adult patients, especially the elderly, the risk of fracture increases with age due to decreased bone density and body balance. Fracture management can be either conservative or operative (surgery). Inadequate management of post-surgical pain can have a significant impact on patients, such as sleep disturbances. One treatment that can be carried out to improve sleep quality in post-surgical patients is Mozart classical music therapy. Mozart classical music therapy is a type of music that has had an extraordinary magnitude in the development of health sciences, including its soft tones, its tones provide alpha wave stimulation, calm, and make the listener more relaxed because of its 60 beats per minute tempo. The goal is to be able to apply Mozart classical music therapy to overcome sleep pattern disorders in cases of femoral neck fractures with Mozart classical music therapy. In this case, implementation was carried out for 3 days with twice a day, the patient listened to music for 30 minutes before bed. After the intervention, the patient was evaluated on the implementation that had been given. The evaluation found that Mozart's classical music therapy can help overcome sleep disturbances in patients with femoral neck fractures.

Keywords: Femoral neck fracture, Mozart's classical music therapy, nursing care, sleep disturbances, surgical nursing

Introduction

Fractures are a serious disorder worldwide, causing the most frequent problems encountered in healthcare facilities (Walker, 2023). A fracture, or broken bone, is a disruption of the normal continuity of a bone (Whiteing, 2008; Pang et al., 2022). In adults, particularly the elderly, the risk of fracture increases with age due to decreased bone density and body balance (Bilge et al., 2022). The World Health Organization (WHO) reported in 2019 that the incidence of fractures increased, with a prevalence of 3.2% among fewer than 15 million people. Based on the 2018 Basic Health Research by the Health Research and Development Agency, the incidence of fractures in Indonesia was 5.5%. Of the many fracture cases in Indonesia, lower extremity fractures due to accidents had the highest prevalence, at 67.9%. Of the 45,987 cases, 19,754 were femoral fractures, the highest number of lower extremity fractures due to accidents. Lower extremity fractures are most commonly caused by accidents (Ngunde et al., 2019; Omoke & Ekumankama, 2020). The lower extremities are the most vulnerable to fractures because they serve as support for the body during walking and other activities.

Femoral neck fractures are a common lower extremity injury site with a high risk of fracture in the elderly. The incidence increases with age. Fracture management can be either conservative or operative (surgical) (Sharma et al., 2025; Lenza et al., 2019). Patients undergoing surgical procedures generally experience pain. Inadequate pain management and care can significantly impact patients, leading to sleep disturbances, difficulty mobilizing, restlessness, and aggression. Pain-affected individuals often awaken due to the pain, disrupting sleep, which can worsen the condition and lead to other illnesses. One treatment that can be implemented to improve sleep quality in post-surgical patients is audio distraction, which focuses the patient's attention on something other than pain. This can be interpreted as diverting attention directed towards actions through the auditory organs, for example, by listening to music. One of the most frequently used types of music is Mozart's classical music. Mozart's classical music has had a tremendous impact on the development of health sciences. Its soft tones stimulate alpha waves, calming the listener, and making them more relaxed due to its tempo of 60 beats per minute. Previous research found that Mozart music therapy was effective in improving sleep quality in post-surgical patients. The study explained that listening to Mozart's music for 30 minutes before bed can affect the heart rate, thus promoting calm. The soft rhythmic music, heard through the ears, goes directly to the brain and is processed, resulting in positive effects on the patient's post-surgical health.

The importance of this study for nursing lies in its potential to provide evidence-based, non-pharmacological interventions that enhance patient recovery and quality of life. Sleep disturbances are common among adults with post-operative collum femur fractures, and poor sleep can delay healing, increase anxiety, and reduce overall well-

being. By exploring Mozart music therapy as a complementary approach, nurses can expand their repertoire of holistic care strategies that are safe, cost-effective, and culturally adaptable. This study supports the nursing role in promoting comfort, reducing reliance on sedative medications, and fostering a healing environment that addresses both physiological and psychosocial needs of patients.

Case Description

Description of the patient's characteristics and data determined during the assessment. The assessment was conducted on January 23, 2025, at 10:00 AM in the Flamboyan Room of Muntilan Regional General Hospital. The patient, Mr. S, is a 62-year-old male. He is a retired civil servant, Christian, and lives in Magelang. The patient was admitted to the hospital on January 21, 2025, complaining of pain. He stated that he had fallen in the yard during a rainy day. An X-ray revealed a left intertrochanteric fracture of the femur. Surgery was performed. On the first postoperative day, the patient complained of postoperative pain, difficulty sleeping, an uncomfortable sleeping position, frequent awakenings, and changes in sleep patterns. Meanwhile, objective data obtained from observations and measurements of vital signs were: Blood Pressure: 120/88 mmHg, Pulse: 98x/minute, Temperature: 36,7°C, Respiration rate: 20x/minute, and SpO2: 99%. The patient appeared listless, lethargic, and pale.

Discussion

The assessment conducted on Mr. S used the 13-domain North American Nursing Diagnosis Association (NANDA) assessment format. The author obtained subjective data from client interviews and objective data from direct patient observations. The patient's complaints included postoperative pain, pain that worsened with leg movement, a pain scale of 4, and intermittent. He also complained of difficulty sleeping due to the pain, frequently waking up and having difficulty falling back to sleep. The patient reported that before the illness, he napped for approximately 1.5 hours between 1:00 PM and 2:30 PM WIB and slept for approximately 7 hours at night between 9:00 PM and 4:00 AM WIB. Since the illness, the patient has not napped. He sleeps for approximately 4 hours at night, between 12:00 AM and 4:00 AM WIB. At night, he complains of difficulty sleeping due to discomfort in his sleeping position, pain with every movement, and frequent waking during the night. He also complained of changes in his sleep pattern. Meanwhile, objective data obtained from observations and measurements included BP: 120/88 mmHg, T: 36.7°C, respiration rate: 20 breaths/minute, SpO2: 99%. The patient appeared weak, pale, and had droopy eyes. Patients experiencing pain will experience disturbed sleep and difficulty falling asleep. The study explained that pain can wake clients during the night and make it difficult for them to fall back asleep.

Based on the assessment data obtained by the author, one diagnostic focus can be identified for the patient according to the Indonesian Sleep Quality Assessment. The first diagnosis is sleeping pattern disturbance related to lack of sleep control (D.0055), and the second diagnosis is acute pain related to physiological injury agents (D.0077). The author prioritizes the diagnosis of sleep pattern disturbance because it is a basic human need that must be met immediately. Sleep disturbances will impact sleep quality, thus affecting a person's quality of life. Pain will disrupt a person's sleep, while someone with poor sleep quality will experience increased pain sensitivity. Based on the planning stage, the author refers to the planning contained in the theoretical basis where planning is divided into 3 stages: determining problem priorities, determining objectives, determining outcome criteria, and planning nursing actions. The intervention designed by the author to address problems with sleep pattern disorders is composed of observation, independent actions, and education tailored to the client's condition. The target time to achieve outcome criteria for the diagnosis of sleep pattern disorders is determined with the same time span, namely 3x24 hours. The author plans to address the nursing problem of sleep pattern disorders in Mr. S with the expected goal of SLKI sleep patterns with a score of 1 (Decreased), 2 (Moderately decreased), 3 (Moderate), 4 (Moderately increased), 5 (Increased), with the reported outcome criteria, complaints of difficulty sleeping (1), complaints of frequent waking (1), complaints of changing sleep patterns (1). The Indonesian Nursing Intervention Standards (SIKI) used are sleep support with nursing activities carried out, namely identifying activity and sleep patterns, identifying sleep-disturbing factors (physical and/or physiological), modifying the environment (e.g., temperature, mattress, bed), carrying out procedures to increase comfort, explaining the importance of adequate sleep during illness, teaching non-pharmacological therapy. One of the non-pharmacological therapies that can be applied in nursing care is Mozart's classical music therapy.

Based on the nursing implementation stage, efforts to realize the established nursing action plan, namely building a relationship of mutual trust, are crucial in this implementation stage, so that the implementation efforts or actions taken are accepted as efforts to solve the problem. The implementation carried out by the author on Mr. S lasted for three days, from January 23-25, 2025. In this case study, the author implemented and evaluated the client's condition daily. On the 1st day with a diagnosis of sleep pattern disorders related to lack of sleep control, the implementation carried out in accordance with the Indonesian Nursing Intervention Standards (SIKI) sleep support with nursing activities carried out, namely identifying activity and sleep patterns, identifying sleep-disturbing factors (physical and/or physiological), modifying the environment (e.g. temperature, mattress, bed), performing procedures to increase comfort with Mozart classical music therapy, explaining the importance of getting enough sleep during illness, teaching non-pharmacological therapy with Mozart classical music therapy by means of, the author first ensures the client's interest in Mozart's music, then positions the patient as comfortable as possible and the patient is

asked to relax, limiting external stimulation such as light, sound, visitors and telephone calls, the patient prefers to sleep in the dark so the lights are turned off, connecting the cell phone and earphones to be used then attaching them to the patient's ears, playing music and adjusting the volume according to the patient's wishes, the patient is advised to close his eyes and concentrate on the music during therapy, then after the intervention is carried out the author gives positive words to the patient. The author informs that therapy is carried out twice during the day and night for 30 minutes before bed. The author set the therapy schedule at 12:30 PM and 8:30 PM. The patient underwent therapy six times over three days. The author collaborated with the patient's family to monitor the therapy. The author also provided an observation sheet regarding the response after Mozart's classical music therapy, ensuring that the family's support and effectiveness were utilized. Music has therapeutic aspects, so Mozart's classical music can be used for healing, calming, and improving the physical and physiological condition of patients. Research conducted by Yasinta (2018) explains the benefits of classical music for post-operative patients, including lowering blood pressure through stable rhythmic music, providing a regular rhythm to the cardiovascular system and stimulating brain function, enabling patients to sleep soundly, balancing the heart rate and pulse, thus accelerating sleep time, and increasing the body's immunity, thus accelerating scar healing.

Evaluation is conducted by assessing the progress and effectiveness of nursing actions during the nursing care program. In the diagnosis of sleep pattern disturbance related to lack of sleep control, the problem was partially resolved on day 1 because the patient was able to perform guided Mozart classical music therapy. This was also resolved on day 3, as indicated by the patient's ability to perform Mozart classical music therapy independently, decreased insomnia, decreased frequent awakenings, and decreased changes in sleep patterns. The patient's sleep quality was measured pre- and post-intervention. On day 1, the pre-intervention score was 6, indicating poor sleep quality. After the Mozart classical music therapy intervention, the score increased by one to 7, but still indicated poor sleep quality. On day 2, the pre-intervention score was 7. After therapy, the patient's sleep quality score increased to 10, indicating moderate sleep quality. On the third day, the pre-intervention score was 10. After the Mozart classical music therapy intervention, the score increased to 12, indicating moderate sleep quality. Based on the results of sleep quality measurements over three consecutive days, Mozart classical music therapy was effective in improving sleep quality. Patients who listened to Mozart's classical music experienced a state of physical relaxation and a feeling of comfort, which helped distract them from the pain they were experiencing. Managing pain and meeting the sleep needs of post-operative patients is crucial. Nurses, as caregivers, can provide interventions for patients to ensure their comfort and safety in daily life and nursing practice. Pain management for these patients is inseparable from pharmacological therapy, which gradually improves pain. The evaluation above indicates that Mr. S's sleep needs have met the patient's developmental needs, at 6 hours per day. On the third day, Mr. S's sleep hours were 6 hours per day. S is 7 hours/day.

Conclusion

Based on the discussion above, it can be concluded that the patient experienced difficulty sleeping due to pain, frequently woke up during the night, reported changes in sleep patterns, and appeared weak with droopy eyes. The priority nursing diagnosis identified was sleep pattern disturbance related to lack of sleep control. In accordance with SLKI and SIKI, the nursing care plan included sleep support through Mozart classical music therapy. The nursing implementation was carried out based on the established action plan, with the expectation that the objectives and outcome criteria would be achieved. Overall, the nursing interventions for each problem were implemented successfully, and the patient's sleep disturbance was resolved by the third day. Evaluation showed that the patient's sleep quality score on day one was 6, indicating poor sleep quality. After three days of Mozart classical music therapy, the score improved to 12, reflecting moderate sleep quality. Thus, it can be concluded that Mozart classical music therapy is effective in addressing sleep pattern disorders in adult patients following post-femoral neck fracture surgery.

References

- Bilge, O., Dündar, Z. D., Atılğan, N., Yaka, H., Kekeç, A. F., Karagüven, D., & Doral, M. N. (2022). The epidemiology of adult fractures according to the AO/OTA fracture classification. AO/OTA sınıflamasına göre yetişkin kırıklarının epidemiyolojik çalışması. *Ulusal travma ve acil cerrahi dergisi = Turkish journal of trauma & emergency surgery : TJTES*, 28(2), 209–216. <https://doi.org/10.14744/tjtes.2020.26374>
- Lenza, M., Buchbinder, R., Johnston, R. V., Ferrari, B. A., & Faloppa, F. (2019). Surgical versus conservative interventions for treating fractures of the middle third of the clavicle. *The Cochrane database of systematic reviews*, 1(1), CD009363. <https://doi.org/10.1002/14651858.CD009363.pub3>
- Ngunde, P. J., Akongnwi, A. C. N., Mefire, C. A., Puis, F., Gounou, E., Nkfusai, N. C., Nwarie, U. G., & Cumber, S. N. (2019). Prevalence and pattern of lower extremity injuries due to road traffic crashes in Fako Division, Cameroon. *The Pan African medical journal*, 32, 53. <https://doi.org/10.11604/pamj.2019.32.53.17514>
- Omoke, N. I., & Ekumankama, F. O. (2020). Incidence and Pattern of Extremity Fractures seen in Accident and Emergency Department of a Nigerian Teaching Hospital. *Nigerian journal of surgery : official publication of the Nigerian Surgical Research Society*, 26(1), 28–34. https://doi.org/10.4103/njs.NJS_42_19

- Pang, Z., Shan, M., Li, Y., Zhang, H., Huang, A., Liu, Y., & Li, X. (2022). The Efficacy of Rehabilitation Nursing Interventions on Patients with Open Lower Limb Fractures. *Journal of healthcare engineering*, 2022, 1859747. <https://doi.org/10.1155/2022/1859747>
- Sharma, O., Hamidi, D., Bozzo, I., Alrajhi, K., & Bernstein, M. (2025). Surgical and Conservative Management are Both Effective for Pediatric Both Bone Forearm Fractures: A Systematic Review and Meta-Analysis. *Journal of the Pediatric Orthopaedic Society of North America*, 13, 100267. <https://doi.org/10.1016/j.jposna.2025.100267>
- Walker J. (2023). Assessment and management of fractures. *British journal of community nursing*, 28(7), 352–358. <https://doi.org/10.12968/bjcn.2023.28.7.352>
- Whiteing N. L. (2008). Fractures: pathophysiology, treatment and nursing care. *Nursing standard (Royal College of Nursing (Great Britain) : 1987)*, 23(2), 49–60. <https://doi.org/10.7748/ns2008.09.23.2.49.c6671>