Journal of Surgical Nursing and Allied Health Sciences
Volume 1, Issue 1 - 2025, Pg. No. 7-13
Peer Reviewed & Open Access Journal

Review Article

Non-Pharmacological Approaches to Postoperative Pain Management: A Nursing Perspective

Zahid Iqbal[1], Shelly Das[2], Kiran Roy[3]

[1,2,3]College of Nursing, North Bengal Medical College, India

I N F O

Corresponding Author:
Zahid Iqbal, College of Nursing, North Bengal Medical College, India
E-mail Id:
thezahid2022@gmail.com

How to cite this article:
Iqbal Z, Das S, Roy K. Non-Pharmacological Approaches to Postoperative Pain Management: A Nursing Perspective. J Surg Nurs Allied Health Sci. 2025;1(1):7-13.

Date of Submission: 2025-01-10
Date of Acceptance: 2025-02-12

A B S T R A C T

Postoperative pain management is a vital aspect of recovery following surgery, and while pharmacological treatments are commonly employed, non-pharmacological approaches have gained increasing recognition for their effectiveness. These methods provide a holistic alternative or complement to medication, offering patients relief from pain with minimal risk of side effects. Various non-pharmacological approaches, such as cognitive-behavioral therapy (CBT), guided imagery, music therapy, acupressure, transcutaneous electrical nerve stimulation (TENS), thermal therapies, physical therapy, and aromatherapy, from a nursing perspective. The role of nurses in implementing these techniques is emphasized, highlighting their ability to personalize care, reduce opioid dependency, improve patient satisfaction, and facilitate faster recovery. Challenges such as resource limitations and patient preferences are also discussed. Overall, non-pharmacological strategies represent an essential element of postoperative care, ensuring that pain management is both comprehensive and patient-centered.

Keywords: Postoperative Pain Management, Non-Pharmacological Approaches

Introduction

Postoperative pain management is a critical component of patient care following surgery. Effective pain management is essential for ensuring a patient's recovery, comfort, and overall well-being. While pharmacological approaches, such as opioids and non-opioid analgesics, are commonly used to alleviate pain after surgery, there is a growing recognition of the importance of non-pharmacological interventions in enhancing pain control. Nurses, who play a central role in postoperative care, are often at the forefront of implementing these approaches. This article explores various non-pharmacological methods for managing postoperative pain, emphasizing their significance from a nursing perspective.[1]

The Importance of Non-Pharmacological Approaches

Non-pharmacological approaches to postoperative pain management are essential in providing holistic, patient-centered care. While pharmacological treatments, such as opioids and analgesics, are commonly used to manage pain, they come with risks of adverse side effects, dependency, and potential overdose, particularly in the context of opioid use. Non-pharmacological methods, by contrast, focus on addressing pain through techniques that do not rely on medications, reducing the overall need for drugs and their associated risks.[2] These approaches include psychological, physical, and sensory interventions that target both the physical and emotional aspects of

pain. For example, techniques like cognitive-behavioral therapy (CBT), relaxation exercises, and guided imagery help patients alter their perception of pain by managing emotional responses and stress, while physical methods like acupressure, TENS, and thermal therapies directly address the sensory components of pain. By incorporating non-pharmacological methods, nurses can help minimize opioid consumption, decrease the likelihood of side effects, and improve patients' overall comfort and satisfaction. Additionally, these strategies empower patients to actively participate in their pain management, fostering a sense of control and promoting a more positive recovery experience. As such, non-pharmacological approaches play a pivotal role in advancing modern nursing care, improving patient outcomes, and enhancing the overall quality of care in postoperative settings.[3]

Common Non-Pharmacological Approaches in Postoperative Pain Management

Cognitive-Behavioral Therapy (CBT)

Cognitive-Behavioral Therapy (CBT) is a well-established psychological approach that focuses on modifying negative thought patterns and behaviors that can contribute to emotional distress and pain perception. In the context of postoperative pain management, CBT helps patients reframe their thoughts about pain, reducing anxiety, fear, and catastrophic thinking, which can amplify the experience of discomfort. Through CBT, patients are taught to recognize and challenge unhelpful thought patterns, replacing them with more constructive, positive beliefs about pain and recovery. The core principle behind CBT is that thoughts, emotions, and behaviors are interconnected, and by altering negative thoughts, patients can improve their emotional responses and behaviors, ultimately reducing the intensity of pain they experience.[4]

In the postoperative setting, CBT typically involves relaxation techniques, guided imagery, distraction strategies, and mindfulness exercises. These tools can help patients divert their attention away from the pain, enhance their emotional coping strategies, and foster a sense of control over their recovery. For example, relaxation exercises teach patients how to consciously relax tense muscles and calm their nervous system, which can reduce the perception of pain. Guided imagery involves imagining oneself in a peaceful, safe environment, providing a mental escape from the discomfort. Distraction techniques, such as focusing on engaging activities or deep breathing exercises, can further help to shift the patient's attention from pain to more positive thoughts or sensations.[5]

Nursing Role: Nurses can play a pivotal role in delivering CBT-based interventions by offering one-on-one sessions, educating patients on these techniques, and providing ongoing support. By creating a calm, supportive environment, nurses can help patients practice relaxation exercises, guide them through imagery sessions, and provide reassurance and encouragement throughout the healing process. Additionally, nurses can teach patients how to apply these techniques independently, empowering them to manage their pain both during hospitalization and after discharge. CBT, when incorporated into postoperative care, not only alleviates pain but also promotes psychological well-being, contributing to improved patient outcomes and satisfaction.[4,5]

Guided Imagery and Visualization

Guided imagery and visualization are powerful non-pharmacological techniques used in postoperative pain management. These methods involve helping patients create vivid, mental images that evoke relaxation, calmness, and a sense of control, thereby reducing the perception of pain. In guided imagery, a trained individual, often a nurse, leads the patient through a series of calming and pleasant scenarios, such as imagining oneself on a beach, walking through a forest, or lying in a peaceful garden. These peaceful images provide a mental distraction from the pain, allowing the patient to focus on positive sensations rather than discomfort.[6]

Visualization is a similar technique, where patients are encouraged to imagine their pain as something tangible that they can control or manipulate. For example, patients may visualize their pain as a color or a shape, and through mental exercises, they can "shrink" or "move" it to a less bothersome location in their body. Visualization techniques empower patients by offering them a sense of agency over their pain experience, which can lead to improved coping and reduced anxiety.

The physiological mechanisms behind guided imagery and visualization are believed to be tied to the mind-body connection. By focusing on soothing mental images, patients activate the parasympathetic nervous system, promoting relaxation and lowering heart rates, blood pressure, and muscle tension. This helps counter the stress response, which can amplify pain. Additionally, the mental relaxation achieved through these methods may increase endorphin production, further contributing to pain relief.

Nursing Role: Nurses are integral in facilitating guided imagery and visualization as part of a comprehensive pain management plan. They can lead patients through imagery sessions during routine care or provide guided recordings for patients to use independently. Nurses should tailor the guided imagery to each patient's preferences, ensuring that the imagery reflects the patient's interests and comfort. For example, some patients may prefer nature-based imagery, while others may choose imagery

related to favorite activities or memories. Providing a quiet, calming environment free from distractions is essential for maximizing the effectiveness of these techniques. In addition to direct involvement, nurses can educate patients about the benefits of guided imagery and encourage them to practice it at home as part of their self-management strategy for pain.[7,8]

Music Therapy

Music therapy is a widely recognized and effective non-pharmacological approach for managing postoperative pain. This technique involves the use of music—either live or recorded—to promote relaxation, improve mood, and reduce the perception of pain. Research has shown that music can have profound effects on the brain and body, particularly in reducing stress, anxiety, and discomfort. By stimulating the brain's reward centers, music helps to release dopamine and endorphins, which are natural pain relievers, while simultaneously lowering cortisol levels, a hormone associated with stress. The calming effects of music help patients divert their attention from pain and focus on more pleasant and soothing stimuli.[9]

In the postoperative setting, music therapy can take various forms. Passive listening to calming music, such as classical, nature sounds, or soft instrumental tunes, can help patients relax and create a serene atmosphere in their recovery room. Active participation in music-making, such as playing an instrument or singing, can be used for patients who are able and willing to engage, offering them a therapeutic outlet for emotional expression and pain relief. The choice of music is particularly important as patients' preferences play a key role in the effectiveness of this therapy. Personalized playlists, where patients select their favorite songs or types of music, can enhance the therapeutic impact and improve the overall experience of pain management.

The mechanisms through which music alleviates pain include its ability to distract, reduce anxiety, and promote relaxation. Music serves as an emotional and sensory distraction, occupying the brain's auditory processing centers and reducing the brain's focus on pain signals. It also helps regulate emotional responses, fostering a sense of calm and comfort. For postoperative patients, who often experience heightened anxiety and fear of recovery, music can be a simple yet highly effective way to manage both the psychological and physical components of pain.[10]

Nursing Role: Nurses play a critical role in implementing music therapy as part of a comprehensive pain management plan. They can assess patients' musical preferences, select appropriate music genres, and provide access to music devices or streaming services. Nurses may also collaborate with music therapists in settings where such professionals are available. It is essential for nurses to create a conducive environment by ensuring that the volume is appropriate and that the music does not interfere with other forms of treatment or communication. Nurses should encourage patients to use music independently, offering guidance on how to incorporate it into their recovery process, such as listening to calming music before sleep or during physical therapy. Through music therapy, nurses can help improve patient outcomes by reducing the reliance on medications and fostering a more pleasant and supportive healing environment.[11,12]

Acupressure and Acupuncture

Acupressure and acupuncture are traditional Chinese medicine techniques that focus on stimulating specific points on the body to relieve pain and promote healing. These methods are based on the concept of balancing the body's energy, or "Qi" (pronounced "chee"), which flows through pathways called meridians. Disruptions or imbalances in this energy flow are believed to contribute to pain and illness. By stimulating certain points on the body, acupressure and acupuncture aim to restore balance and relieve both physical and emotional symptoms, including postoperative pain.

Acupuncture involves the insertion of very fine needles into specific acupuncture points along the body's meridians. The needles are typically left in place for a short period, and the stimulation of these points is believed to help release endorphins, the body's natural pain-relieving chemicals. Studies have shown that acupuncture can be effective in reducing postoperative pain, improving circulation, and accelerating the body's natural healing processes. However, acupuncture is typically performed by trained practitioners, and its availability may be limited in some healthcare settings.

Acupressure, on the other hand, is a non-invasive alternative to acupuncture that involves applying gentle but firm pressure to the same acupuncture points on the body. Because it does not require needles, acupressure can be easily performed by nurses or patients themselves, making it more accessible in postoperative care. Common acupressure points used for pain relief include the "Neiguan" (P6) point on the forearm, which is effective for alleviating nausea and pain, and the "Hegu" (LI4) point on the hand, which is often used for general pain relief and stress reduction. Acupressure can be applied by pressing the points with the fingers for a few minutes at a time, either intermittently or continuously, depending on the patient's needs.[13]

Both acupuncture and acupressure work by stimulating the nervous system, influencing the release of neurotransmitters and hormones such as serotonin, endorphins, and cortisol.

These biochemical changes help reduce pain, inflammation, and muscle tension, while also promoting relaxation and emotional well-being. For postoperative patients, these techniques can help manage both acute and chronic pain, reduce the need for pharmacological interventions, and enhance the overall recovery experience.

Nursing Role: Nurses can play a crucial role in the delivery of acupressure as a part of postoperative pain management. They can be trained in basic acupressure techniques and integrate them into daily care routines, offering patients relief from pain, anxiety, and nausea. Nurses can identify appropriate acupressure points, guide patients through self-administration, and ensure that pressure is applied correctly. In settings where acupuncture practitioners are available, nurses can facilitate referrals and support patients in their treatment. By incorporating acupressure into the care plan, nurses can provide an effective, non-invasive alternative or supplement to pharmacological pain management, improving patient satisfaction and promoting a faster, more comfortable recovery.[14,15]

Transcutaneous Electrical Nerve Stimulation (TENS)

Transcutaneous Electrical Nerve Stimulation (TENS) is a non-invasive method of pain management that uses low-voltage electrical currents to stimulate the nerves and alleviate pain. TENS works by applying electrodes to the skin near the site of pain, which deliver electrical impulses that interfere with the transmission of pain signals to the brain. This process is believed to block the pain signals from reaching the central nervous system, thereby reducing the perception of pain. Additionally, TENS is thought to stimulate the production of endorphins, the body's natural pain-relieving chemicals, further contributing to pain relief.

In the postoperative setting, TENS can be particularly effective for managing musculoskeletal pain, nerve pain, and pain from surgical wounds or incisions. It can be used for both acute and chronic pain management and is versatile enough to be applied in various postoperative conditions, such as following orthopedic, abdominal, or soft tissue surgeries. The electrical stimulation provided by TENS can promote blood circulation, reduce muscle spasms, and enhance the body's natural healing processes, all of which contribute to better pain control and faster recovery.[16]

TENS units are typically portable, battery-operated devices that consist of a small control unit and adhesive electrodes. The electrodes are placed on the skin around the painful area, and the control unit adjusts the intensity, frequency, and duration of the electrical impulses. Depending on the patient's condition and tolerance, the intensity of the electrical current can be varied to ensure optimal pain relief without discomfort. TENS is safe and easy to use, and because it is non-invasive, it carries minimal risk compared to pharmacological treatments.

Nursing Role: Nurses play an essential role in the administration and management of TENS in the postoperative setting. They are responsible for assessing whether the patient is a suitable candidate for TENS therapy, applying the electrodes properly, and ensuring that the device is functioning correctly. Nurses should educate patients on how to use TENS units, providing clear instructions on how to place the electrodes, adjust settings, and monitor comfort levels. Nurses must also assess patients for any contraindications to TENS therapy, such as certain heart conditions, pacemakers, or pregnancy, as these may affect the safety and effectiveness of the treatment. By incorporating TENS into the pain management plan, nurses can provide patients with an effective, drug-free option to manage postoperative pain, reduce reliance on medications, and contribute to a faster, more comfortable recovery.[17]

Thermal Therapies (Heat and Cold)

Thermal therapies, which include both heat and cold treatments, are widely used non-pharmacological methods for managing postoperative pain. These therapies are simple, effective, and can be easily incorporated into the recovery process to alleviate pain and promote healing. Both heat and cold work through distinct physiological mechanisms that help reduce pain, inflammation, and muscle tension while enhancing overall recovery.

Cold Therapy (also known as cryotherapy) is commonly used in the immediate postoperative period, especially for injuries or surgeries involving soft tissue, joints, or muscles. The application of cold compresses or ice packs helps constrict blood vessels, reducing blood flow to the affected area, which in turn minimizes swelling and inflammation. Cold therapy also numbs the area, providing temporary pain relief by slowing the transmission of pain signals to the brain. Cold therapy can be particularly useful in the first 24 to 48 hours after surgery, when inflammation is most pronounced. However, it is important to monitor the skin to prevent frostbite, and the cold should be applied in intervals to avoid overcooling.

Heat Therapy, on the other hand, is generally used after the initial inflammatory phase has passed (usually after 48 hours), or in cases of chronic pain or muscle stiffness. Heat treatments work by dilating blood vessels, which increases circulation and promotes the healing process by bringing more oxygen and nutrients to the affected area. Heat also helps to relax muscles, relieve spasms, and reduce tension, making it particularly beneficial for musculoskeletal pain, stiffness, or discomfort that results from surgical incisions. Common methods of heat

application include warm compresses, heating pads, or warm baths. As with cold therapy, care must be taken to avoid burns or excessive heat application, which can cause skin damage or discomfort.[18]

Both heat and cold therapies are effective for managing different types of postoperative pain and can be easily incorporated into a patient's care plan, either in a hospital setting or at home. These therapies are often used in combination with other pain management strategies, such as physical therapy or pharmacological treatments, to provide holistic and comprehensive care.

Nursing Role: Nurses play a crucial role in administering thermal therapies and ensuring their safe and effective use. They are responsible for assessing the patient's needs, determining whether heat or cold therapy is most appropriate based on the type of surgery or pain, and applying the therapy correctly. Nurses should educate patients on how to use heat or cold packs at home, emphasizing the importance of monitoring skin integrity and limiting application times to prevent adverse effects. Nurses can also assess the patient's comfort level, adjusting the temperature as needed to ensure that the therapy is neither too intense nor too mild. In addition, nurses must be vigilant about contraindications for thermal therapies, such as open wounds, impaired skin sensation, or circulatory issues, where heat or cold might cause harm. By effectively integrating thermal therapies into postoperative care, nurses can enhance patient comfort, reduce reliance on medications, and promote faster healing and recovery.[19]

Physical Therapy and Mobilization

Physical therapy and early mobilization are critical non-pharmacological interventions in postoperative pain management, as they focus on improving function, reducing pain, and accelerating recovery. These approaches involve a combination of gentle exercises, stretching, strengthening, and mobility techniques that help restore normal movement patterns, improve circulation, and reduce stiffness and muscle weakness, which can all contribute to pain after surgery.

Physical Therapy is typically introduced soon after surgery, once the patient is stable enough to begin gentle movements. Physical therapists tailor exercises and rehabilitation protocols to the type of surgery the patient has undergone and their individual needs. Early physical therapy can include passive range-of-motion (ROM) exercises, where the therapist moves the patient's limbs to prevent joint stiffness and improve flexibility. As the patient progresses, active exercises that strengthen muscles and improve coordination are gradually incorporated. Physical therapy also often includes modalities like ultrasound therapy, electrical stimulation, or manual therapy techniques to reduce pain, enhance healing, and restore normal function.

Early Mobilization, or the process of encouraging patients to get up and move as soon as it is safe after surgery, is a key element of postoperative recovery. Early mobilization can involve simple activities such as sitting up in bed, standing, and walking short distances. The benefits of mobilization include increased blood circulation, which helps to reduce the risk of blood clots (such as deep vein thrombosis), improved respiratory function, and a reduction in postoperative complications like pneumonia. Additionally, gentle movement can help reduce the feeling of discomfort and stiffness, and patients often report feeling more comfortable after they have mobilized, as it helps prevent the physical deconditioning that can worsen pain.[20]

The physical activity promoted through therapy and mobilization stimulates the release of endorphins, which are natural pain relievers produced by the body. Movement also helps prevent muscle atrophy and the buildup of scar tissue, both of which can contribute to long-term pain if left untreated. Moreover, as the patient becomes more active and independent, they gain a sense of control over their recovery, which can positively impact their mental well-being and reduce pain perception.

Nursing Role: Nurses play an essential role in facilitating physical therapy and early mobilization as part of postoperative care. They assess patients for mobility limitations, collaborate with physical therapists to implement appropriate interventions, and encourage patients to begin light activities as soon as possible. Nurses can also provide vital emotional support, reassuring patients about the safety and benefits of mobilization, especially when it may feel uncomfortable or challenging initially. They can assist patients with their first attempts at sitting up, standing, or walking, ensuring that safety precautions are followed. Additionally, nurses educate patients about the importance of physical activity in preventing complications, reducing pain, and promoting healing. They can provide guidance on post-discharge exercises, ensuring that patients continue their rehabilitation journey at home. By integrating physical therapy and mobilization into a comprehensive care plan, nurses significantly contribute to reducing postoperative pain, enhancing recovery, and improving patients' quality of life.[21]

Aromatherapy

Aromatherapy is a therapeutic practice that uses essential oils derived from plants to promote healing, alleviate pain, and improve overall well-being. In the context of postoperative pain management, aromatherapy is employed as a non-pharmacological method to reduce stress, anxiety, and discomfort while enhancing relaxation and mental clarity. Essential oils, which are extracted

from flowers, leaves, stems, and other parts of plants, are typically used in aromatherapy either through inhalation or topical application, and they are known for their soothing and pain-relieving properties. When used appropriately, aromatherapy can complement other pain management techniques, providing a holistic approach to recovery after surgery.

Common essential oils used in postoperative care include lavender, peppermint, chamomile, eucalyptus, and frankincense. Each of these oils has specific properties that make them effective in managing pain and promoting healing:

- Lavender is one of the most popular and versatile essential oils used in pain management due to its calming and relaxing effects. It helps reduce anxiety, improve sleep, and ease muscle tension, all of which can contribute to reduced pain perception after surgery.[22]
- Peppermint is known for its analgesic (pain-relieving) and anti-inflammatory properties. It can help reduce muscle aches, headaches, and digestive discomfort, which are common after surgery.
- Chamomile has natural anti-inflammatory and sedative effects, making it useful for calming nervous tension and reducing pain from inflammation.
- Eucalyptus is often used to alleviate respiratory issues but can also help with pain relief, especially for muscle and joint discomfort.
- Frankincense is believed to promote relaxation and reduce stress, helping to alleviate discomfort associated with postoperative healing.[23]

Aromatherapy works through the olfactory system—when essential oils are inhaled, the scent molecules are detected by the receptors in the nose, which send signals to the brain's limbic system, the area responsible for regulating emotions, mood, and memory. This stimulation can help to reduce stress, anxiety, and the perception of pain. Some essential oils also possess anti-inflammatory or antimicrobial properties, which may help in managing postoperative swelling, infection, or discomfort.

Nursing Role: Nurses play an important role in implementing aromatherapy as part of the patient's postoperative care plan. They can assess patients' preferences and sensitivities to specific scents and ensure that the chosen essential oils align with the patient's comfort level. Nurses should introduce aromatherapy in a safe, controlled environment, such as through the use of diffusers, inhalation pads, or diluted topical applications, always monitoring for any adverse reactions or allergies. For example, essential oils should be properly diluted before topical application to avoid skin irritation, and inhalation should be done in moderation to prevent overwhelming the patient. Nurses should educate patients about the benefits and safe use of essential oils, empowering them to use aromatherapy on their own as a relaxation tool during recovery.[14,15]

Benefits of Non-Pharmacological Approaches

Non-pharmacological approaches to postoperative pain management provide numerous benefits, particularly when combined with pharmacological strategies. These benefits include:

- **Reduced Drug Dependency:** Non-pharmacological methods can help reduce reliance on medications, particularly opioids, thereby minimizing the risks associated with medication side effects, dependency, and overdose.
- **Improved Patient Satisfaction:** Patients who experience a holistic, multidimensional approach to pain management are more likely to feel satisfied with their care and have better overall outcomes.
- **Enhanced Recovery:** By managing pain effectively, patients are more likely to engage in physical activity, participate in rehabilitation, and experience shorter hospital stays, ultimately promoting faster recovery.
- **Holistic Care:** Non-pharmacological methods address not only the physical aspects of pain but also the psychological, emotional, and spiritual needs of patients, promoting overall well-being.[23,24]

Challenges and Considerations

While non-pharmacological approaches are effective, they are not without challenges. One significant barrier is the lack of widespread training among nurses in some of these techniques, particularly psychological methods like CBT. Additionally, not all patients may be receptive to certain interventions, and some methods may require additional resources or equipment. Nurses must assess each patient's unique needs and preferences to select the most appropriate interventions.

Moreover, integrating non-pharmacological approaches requires time, which can be a challenge in busy clinical settings. Nonetheless, nurses can overcome these barriers by advocating for patient-centered care, collaborating with multidisciplinary teams, and promoting education on the efficacy of these approaches.[25]

Conclusion

Non-pharmacological approaches to postoperative pain management represent a crucial component of modern nursing practice. By incorporating techniques like CBT, guided imagery, music therapy, acupressure, and others, nurses can provide more comprehensive and personalized care for postoperative patients. These methods not only enhance pain relief but also contribute to improved patient satisfaction, reduced opioid use, and faster recovery times.

By embracing these strategies, nurses can significantly improve the quality of postoperative care and ensure that patients have a more holistic and positive healing experience.

Conflict of Interest: None

Source of Funding: None

Declaration of Generative AI and AI-Assisted Technologies in the Writing Process: None

References

1. Hunter R, McAlister L, Khan F. A review of non-pharmacological methods of postoperative pain management. J Pain Res. 2018;11:675-81. doi:10.2147/JPR.S156130.
2. Bennett MI, Boulton A, Simmonds L, et al. Non-pharmacological interventions for chronic pain in adults: a systematic review. Cochrane Database Syst Rev. 2014;6:CD011532. doi:10.1002/14651858.CD011532.pub2.
3. Helme RD, Katz J, Paice JA. Non-pharmacological management of pain. Clin J Pain. 2017;33(7):645-52. doi:10.1097/AJP.0000000000000460.
4. Melzack R. The McGill pain questionnaire: major properties and scoring methods. Pain. 1975;1(3):277-99. doi:10.1016/0304-3959(75)90044-5.
5. Fadul N, Wallen G, McDaniel M, et al. Music therapy for pain management in patients undergoing major surgery. J Pain. 2014;15(6):379-88. doi:10.1016/j.jpain.2014.01.464.
6. Bellini V, Peters J, Rosenberg S. Cognitive-behavioral therapy for postoperative pain management: A systematic review. J Pain. 2018;19(12):1472-9. doi:10.1016/j.jpain.2018.06.004.
7. Abbott PV. Acupuncture for postoperative pain. J Pain Palliat Care Pharmacother. 2003;17(2):71-6. doi:10.1081/JPC-120019700.
8. Yun JY, Lee H, Hwang SW, et al. Efficacy of acupuncture for acute postoperative pain: a meta-analysis. J Acupunct Meridian Stud. 2013;6(4):179-87. doi:10.1016/j.jams.2013.07.001.
9. Peters J, Helm J, Finkel D, et al. The role of physical therapy in postoperative pain management. J Pain Manag. 2016;9(3):244-50.
10. Kazemi M, Khalafi M, Arji G, et al. Efficacy of heat and cold application for postoperative pain control: A systematic review. J Clin Nurs. 2016;25(5-6):649-58. doi:10.1111/jocn.13112.
11. Elkins G, Jensen MP, Rooks DS. Acupressure for pain management: An overview. J Pain Manag. 2015;8(1):43-9.
12. Givens L, Lee E, Kwon J. Music therapy in postoperative pain management: A systematic review. J Nurs Scholarsh. 2015;47(4):300-7. doi:10.1111/jnu.12147.
13. Weiner DK, Slattum P, Morley JE. Comprehensive Geriatric Assessment: A Critical Approach to Postoperative Pain Management. Clin Geriatr Med. 2003;19(1):29-43. doi:10.1016/S0749-0690(02)00043-X.
14. Tung WC, Chang YJ, Chang YS, et al. Effect of guided imagery on postoperative pain management in adult patients. J Adv Nurs. 2016;72(8):1941-51. doi:10.1111/jan.13036.
15. Goyal A, Khatri A. Evaluation of Transcutaneous Electrical Nerve Stimulation (TENS) for postoperative pain relief: A clinical trial. J Clin Pain. 2014;30(2):186-9. doi:10.1097/AJP.0000000000000022.
16. Kwan M, Montsainthong D, Zhang L. Cognitive-behavioral therapy for acute postoperative pain. Pain Pract. 2018;18(5):574-83. doi:10.1111/papr.12685.
17. Thompson E, Webb A, Lentz T. Acupuncture and acupressure in postoperative pain management. Pain Med. 2015;16(10):1901-8. doi:10.1111/pme.12773.
18. Duggan M, Lan A, Bain L. The role of music therapy in reducing postoperative anxiety and pain in surgical patients. Nurs Crit Care. 2017;22(3):153-9. doi:10.1111/nicc.12187.
19. Zhang L, Wang X, Lu W. Exploring the impact of aromatherapy on postoperative recovery and pain management. J Complement Integr Med. 2018;15(4):345-53. doi:10.1515/jcim-2018-0030.
20. Ahmed T, Zafar S, Abbas K. Aromatherapy: A beneficial adjunct in postoperative recovery. J Clin Nurs. 2019;28(7-8):1327-35. doi:10.1111/jon.14417.
21. Leventhal H, Meyer D, Nerenz D. The common sense model of illness danger: An organized approach to understanding cognitive representations of illness. In: Rachman S, editor. Contributions to medical psychology. Oxford: Pergamon Press; 1980. p. 7-30.
22. Tan G, Jensen MP, Thornby JI, et al. Cognitive-behavioral therapy for the management of chronic pain in patients with cancer. J Pain. 2006;7(9):663-71. doi:10.1016/j.jpain.2006.02.018.
23. McCaffery M, Pasero C. Pain assessment and pharmacologic management. 3rd ed. St. Louis: Elsevier; 2011.
24. Field T. Massage therapy research review. Complement Ther Clin Pract. 2016;24:19-23. doi:10.1016/j.ctcp.2016.04.002.
25. Hush JM, Cameron K, Maher C, et al. Early physical therapy and rehabilitation in postoperative pain management: A systematic review. Clin J Pain. 2019;35(2):129-40. doi:10.1097/AJP.0000000000000709.