**Therapeutic Nursing Interventions: Post-Operative Pain Management**

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**Post-operative Pain Management**

 The purpose of this assignment is to assess nursing interventions that are currently practiced on a neurological unit and to explore effective alternative methods to managing pain on neurosurgical patients. I chose to focus on this matter because I work on a neurological unit at a level II trauma center and see patients that have all types of surgeries and experience post-op pain. This unit comprises of 36 beds on two wings (18 beds on each side) medical-surgical patients who require neurological assessments every 4 hours. We primarily care for patients who have experienced strokes, undergone spinal and back surgeries, have seizures, encephalopathy, multiple sclerosis etc. The acuity level of this unit tends to be much higher than other med-surg units. Our staffing matrix is six patients to one nurse with the charge nurses also having six patients. There is also a unit secretary on each side as well as a certified nursing assistant (CNA) that takes care of 18 patients. Post-op pain is quite common on this unit and with the staffing matrix it is extremely hard to manage effectively.

**Clinical Problem: Post-op Pain**

Pain is one of the most common, unpleasant, and frightening symptoms associated with surgery and can be seen in any healthcare setting (Mwaka et al., 2013). It is significant in this setting because the surgeries involve the brain and spine and some most patients have drains that are sutured in place to collect blood from the surgical sites which should be assessed regularly especially in the first 24 hours after surgery. Although there are formal and informal mechanisms to deal with post-op pain management on the unit in place, research and technology are constantly changing and transforming healthcare to allow to effectively manage pain. Poor pain control impedes postoperative rehabilitation, reduces patients’ health-related quality of life, causes significant personal burden, and adds to national health care expenditure (Graff & Grosh, 2019).

Being that I work on this unit I have personally witnessed many cases in which patients’ hospital stays have been prolonged due to poor pain control. Patients cry when in pain, have attitudes and are just not themselves because they are hurting and uncomfortable. They feel miserable and sometimes take it out on staff. These patients will ask for intravenous (IV) pain medications because it gives them faster relief, but then it raises concern for drug abuse or believe the patient may be drug seeking. When a patient is in pain, they also do not want to participate in physical therapy which hinders their healing process and prolongs their discharge from the hospital. Pain is a subjective feeling, and the self-assessment of pain by the patient and evaluation by the observer can be influenced by a variety of factors, including but not limited to socio-economic status, beliefs, and psychological status (Tandon et al., 2016).

**Current Practice**

**Formal Mechanisms**

Formal mechanisms on the unit start with pain assessments done every four hours on any post-op patient. There are orders in place that contain medications such as acetaminophen, gabapentin, and celecoxib scheduled to treat pain and reduce inflammation prophylactically with as needed opioids and muscle relaxers that are given orally and intravenously for breakthrough pain. Once administered, our policy states that the patient must be reassessed within an hour after administration to determine status and if changes need to be made to the current pain management regimen. This is a step that is often missed for several reasons. Nurses are not neglecting to do reassessments on purpose but rely on the patient to inform them of their current pain levels or the patient may be sleeping, and it is taken as if they are not in pain. Hourly reassessments are difficult to complete when a nurse has six patients and several of those are surgical patients. Pain assessments and reassessments are more difficult at night due to patients sleeping or not wanting to bother the nursing staff.

**Informal Mechanisms**

Informal mechanisms of pain management are non-pharmacological methods such as heat or ice compression. Patients come to the unit with cold gel packs post operatively, but they are rarely used and the freezer for the icepacks are too far from the patient rooms and are often forgotten. There is evidence that proves that cold therapy works for several types of localized pain. In a study by Keawnantawat et al. (2017) patients in a randomized controlled trial received cold applications post-operatively after cardiac surgeries had less pain compared to patients that received routine care. They also found that pain scores in the experimental group were significantly decreased during the first 72 postoperative hours therefore making cold therapy effective in reducing pain after cardiac surgery in the acute phase (Keawnantawat et al., 2017).

 On the other end, the nurses offer warmed blankets in the hospital. Most health care environments are cold. Warm blankets are given by the nurses to promote comfort in an uncomfortable environment. Post-operative patients often complain that hospital beds are uncomfortable, small, and restrictive. Patients are often very appreciative of warmed blankets because it promotes relaxation and comfort. Kovach (2019) found that there are “significant decreases in both pain level and agitation among baseline, 20 minutes after application.” I would also offer warm showers to those patients whose mobility level safely allows them to ambulate to the bathroom without falling. This is also helpful, and patients appreciate this nonpharmacologic way of reducing pain and getting refreshed at the same time. These methods are helpful in managing pain in conjunction with pharmacological options that are ordered by physicians. Informal methods of pain management focus less on pain rating and more on involvement in promoting positive emotional wellbeing aimed to reduce stress and increase comfort.

**Suggested Nursing Interventions**

The goal is to effectively manage and reduce pain in post-operative neurosurgical patients in a safe manner while reducing the use of narcotics in the hospital setting. Narcotic and opioid use poses the risk of addiction and drug abuse, decreased respiratory effort, constipation, nausea and vomiting and other adverse effects. Exploring alternative ways to reduce pain will decrease the risk of opioid addiction and drug abuse, prolonged hospital stays, and rising cost of healthcare.

**Virtual Reality**

 Virtual reality (VR) is new in technology and is something we have heard of with gaming or watching television and movies. Improvements in software and design and reduction in cost have made virtual reality (VR) a practical tool for immersive, three-dimensional (3D), multisensory experiences that distract patients from painful stimuli (Tashjian et al., 2017). There is new research that suggest that VR can have therapeutic effects in pain management. Mechanistic theories behind how it works suggest that by stimulating the visual cortex while engaging in other senses, VR programming acts as a distraction to limit a person’s processing of nociceptive stimuli (Black, 2020). In this article, the author went on to quote Mark Young, MD stating that “it captures the mind’s attention and blocks pain signals from reaching the brain.” Spiegel et al. (2020) conducted a randomized trial to determine the effectiveness of virtual reality on pain management of hospitalized patients. Patients who watched a health and wellness video through a VR headset yielded improved pain scores versus the score of the patients watching the same video on a regular television (Spiegel et al., 2020).

**Transcutaneous Electrical Nerve Stimulation**

 A nonpharmacological method to manage post-operative pain in through a Transcutaneous Electrical Nerve Stimulation (TENS) unit. A TENS (transcutaneous electrical nerve stimulation) unit is a small, battery-operated device that can help with pain management. The device has leads attached to adhesive pads called electrodes. The electrodes are placed on the skin near the painful area. It delivers mild electrical impulses that can be adjusted in frequency and intensity to help modify pain signals in your body (Jacques, 2020). There are overwhelming sources supporting TENS as an effective source for pain relief related to about anything from bursitis, arthritis, tendonitis, surgeries, headaches, injuries, and wounds among other things (Stubblefield, 2017). I believe it can be used to assist in alleviating pain in neurosurgical patients. It has proven to be an effective method of localized pain control and can be used in addition to pharmacologic methods. TENS reduces the frequency in narcotic use and is a safer method to treat pain.

**Multimodal Analgesia**

Pharmacologic intervention is the most widely used method of effective pain management. The focus is to use medications to promote incisional wound healing and comfort to assist in better post-operative prognoses and satisfaction. In a research study by Polomano et al (2017) it states that multimodal analgesia (MMA), which combines analgesic drugs from different classes and employs analgesic techniques that target different mechanisms of pain, is recommended in the treatment of acute postoperative and trauma-related pain because its synergistic effect maximizes pain relief at lower analgesic doses, thereby reducing the risk of adverse drug effects. This approach may employ the following use of analgesics including opioids and nonopioids such as acetaminophen and nonsteroidal anti-inflammatory drugs (NSAIDs), gabapentin, pregabalin, serotonin norepinephrine reuptake inhibitors (SSRIs), tricyclic antidepressants (TCAs), neuraxial (epidural and intrathecal) interventions, peripheral nerve blocks interventions, and intraarticular and wound infiltrations with local analgesia (Polomano et al., 2017). The use of MMAs does not rule out opioid use but focus on reducing the unwanted effects of opioid abuse and addiction.

Patient education is an integral part of multimodal pain management. They need to understand the rationale for their treatment and for the use of all medications and interventions both during and after hospitalization (Polomano et al., 2017). Providers need to be careful in how they prescribe these medications and find alternative ways to manage post-operative pain in surgical patients.

**Implementation**

 There is an abundance of research about the use of MMAs. It is the most used method of nonnarcotic pain control by targeting pain in ways that will promote healing and pain control both actively and prophylactically. It is an approach that I have seen certain neurosurgeons use on the unit. The incorporation of MMAs is becoming the first line agent when it comes to pain management. More research continues to show us how MMAs would affect neurosurgical patients that have undergone craniotomies, back and spinal surgeries etc. The evidence to support a multimodal approach is growing; neuro-anesthesiologists and neurosurgeons should seek to incorporate multimodal analgesia into the perioperative care of craniotomy patients. Discussions about the risk and benefits of MMAs for specific patients should be addressed between the healthcare team. It is important to assess pain level and tolerance, beliefs, history, and current methods of pain relief with patients prior to administering any pain medications.

 Research for virtual reality (VR) is still in the beginning phases with little research to establish that VR is an appropriate measure for pain management in neurosurgical patients. VR is new and still in the initial stages of research and implementation. The use of VR requires more studies to determine how and when it should be used as well as the scientific determinants in how it affects the brain’s ability to perceive pain. This especially holds true to patients who have a history of seizures, epilepsy, or other neurological issues. VR is known to be effective with most pain management because it distracts your brain from thinking of pain. More research regarding the types of VR programs, the cost related to its use and how long a patient should use this type of pain relief also needs to be conducted before becoming widely used.

 Other technology like the transcutaneous electrical nerve stimulation (TENS) has been widely researched and studied to be used as a nonpharmacologic method of pain control that is currently accepted in the healthcare community. The effectiveness of TENS treatment varies depending on what condition you are treating, and how intense the treatment is. More research is needed in patients who feel pain after spine and neck surgeries to determine if TENS is appropriate for neurosurgical patients. Nurses will need education on proper administration of TENS with neurosurgical patients. Neurosurgeons need to accept the research regarding TENS and have it as a suitable option for pain management in their patients. Administrators need to evaluate the cost effectiveness of TENS before introducing it to the hospital and clinical setting.

**Summary**

Pain is subjective. A patient that underwent a minimally invasive surgery may rate their pain at 10 on a 0 to 10 pain scale while another patient who just underwent extensive spinal fusions may rate their pain at 3 on the same pain scale. No two people are alike and what one person feel is unbearable another may feel its tolerable. It is important for the patient to be prepared for anticipated pain rather than expecting it. This heightens the patient’s anxiety and makes it hard for nurses to manage their pain. Communication is important when addressing the pain needs of surgical patients. Nurses also need not judge the patient based on what procedures were performed and not assume all patients are drug seeking. Remembering pain is subjective will remind the nursing staff to be nonjudgmental. Alternative methods of pain relief should be discussed with the patient, so they are aware of their options.

 Nurses need to also understand that certain medications may bring upon adverse effects such as nausea, vomiting or confusion. They also need to realize that patients may not react well to non-pharmacological methods as well. Adequate pain control is managed with a balance of pharmacologic and non-pharmacologic methods that assist in promoting healing and recovery in post-surgical patients. I believe that introducing new forms of pain management such as MMAs, VR and TENS to neuroscience will allow nurses to provide more options to alleviate pain in post-operative patients. Newer forms of pain management are introduced to improve patient satisfaction and safety with more research and studies of new ways to manage post-operative pain. In the end, pain will be better managed, and the patients will be happy and pain free.

**References**

Black, R. (2020). Virtual Reality Programs for Pain, Stress and Depression. Practical Pain Management. <https://www.practicalpainmanagement.com/patient/virtual-reality-for-pain-depression>.

Graff, V., & Grosh, T. (2019, November 3). Multimodal Analgesia and Alternatives to Opioids for Postoperative Analgesia. Anesthesia Patient Safety Foundation. <https://www.apsf.org/article/multimodal-analgesia-and-alternatives-to-opioids-for-postoperative-analgesia/>

Jacques, E. (2020, April 24). Using a TENS Unit for Pain Management: TENS uses a small electrical current to alleviate pain. Very well Health. <https://www.verywellhealth.com/what-is-tens-and-how-does-it-work-2564548>

Keawnantawat, P., Thanasilp, S., & Preechawong, S. (2017). Effectiveness of cold therapy in reducing acute pain among persons with cardiac surgery: A randomized control trial Songklanakarin *J. Sci. Technol. 40*(6), 1378-1385. <https://rdo.psu.ac.th/sjstweb/journal/40-6/19.pdf>

Kovach, C. (2019). Do warm blankets change pain, agitation, mood, or analgesic use among nursing home residents? *Innovation in Aging,* *3*(1), 623. <https://doi.org/10.1093/geroni/igz038.2320>

Mwaka, G., Thikra, S., & Mung'ayi, V. (2013). The prevalence of postoperative pain in the first 48 hours following day surgery at a tertiary hospital in Nairobi. *African health sciences*, *13*(3), 768–776. <https://doi.org/10.4314/ahs.v13i3.36>

Polomano, R., Fillman, M., Giordano, N., Vallerand, A., Nicely, K., Jungquist, C. (2017, March). Multimodal Analgesia for Acute Postoperative and Trauma-Related Pain, *AJN, American Journal of Nursing, 117*(3), S12-S26. <https://doi:10.1097/01.NAJ.0000513527.71934.73>

Spiegel, B., Fuller, G., Lopez, M., Dupuy, T., Noah, B., Howard, A., Albert, M., Tashjian, V., Lam, R., Ahn, J., Dailey, F., Rosen, B. T., Vrahas, M., Little, M., Garlich, J., Dzubur, E., IsHak, W., & Danovitch, I. (2019). Virtual reality for management of pain in hospitalized patients: A randomized comparative effectiveness trial. *PLOS ONE, 14*(8). <https://doi.org/10.1371/journal.pone.0219115>

Stubblefield, H. (2017, December 28). Transcutaneous electrical nerve stimulation unit. <https://www.healthline.com/health/transcutaneous-electrical-nerve-stimulation-unit>

Tandon, M., Singh, A., Saluja, V., Dhankhar, M., Pandey, C. K., & Jain, P. (2016). Validation of a New "Objective Pain Score" Vs. "Numeric Rating Scale" For the Evaluation of Acute Pain: A Comparative Study. *Anesthesiology and pain medicine*, *6*(1), e32101. <https://doi.org/10.5812/aapm.32101>

Tashjian, VC., Mosadeghi, S., Howard, AR., Lopez, M., Dupuy, T., Reid, M., Martinez, B., Ahmed, S., Dailey, F., Robbins, K., Rosen, B., Fuller, G., Danovitch, I., IsHak, W., Spiegel, B. (2017). Virtual Reality for Management of Pain in Hospitalized Patients: Results of a Controlled Trial. *JMIR Mental Health. 4*(1) 9th ed. <https://doi.10.2196/mental.7387>

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