**Animal-Assisted Therapy and Pediatric Chronic Pain**

**Animal Assisted Therapy as a Complementary Treatment for Pediatric Chronic Pain**

Pain in children is a public health concern that affects most of the world. Chronic pain is classified as a pain that persists or recurs for longer than three months and it is experienced by about a quarter to a third of children around the world (WHO, 2020). Pain can cause emotional effects such as irritability, anger, distress, and depression (Muhammad, 2017). Thus, pain in children is more complex, and it involves physiological, psychological, behavioral, and developmental factors that are often difficult to assess (Srouji et al., 2010). There are two interventions to manage the pain, nonpharmacologic and pharmacologic involvement. However, pharmacology management alone is not always optimized and effective treatment in healthcare settings. Pain management in children sometimes remains un-recognized and treat insufficiently with about 10% of hospitalized children showing characteristics of chronic pain (Friedrichsdorf et al., 2016).

In terms of nonpharmacologic interventions, the advantage is that they are relatively inexpensive and safe, and these therapies can treat pain as adjuvant or complementary to other approaches. Complementary therapy is a treatment that enhances conventional approaches and has better outcomes for children with chronic pain (Srouji et al., 2010). Therefore, this approach can improve the quality of hospitalization experience for the patient with chronic diseases. Animal Assisted therapy, which involves interaction with animals may be one of most promising complementary interventions. Specifically, therapy using trained dogs has provided a positive change in terms of reduction of pain. In fact, following Animal Assisted therapy, pediatric patients experiencing chronic pain have shown a significant decrease in the self-reported feeling of pain in inpatient settings. Through this literature review, different studies were reviewed, and most of the studies were favorable to the positive outcome of the children population with chronic pain.

According to Friedrichsdorf et al. (2016), pediatric chronic pain is a global public health problem that posit 20% to 35% of children and adolescents affected by it. The total standard care costs for children and adolescents with moderate to severe chronic pain has been $19.5 billion annually in the USA. Animal-Assisted therapy as a complementary therapy has been described as effective in the management of pediatric pain. That said, chronic pain in children is a concern that needs the attention of healthcare providers to improve the quality of care in hospitalization. Animal-assisted intervention is a very important approach because its use has increased each day and has already been used by many health and educational professionals. However, it requires teamwork, collaboration, safety techniques, and communication to have effective results.

**QSEN competencies**

This paper will address Animal Assisted therapy as a complementary therapy for the treatment of chronic pain. All six different QSEN competencies such as patient-centered care, evidence-based practice, teamwork and collaboration, safety, quality improvement, and informatics are related to this therapy (QSEN Institute, n.d.). However, the most relevant is the QSEN competency of patient-centered care and will be addressed as the main focus of this paper.

The QSEN competency of patient-centered care is the most relevant. In patient-centered care, patient care requires meaningful consideration of a patient's health, well-being, and comfort as one of the highest priorities (Yamasaki, 2018). Since a safe nurse to the Animal-Assisted therapy will provide enough time to patient-centered care with sensitivity and compassion based on the children’s needs. This therapy shows the benefits of animal interaction and the personal bonds between the children and the dog. Therefore, nurses should be acknowledged of the time provided as part of the care to assess children with chronic pain.

Relating to evidence-based practice, integrating the best current evidence, nurses can deliver optimal health care. Animal-Assisted therapy is associated to decrease chronic pain in hospitalized pediatric patients, and several studies have shown research evidence that support the therapy outcomes and the importance in clinical practice.

Concerning the teamwork and collaboration competency, it is really important to accomplish an effective inter-professional collaboration during the Animal-Assisted therapy process to approach specific children’s needs, in this case, pain management. Nurses are ideally members of an open interdisciplinary communication and management team that can verbalize the therapy’s effectiveness, concerns, and errors related to the therapy. They also can integrate the contribution of family members to achieve health goals such as therapy compliance.

Another QSEN competency related to animal therapy is quality improvement. Seeking feasibility information about the outcomes of AAT can help in using those results to support appropriate techniques. Monitoring the effect of Animal-assisted therapy on the expression of self-reported pain would improve the quality and safety of this complementary therapy. To ensure the therapy is safe, it is vital to follow important health and behavior techniques such as hand hygiene, health and characteristics of the animal, patients’ response to open questions before and after the therapy, and so on.

The use of technology is another important competency to mitigate errors by gathering educational information. It will help to the nurse to provide an effective result to hospital management and representatives. Thus, they can make decisions to continue the use of Animal-assisted therapy and to implement in more hospital settings. Lastly, QSEN competency of safety is essential to minimize the risk of harm to patients, their family members, and to the healthcare team. Nurses should monitor and check the environment regarding the noise, equipment, circulation of people, to ensure that it is safe for all parties involved and with minimal adverse complications. (Ichitani & Cunha, 2016).

**Literature Review**

Chubak et al. (2017) conducted a quasi-experiment study to assess the feasibility of studying animal-assisted activities and the potential benefits of Animal-Assisted activities on hospitalized pediatric patients. As it was a pilot study in preparation for larger observational studies and randomized controlled trials, the sample size was small and had not to a control group. However, it had reasonable and consistent results with a reliable conclusion about Animal Assisted therapy. This research was performed on 19 unique (inclusive) inpatient participants aged 7 to 25 years (mean age=12.9 years) and all participants were from the hematology/oncology unit with a diagnosis of leukemia/lymphoma, sarcoma, or brain cancer. This study was conducted at Seattle Children’s Hospital between November 2015 and March 2016. The data sources consisted of patient self-report surveys completed before and after the therapy, direct observation of the visit by the researchers, EMR review, case review by Infection Prevention staff, and surveys to staff (e.g., physician, nurses, medical assistants). The AAT consisted of 25 visits of the dogs into the unit. The statistical analysis computed descriptive statistics and recorded pre- and post-intervention PedsQL Present Function scales and conducted hypothesis tests using the paired t-test. The study results of total score and emotional distress summary were significant. The patients had lower distress and significant decreases in worry, tiredness, fear, sadness, and pain. Postintervention total score and emotional distress summary score reveal significant decreases, Worry p<0.01, tiredness p<0.01, fear p=0.04, sadness p=0.02, pain p=0.02. Total score p=0.002, emotional distress summary score p=0.005. Results appeared to differ by age with children younger than 13-year-old who started with much worse score and experienced greater improvements than older children. The intervention was supported by providers and by the therapy outcomes. This study recommended that future studies are needed to assess risk for infection and lasting improvements in quality of life in children with cancer.

Marcus et al. (2012) conducted a randomized controlled trial study to evaluate the benefits of brief complimentary dog therapy visits to an outpatient pain facility. The population was a total of 382 participants aged ≥ 18 years old, diagnosed with back pain, fibromyalgia, neck pain, neuropathic pain, arthritis, other unspecified pain. The participants receiving the therapy visits were N=286 versus the 96 of the waiting room control. For the therapy, they used a certified therapy dog to avoid introducing an additional confounding variable. The study was conducted from June 1, 2011, to July 27, 2011. The study results showed improvements related for pain, mood, and distress among chronic pain patients after the therapy dog visit but not on the control group, with significant pain relief (decrease ≥ 2 points) in 23% after the therapy dog visit and 4% in the control group. As hospitalization is a very stressful environment, it is worth highlighting that hospital professionals who interact with the dog also showed greater ease and relaxation. The data about demographics, PHQ-4 results, and satisfaction questions were evaluated using descriptive statistics. The outcome measure was based on self-reported pain, fatigue and emotional distress recorded using 11-point numeric rating scales before and after therapy or waiting room time. Changes in mean pre- and post-intervention symptoms scores were calculated and the differences were evaluated with paired t-tests, with significance set at <0.05. The intervention values in patients who received therapy dog visits regarding pain, stress, anxiety symptoms, the p-value <0.0001, compared with the waiting room control for symptoms, pain p=0.516, stress p=0.237, anxiety p=0.125. This true experiment had a larger sample size and the result is very consistent and reliable.

Ichitani and Cunha (2016) conducted a qualitative study to verify the effects of animal-assisted activity (AAA) on the expression and quality of self-reported pain in hospitalized children and adolescents. The participants were 17 hospitalized children of both genders, aged 7 to 17 years with a chronic disease, who complained of feeling pain, and had the capacity for verbal expression. The average age was 12.1 years (SD=2.8 years, median= 11.8 years, range = 7.5 to 17.4 years). The data were predominantly descriptive and collected between October of 2014 and April of 2015. The content was analyzed by the following steps: pre-analysis, analytical description, and referential interpretation. Although the sample size can be considered a limitation, the key finding is that the introduction of the animals to the hospital environment generally resulted in clear benefits. This study used two trained dogs that underwent constant behavioral and health assessment for their safety and the safety of the subjects. Safety procedures were used in this research such as hand hygiene, the character of the animal, health, and cleaning of the animal. This study had a reasonably consistent result with fairly definitive conclusions on the positive effects of Animal-Assisted activities that decreased self-reported feeling of pain in children. The response to the open question before and after the AAA was grouped into four categories data (feelings, part of the body where feeling pain, the intensity of pain, other comments). Thus, it was suggested that AAA may cause a decrease in the sensation of pain and the dog can represent acceptance and attachment.

Calcaterra et al. (2015), conducted a randomized controlled trial study to better understand and describe the impact of Animal-Assisted therapy (AAT) on children's response to stress and pain in the immediate post-surgical period. The participants were 40 children (32 M and 8 F) aged 3-17 years who were randomized into two groups. One group underwent a 20 minutes session with AAT after surgery, and the other one was in the standard postoperative care. They considered as outcomes the electroencephalogram activity, heart rate, blood pressure, oxygen saturation, cerebral prefrontal oxygenation, salivary cortisol levels, the faces pain scale, and child’s self-reported pain. The result of this study showed that after the introduction of the dog, the electroencephalogram diffuse beta-activity (> 14 Hz) was faster in all children of the animal-assisted therapy group; in the standard-group, no beta- activity was recorded (100% vs 0%, p<0.001). The beta activity was correlated with an increase in attention, which can explain the finding of a higher threshold pain perception. During observation, some differences in the time profile between groups were observed for heart rate (test for interaction p = 0.018), oxygen saturation (test for interaction p = 0.06) and cerebral oxygenation (test for interaction p = 0.09). AAT also influenced the systolic and diastolic blood pressure observing a higher variability in diastolic pressure. So, the study could affirm that early post-operative intervention with AAT stimulation could help rapid recovery of vigilance and activity after anesthesia. The group that received standard care showed a longer anesthesia time in comparison with the AAT group. This therapy is beneficial for children undergoing surgical procedures. It aids to have a faster recovery, modifies pain perception, and induces an emotional prefrontal response.

**Synthesis**

The literature review on the use of Animal-Assisted therapy as complementary treatment suggested that it is an effective way to help to reduce pain in hospitalized children. Furthermore, one study demonstrated the positive effects of AAT regarding decreasing self-reported pain in children because, during dog therapy, pediatric oncology patients can distract, and the interaction can increase happiness. The dog might represent acceptance and affection at the moment of great emotion (Ichitani, 2016). Moreover, AAT not only decreases pain but also has been found to lower emotional distress in the hospitalized pediatric population (Chuback et.al., 2017). AAT process is increasingly being used in the context of health and education that is guided, structured, and planned with monitoring from healthcare professionals (Ichitani, 2016). Although previous studies have been effective in the different population age, more randomized controlled trial studies are needed to support the benefits of the therapy and the risks of it. During the time of one study, there were several infections in the weeks following the Animal Assisted therapy, but none could be attributed to the therapy. The authors of that study recommended future large-scale randomized studies to rule out and to assess whether AAT increases the risk for infection besides the potential benefits of the AAT for the children population (Chubak et al., 2017). In the setting where the study was done, positive feedback was obtained from providers and medical staff supporting the AAT implementation in pediatric oncology settings because of the favorable effects on those patients.

Animal Assisted therapy also had effects on an outpatient facility with a population age >18 years. A true experiment with large sample size and control group (waiting room area) showed reliable and consistent results. Although the focus was not on the children's population, this study could demonstrate that AAT decreased pain. Clinical meaningful pain relief was achieved by 26.2% of the patient receiving the therapy dog vs 3.4% in the waiting (Marcus et al., 2012). The study also considered emotional distress and fatigue outcomes. AAT may be a worthwhile complementary addition to pain management clinics because of the positive results not just in the patients but also in family and friends accompanying patients to the appointment and clinical staff as well.

Among all articles, the last one mentioned was distinctive from the other ones because of the relatively substantial patients sample size and the inclusion of non-patients for evaluation. Thus, after the literature review, one of the QSEN competencies that was considered to be the most important for Animal-Assisted therapy is patient-centered care competency, which requires significant consideration of a patient’s health and comfort. Patient-centered care is defined to recognize the patient as the source of control in proving compassionate and coordinated care based on respect for the patient’s preferences, values, and needs (QSEN Institute, n.d.).

The current best nursing practice is pain management about Animal Assisted Therapy. Standard practice for pain management refers to the administration of an anesthetic agent, medication, or technique to decrease pain. During my clinical rotation, I saw the use of several opioids for children pain such as acetaminophen, nonsteroidal and anti-inflammatory drugs. Despite the benefits of opioids for pain management, opioids have been associated with a range of side effects including respiratory depression, constipation, cognitive dysfunction, dependence, and heightened pain sensitization (Wren et al., 2019). The articles provided in the literature review recommend and consider Animal Assisted therapy as one of the best practices in the management of pain because the patients and/or family members experienced comfort, lower time in recovery, and understanding of the benefits. Moreover, not only the patient was involved but the family and caregivers were coordinated to integrate into the therapy. Nurses could assess the level of physical and emotional discomfort by asking open questions and doing a physical examination. Chronic pain management in children may be very challenging when assessing because children often do not know how to express their feelings or emotional expression differently as adults do. Self-report may vary depending on the age and cognitive ability of the children. For nurses, it is really important to determine a patient’s baseline cognitive abilities to select the correct assessment tool. Best practices in nursing for pharmacology or complementary therapy are important methods because they serve to direct nurses to identify patients’ needs. Knowing the side effects of the medications, types of medications for mild and severe pain, the lasting of medication, all that can impact on the delivery of care. Therefore, the patient centered care competency, which involves also initiating effective treatment, would help to relieve pain and suffering in children using AAT.

In terms of Patient-centered care in the area of education, the population who will receive education are health care providers and patients. The health care providers should demonstrate a comprehensive understanding of the AAT and physiological models of pain and expressions. They should know also the safety and quality techniques used to have an effective outcome before the therapy process. The challenges in providing information would be time-consuming to include the AAT in a daily schedule. When patients receive education, it is important to know the patients’ cognitive level. If caregivers or family members are involved, they may receive a pamphlet or brochure to improve understanding of the therapy and take a more active role in the process. During my Psych clinical rotation, we provided an education class to lower stress, we used a pamphlet and demonstration of some relaxing techniques for patients and family members. Therefore, a recommendation for time challenge will be summarizing important topics and have a dynamic education method such as an informative and inviting pamphlet. In this case, as the population is children, the focus of the education dissemination will be more beneficial to the family member attending the therapy.

Patient-centered care requires meaningful consideration of the patient’s well-being. So, the AAT should be acknowledged as part of this care. In the area of research, the authors’ recommendation for further clinical studies was to have large-scale studies and to find the possible complication of using Animal-assisted therapy in children with chronic pain. After reading the articles, my recommendation would be that the pediatric facilities continuing with future studies and find more facts about the benefits of the AAT.

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