The Impact of Play and Recreation on Reported Pain Levels in Children with Cancer

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Individuals diagnosed with cancer have benefited tremendously in recent years with advances in treatment that have emerged. However, managing the symptoms that often accompany these treatments is an issue that still needs to be addressed. Additionally, while symptom management is an important issue for all individuals undergoing treatment for cancer, it should be noted that the needs of children and adolescents with cancer may be especially unique. Not only can a prolonged hospitalization be detrimental to development, but treatments in general can cause distress and pain that affect a child’s quality of life and well-being. Research conducted in this area suggests that in addition to standard care and pharmacologic treatments, healthcare providers should include additional interventions that could help reduce the distressing and painful symptoms of treatments (Windich-Biermeier, Sjoberg, Dale, Eshelman, & Guzzetta, 2007). These interventions can be classified in several ways, but most are typically described as “nonpharmacologic adjunctive therapies”, “cognitive-behavioral strategies”, “noninvasive support care”, or “complementary and alternative medicine”. The underlying focus of all of these interventions is to improve the child’s overall quality of life by increasing their perception of control, distracting them during treatments to improve compliance, and decrease their overall pain levels through distraction and relaxation.

In order to better understand pain management in children with cancer, the definition of pain must be understood first. According to the International Association for the Study of Pain [IASP], pain is defined as:

An unpleasant sensory and emotional experience associated with actual or potential tissue damage, or describe in terms of such damage. The inability to communicate verbally does not negate the possibility that an individual is experiencing pain and is in need of
appropriate pain-relieving treatment. Pain is always subjective. (Shepherd, Woodgate, & Sawatzky, 2010, p. E318)

This is vital in fully comprehending pain management because it shows that the experience of pain is personal and unique to the individual, and must be treated as such. It also indicates that pain isn’t always verbally communicated, so healthcare providers often need to look to other indicators, such as emotions, behaviors, and psychological needs, to effectively evaluate pain and distress (Shepherd, 2010). Pain resulting from treatments can make it very difficult, for children especially, to comply with and continue treatments, reducing their rate and chances of improvement (Gershon, Zimand, Lemos, Rothbaum, & Hodges, 2003). According to the American Cancer Society in 2010, it was estimated that 10,700 children would be diagnosed with cancer in that single year alone (as cited in Shepherd, 2010, p. E318). Those numbers combined with children already undergoing cancer treatment, support the claim that pain management is a significant concern and interventions that facilitate positive coping should be embraced and utilized by professionals involved in a comprehensive treatment plan.

One coping mechanism frequently used in treatment by recreation therapists working with children experiencing pain associated with cancer is distraction (Windich-Biermeier et al., 2007). By using recreation and play as a therapeutic outlet, Certified Therapeutic Recreation Specialists (CTRS’s) are often able to assist in promoting independence and an internal locus of control, while also improving the child’s quality of life; this is therapeutic recreation is its most basic, but essential, form.

It is also important to acknowledge that, by design, every human being is different. Due to each individual’s needs and interests, children may require a variety of interventions to effectively distract their attention away from the treatment or procedure causing them pain.
(Gershon et al., 2003). The evidence supporting distraction for pain management notes these differences, and uses different modalities across the range of studies.

One possible intervention that can be used as a distracter for children undergoing painful cancer treatment is virtual reality. Gershon et al. (2003) completed a case study with one child who was diagnosed with acute lymphocytic leukemia. Their objective was to determine whether immersive virtual reality was an effective distracter during the child’s treatment (a port access), and furthermore, if it was more effective than regular video games. The measures used in this study were the Multidimensional Anxiety Scale for Children (MASC), which measures for anxiety, the Visual Analogue Scale (VAS), which measures for pain and anxiety, and the Child Behavior Checklist (CBCL), which is a questionnaire completed by the parents, asking about the child’s behavior and social abilities. The child’s pulse rate was also monitored before, during, and after the treatment session. The child’s port was accessed four times during the study, once to determine a baseline, once to study the effects of the video game, a third time where the child played a virtual reality game, and a last time again without any form of distraction. The results of this study showed that the child’s lowest pain ratings from all measures were during the immersive virtual reality condition. Although this demonstrated that virtual reality can be an effective distracter for pain management in children with cancer, it cannot be generalized for all children with cancer because it was a single case study (Gershon et al., 2003).

In a second study, done by Windich-Biermeier et al. (2007), virtual reality games were used again. This time it was one of five options for children to choose from, in order to study the effect of distraction on pain, fear, and distress in children. A group of 50 children were split into two groups, a comparison group receiving standard therapy, and an intervention group receiving standard care with some form of distraction. The children had five different choices: I Spy:
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*Super Challenger* book, a music table, virtual reality glasses, or a Nintendo *Gameboy Advance* (Windich-Biermeier et al., 2007, p. 8-10). According to Windich-Biermeier et al. (2007), the children were allowed to choose the distracter on their own, with the belief that:

Participants would choose a distracter based on personal preferences, individual characteristics, and level of attraction for a particular item, thus maximizing the possibility that the distracter would beneficially affect participant outcomes…We included five age-appropriate distracters in our design, believing that if participants had a choice, it might foster a sense of mastery and control over the situation and empower their coping. (p. 10-16)

This study measured the participant’s pain level with the Color Analogue Scale (CAS), fear level with the Glasses Fear Scale (a variation of the Visual Analogue Scale), and their behavioral distress level with the Observation Scale of Behavioral Distress (OSBD). The nurse also asked the child an IV Poke Questionnaire after the procedure. The results indicated that the children in the invention group had better ratings (less pain, fear, and distress) overall than the comparison group. The study also showed a correlation between the child’s perceived pain level and fear rating. 91% of the children in the intervention group reported that they would use the distracter again because it helped, and 100% of the parents reported the same (Windich-Biermeier et al., 2007, p. 8-17).

The next few studies looked at complementary and alternative medicine (CAM) as a distracter and method of relaxation for children coping with pain from cancer. There are many different forms of CAM, including (but not limited to) progressive muscle relaxation, guided imagery, deep breathing activities, music therapy, and humor and laughter. This, again, is
recreational therapy in the sense that recreational modalities are used in a therapeutic manner to improve the child’s well-being.

The first study, completed by Rheingans (2007), was a literature review looking at the effect of CAM on procedural pain, distress, and anxiety. After reviewing forty one studies, it was found that the top interventions used were distraction, relaxation, imagery, and play or music therapy, all of which are recreational therapy modalities. Virtual reality was again brought up in one of the articles, proving its effectiveness once more. In all of the studies, the interventions used were proven effective, having a decrease in pain and distress (Rheingans, 2007).

In another literature review, done by Shepherd et al. (2010), CAM was demonstrated to be effective again. The literature in these studies were evaluated using the Human Response to Illness (HRTI) model, which address four aspects of pain: physiologic (the body’s normal way of interpreting pain), pathophysiologic (an altered reaction), experiential (individual’s perspective), and behavioral perspectives (the individual’s observed behaviors). It also looked at two main factors for how an individual reacts to pain. Person factors are the traits in a person that affects how they react to pain, some of which can be changed, and others of which cannot be changed but must be worked with and kept in mind. Environmental factors are the things around an individual, such as their physical and social surroundings, that influence an individual’s perception (Shepherd et al., 2010). All in all, the literature review found that the most effective CAM therapies used to treat pain were imagery, relaxation, and distraction techniques that triggered “the release of natural endorphins” to reduce pain (Shepherd et al., 2010, p. E328).

Molassiotis and Cubbin (2004) created a questionnaire for their study to evaluate the forms of CAM that parents used with their children, and the reasons why they used them.
Ninety-six questionnaires were sent out, and forty nine came back completed. The primary respondent was the mother in almost every case, and all of the children were either receiving treatment currently, or had already completed their treatments. CAM was used, or had been used, by sixteen of the parents that responded (32.7%). Among the top fifteen types used were music, humor/laughter, and sports/exercises, all of which are forms of recreational therapy. The parents that had used a form of CAM reported doing so to improve the child’s general health, relax the child, and treat pain effectively (Molassiotis & Cubbin, 2004).

Another distraction technique used is called Progressive Muscle Relaxation (PMR), which can be considered a form of CAM. In a study done by Kwekkeboom, Hale, Wanta and Bumpus (2008), individuals with cancer pain were asked to participate in a two day intervention, where they could try PMR on the first day, and guided imagery on the second. Twenty six of the participants agreed to complete a post-study interview about their perceptions of their own pain levels. For the PMR intervention, twenty one (81%) of participants believed that the PMR worked to decrease their pain levels, when really only ten had shown a statistically significant change in pain levels. The researchers believe that a “meaningful change in pain” may not be as high as they were testing for. In the guided imagery intervention, eighteen people had said the intervention worked for them, and that was true for all cases (Kwekkeboom et al., 2008). This study, although completed with adults instead of children, is important to reference because it alludes to the power of an individual’s perception in relation to distraction and pain management. Those who believed it had worked for them, felt better, regardless of an actual change in pain level.

Music as therapy was also a reported form of CAM that was used in children with cancer. A study by Nguyen, Nilsson, Hellstrom, and Bengston (2011) wanted to prove music’s
effectiveness against cancer pain in children. Forty children participated in the study, and were evenly divided into either an intervention group, in which the children were able to listen to music during their treatment session (a lumbar puncture), or a control group, that received earbuds without music. Before, during, and after the lumbar puncture, the children were asked to rate their level of pain, and were then asked open-ended interview questions after the procedure. The results from this study show that music is an effective distracter because the intervention group had pain scores that were statistically significantly lower than the control group. The children in the intervention group also reported less pain and fear in the interviews conducted at the end of the procedure (Nguyen et al., 2011).

Lastly, Animal Facilitated Therapy (AFT) is another possible intervention to use as a distracter for pain management. In a literature review by Urbanski and Lazenby (2012), AFT is characterized as a form of CAM. Two studies were found on the topic of AFT, and both showed that children who interacted with the animals had decreased pain scores. Unfortunately, not enough research has been done in this area to generalize this information, but it is an intervention that can be used as a distracter to decrease pain in children with cancer (Urbanski & Lazenby, 2012).

All of these studies show that distraction can be effective in decreasing reported pain levels in children with cancer. Although many different forms of distraction were identified, a common denominator for all is that they are appropriate modalities that could be used in recreational therapy to promote coping skills and improve quality of life and well-being. With limited research in this area, and most of the studies to date being small-scale, additional research in this area is needed. However, health care practitioners should be promoting the use of distraction techniques that have shown promising results.
References


