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THE USE OF DISTRACTION TECHNIQUES FOR PAIN MANAGEMENT IN PEDIATRIC PATIENTS

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Abstract

Diagnostic testing and treatment regimens for pediatric malignancies may require intrusive and unpleasant procedures. The therapy of severe pain is typically inadequate in many regions worldwide, mostly due to the high cost and restricted accessibility of suitable drugs. Existing research indicates that distraction, which is a cost-effective strategy, has promise as an intervention for managing procedural pain. Nevertheless, there is little data to substantiate its efficacy in pediatric oncology patients. An evaluation was carried out to determine the efficacy of distraction as a procedural pain control method in pediatric cancer patients. A thorough search approach was used to search electronic databases such as MEDLINE, PsycINFO, Cochrane Library, AMED, CINAHL, Web of Science, and EMBASE for papers that compared distraction strategies to standard treatment or any other intervention. A comprehensive review and meta-analysis of randomized controlled trials was done using the chosen papers. This comprehensive review provides evidence that distraction is an effective technique for reducing procedural discomfort. Subsequent studies should evaluate the efficacy of diversion techniques in many groups, in order to investigate the impact of cultural factors on the manifestation, evaluation, and treatment methods of pain.

Keywords: Distraction, procedure pain, pediatric patients, cancer, pediatric oncology.

1. Introduction

Pain is a common symptom seen by pediatric oncology patients (POPs).Pain may result from diseases or invasive medical procedures, including lumbar punctures, venepuncture, intramuscular injections, port access, finger pricks, bone marrow aspiration, and biopsy.1,2,3 While cancer-related pain may be upsetting, patients with pain on presentation (POPs) indicate that intrusive treatments are both the most dreaded and most common cause of discomfort.4,5 The condition necessitates many invasive procedures for diagnosis and therapy, unfortunately.

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Chemotherapy and other therapies might cause additional pain and anxiety because to their adverse effects.6,7,8 Research has shown that enduring and unmitigated procedural pain may have negative effects on the physical, psychological, and social welfare of pediatric patients. 9, 10, 11, 12. Furthermore, the alleviation of pain is strongly linked to the contentment of patients and is seen as an essential entitlement of every individual.13 Therefore, it is crucial to appropriately address procedural pain in order to decrease anxiety and enhance the well-being of pediatric patients.

Procedural pain is often treated with pharmacologic and nonpharmacologic therapies, either alone or in combination as part of integrative medicine. However, in many situations, no therapy is given. 14, 15, 16. Pharmacological therapies, such as opioids, non-steroidal anti-inflammatory medications (NSAIDs), sedatives, and local and general anesthesia, may be used depending on the specific surgery.17 Empirical investigations have substantiated the efficacy of these medications.14, 18, 19, 20 Nevertheless, in most underdeveloped nations, these medications are not easily accessible, primarily owing to their high cost.15 Consequently, nurses and parents must physically limit a child's movements during a painful medical treatment. 21. This might result in physical injury to the youngster. Even in regions where pharmaceuticals are accessible, research has shown that pharmacologic therapies do not enhance the overall pain experience of children, as they continue to report pain and stay in a state of distress. 22, 23, 17 Therefore, both research studies and clinical recommendations have advocated for the use of nonpharmacologic therapies, which are more cost-effective and readily available. 24, 25, 26, 27.

Various categories of nonpharmacologic therapy exist. 28 A Cochrane study categorized these interventions into two groups: psychological techniques (such as distraction and guided imagery) and nonpsychological techniques (such as acupuncture).29 Psychological therapies are widely recognized as the predominant approach for alleviating procedural pain. However, in the field of pediatrics, the effectiveness of some therapies, such as suggestion, is still unclear, while interventions like distraction and hypnosis are becoming recognized as effective. 17, 28, 29. Two systematic studies in the field of pediatric oncology have shown that hypnosis may be a beneficial method for relieving procedural pain. However, the inadequate quality of the articles included in these reviews has affected the validity of their findings. 30,31 No comprehensive evaluations assessing the efficacy of distraction for relieving procedural pain in POPs were identified. Despite the completion of main research, the findings have shown a lack of consistency. 32, 33, 34.

Furthermore, the limited sample sizes of these researches hinder the ability to apply their findings to a broader population. Therefore, there is little empirical support to establish the impact of distraction on procedural pain in postoperative patients. Although there is less empirical data, distraction is often used in many hospitals worldwide. 35, 36. Health treatments should be based on empirical data in an age that emphasizes evidenced-based practice. Hence, the objective of this systematic review was to do a meta-analysis of the main studies in order to

determine the combined therapeutic impact of distraction on pain linked to medical procedures in children and adolescents with cancer.

The meta-analysis of the four trials indicates that distraction had a substantial impact on self-reported procedure pain (P = 0.007). However, it is important to approach these findings with caution due to the significant variability seen among the trials (I2 = 61.3%, P = 0.051). The Cochrane handbook recommends assessing the source of heterogeneity. However, due to the limited number of trials (<10), this was not feasible.37 The variation may arise from the use of diverse pain evaluation measures in the studies that were included. A random-effects model was included for the meta-analysis, therefore accounting for the variation in pain measurement measures. Similarly, a Cochrane review found that distraction is beneficial in lowering pain intensity in children, as shown in a meta-analysis. However, there was a substantial amount of variation across the trials (I2 = 88%).29 According to self-reported pain assessments, several systematic studies have also shown that distraction is a useful method for relieving pediatric procedural pain. 28, 37, 38

Due to the inherent subjectivity of pain, the results obtained from self-reported pain assessments have significant relevance. They provide the child's viewpoint on their perception of pain and the efficacy of distraction. Additionally, these data suggest that children have a preference for using distractors while undergoing unpleasant treatments. This statement implies that more research may be conducted to investigate the pleasure of children when distraction strategies are used, and to compare it with other nonpharmacologic therapy.

The results of behavioral assessments on the impact of distraction were inconclusive. A research elucidated that nurses often prioritize the act of inserting the needle, hence allocating less attention to the discernible alterations in the child's behavior.32 While parents may possess a heightened sensitivity to tiny changes in their child's behavior, their evaluations may be swayed by their own emotions towards the process, leading to inconsistencies in the outcomes. According to the findings of this systematic review (SR), a study that examined the effectiveness of distraction in reducing procedural pain in children, it was found that there is limited evidence supporting the use of distraction based on behavioral measures. However, strong evidence was found supporting its use based on self-report measures. 28

Earlier evaluations provided evidence for the efficacy of distraction based on behavioral measures, but self-report assessments gave less support. 29,40 Prior assessments indicated that a significant proportion of the research included in the analysis included behavioral measures.41 However, the results of this systematic review (SR) and other recent reviews differ from this, since most of the research included in these reviews used self-report measures. 28,29 The variation in outcomes over time may be ascribed to the augmented use of self-report measures in recent times. 28. Thus, it seems that there has been a decrease in the use of behavioral measures and a corresponding rise in the utilization of self-report measures over a period of time. This is likely due to the fact that behavioral measurements may be influenced by the observer's personal

qualities, such as their prior experiences with pain and observational abilities. As a result, this might lead to a misunderstanding of the child's discomfort.42

The most often measured physiological indication in this study was the pulse rate, which is also a consistent finding in earlier investigations on distraction. 28, 29. The meta-analysis demonstrated that distraction had a substantial impact on pulse rates ($P < 0.001$). Furthermore, there was no evidence of statistical heterogeneity across the trials, as shown by an I2 value of 0.0%. A value of 0% for I2 should not be taken as indicating uniformity without taking into account the clinical and methodological diversity across the studies.37

Remarkably, it seems that these studies exhibit a significant degree of methodological and clinical homogeneity. The impact of distraction on pulse rates during painful operations is well apparent. A review yielded comparable findings to a meta-analysis of two investigations. 29 However, a notable drawback of physiological markers is the challenge of ascribing a specific stimulus to a change in pulse rates. The fluctuations in pulse rates may be ascribed to several stimuli, including fever, effort, pain, and distress.42 However, all three studies measured pulse rates prior to the treatment, indicating that any change in pulse rates may be attributed to the unpleasant process. Notably, in all the investigations, there was a rise in pulse rates seen in both the intervention and control group during the process. Nevertheless, the intervention group saw a lesser increment in distraction compared to the control group. Therefore, according to the pulse rates, it seems that distraction is a good method for lowering procedure pain in patients with postoperative pain.

2. Factors Affecting the Efficacy of Distraction

Several elements have been postulated to impact the efficacy of distraction. For example, factors such as age, the interactivity or passiveness of the distractor, if the youngster had influence over the distractor, and whether the patient deliberately picked that specific distractor. 17,43. The majority of research included in this evaluation did not investigate the impact of these variables. A single research assessed the impact of age and gender on the efficacy of distraction.44 The findings indicate that there was no notable disparity between boys and girls in both the intervention and control groups. However, it seemed that the distraction method known as the Hey-Hu breathing technique was more efficacious for children aged 10 years and older. A comprehensive evaluation has shown that distraction strategies are more effective in children between the ages of six and 11.The number is 28. In one research, children were given the freedom to pick their own distractions, while in another study, participants were allowed to choose the kind of music they preferred to listen to. No other research has investigated the impact of any other element on distraction, except from the ones mentioned.

Consequently, this study was unable to evaluate the impact of these characteristics on the efficacy of distraction. On the other hand, a systematic review (SR) consisting of 26 papers examined the impact of these variables on distraction.28 While no significant variation was seen across the distractors, it was determined that therapies without adult involvement or passive

distraction were somewhat more efficacious compared to those with adult supervision or interactive distraction. However, it is important to note that this was a subanalysis, meaning that the results merely provide suggestive evidence that these characteristics may have an impact on distraction.37. Hence, it is important to conduct more research investigations to evaluate the impact of the listed variables on distraction in POPs. 28, 29

Another significant aspect to take into account is culture. While the impact of culture on the efficacy of distraction is still uncertain, there is research indicating that it does alter how caregivers communicate and perceive suffering.44,45 The studies considered in the analysis are limited to four countries and mostly consist of participants of Caucasian ethnicity. Therefore, cultural influences may have an impact on both the self-report and observers' assessments of pain. Thus, it is uncertain if distraction will be efficacious in some countries, such as Ghana and Nigeria, where there is a cultural belief that a man's capacity to withstand suffering without shedding tears is indicative of his strength. Hence, it is essential to conduct more study investigations on the efficacy of distraction in alleviating procedural pain in populations of various countries/cultures, especially those with prevalent cultural misunderstandings about pain. 28,29

3. Summary

According to the results of this comprehensive analysis, distraction shows potential as an effective treatment for managing procedural pain in pediatric oncology patients (POPs), while the current evidence is limited. Therefore, it is advisable to perform more research, especially in regions like sub-Saharan Africa where its use is infrequent. Moreover, future studies should do a comparative analysis of the efficacy of various distractors, such as active vs passive methods. Additionally, it is important to investigate how aspects like a child's choice and age impact the effectiveness of distraction. Furthermore, it is important to assess the impact of distraction on cancer pain. No studies assessing the efficacy of distraction in children under the age of two with cancer were found in this systematic review. Therefore, future research should investigate the impact of distraction on this specific age group. Moreover, distractors might operate as carriers for microorganisms.

Therefore, researchers should investigate economical methods to reduce the likelihood of transmitting illnesses via distractors. This is significant due to the heightened susceptibility to infection that is linked to cancer therapy.46 In addition, researchers should strive to enhance the quality of studies by concealing the allocation and reporting of crucial information, such as the randomization process and the averages and standard deviations of all outcome measures, regardless of their relevance. These proposals will enhance our understanding of distraction.

References

1. Bracken JM. Children with cancer: A comprehensive reference guide for parents. Oxford: Oxford University Press, 2010.

2. Hickman J, Varadarajan J, Weismann SJ. Behavioural measures of pain. In: McGrath PJ, Stevens BJ, Walker MS, Zempsky W, eds. Oxford textbook of paediatric pain. Ox- ford: Oxford University Press, 2014.
3. Ljungman G, Gordh T, So€rensen S, Kreuger A. Pain in paediatric oncology: interviews with children, adolescents and their parents. Acta Paediatr 1999;88:623e630.
4. Hedstro€m M, Haglund K, Skolin I, Von Essen L. Distress- ing events for children and adolescents with cancer: child, parent, a nurse perceptions. J Pediatr Oncol Nurs 2003;20: 120e132.
5. Hedstro€m M, Ljungman G, Von Essen L. Perceptions of distress among adolescents recently diagnosed with cancer. J Pediatr Hematol Oncol 2005;27:15e22.
6. Griffiths M, Schweitzer R, Yates P. Childhood experi- ences of cancer an interpretative phenomenological analysis approach. J Pediatr Oncol Nurs 2011;28:83e92.
7. Anderson FS, Kunin-Batson AS. Neurocognitive late ef- fects of chemotherapy in children: the past 10 years of research on brain structure and function. Pediatr Blood Cancer 2009;52:159e164.
8. Dzolganoski B. Clinical trials. In: Tomlinson D, Kline NE, eds. Paediatric oncology nursing, 2nd ed. Ger- many: Springer, 2010:307e335.
9. Peterson AM, Harper FW, Albrecht TL, et al. Parent Caregiver Self-efficacy and child reactions to pediatric can- cer treatment procedures. J Pediatr Oncol Nurs 2014;31: 18e27.
10. Kennedy RM, Luhmann J, Zempsky WT. Clinical impli- cations of unmanaged needle-insertion pain and distress in children. Pediatrics 2008;122(Suppl 3):S130eS133.
11. Page MG, Huguet A, Katz J. Prevention of the develop- ment and maintenance of paediatric chronic pain and disability. In: McGrath PJ, Stevens BJ, Walker MS, Zempsky WT, eds. Oxford textbook of paediatric pain. Ox- ford: Oxford University Press, 2014:39e49.
12. Twycross A, Stinson J. Physical and psychological methods of pain relief in children. In: Twycross A, Dowden S, Stinson J, eds. Managing pain in children: a clin- ical guide for nurses and health professionals, 2nd ed. West Sussex: Wiley Blackwell, 2014:86e111.
13. Brennan F, Carr DB, Cousins M. Pain management: a fundamental right. Anesth Analg 2007;105:205e221.
14. Da Silva PS, de Aguiar VE, Waisberg DR, Passos RM, Park MV. Use of ketofol for procedural sedation and analgesia in children with hematological diseases. Pediatr Int 2011;53:62e67.
15. Soyannwo OA. Obstacles to pain management in low- resource settings. In: Kopf A, Patel NB, eds. Guide to pain management in low-resource settings. Seattle: International Association for the Study of Pain, 2010:9e12.
16. Taddio A, Appleton M, Bortolussi R, et al. Reducing the pain of childhood vaccination: an evidence-based clinical practice guideline. Can Med Assoc J 2010;182:E843eE855.

17. Koller D, Goldman RD. Distraction techniques for chil- dren undergoing procedures: a critical review of paediatric research. J Pediatr Nurs 2012;27:652e681.
18. Antmen B, Sas¸maz I, Birbic¸er H, et al. Safe and effective sedation and analgesia for bone marrow aspiration proced- ures in children with alfentanil, remifentanil and combina- tions with midazolam. Paediatr Anaesth 2005;15:214e219.
19. Darabi MA, Mireskandari SM, Sadeghi M. Propofol-al- fentanyl versus midazolam-ketamine for sedation and anal- gesia during bone marrow aspiration in children. Tehran Univ Med J 2007;65:17e22.
20. Iannalfi G, Bernini S, Caprilli A, Lippi F, Tucci A, Messeri A. Painful procedures in children with cancer: com- parison of moderate sedation and general anesthesia for lumbar puncture and bone marrow aspiration. Pediatr Blood Cancer 2005;45:933e938.
21. Demir A. The use of physical restraints on children: practices and attitudes of paediatric nurses in Turkey. Int Nurs Rev 2007;54:367e374.
22. Dahlquist LM, Pendley JS, Landthrip DS, Jones CL, Steuber CP. Distraction intervention for preschoolers under- going intramuscular injections and subcutaneous port ac- cess. Health Psychol 2002;21:94e99.
23. Gatlin CG, Schulmeister L. When medication is not enough: nonpharmacologic management of pain. Clin J On- col Nurs 2007;11:699e704.
24. World Health Organization (WHO). Cancer pain relief and palliative care in children. Geneva: World Health Orga- nization, 1998.
25. Anaesthetists A of P. Good practice in postoperative and procedural pain. Paediatr Anaesth 2012;22:1e79.
26. British Pain Society. Cancer pain management. [online]. London: British Pain Society, 2010.
27. Czarnecki ML, Turner HN, Collins PM, Doellman D, Wrona S, Reynolds J. Procedural pain management: a posi- tion statement with clinical practice recommendations. Pain Manag Nurs 2011;12:95e111.
28. Birnie KA, Noel M, Parker JA, et al. Systematic review and meta-analysis: distraction and hypnosis for needle- related pain and distress in children and adolescents. J Pediatr Psychol 2014;39:783e808.
29. Uman LS, Birnie KA, Noel M, et al. Psychological inter- ventions for needle-related procedural pain and distress in children and adolescents. Cochrane Database Syst Rev 2013;CD005179.
30. Wild MR, Espie CA. The efficacy of hypnosis in the reduction of procedural pain and distress in pediatric oncology: a systematic review. J Dev Behav Pediatr 2004;25: 207e213.
31. Richardson J, Smith JE, Mccall G, Pilkington K. Hypno- sis for procedure-related pain and distress in pediatric cancer patients: a systematic review of effectiveness and methodology related to hypnosis interventions. J Pain Symp- tom Manage 2006;31:70e84.

32. Hed´en L, von Essen L, Ljungman G. Randomized inter- ventions for needle procedures in children with cancer. Eur J Cancer Care 2009;18:358e363.
33. Wolitzky K, Fivush R, Zimand E, Hodges L, Rothbaum BO. Effectiveness of virtual reality distraction dur- ing a painful medical procedure in pediatric oncology pa- tients. Psychol Health 2005;20:817e824.
34. Nguyen TN, Nilsson S, Hellstrom AL, Bengtson A. Music therapy to reduce pain and anxiety in children with cancer undergoing lumbar puncture: a randomized clinical trial. J Pediatr Oncol Nurs 2010;27:146e155.
35. Great Ormond Street Hosptial. Available from http:// www.gosh.nhs.uk/medical-information-0/procedures-and-tr eatments/distraction-therapy. Accessed September 4, 2014.
36. Jun-Tai N. No.6 play in hospital. [online] 2004. Available from http://www.ncb.org.uk/media/124842/no.6_play_in_ hospital.pdf. Accessed September 4, 2014.
37. Higgins JPT, Green S. Cochrane handbook for system- atic reviews of interventions version 5.1.0. [online]. England: John Wiley & Sons: The Cochrane Collaboration, 2011.
38. Joanna Briggs' Institute. Joanna Briggs Institute Re- viewers' Manual: 2014 Edition. Australia: Joanna Briggs Insti- tute, 2014.
39. Stinson JN, Kavanagh T, Yamada J, Gill N, Stevens B. Sys- tematic review of the psychometric properties, interpret- ability and feasibility of self-report pain intensity measures for use in clinical trials in children and adolescents. Pain 2006;125:143e157.
40. Huguet A, Stinson JN, Mcgrath PJ. Measurement of self- reported pain intensity in children and adolescents. J Psychosom Res 2010;68:329e336.
41. Hozo SP, Djulbegovic B, Hozo I. Estimating the mean and variance from the median, range, and the size of a sam- ple. BMC Med Res Methodol 2005;5:13.
42. Mu€ller M, Wandel S, Colebunders R, Attia S, Furrer H, Egger M. Immune reconstitution inflammatory syndrome in patients starting antiretroviral therapy for HIV infection: a systematic review and meta-analysis. Lancet Infect Dis 2010;10:251e261.
43. Tamini N, Rota M, Bolzonaro E, et al. Single-incision versus standard multiple-incision laparoscopic cholecystec- tomy a meta-analysis of experimental and observational studies. Surg Innov 2014;21:528e545.
44. Zhen C, Xia Z, Long L, Pu Y. Accuracy of infrared ear thermometry in children a meta-analysis and systematic re- view. Clin Pediatr (Phila) 2014;53:1158e1165.
45. Albertsen BK, Hasle H, Clausen N, Schrøder H, Jakobsen P. Pain intensity and bioavailability of intramus- cular asparaginase and a local anesthetic: a double-blinded study. Pediatr Blood Cancer 2005;44:255e258.
46. Uman LS, Chambers CT, McGrath PJ, Kisely SR. Psycho- logical interventions for needle-related procedural pain and distress in children and adolescents. Cochrane Database Syst Rev 2006;CD005179.