

A critical appraisal of “Impact of intensive upper limb rehabilitation on quality of life: a randomized trial in children with unilateral cerebral palsy”

By

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Abstract

I set out with the goal of finding a research article to answer my clinical question, is CIMT an effective intervention to improve function and motor control for the pediatric population diagnosed with spastic hemiplegic CP. I will explain my process of finding an article, analyzing the article, and then determining if the study was valid and appropriate to use as a resource to educate potential patients interested in constraint induced movement therapy. The appraisal begins by discussing strategies to find articles applicable to the clinical question through a reputable database. I then discuss the positives and negatives of the article including the introduction, methods, results, and discussion sections. In addition to identifying the negative components of the article, I also provide alternatives that could enhance the process and presentation of the study. The appraisal is then concluded by a discussion section. This section discusses the practicality of the selected study in the scope of physical therapy practice.

Key words CIMT, Pediatric, Cerebral Palsy, Quality of Life, Bimanual Therapy

Introduction

It is important that physical therapists remain up to date with research on new or modified rehabilitation strategies. However, not all research is good research. When reading new research articles, it is important to analyze the article to determine whether it is reliable and valid. My clinical question explored whether CIMT is an effective intervention to improve function and motor control for the pediatric population diagnosed with spastic hemiplegic CP.

Methods

When searching for an article to answer my clinical question, I tried many reputable databases. I decide to utilize the Cumulative Index of Nursing and Allied Health Literature (CINAHL) Complete database. This database provided a wide variety of articles regarding my clinical question. I simply searched “CIMT Cerebral Palsy Children” and applied limitations to narrow my search and was shown 15 articles that I could then begin to review. I limited my search to only show randomized control trials that were published within the last 10 years. I did this to try to find an up-to-date study that would break down the process of their research including introduction, method, results, and discussion portions. I decided to exclude articles who included adult subjects and short-term studies in order to find an effective study that was applicable to my clinical question.

The article I choose to appraise was published in the Developmental Medicine and Child Neurology journal on March 17th, 2012. The article was conducted in Australia by Leanne Sakzewski, Stacy Carlon, Nora Shields, Jenny Ziviani, Robert S. Ware, and Roslyn S. Boyd. I choose this article because it examined the effects of CIMT on the subject’s effects beyond objective outcome measures. Through surveys, functionality and motor control outcomes among

many other components of self-conceptions were measured through self-perception and the subject's caretaker.

Results

Summary of the study

This study set out to determine if CIMT training resulted in a greater quality of life than bimanual training in unilateral cerebral palsy pediatric patients. It is typical for the patient's quality of life to be lower than neurotypical counterparts. This article hoped to find the most effective strategy in raising the quality of life for CP patients. They defined quality of life as having many components. These components ranged from functioning, physical well-being, psychological well-being among many other social, mental, and emotional factors. 64 children were split into two different groups, one group receiving CIMT and the other group receiving bimanual training. The only difference between the two groups was the CIMT or bimanual training. They both received 6 hours of group therapy a day for 2 weeks in a circus-themed environment to help gain the children's interest. Following 3 weeks, 26 weeks, and 52 weeks the children and their caretakers would complete the CPQOL appropriate for their age group and the KIDSCREEN-52. After comparing the results from the questionnaires, it was determined that there was no significant difference in quality of life increases between bimanual and CIMT therapy.

Appraisal of the study introduction

Overall, the introduction section is very informative over Cerebral Palsy prevalence and detailed associations between individuals with CP and their quality of life. The authors included many up-to-date literatures that helps to strengthen the credibility of the article.

I do, however, believe they could have gone into more detail regarding CIMT and bimanual training. They do not discuss CIMT and bimanual general protocol nor express the typical outcomes of these strategies.

Appraisal of the study methods

The methods section of this article is the strongest portion of this article. This research team recruited 64 subjects and only had 10 subjects withdraw throughout the year-long study. Also, prior to randomizing the two groups, subjects were placed with a partner that shared the same sex, age, side of hemiplegia, and level of function. Then, the subjects were randomly allocated into either the CIMT or bimanual therapy group. When implementing the interventions, everything was the exact same other than the type of therapy they received. Making the two groups as similar as possible ensured that any changes of QOL between the groups can be attributed solely to the rehabilitation they received across a wide range of ages and aspects of their CP.

The outcome measures, however, were not as strong. The authors choose two questionnaires for the children and their caretakers to complete three times throughout the year. Questionnaires can be subjective and can vary based on if the person is in a good mood or not among many other factors. They do not have strong reliability scores and all of the children could not complete the questionnaires due to significant intellectual impairment. I believe it would be beneficial to add one or two objective measures in addition to the questionnaires to help identify the physical changes from CIMT and bimanual therapy.

Appraisal of the study results

The results are presented in a very organized manner and were easy to follow. Each outcome measure was presented in the same order that was presented in the methods section. The descriptions of the results were direct and concise.

The tables used to present the results could have been improved by adding lines to divide the columns or rows. With so much data presented on one table, it becomes difficult to not get the numbers confused. It would also be beneficial for the authors to indicate the minimal clinically important difference, or the number needed to treat in the results section. This would assist the audience in interpreting the results of the study.

Appraisal of the study discussion

The discussion portion of this study is very effective in emphasizing their discoveries and the meaningfulness of the results. They began by including reputable literature in the discussion that matches or could help explain the results founded through this study. The inclusion of a conclusion paragraph made it clear to the audience the new discoveries that were found through this study and their hope to inspire further QOL studies.

Overall, the discussion is very strong. However, it could be improved through providing ideas for a future study. By providing ideas for future studies, the authors could have helped promote further research in CIMT in pediatric CP patients.

Discussion

This study determined that both bimanual training and CIMT resulted in improved function and quality of life in pediatric. The authors acknowledge that they are unsure if the changes seen in this study are clinically meaningful. The study does not directly answer my clinical question with objective, valid outcome measures. Instead, it provides information on how subjects perceived their functional improvement and goes even further to provide overall quality of life perceptions

following a year of CIMT or bimanual therapy. The study is significant to current PT practice by seeing how CIMT and bimanual effect the subject's quality of life as well as the caretaker's perception of the subject. It is a good reminder to look at the patient as whole.

The results of this study indicate that both bimanual therapy and CIMT provide improved quality of life for pediatric CP patients. This study gives me the confidence that CIMT will not provide a negative impact on the pediatric subjects in any aspect of their quality of life and gives the children and their caretakers the feeling of progression in functionality and strength. There is a potential risk of the child not reacting well, either physically or emotionally, to the long hours of wearing the CIMT mitt. However, the study displays that the pros outweigh the cons. The subjects were able to follow the CIMT protocols without a significant decrease in QOL. The addition of objective outcome measures could improve the argument of the effectiveness of CIMT.

I would feel confident utilizing this article to show patients the possible effects of CIMT on pediatric CP patients. This study takes many precautions and steps to maintain the validity of their research. It will provide patients with an idea of possible long-term physical, emotional, and mental effects of CIMT and bimanual therapy. However, I would not feel comfortable only utilizing this article to defend the functional effects of CIMT due to the subjective outcome measures. Using this article in conjunction with another CIMT CP pediatric study that utilized objective outcome measures, would provide me with enough clinical confidence to utilize CIMT or bimanual therapy in practice.

In conclusion, this study did something that many other studies do not. It examined not only the treatment's effect on muscle function or motor control but saw the effects of these strategies on

all aspects on the subjects. It gives readers a unique look at how treatment affects the subjects considering mental, emotional, spiritual, financial, and physical effects. The authors took many precautions to maintain the validity and credibility of this study. Although a physical therapist may not have objective outcome measures to determine the effectiveness of CIMT in improving function, it does give a good indication on how individuals react to this treatment and how they perceive their improvement which can be just as important.