Parent's perception of constraint induced movement therapy in cerebral palsy management in rehabilitation centers of Lahore

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Abstract

Objectives: To assess the perceptions of parents about constraint-induced movement therapy to treat their children with cerebral palsy.

Methods: The qualitative study was conducted in three rehabilitation centres situated in Lahore, Pakistan, from January to July 2014, and comprised parents with enough experience of constraint-induced movement therapy. Therapy session was given to children with hemiplegic spastic cerebral palsy for 4-5 hours per day for at least a month. The interview was recorded and then transcribed verbatim.

Results: There were 5 sets of parents whose children were aged 4-12 years. Five main themes emerged from the interviews and they were: child behaviour towards the therapy is variable; increase in cognitive level of the child; group therapy is more beneficial than individual therapy; after therapy the children developed a habit to use the affected hand in their activities; and other than change in the physical condition, parents also observed change in the social behaviour.

Conclusion: Constraint-induced movement therapy seemed to offer a promising opportunity to tackle and promote both social and physical outcomes in cerebral palsy children.

Keywords: Child, Cerebral palsy, Constraint induced movement therapy, Parent's observation, Group format, Qualitative research study. (JPMA 69: 373; 2019)

Introduction

Cerebral palsy (CP) consists of multiple manifestations of movement and postural disorders resulting in the limitation of activities in the affected population, caused by the non-progressive damage to brain in the initial developmental period of one's life. Among the childhood disabilities involving the motor system, CP is considered the most common. CP is the most common motor disability in childhood. Among the general population, two CP children are present in thousand live births and the number varies from 3-4 per thousand live births in the United States.[1]

Diagnosis of CP is established when the child exhibits movement disorder, muscle tone abnormalities, coordination issues as well as impaired postural control.[2] Three quarters of the injuries occur due to the foetus encountering injury before birth.[3] Among foetal risk factors that can cause damage is the low birth weight, seizures after birth, breathing meconium into the lungs and respiratory distress syndrome.[4] The most common type of CP is spastic ,accounts for almost 70% -80% of all cases.[2]

One of the parts of the constraint-induced movement therapy (CMIT) is known as shaping which includes the use of affected hand intensively and purposely for performing a specific task with given duration and time while placing a mitt on the unaffected side.[5] Conventionally, CIMT was being used specifically for stroke patients and then for the hemiplegic CP. Initially the time and duration for the patients under the therapy was very long. It was used for about 90% of the waking hour. The aim was to make the patient perform all daily activities intensively with that hand only.[5] The effectiveness of the therapy has been seen in stroke patients. Among stroke patients who received the therapy, the initial 3 to 9 months just after the stroke attack showed better result than those who started 15 to 21 months later.[6] CIMT has not yet been a part of the standard treatment method for stroke and spastic hemiplegic CP children.[7] The problem is the selectivity of the treatment as it cannot be used generally on all patients. It excluded all the patients with moderate to severe stroke, because of balance issues, global aphasia and cognitive deficits.[8]

Learned non-use is a process that may be experienced by subjects suffering from upper extremity dysfunction, which happens due to hemiplegia. With the passage of

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time, it becomes more difficult for the patient to do functional movements with the affected limb.[9] Cortical reorganisation is the basic therapeutic concept of CIMT. It enables brain to re-engage different parts for performance of various functions. Cortical response enhances with enhanced use of a body part.[10] Other than CIMT, repetitive-task practice is also used. It is a technique in which specific movements are performed repeatedly in a functional context as well as relative to other functions and movements.[11] In a study, 2-week camp was organised to study the effect of CIMT against hemiplegic CP. Nine adult patients were treated and the study reported benefits of group study.[12] In another study, the acquisition of motor skills in CIMT group versus conventional method group was more (9.3 vs. 2.2). The study revealed that the effects of CIMT were maintained over months and were sustainable with the use of the affected limb.[13] In one study, 20 children served as the control group while 21 children received CIMT who were made to wear a restraining glove daily for 2 hours for two months. The purpose of the treatment was acquisition of motor skills in a home environment.[14] One study revealed frustration as a behavioural issue in children diagnosed with spastic paralysis CP after the use of CIMT.[15] A qualitative study recognized themes after the interviews from the family members of children diagnosed with spastic hemiplegic CP. The results could be more refined if the communication barrier was overcome.[16] In a prospective study with 58 family members of children diagnosed with spastic hemiplegic CP, families reported in interviews that they found it difficult to locate the systems of care. Some families reported that were infeasible.[17]

The current study was planned to assess the perception of parents of children diagnosed with spastic hemiplegic CP who were receiving CIMT.

Subjects and Methods

The qualitative study was conducted in three rehabilitation centres situated in Lahore, Pakistan, from January to July 2014, and comprised parents with enough experience of CIMT. Purposive sampling approach was used to recruit participants. Based on the concept of community-based rehabilitation, five physical therapists were found in the three private rehabilitation centres in addition to a researcher in one of those centres. This rehabilitation centre followed its own organisational rule of not allowing the parents to directly attend the therapy session though they were permitted to observe the child's activities while staying in the designated waiting area. CIMT sessions were given to the affected children for 4-5 hours per day. All the therapists participated in the provision of CIMT on an hourly basis.

The interviews were recorded and then transcribed verbatim after permission was obtained from the institutional review committee of Riphah International University and informed consent was taken from all the parents. The interviews comprised a set of questions to facilitate the understanding about the themes that emerged from the transcripts. The interview guide included the following questions: Can you tell me about your family?; How old are your children?; Can you tell me about extended family members?; Since how long the child is receiving CIMT?; Did the child receive any other therapy before attending CIMT?; What is the usual behaviour of the child during therapy?; Did the child try to take off restraint during the therapy?; What is the behaviour with siblings during playing? While wearing the restraint?; Do you have any fear of the child falling?;

Did the child regularly wear recommended restraint for recommended time?; Was the child comfortable with the restraint during his/her activities of daily living (ADLs)?; How did the child attempt to use his/her affected limb while wearing the restraint?; What are your overall views about CIMT?; Do you think that cognitive level and age of the child are also important?; What did you like about CIMT?; How is CIMT different from other therapies?;

Do you prefer group therapy or not?; Does the team format enhance CIMT impact for your child, or should it be provided by a single therapist?; Are you satisfied with the results of CIMT for your child's motor function progress?

Using the transcriptions categories were developed to see how each part fitted into the overall phenomenon. Categories were organised to generate themes to expand the body of knowledge about the specific field of interest.[18] The researcher went through the transcriptions again, and then an investigator analysed the data by writing the words or phrases in the margins of the transcript.[19]

Trust was ensured with the participants by prolonged engagement, support groups, peer debriefing and participant checks. Plenty of time was spent by the researchers to reflect on the analysis of data in order to make sure the information was truly representative of the participant's experience. Opportunity was also provided to the parents to clarify or add to the information.

Results

There were 5 sets of parents whose CP children were aged 4-12 years (Table). Five main themes emerged from the interviews: child behaviour towards the therapy; cognition level of the child; group therapy versus

Table: Participants' Information.

Parent	1	2	3	4	5
Age of child at time of study	4 years	8 years	10 years	12 years	11 years
Child diagnosis	Right side hemiplegia	Right side hemiplegia	Left side hemiplegia	Right side hemiplegia	Left side hemiplegia
Previous treatment or therapy used	Conventional exercises, stretching and strengthening exercises	Home exercises, taping	Conventional exercises, stretching and Home exercises	Conventional exercises, stretching and Home exercises	Conventional exercises, stretching and Home exercises
Previous experience with CIMT	No	No	No	No	No

CMIT: Constraint induced movement therapy.

individual therapy; utilisation of hand at home after the therapy; and satisfaction level of family members after receiving CIMT.

Regarding the first theme, every parent described the behaviour of their children during therapy session and at home after the therapy. The behaviour of children showed variation. Most of the children got irritated at some part of the session. Some children came to the therapy session happily but as the time passed, they got irritated and tired. Some parents described reluctance in behaviour of their child in coming to the therapy session. They tried not to come to the session. As one mother said: "He avoids coming to the therapy. If I make him agree to come, he asks me to pick me up soon. 'When will you come to pick me? I want to come back soon'."

There were very few children who came to the therapy session happily, worked well and were not fed up but they got tired of work. One girl's parents said she came to the session happily and worked with the therapists very cooperatively and well to get some achievement. The only change they noticed at home was that she got tired at home after her therapy.

After the therapy sessions, the children developed the habit of using the affected hand in their daily activities. Some parents noticed this change in their children that they used their hand when the object handling was tough with one hand and they used their affected hand to support the unaffected limb in bilateral tasks. The therapy session gave them the courage that they can use their other hand as well. One father stated: "After therapy sessions, the change in him was visible. We noticed that after therapy he developed a habit to make use of his left hand (affected) in his playing activities. Usually when both hands were free, he preferred to use the right hand (unaffected), but when there was a need, he used his left hand too."

While investigating current treatment options, all of the participants learned about CIMT as a fairly new and promising treatment approach. However, there were differences in the ways programmes offered CIMT in terms of length, group versus individual treatment, and within hospital or community settings. One father enrolled his child in CIMT, but was dissatisfied with the hospital and home-based programmes. Lack of organisation in CIMT programme in a hospital prevented them from actually enrolling their child. He stated:

"He is younger than his sisters and brothers. He was resistant to come to the therapy, but after joining this therapy session, he didn't feel that he is going for therapy, and now he enjoys the session with other children."

The change in some children with early age was profound. As a father said, the change in hs child was visible, not only in the functioning of the hand, but also in terms of positioning. He said that before the therapy he used to keep it in only one position. But not only the use of the affected hand has increased now, but its position also changes as the activity demands. The daily routine activities had become easier for him and this had increased confidence in him."I am satisfied because the change is visible at home. He got in the habit of using his affected hand for his tasks."

Discussion

All the 5 participants in this study described changes in behaviour of their children after the CIMT session at home. Every participant suggested that the change in behaviour in their children after taking session was certain. However, not much literature is found showing behaviour changes in children during and after therapy. One study showed that the balance should be maintained between the participation and frustration of the children for therapy.[20]

The effectiveness of this therapy explained by the parents is very high. The results of this study are similar to a randomised control study.[21] The settings in which the children got therapy was friendship-based and activity-based. This supports the current study because children work more easily in this environment. Similar results were found with another study.[22] The findings showed that

CIMT encouraged the use of the affected hand to a much extent due to wearing the constraint on the other hand. These results match with other studies that described CIMT as a comparative treatment.[23] Another study is consistent with our results. This study explained CIMT application on two children with different ages. Both children made significant gains in upper arm function that were reflected in a variety of domains, including aspects of everyday functional limb use.[24] In the current study, the number of children was more with higher age range (2-12 years). The results show that not only the use of hand increased but also the dependency decreases. This change in condition of the children makes their families happy. Similar changes and improvement in quality of life besides improvement in motor function were documented by another study.[25]

The current study adds to the body of knowledge based on the experiences of parents as their children participated in a CIMT programme. This is the only qualitative study in Pakistan, to the best of our knowledge. A number of factors have been explained besides effectiveness of the therapy. After getting some interviews, more interviews were conducted to saturate the available data. As the time passed, more interviews were conducted with some changes in the interview format. These changes were in the shape of some more questions. This practice of data saturation made results of the study more reliable. One of the significant perceptions stated by the parents was the behaviour modification activities during therapy. However, more changes in the environment can be helpful. The strength of this study includes higher number of participants interviewed and the ability to generalise the information. The views suggest that the therapy is not applicable at home because of the behavioural changes in such an environment. It shows that more work is needed on adherence enhancing behavioural strategies. If the agreement is made with parents that the number of given activities based on functional movements to be done at home time, it will make the child adherent to the therapy even at home.

Conclusion

Originally, the study planned to learn more about the perceptions of parents with children who were participating in CIMT. However, as it is typical of a qualitative research, the richness of the topic shed light on other important issues related to quality care and resources. CIMT in a group format appears to offer a promising avenue for addressing and promoting both social and physical outcomes. Further research into the potential benefits of this format, along with other format options, is necessary to improve services for these children and their parents.

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