

Occupational therapy in the complex treatment of clients with cerebral palsy

TOMA GEANINA¹, TOMA ȘTEFAN²

^{1,2}University of Pitesti, ROMANIA

Published online: November 30, 2019

(Accepted for publication: November 15, 2019)

DOI:10.7752/jpes.2019.s6351

Abstract

The current concept regarding occupational therapy treatment has characteristics that go beyond the simple play of the child. In occupational therapy at this age, the child is required for his / her later training, for the role of adult through activities appropriate to his functional development, aimed at correcting any type of disability. The main means by which the young child can intervene is the game, which allows its psycho-social development. The game offers the child the opportunity to expand his knowledge, helps him develop his skill, intelligence, affectivity, sensitivity, to assert he. It can also help him get to know his body and become aware of the environment. Under the name of occupational therapy, when it comes to the child, is understood any attractive game or activity that can contribute to its physical improvement and psychological recovery. In this context, the game can be a job, the work not necessarily being a boring and unpleasant activity but on the contrary, it can be interesting.

The purpose of the study: This paper aims to show the impact that occupational therapy has on the complex treatment of clients with cerebral motor disability, by using a specific intervention plan.

Material and methods: In the study we used the observation method to observe how the client carries out his activities, both in the physical and social environment, as well as to observe the possible barriers to the performance and occupational participation created by the environment. With the help of the Canadian practice model in occupational therapy, we were able to describe the main steps used by me in practice with the client, using the 8 steps that this model promotes. Barthel disability scale - this is a test used to measure the client's performance in 10 activities of daily life according to the external help he needs. It was used for a more complex evaluation of the client I worked with and to indicate its degree of independence. The Canadian Occupational Performance Measurement Questionnaire (COPM) - is an assessment tool, created for use by occupational therapists, in evaluating clients in areas such as self-care, leisure and productivity.

Results: The evaluated subject made progress following the intervention that was focused on the first two problems, which results from the modification of the scores scored by him on the first two problems of occupational performance initially, as opposed to the end, in the Canadian occupational performance measurement questionnaire. Regarding the score obtained on the Barthel incapacity scale, it can be observed that it does not change, remaining at the value of 60, which places the client within those with "assisted independence".

Conclusions: Following the specific intervention of occupational therapy, performed on a single subject with cerebral motor infirmity, the form of spastic diplegia, considerable progress has been made in terms of the most important occupations of his life and in which he is experiencing performance difficulties.

Key words: cerebral palsy, motor infirmity, occupational therapy, integration.

Introduction

Because cerebral palsy is the most common cause of severe mental disability in childhood, with consequences in the development of the child that affect different occupational areas from an early age, as well as their independence in their development, I consider the impact of occupational therapy in this type of infirmity is an extremely important one. Knowing the types, causes and manifestations that this disease causes to those affected, occupational therapy should play a central role in the complex treatment of people with cerebral palsy, as it aims to improve the quality of life, the level of independence as well as increasing participation and occupational performance in leisure, self-care and productivity activities. Cerebral motor infirmity or cerebral palsy is the most common cause of severe mental disability in childhood (Koman, Smith 2004). The latest definition describes it as follows: "Cerebral palsy describes a group of disorders of movement and posture development, causing the limitation of activities, which are attributed to the non-progressive disorders that occurred during the development of the brain of the child or fetus. The motor disorder in cerebral palsy is often accompanied by disturbances of sensations, knowledge, communication, perception and / or behavior." (Bax, Goldstein 2005). According to the United Cerebral Palsy Foundation (UCP), in the United States there are approximately 800,000 children and adults living with one or more symptoms of cerebral palsy. Accidents that

cause brain damage can occur during the prenatal, perinatal or postnatal period, evidence suggesting that in 70-80% of cases they occur during the prenatal period. Often it is noted the possible association of several causes, but sometimes there is a family history of neurological diseases, but also an infectious disease in the first months of pregnancy, an abnormal birth and later severe postnatal diseases. In these situations it is possible that cerebral palsy is the result of the action of several factors. The dominant role in the production of cerebral palsy is played by perinatal hypoxia and perinatal pathology. It should also be emphasized that hypoxia at birth is not inevitably followed by cerebral hemiplegia (Rosen 1996).

Cerebral motor infirmity or cerebral palsy is part of a larger group of brain disorders called "Infantile Chronic Encephalopathies" (which means lesions of the cerebral, congenital and / or acquired cortex in the first 2-3 years of life, with varied effects in mental, behavioral, sensory or motor plane).

The brain injury that causes this infirmity cannot be cured. Nerve cells called neurons (from the brain, spinal cord, or nerves) cannot be restored after injury, because they are the only cells in the body that do not divide and therefore do not regenerate (Delisa 1998). A positive aspect of cerebral palsy is, however, that the condition (neurological lesion) does not progress, does not accentuate during life. So we can say that cerebral palsy. it is a destructive but not progressive disorder. Brain injury interferes with the message transmitted from the brain to the body, affecting body movements and muscle coordination. Cerebral palsy does not affect the baby's muscles or nerves that make their connection with the spinal cord and only the brain's ability to control the muscles.

Cerebral palsy is a disorder with a diverse clinical picture, the signs and symptoms vary depending on the type and severity of the brain injury. The signs of cerebral palsy are the effects that can be observed and tested by specialists. These signs are observed during early childhood or in childhood itself. There may be an excess of stiffness or flaccidity, or a lack of hand gestures, or control of the muscles of the face. He may not be able to point to objects he needs because of these deficiencies (Wilsdon 1996).

A diagnosis of cerebral palsy is extremely stressful for the family and the child when he or she grows up. This leads to different reactions ranging from denial to anger, guilt and depression. Coping with the emotional burden of disability is easier if the family has strong relationships, financial security and community support. The child and the family must find ways to connect with each other. A healthy relationship between mother and child forms the basis of a future happiness. The proper prevention or treatments of the associated problems improve the quality of life of the child and his family (Motion, Northstone 2002).

Occupational therapy focuses on developing the skills needed to increase participation and occupational performance in everyday life. These activities include play, self-care activities such as dressing, washing, self-care, feeding and fine motor tasks such as writing and drawing. Occupational therapy it also addresses perceptual-cognitive disabilities, especially in the visual-motor area.

Another important aspect is the adaptation of the assistive equipment to allow a better functioning of the upper members and to promote the functional independence. In addition, counseling with parents is an important aspect of treatment, in terms of optimizing parental support for improving the functional abilities of the child with cerebral palsy. (Molke, Laliberte 2004)

The objectives of occupational therapy are:

1. To provide an individual with cerebral palsy, positive and fun activities that will improve and enhance his / her physical, cognitive, fine and coarse motor skills and will help him increase his self-esteem, and give them a sense of accomplishment.
2. To focus on training the skills of an individual who are needed to carry out the activities of daily life.
3. To focus on visual-motor, cognitive and perceptual disabilities.
4. To assist in the better use of the upper limbs and to achieve functional independence.
5. To offer assistive technologies and adaptations of the environment. Consult with the parents or caregivers regarding the intervention, this being client-centered. (Alok, Hemangi 2014)

Material and methods

The general objective that we propose in this context consists in the complex, interdisciplinary approach of the problem raised by the occupational therapy in recovering the client with cerebral motor infirmity and to offer it, positive and fun activities that will improve and enhance his physical, cognitive, fine and coarse motor skills and will help him increase his self-esteem.

The objective of the study is to demonstrate the effectiveness of the occupational intervention applied in the complex rehabilitation of the patient with cerebral palsy, the appreciable proof of the daily activities, as naturally as possible, in an ideal period of time, so that the client becomes autonomous with a appropriate social integration.

The purpose of this paper aims to show the impact that occupational therapy has on the complex treatment of clients with cerebral motor disability, by using a specific intervention plan.

In the study we used the observation method to observe how the client carries out his activities, both in the physical and social environment, as well as to observe the possible barriers to the performance and occupational participation created by the environment. Also with the help of the observation we were able to track the progress and the way the client responds to the intervention. With the help of the Canadian practice model in occupational therapy, I was able to describe the main steps used by me in practice with the client, using

the 8 steps that this model promotes. I used this model to describe the factors related to the person, environment, occupation and which influence the performance in the activity of hand-painting, helping me to gather information necessary to develop the plan of invention, together with the client. Barthel disability scale - this is a test used to measure the client's performance in 10 activities of daily life according to the external help he needs. It was used for a more complex evaluation of the client I worked with and to indicate its degree of independence. The Canadian Occupational Performance Measurement Questionnaire (COPM) - is an assessment tool, created for use by occupational therapists, in evaluating clients in areas such as self-care, leisure and productivity (Law M., & all 1996). I used COPM to identify the main occupational performance issues of the client, after which I set the objectives of the intervention specific to the occupational therapy.

Research design - Presentation of the case study based on the chosen intervention model

R. is an 8-year-old boy who was born prematurely at the gestational age of 7 months, the lungs too small did not cope with the new life, the brain was not oxygenated properly, so the central nervous system suffered, this being diagnosed with cerebral motor infirmity, spastic diplegia.

He attends the special secondary school, where he is a student in the first grade and benefits from kinesiotherapy, psychology, occupational therapy as well as special classes for children with special needs, along with other colleagues of similar age.

Based on an IQ test applied by a psychologist, he obtained the score of 65, being classified in the group of those with mild mental retardation. The degree of spastic dysplasia is an average one, his displacement cannot be independent, he is in permanent need of assistive equipment such as a walking frame, which he usually uses at home and a wheelchair with manual propulsion that he uses when he goes to school, participates in hours or just leave the community. For transfer from the wheelchair to a chair or walking frame, bed, sofa, etc. it requires assistance from others, as well as for traveling with a wheelchair over long distances or where it is necessary to climb access ramps, as it does not have the muscle strength of the upper limbs needed to move independently.

Following an evaluation carried out by the physiotherapist of the special school it was established that based on the gross motor function classification system, it is in the category of the 3rd grade, that is to say those that require the use of manual displacement devices, and to get up in a biped position, it requires physical assistance or a support surface.

With regard to the upper limbs, they are devoid of deformities that cerebral palsy could produce, but it has difficulties in terms of fine motor skills and mentality, which makes slow and unobtrusive movements in free time activities (play), self-play care (dressed, washed, eaten), and productivity (writing, handling objects).

R. has an extraordinary personality, being a very lively person, despite the problems. He is happy when interacting with his colleagues and school staff, but says he is upset that he has no friends. He feels frustrated, angry and anxious because he cannot do different school tasks by himself, such as copying on the notebook on the board. He likes to greet everyone when he moves in the wheelchair on the school corridors.

The family of which R. belongs is a modest one, with both parents alongside. He is their only child, receiving sufficient attention from them. The mother is the one who deals most with raising and providing the assistance that the boy needs. She is 30 years old, and father 35. From a financial point of view, they say that they have enough money to maintain and take care of R. My mother works at an 8-hour clothing factory, only the exchange 1, and the father is a worker in an electrical parts factory, where he works on 3 shifts / 8 hours.

They live on the outskirts of the city, in a single-story house, which has 2 rooms (bedroom, living room), bathroom, kitchen with pantry and a quite spacious yard. They have electricity, gas, sewerage, drinking water. The nearest shops are at a distance of 200 meters from where they live, and the distance to the special education unit is 2km. The means of transport with which he arrives and comes from the school is represented by a minibus of the school that he attends, which has an up / down ramp for the wheelchair and which is free.

The rooms are spacious, clean and neat, but very crowded with furniture, household items and other accessories. Very hard the boy can move with the wheelchair inside the house, the only place where he could make a return to 180° is the living room. It is used for traveling by the walking frame, but with a low autonomy, it gets tired pretty quickly. At the exit of the house, besides the stairs there is a ramp to access the house.

The special school he started attending, has an access ramp, spacious corridors, classrooms adapted to his needs and other colleagues with special needs. The staff is qualified and behaves appropriately with students with special needs, including R.

The occupational difficulties are related to the fact that in order to complete some self-care activities (eating, washing, dressing, etc.), free time (playing) or productive (writing, homework, collecting toys), it requires the assistance of the mother, or another person.

Outcomes and discussions

The research that was the subject of the present study was performed on a single male type, 8 years old, with the diagnosis of cerebral motor infirmity, spastic diplegia.

The subject was evaluated three times, initially, during the intervention and at the end, in terms of participation and occupational performance, as well as on the degree of satisfaction in different occupations.

Also, a scoring of the importance of each activity carried out in several areas of interest with the help of C.O.P.M., the obtained scores have been represented in the graph below:

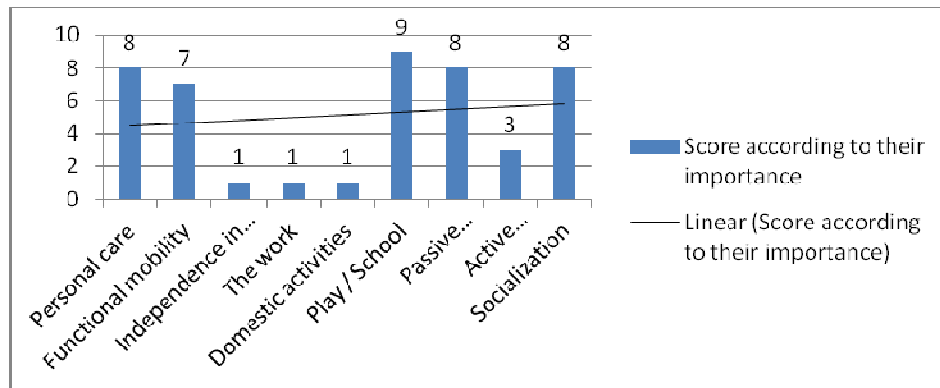


Fig. 1. The importance of the different activities in the client's life

Also in the COPM a score was obtained for the initial evaluation, from which the main problems of occupational performance were obtained, 5 in number, which were chosen by the subject and noted according to their importance. He was then asked to give a note on the initial evaluation for performance and one for satisfaction, and then on the final evaluation to note again. The performance difference between the initial and the final evaluation is represented graphically as follows:

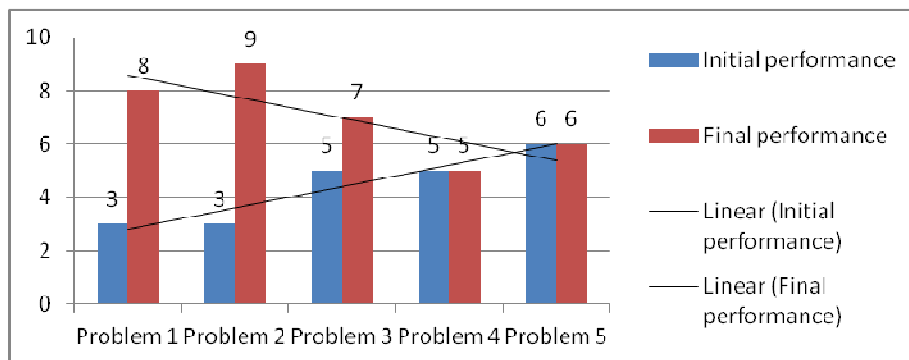


Fig. 2. Performance scores, initially and final

The difference between the initial satisfactions can be seen in the graph below:

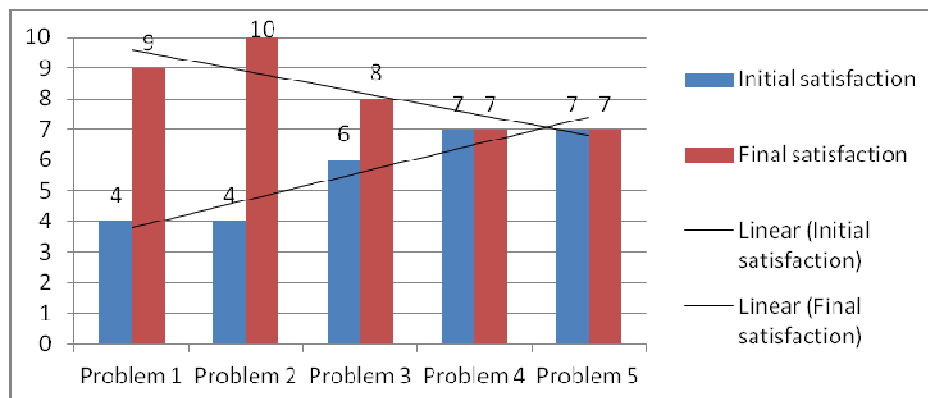


Fig. 3. Satisfaction scores, initially and finally

Regarding the total score obtained on the Barthel disability scale, it remained unchanged at the final evaluation, as we used this tool in order to collect more customer data. Following the evaluation, 3 scores can be obtained (The maximum score is 100 points and corresponds to a complete autonomy. The 60 points score means "assisted independence" and the 75 points are quasi-independent).

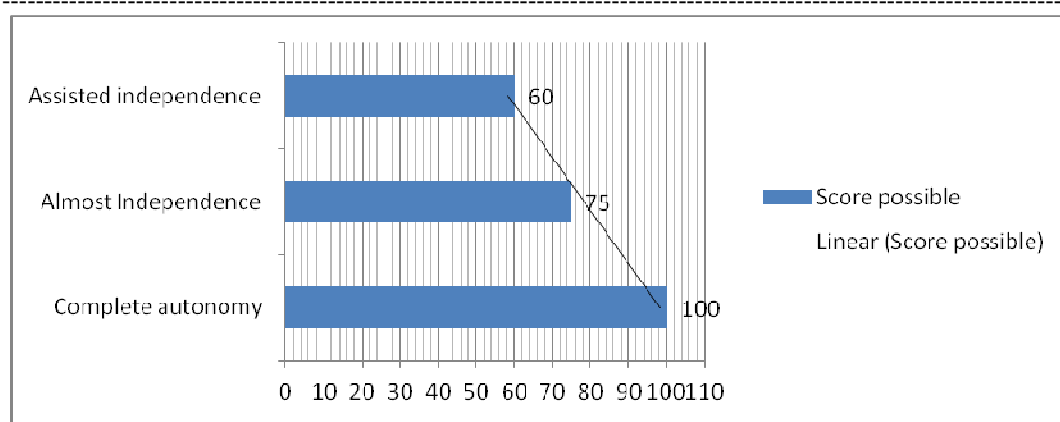


Fig. 4. Possible scores within the Barthel disability scale

Analyzing the obtained data it can be said that:

From the notes he has given to the different activities in his life and with which he has problems of occupational performance, we can see that the most important ones are those in the sphere "Play / School", "Socialization", "Personal care" and activities passive recreation (eg watching TV), where they were rated with 8 and 9 marks, followed by the other activities with scores below 7.

The evaluated subject made progress following the intervention that was focused on the first two problems, which results from the modification of the scores scored by him on the first two problems of occupational performance initially, as opposed to the end, in the Canadian occupational performance measurement questionnaire.

You can see the difference between the marks awarded initially, as against the end, by increasing the grades given to the performance and satisfaction. Thus for the first problem of occupational performance the rating given by the client for satisfaction increased from 4 to 9, and for the performance there was an increase from 3 to 8. For the second problem of occupational performance, the satisfaction increased from 4 to 10, and performance from 3 to 9.

Following the analysis of these results we can see an improvement of the grades and the third problem of occupational performance, which did not intervene directly, but to which the intervention performed for the first two problems influenced an increase here. Thus, from grades 5 and 6 awarded for satisfaction and performance, they increased to 7 and 8.

Regarding the score obtained on the Barthel incapacity scale, it can be observed that it does not change, remaining at the value of 60, which places the client within those with "assisted independence".

The score remained unchanged due to the fact that it was used for the purpose of obtaining customer data for the initial evaluation and not for showing its progress in the activities outlined in this instrument.

Conclusions

Following the specific intervention of occupational therapy, performed on a single subject with cerebral motor infirmity, the form of spastic diplegia, considerable progress has been made in terms of the most important occupations of his life and in which he is experiencing performance difficulties.

If initially, for the writing activity, he became anxious, frustrated and nervous when he had to write from the sheet on the notebook, or after dictation, following an intervention whereby the degree of fine motor skills and performance increased through his activities and through modifying the pen with an adapted one, now he is doing very well in my writing activity, which he began to do with pleasure, without showing any signs of rejection.

Another thing he pointed out was the lack of friends to play with and talk to. Thus for this we set an objective of the intervention which was based on the accomplishment of an activity pleasing to the subject, to be carried out with people who have things in common with it, such as the same type of affection or the same preferences in terms of activities for spending time free. As a result of this intervention, the people who participated in achieving this objective got to know each other better and formed a friendly relationship. They meet daily at school and play, talk during breaks, and with one of them, the subject formed a closer relationship with friends, they frequent visits to each other, after the school program.

An interesting fact of this intervention is the fact that we worked with it only on improving the occupational performance in the first two problems of occupational performance (writing, socializing), and it also had an improvement on the third problem, represented by the activity to wear.

This is due to his growing interest in going to school, where he no longer has great difficulties in completing school assignments and where he can be seen with his friends.

At first he was not interested at all in what clothes he would wear and how he is dressed, now he has different preferences in terms of clothes, and some of them wear them alone.

It can be said that occupational therapy has had a beneficial impact on the life of the subject with cerebral motor disability, which is making visible progress in the most important activities of his life and improving the quality of his life.

Among the progress made by the subject, we can list the following:

- He made visible progress in the activities in which he had problems of occupational performance.
- The general condition has improved, if at first he did not seem too cheerful when he had to go to school, he is now involved in the activities which consist of his preparation for school (eg the dress).
- The fine motor skills and his / her pre-tension improved after the intervention.
- School skills and school performance have increased.

If initially he had no friends, now he has created a circle of friends that he meets at school, and with one of them he visits each other at the home of each one.

References

- Alok S., Hemangi, S., Nandini, G., Prerna, B., Pooja, K., Amruta, P., (2014). *Stem Cell Therapy for Cerebral Palsy – A Novel Option. Cerebral Palsy. Challenges for the future*, pp. 217-242.
- Bax M., Goldstein M., Rosenbaum P., Leviton A., Paneth N., Dan B., Jacobsson B., Damiano D., (2005) *Proposed definition and classification of cerebral palsy*. *Developmental Medicine and Child Neurology*, 47:571–576
- DeLisa J.A., Gans, B.M., Bockenek, W.L., (1998). *Rehabilitation medicine: principles and practice*, Lippincott-Raven, Philadelphia
- Koman L., Smith B., Shilt S., (2004). *Cerebral palsy*, ed. Lancet, London
- Law M., Cooper B., Strong S., Stewart D., Rigby P., Letts L.(1996), *The person – environment – Occupation Model: A transactive approach to occupational performance*, *Canadian Journal of Occupational Therapy*, volume no.1
- Molke D.; Laliberte-Rudman, D.; Polatajko, H. (2004) *The promise of occupational science: A developmental assessment of an emerging academic discipline*. *The Canadian Journal of Occupational Therapy* , 71:5, 269- 281
- Motion S., Northstone, K., Emond, A., Stucke, S., (2002). *Early feeding problems in children with cerebral palsy: weight and neurodevelopmental outcomes*, *Dev. Med. Child. Neurol.*, 44(1):40-3
- Rosen B.A., (1996). *Cerebral palsy* In: Hultman C.B., ed. *Gellis and Kagan's current pediatric therapy*, fteenth edition, Philadelphia, WB Saunders, pp. 79–82.
- Wilsdon J., (1996). *Cerebral palsy* In: Turner A., Foster, M., Johnson, S.E. eds. *Occupational therapy and physical dysfunction*, New York, Churchill Livingstone, pp. 395–432