

**ARTIGO
ORIGINAL**

A interferência dos aspectos percepto-cognitivos nas atividades de vida diária e nas atividades instrumentais de vida diária, em clientes com seqüelas por lesão neurológica.

The influence of the perceptual-cognitive difficulties on the activities of daily living and instrumental activities of daily living in patients with neurological injuries

Juliana Conti¹

RESUMO

Este artigo é um levantamento bibliográfico sobre a interferência dos aspectos percepto-cognitivos durante a realização das atividades de vida diária (AVDs) e atividades instrumentais de vida diária (AIVDs) em clientes com seqüelas por lesão neurológica. Com o objetivo de indicar o quanto esses déficits interferem na reabilitação do cliente e no retorno às atividades cotidianas, o artigo mostra que essas atividades — que aparentemente são simples e já conhecidas por eles — têm de ser aprendidas outra vez. Por outro lado, o artigo revela que não apenas esses aspectos interferem nessas tarefas durante o tratamento e no final dele (no qual o cliente apresentará uma maior ou menor independência), mas também há fatores — como os motores, emocionais, culturais, sociais, econômicos e principalmente a família — que influenciarão de maneira positiva ou negativa o cliente e seu processo de reabilitação. Para ilustrar esta pesquisa, foram apresentados três casos clínicos atendidos no serviço de Terapia Ocupacional.

PALAVRAS-CHAVE

terapia ocupacional, percepto-cognitivos, atividades cotidianas, reabilitação, lesão neurológica crônica

ABSTRACT

This is a literature review on the influence of perceptual-cognitive aspects in the performance of activities of daily living (ADL) and instrumental activities of daily living (IADL) in patients with neurological injury sequelae. In order to show how much these deficits impair the clients' rehabilitation and their return to routine activities, the review shows that such activities - which seem apparently simple and are previously known by them - have to be learned again. On the other hand, the review shows that these aspects not only interfere with these tasks (for which the client can be more or less independent), but also that there are factors – motor, emotional, cultural, social, economic, and, mainly, familial – that can positively or negatively influence the patient and his rehabilitation. Three clinical cases seen at the Occupational Therapy Service will be presented in order to illustrate this review.

KEYWORDS

occupational therapy, cognition, activities of daily living, rehabilitation, chronic brain injuries.

Received on May 11 2006, accepted on June 9, 2006

¹Occupational Therapist from the Division of Rehabilitation Medicine – Umarizal

Address for correspondence:
Divisão de Medicina de Reabilitação – Centro de Reabilitação Umarizal
Rua: Guaramembé, 589 – Jd. Umarizal, São Paulo - SP
Cep: 05754060
E-mail: juconti@yahoo.com.br

Introduction

The activities of daily living (ADL) and the instrumental activities of daily living (IADL) are some of the main points to be exercised during the process of physical rehabilitation of clients with sequelae due to neurological injuries. It is necessary, initially, to define what ADL is. For the American Association of Occupational Therapy, ADL are activities that individuals exercise in their daily lives. According to Holm et al², ADL are divided in 11 categories:

- Bath or shower
- Urinary and vesical control
- Toilet use
- Clothing
- Feeding
- Functional capacity
- Self-care
- Hygiene
- Grooming
- Sexual activity
- Sleep

In addition to ADL, IADL were defined and are also divided in 11 categories:

- Care for others
- Care for animals
- Care for children
- Communication
- Locomotion in the community
- Dealing with finances
- Care for health
- Homecare activities
- Preparing a meal
- Cleaning activities
- Safety and emergency procedures
- Shopping

However, according to Rogers³, the ADL as well as the IADL consist of smaller tasks. For instance, hygiene includes brushing the teeth (or dental prosthesis), combing the hair, shaving or applying make-up, and trimming finger and/or toenails – each one of these elements having a sequence of small steps that must be carried out (for instance, for brushing the teeth: take the tooth brush and paste, put the toothpaste on the brush, brush the teeth, rinse the mouth, rinse the brush and put it away).

During the ADL assessment, it is necessary to consider some factors about the client⁴, such as his or her development after the injury, physical aspects (joint range of motion, muscular strength, coordination, sensitivity and balance), the determination of potentials and deficits and the need for equipment. The same authors affirm that cognition and perception are important aspects to be considered, as they determine the learning potential. Additionally, it is important to consider the family and the client, as well as their values and culture, as these factors directly interfere on the treatment, either negatively or positively. For instance, a client older than 60 years who has never prepared a meal or even made coffee

(for his wife has always done these things for him) won't start doing them after the injury. Based on these data, it is possible to organize the objectives for the rehabilitation program in routine activities. However, this article proposes to study only the interference of the perceptual-cognitive aspects on the performance of ADL and their interference on the client's higher or lower degree of independence and autonomy.

During the analysis of each one of the ADL and IADL, it is important to observe all the aspects that participate of each task. For instance, to put on a T-shirt: it involves the motor and sensitive aspects, as well as planning, attention, memory and learning aspects. As it can be observed, several aspects are necessary to perform a simple everyday task⁴, which makes it necessary for patients with sequelae due to neurological injuries to learn how to perform them again.

The neurological injury can bring, among other sequelae, perceptual-cognitive alterations and these, according to Katz et al.⁵, are essential for the development and performance of the client when carrying out ADL. The authors also affirm that these deficits are common in these injuries and that they cause a significant impact on the functional aspects. According to Erikson et al.⁶, after undergoing a neurological injury, the client has limited capacity to adapt to the new circumstances and demands encountered during the performance of routine activities. According to the authors, the occupational therapist must focus his or her objectives on the activities that are really meaningful for the client, so that there is an adaptation process, i.e., so that the client can reach a higher degree of functionality in his or her daily activities, according to his or her deficits and potentials. According to Katz et al.⁷, depending on the severity of the sequelae, the perceptual-cognitive deficits will determine a slower progress or lack of success in the client's rehabilitation process, even if the motor skills are recovered.

According to Segal⁸, the adaptation to the neurological deficits cause impairment not only to the client, but also to the family, to its routine and daily rituals, altering the family's lifestyle. Still according to the same author, rituals and routines are a symbolic form of communication and identity in each family. During the evaluation, this is another aspect to be taken into consideration, mainly when some type of change, adaptation or technology is indicated to help the client in his or her ADL or IADL. Therefore, the way the client will carry out his or her activities, the need for help, and the acquired autonomy and independence will also suffer interference from the family, its lifestyle, its culture and its habits.

During the treatment it is necessary to measure the client's degree of independence, i.e., his or her capacity to perform a task alone, or whether he or she needs help to do it. Rogers & Holm⁹ classify the levels of independence as null, minimal, moderate or maximum, being necessary to consider factors such as safety, amount and type of help needed, quality (with which the task is carried out) and the client's adequacy regarding the activities and possible changes.

As the objective of this literature review is to study the interference of the perceptual-cognitive aspects, it is necessary to briefly describe each one of them.

The perception is constructed, according to Baldo & Haddad¹⁰, by the interrelation that we unconsciously establish with the environment around us, knowing that a large part of what we perceive is a construction of our nervous system. For the authors, the perception occurs based on experiences with the environment, which will be undertaken and stored in the nervous system and, when necessary, will be remembered, compared and experienced. The perception involves all of the sensory system (touch, taste, hearing, sight, smell and proprioception) and it is through it that we recognize information and interact with the world around us¹¹.

In the individual with a neurological injury, this system is usually altered, interfering in the way he or she interacts, learns and remembers actions, known and new situations, recognizing information from the world around him or her. It is through the perception that we recognize objects, people, the environment around us and our own body, as well as the interrelations among them. During a meal, sitting at the table, it is necessary to recognize the place we are sitting at, where the plates, silverware, glasses and dishes are, and who the people sitting around us are, in addition to savoring the food.

According to Grieve¹², cognition is a set of acts and behaviors used to attain a certain objective, for instance, which clothes to wear to go to a birthday party. This action involves several aspects of cognition, among them: memory (Where are the dress clothes?), praxia (Am I putting the clothes on as expected?), attention (Did I put the left foot shoe on the left foot?), critical opinion (Are these clothes adequate for the occasion?), planning (What do I put on first?), behavior (What do I do if the clothes I want to wear are wrinkled?), reasoning (How long do I need to get ready? What if I get late?). In addition to cognition, the perceptual aspects are also involved, such as spatial, body, visual and temporal perception. Grieve also affirms that the cognitive system works as a whole, but it is necessary to establish the divisions for a better understanding and evaluation of each aspect. Thus, when the client's deficit is identified, it becomes easier to explain the occupational dysfunction.

Case I

Seen at the Occupational Therapy Service from 08/05/2005 to 08/24/2005.

A.C.D., 52 yrs, suffered cranioencephalic trauma in 1999, after being hit by a car. The patient presented a frontal injury with right hemiparesis and right-hand dominance.

Clinical alterations: diabetes and cardiac problems that directly interfered with his ADL, causing fatigue and exhaustion. Low bilateral visual acuity.

Cognitive deficits: memory, planning, organization and perception.

Motor aspects: preserved active mobility, with decrease of muscular strength and lack of fine motor coordination.

ADL: semi-dependent; needed a supervisor to report each step to be carried out and how to do it.

Family: patient and supportive; however, the wife performs the tasks for him, as she can do it more efficiently and faster. After being instructed and watching demonstrations (especially regarding

safety), the family showed to be receptive.

Grieve also affirms that the memory is involved in almost everything we do, and that the way we use it depends on our own style and experiences¹². Attention is described as the capacity of selecting a stimulus among many others that reach the individual and only responding to the one that seems stronger and/or more important¹³. As previously discussed, similarly to the other cognitive aspects, memory and attention are interrelated and complete each other. One example in this case would be a simple activity such as shaving, which requires evoking the information stored by the memory on how it must be done (at the moment of learning, a special attention was necessary to retain the information and subsequently, remember the actions employed in the task).

When we make a cake, the memory is necessary to remember the recipe, and attention, to separate the ingredients and put them into the bowl in the correct order, without forgetting any items; otherwise, the cake won't turn out OK.

In our daily routines, we perform several tasks that we consider to be automatic, that is, we do not think about how we do them, we just do them. If there are any changes or unforeseen events, it will be necessary to plan and carry out the tasks in a different way. A simple task in our daily routines, such as taking a shower, can become complicated when the shower suddenly stops heating the water. When an unexpected fact occurs that requires a plan alteration, a different planning with new objectives, which can interfere with the actions more or less severely, according to the needs of the moment. Apparently, it is an easy problem to solve but, for an individual with an alteration of the executive functions, it is a set of solutions and resolutions difficult to be attained. Situations such as paying bills, receiving the change, withdrawing cash and checking the statement of account can become difficult tasks for a client with difficulties in reasoning, organization and planning, in addition to the memory, attention and concentration difficulties.

Praxia, according to definition by Landry & Spaulding¹⁴, is the capacity of planning and performing a certain movement intentionally. Still, according to the authors, praxia involves the necessary recognition to perform a certain action and the planning necessary to perform the task (voluntarily). The deficit is called apraxia, and it is defined as a disorder in the learning of a movement, when the motor functions, sensitivity, understanding and attention are preserved; therefore, this deficit is defined as an exclusion criterion.

A common example of apraxia is the difficulty in putting a T-shirt on: the client puts it on inside out or backwards; cannot realize how the action must be performed; even though it has been shown and taught how to do it, the client cannot put it on, several times causing the family and/or the client to feel irritated him or herself. The task can become difficult when the client, alone, decides to make coffee (which used to be a habit) and gets confused as to when to spoon the ground coffee or pour the water, sometimes making mistakes such as spooning the coffee into the water, forgetting the filter.

Case II

Seen at the Occupational Therapy Service, from 05/06/2004

to 03/04/2005.

E.L.M., 60 yrs, suffered head trauma due to firearm accident (FAA) on 07/06/2001, resulting in left hemiparesis; right-hand dominance.

Clinical alterations: polytrauma due to radioactive accident, prior to the FAA and decrease of the bilateral visual acuity.

Cognitive deficits: executive functions, organization, planning, ideatory apraxia and attention.

Motor aspects: preserved active mobility of upper limbs, performing manual and bimanual functions in activities of daily living, although with a deficit fine motor coordination and dexterity.

ADLs: the low visual acuity interferes with the daily routine, but does not prevent him from performing them. The patient has difficulties to get dressed (does not differentiate the front from the back of the clothes and what to put on first), being necessary to tell him and make him face the mirror, in addition to handing him the clothes so that the task can be performed.

Family: showed to be impatient due to difficulties presented by E.L.M. and used to perform the ADL for him, as well as being resistant to the instructions.

Some perceptual deficits prevent the client from recognizing and perceiving sometimes, even objects that are placed near him or her. The person who has a visual-spatial perception deficit – according to Liu et al.¹⁵ – has difficulty in recognizing a stimulus that is localized and distant from his or her more centralized visual field. When the person decides to read a newspaper, sometimes he or she does not understand the story, as due to his or her visual-spatial limitation, he or she cannot read parts of the phrases, only the central words, but not the lateral ones.

Case III

Seen at the Occupational Therapy Service from 06/28/2005, no predicted release up to the present date.

J.C.L., 74 yrs, suffered a stroke on 01/12/2005, presenting left hemiplegia as sequelae and right-hand dominance.

Clinical alterations: hearing deficit.

Perceptual-cognitive deficits: unilateral left neglect, temporo-spatial alteration and long-term memory.

Motor aspects: upper left limb with a (subtle) flexion of fingers and no active mobilization of the other joints. ADLs: semi-dependent. At home, the family refers that J.C.L. does not perceive objects placed on his left side; during meals, they placed the plate, cup and silverware on the right side so he could see them; at the car, the client kept talking to his son and did not realize he had left the car. During the activities proposed at the therapy, the client started transferring to the right side the objects that were on the left, as he could not formerly find them.

Family: supportive and participative in the treatment, follows instructions.

As previously described, these functions are interrelated, in a way that one interferes with the other more or less intensely, hindering the performance of daily activities in the presence of a deficit. During a more detailed observation of each one of these activities, it is possible to perceive that several perceptual-cognitive aspects

are involved, and not only those mentioned in the examples.

Conclusion

Based on the analysis of this literature review, it was possible to observe the influence of the perceptual-cognitive aspects in the performance of ADL and IADL; however, at the moment of the evaluation, there are other aspects that must also be considered. In addition to the moment of evaluation, they must also be considered during treatment, when defining a prognosis (which will possibly undergo alterations) of more or less independence and autonomy of the client with the sequelae due to neurological injury. Our interest and objective is not only that the client becomes independent, but also that this will reflect on the client and his or her family, without overlooking the deficits and potentials of each one of them. One must also bear in mind the family's socioeconomic and cultural limitations. Although this report presents clinical cases, it is based solely on literature.

References

1. Uniform terminology for occupational therapy - third edition. American Occupational Therapy Association. *Am J Occup Ther.* 1994;48(11):1047-54.
2. Holm MB, Rogers JC, James AB. Intervention for Daily Living. In: Crepeau EB, Cohn ES, Schell BAB. Willard & Spackman's occupational therapy. 10 ed. Philadelphia: Lippincott, Williams & Wilkins; 2003. p.491-554.
3. Rogers JC, Holm MB. Evaluation of areas of Occupation. In: Crepeau EB, Cohn ES, Schell BAB. Willard & Spackman's occupational therapy. 10 ed. Philadelphia: Lippincott, Williams & Wilkins; 2003. p.315-64.
4. Foti D. Atividades da vida diária. In: Pedretti LW, Early MB. Terapia ocupacional: capacidades práticas para disfunções físicas. 5 ed. São Paulo: Roca; 2005. p.132-83.
5. Katz N, Hartman Maeir A, Ring H, Soroker N. Relationship of cognitive performance and daily function of clients following right hemisphere stroke: predictive and ecological validity of the LOTCA battery. *Occup Ther J Res.* 2000; 20:3-17.
6. Erikson A, Karlsson G, Soderstrom M, Tham K. A training apartment with electronic aids to daily living: lived experiences of persons with brain damage. *Am J Occup Ther.* 2004;58(3):261-71.
7. Katz N, Itzkovich M, Averbuch S, Elazar B, Loewenstein Occupational Therapy Cognitive Assessment (LOTCA) battery for brain-injured patients: reliability and validity. *Am J Occup Ther.* 1989;43(3):184-92.
8. Segal R. Family routines and rituals: a context for occupational therapy interventions. *Am J Occup Ther.* 2004;58(5):499-508.
9. Rogers JC, Holm MB. Avaliação das áreas de desempenho ocupacional. In: Neistadt M, Crepeau EB. Willard & Spackman: terapia ocupacional. 9 ed. Rio de Janeiro: Guanabara Koogan; 2002. p.167-201.
10. Baldo MVC, Haddad H. Ilusões: o olho mágico da percepção. *Rev Bras. Psiquiatr.* 2003; 25 (2 Suppl):6S-11S.
11. Luria AR. Atenção. In: Luria AR. Fundamentos de neuropsicologia. São Paulo: EDUSP; 1981. p.222-43.
12. Grieve J. Neuropsicología para terapeutas ocupacionales: evaluación de la percepción y cognición. 2 ed. Madrid: Médica Panamericana; 2000.
13. Luria AR. Percepção. In: Luria AR. Fundamentos de neuropsicologia. São Paulo: EDUSP; 1981. p.199-212.
14. Landry J, Spaulding S. Assessment and intervention with clients with apraxia: contributions from the literature. *Can J Occup Ther.* 1999;66(1):52-61.
15. Liu CJ, McDowd J, Lin KC. Visuospatial inattention and daily life performance in people with Alzheimer's disease. *Am J Occup Ther.* 2004;58(2):202-10.