



**Report of the 16th Conference of the NEUROPSYCHOLOGICAL REHABILITATION SPECIAL INTEREST GROUP OF THE WFNR (NR-SIG-WFNR) and 15th Congress of the Andalusian Society of Neuropsychology (SANP) Granada, Spain**

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***Neuropsychological rehabilitation, a door to creativity, motivation and stimulation of researchers to improve the quality of life of patients<sup>1</sup>***

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Neuropsychological rehabilitation is continually in process, since every day we learn more about the mysteries of the nervous system, its plasticity and the benefits of the interaction of all cognitive processes, of affection, motivation and socio-cultural environment. Stimulating all the components in rehabilitation implies improving various areas (figure 1) of the patients and treating them as a human being with not only cognitive needs but also understanding in their emotions, his motivations, that is, from their holistic potential with opportunities towards social participation.

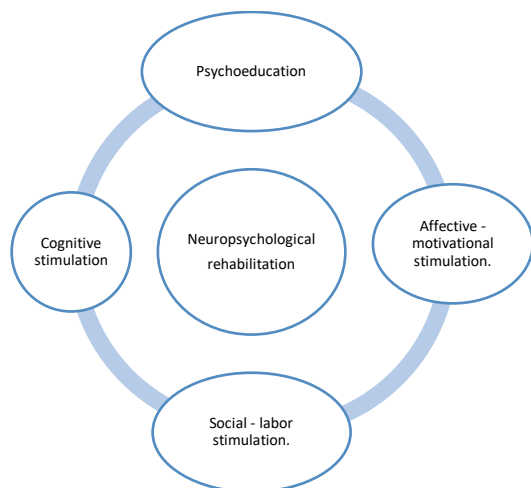


Figure 1. *Neuropsychological rehabilitation areas* (Huacache, 2019)

The 16th conference held in Granada, has been a great opportunity for many researchers to present our studies, in addition to exchanging scientific knowledge in order to achieve improvements in our procedures like in evaluation or rehabilitation.

When carrying out an analysis of the academic papers presented at the congress, you can see the different approaches within the rehabilitation, for example, the proposals of the TIC'S, software engineering, virtual reality, of how these new paradigms affect the patients and their abilities to adapt in their immediate environment, the social or work environment.

Another group would be composed of those experimental studies, such as transcranial stimulation in patients with brain lesions.

On the other hand, another group of studies focused on the importance of the family and social environment in rehabilitation.

Another area of study was integrated by those studies in patients with psychosocial problems as aggressors and victims of violence. Within the main axes of intervention according to the World Health Organization would be the issue of violence.

The rehabilitation in the developmental disorders, also was object of study, for example, the ADHD, have seen very interesting proposals in the congress because it includes the game, the creativity like forms of rehabilitation in children.

Neuropsychological rehabilitation has had a great impact on patient improvement, largely due to the contributions made to the theoretical basis of rehabilitation and one of the pioneers in studying the importance of brain plasticity in neuropsychological rehabilitation has been Barbara Wilson , who at the present congress has presented various studies that she has done,

which reminds us that we still know the brain, it's networks and its plasticity.

In reference to the clinical studies that she presented, one of them was from a 21-year-old patient (Wilson, 2019), who reports that the patient stills in the recovery process. Another study she carried out in 2008, in the follow-up observed that the Cognitive changes were observed in the patient even if it was slow, however in both cases despite the injury she observed improvements over time, which reminds us that while there is a neurophysiological basis of cerebral plasticity, as well as other areas adjacent to the Injury they fulfill various tasks compensating for the function, they would be the sustenance mentioned by Luria (1979), explaining that the superior functions acted as a complex system that interacted even from remote areas of the cortex but that influenced each other.

One of the difficulties we face in a neuropsychological rehabilitation session in patients with brain lesions is their level of alertness, as clinicians know that having strategies that activate the so-called first functional unit (Luria, 1979), of patient care and alertness, we assume that we already have a great advantage to start the rehabilitation, so that within the works presented at the congress, they propose the use of virtual realities and software engineering, which proposes a more motivating, dynamic environment interactive, which can offer many opportunities in the evaluation and rehabilitation of the patient, as referred to in the study by Mata, Pardo, Ramírez, and Nieto (2019), who found improvements in cognitive efficiency, motivation, adherence to treatment and executive functions in the use of virtual reality, in Colombia, Montañez and Beltrán (2019) presented a "Brain Trainer" software, for the estimation lation of working memory and processing speed, finding improvements in patient outcomes and in Spain, Sánchez, Sáez, Rute, Vázquez and Caracuel (2019), presented the VITRAEL program, of cognitive stimulation, these programs coincide in the importance of having a standardized protocol, replicable and in various contexts.

Trayner, Dowson, and Bateman (2019), presented a study to map processes and software engineering to improve the efficiency of rehabilitation, this study allowed to know improvements in management through software such as using shared electronic records, results of achievement of goal, this trend reduces the cost

of delivering reports. This study allows to know new ways of systematizing the results generating improvements in the way of managing resources, in a more efficient way and establishing a more effective communication between the professionals that are carrying out the rehabilitation plan.

However, in the face of new challenges, an interesting proposal raises the value of digital evaluation versus traditional evaluation, (Spreij, Gosselt, Visser and Nijboer, 2019), the researchers, found that traditional outcome measures may not be sensitive enough to specify cognitive difficulties in the daily life of patients with brain injury as a digital program can.

In subsequent investigations, these results should be taken into account. I consider that the importance of qualitative clinical evaluation is the most important factor when it comes to neuropsychological evaluation, on the other hand intervention with a virtual reality, can generates greater predisposition of patients to perform tasks, since they are familiar with technological changes and could act as a motivational variable and control of fatigue in the rehabilitation process.

Another group of academic papers presented at the congress were those focused on violence.

In a study to know how the level of emotion recognition works in aggressors, Marín, Amaoui, Clares, García, (2019), found that a group of aggressors obtained low scores in recognition of emotions compared to the control group, in another study they found that in a lower level of working memory there is a higher number of distorted thoughts, these findings show us that the dynamics of the brain of an aggressive person according to these reports is different from those who are not.

In addition these results can suggest that Are we finding some neuropsychological markers for aggressiveness? And so we can recognize them at an early age through neuropsychological evaluation, as well as intervene with rehabilitation plans in these people, generating protective factors against aggressiveness.

In a study of violence by Fernández, Hidalgo, Daugherty, Lozano, González; García and Pérez (2019), found that the greater the severity of violence is related to higher levels of anxiety, stress disorders and depression in women who have been victims of violence. These results

suggest that victims of violence have higher risk factors, and that it is important to have an early action plan in these patients.

Fear and catastrophe about mental activities lead to less mental activities? , Wijenberg, Rauwenhoff, Van Heugten, Verbunt, and Stapert (2019), in the Netherlands studied how high levels of catastrophization and avoidance of fear are related to the avoidance and performance of mental activities in healthy adults. The results support the applicability of the fear avoidance model in the population of patients who had an injury. This implies that in our process of rehabilitation with patients, we should work with various emotions such as fear.

In relation to studies with psychotic patients. Ruiz, Daza and Santiago (2019) in Spain, conducted a study in which they found that psychotic patients with negative symptoms had deficiencies in working memory, which could be interfering in the processing of emotional information that affects recognition of facial expressions and the ability to mentalize.

In patients with schizophrenia (López, García, Pérez, Torrecilla, Villagran, 2019) in Cádiz, Spain, they studied the relationship between neurocognition and social cognition in patients with schizophrenia, they concluded that the theory of mind (TOM), provides greater explanation to functional impairments, intervening with the theory of the mind in addition to children with autism, in patients with schizophrenia can be an effective intervention when acquiring better skills.

Primary care is a cornerstone for rehabilitation, since, by carrying out stimulation programs, and especially prevention, in various cognitive, affective and motivational areas, many of the risk factors for various syndromes could be reduced, an important aspect within primary care is psychoeducation.

Longley and Marron, (2019), carried out a feedback plan of the neuropsychological evaluation as a form of psychoeducational therapeutic intervention in patients with multiple sclerosis in order to improve knowledge, psychological well-being, the study concluded that feedback is very positive for patients, as they observed improvements in attitude, improved their knowledge and mood.

A program based on psychoeducation "BISEP", is an emotional-oriented brain injury treatment

program, developed by Rowlands, Turnbull, Coetzer (2019), in the United Kingdom, based on a traditional psychoeducation group approach, but with an emphasis on emotion and emotion regulation, its findings suggest the BISEP is an effective approach to improve anxiety.

Both intervention studies through psychoeducation have been effective, and in clinical practice it is important that the patients know the nature of their illness, their rehabilitation plan and setting goals, have proven to be very useful in the intervention.

Labor reintegration is another important variable in the patient rehabilitation, knowing that this degree of functionality will generate greater confidence and autonomy for the patient.

Tanemura and Ishida (2019), in Japan, developed an TIC tool to support work activities among people with cognitive disorders, found that vocational rehabilitation is effective, but observed that users need a lot of support for these operations such as having manuals, that allows them to make a step by step of the activities.

In Australia, Douglas, Winkler, D'Cruz, Bucolo and Finis (2019), developed a plan of videos directed by participants to train support workers of people with severe acquired brain injury, finally concluded that videos can improve the performance support and maximize results by allowing people with cognitive and communication disabilities to have options and control, then can set their own goals and direct their support.

Various studies presented at the congress confirm the importance of other basic superior neurocognitive processes when planning a rehabilitation program such as music, creativity, which well planned can provide optimal results allowing the patients to express themselves and feel the environment more close to them.

Hidalgo (2019), from the University of Malaga in Spain, conducted a study of the neuropsychology of creativity applied in children with ADHD, the neuropsychology of creativity suggests intervening in ADHD through divergent thinking to strengthen deficit neuronal connections. The purpose of the program was to develop creative and emotional thinking in children with ADHD, train mental, interpersonal and intrapersonal, emotional and academic skills, the results showed greater attention, fluidity of ideas and flexibility

of thinking, decreased behaviors of frustration and increased interest in learning.

In another study to analyze the relationship between creativity, thinking and academic achievement in the main subjects of the Spanish primary of: Segundo, Daza, López, Fernández (2019), in Spain, the findings suggested that creative thinking skills in primary school can predict academic success and could also help ensure the fundamental knowledge and skills for later educational stages.

These findings support the fact that while learning has an affective component and stimulate more brain areas related to motivation and creativity, that are functions not only of the left hemisphere also of the right, the child will have greater potential in learning.

In a group treatment trial for patients with traumatic brain injuries whose objective was to contribute to the participation and social integration of patients (Vartiainen, and Raukola, 2019), the program included arts sessions and detailed analysis of the emotions experienced. At the end the participants reported that they enjoyed these activities and found new ways to experience and express their emotions.

Research in transcranial stimulation has brought new forms of treatment in patients with neuropsychological syndromes. Torralba, Pavón and Hemmerich (2019), in Spain, conducted a study in a patient with anomic aphasia, in which they explored the effect of transcranial direct current stimulation on the ability to name objects of a patient with anomic aphasia, the results showed a highly improved nomenclature capacity of the stimuli used, the researchers highlight the potential of a method of intervention in anomie through neuromodulation.

It has been seen that there is a correlation between cognitive deficit and cardiological problems. Mion, Magee, Watson, Hardin, Karamasis, Keeble, Basildon (2019), in a study with survivors of cardiac arrest outside the hospital (OHCA), found that these patients have a higher risk of developing cognitive difficulties and morbidity psychosocial, and the latter also affects family members, cognitive difficulties are common in OHCA survivors but are often not identified.

Norup, Wolffbrandt, Nordin, Biering and Arango, evaluated the feasibility of a family intervention after a traumatic injury have tried to reported

changes in the family after a traumatic injury, including the patient and family. The study concluded that the intervention it seemed feasible and applicable to families in their daily lives.

Likewise, the issue of resilience in families after a brain injury evidences that brain injury affects the social and family network, so Breen and Farrington (2019), proposed that psychoeducation for the attendees to pose problems, family members described how the group helped them manage their own expectations of the future and understand how recovery in the community could be. It would be important to conduct studies that allow clarifying that other variables are involved and how resilience supports the families of these patients.

Finally, each academic work presented has been a great contribution to know the advances in research in rehabilitation in various countries. I conclude that while addressing cognitive aspects and also the affection and motivation of the patient, we will be generating higher expectations of confidence and autonomy in them and this can act as a driver to maintain their motivation during the rehabilitation process, know their needs, and take it into account when making the treatment plan, psychoeducate them, work with their family and work with the environment, to generate facilities in order to improve its degree of functionality and as researchers continue to motivate us, since we still continue to explore the brain, however what we do know is that it has plasticity, and thanks to that we can learn, improve the functions of patients .

The congress has been an opportunity to stimulate and motivate our brain and generate new information networks, I mean " learning" .

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