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Research Article

Multifamily Groups, Empathy and Acquired Brain Damage

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Abstract

Introduction: Multifamily groups have demostrated their effectiveness in different clinical and healthcare setting, primarily in patients with mental health problems. However, their benefits in patients with acquired brain damage have been little investigated. Interfamily therapy is base don dialogic practices and attachment. However, due to the intrinsic characteristics of our simple, we sought to delve deeper into the concept of emphaty(focusing primarily on perspective- taking and empathic concern, as mesoured by an interpesonal Reactivity Index (IRI) assesemnt intrument). Using multifamily therapy, we aimed to investigat, in a simple of 34 patients, whether imporvementes in empathy accurred after attending 10 sessiones. We also sought to explore the level of satisfaction with multifamily therapy.

Result: The level of satisfaction with subjective improvements was hight at 92 %. No significant differences were found in the four índices that mediate the IRI(fantasy, perspective taking, empathic concern, and personal distresss). 44.11% improved in " capacity for compassion for others" and concern. Another 44.11% imporved in " persepctive- taking", regardless of the location of the injury. Difficult undestanding certain ítems in our IRI simple. We found higher scores in empathy, both in perspective taking and empathic concen, in people with right-sided lesions before and after group psychotherapy. Therefore, our data do not corroborate findings in other studies on empathy.

Conclusions: Multifamily groups are satisfactory and useful, according to or simple. The IRI is a complx instrument fro patienes woth acquired brain injury (patients with languages-related injuries were excluded. We found no significant differences in improved empathy, althought we did observe a trend toward improvement in empathic concern and undestanding of others, and in perspective- taking. Therefore, futher research is need on these parameters to obtain a more robust simple.

Keywords: Empathy; Acquired Brain Injury; Multifamily Groups; Psychotherapy

Introduction

Intervention with families in acquired brain injury (ABI) has been reported in the scientific literature. In the onset and course of a severe neurological disease, the family is weakened and a certain predisposition to develop different mental disorders and/or psychopathological symptoms is generated. This has repercussions on the care provided to the patient, on dysfunctional relational dynamics and on the "burned-out" caregiver syndrome [1]. Considering that loneliness is one of the most stressful factors and in animal experimentation studies it has been studied that it is the first factor that induces stress [2].

Therefore, we have been developing the multifamily groups of acquired brain injury, from the perspective of interfamilial psychotherapy [3]. It is an eclectic and integrated multifamily model of the contributions of the main multifamily authors to which the contributions of attachment theory and dialogic practices are applied. It favors communicative, analogical and verbal interaction between professional and non-professional participants creating a complex transgenerational, multicultural, and multidisciplinary group matrix in which an individual, intrafamilial, interfamilial and social network is woven [4]. Our study arises from taking into account the interpersonal neurobiology that advocates emotionally rich environments to generate optimal neuronal plasticity, leading to a new brain organization that favors the process of adaptation to the disease and in turn improve the patient's quality of life.

Strong attachment bonds prepare the brain for change [5]. The brain systems of the members of a group in therapy, the brains receive stimulation in the group space, towards higher levels of integration (the neurons that are activated connect with each other) [6]. The initial changes in the brain are only temporary: hence the advantages of long-term therapy [7]. Familiarity, intensity and long duration are necessary for an attachment relationship to provide stability and modification of the central nervous system resulting in long-term brain change [8]. On the other hand, it should be taken into account, following some authors, that within a group imitation and/or identification processes occur, not as learning by observation but understood as a social reflex [9].

The brain is social and is programmed to cooperate, care and be fair [10,11]. Understanding the emotions of others is processed through mirror neurons that generate the empathy necessary to bring about change. This empathy is at the basis of successful interpersonal relationships. It is necessary for the driver of interfamilial therapy to understand that the group provides an environment that favors the repair of inevitable ruptures and betrayals that occur in authentic relationships [12].

To speak of empathy, one must understand its role in social cognition. One definition [13] refers to this cognition as the ability to create representations of the relationships of oneself and others and to use these representations in a flexible way to guide social behavior. Other authors consider it essential for survival, which will depend on a plan of action taking into account the desires and plans of others [14].

Several models of social cognition differentiate between automatic and controlled processes [15] [16,17]. The former refer to an open system that admits changes and the latter to a closed system. Other authors [17] call this open system empathy and the closed system systematization. On the other hand, Ochsner [18] proposes the existence of a five-step socio-emotional processing flow: first there is an affective appraisal of stimuli leading to conditioning, then there is recognition of biological movement and non-verbal cues. Thirdly, there is low-level inference, where we find empathy and mirror neurons, followed by high-level inference, referring to the symbolic understanding of what is happening and taking into account the context, and finally, there is self-regulation of our behaviour. Other authors speak of three important aspects that make up such cognition: the perception of emotional expression, the ability to attribute desires, intentions and beliefs to others, and empathy [19].

The aim of multifamily groups [20] is to generate new coherent narratives about attachment, promoting mentalisation and empathy among group members. Therefore, empathy is a construct that needs to be studied within multifamily groups due to the activation of mirror neurons within the relationship networks that emerge. On the one hand, these groups will facilitate that the brains contin-

ue to be stimulated and new interconnections are generated from the coldest cognitive point of view, i.e. more related to the more cortical executive functions, and on the other hand, improvements in compassion and relations with the other, more related to the limbic system, can be produced. Both the cognitive and emotional aspects of empathy are measured by the Interpersonal Reactivity Index (IRI). This has led us to consider using this instrument to check whether certain significant differences are produced in a sample of 34 patients who attended the multifamily groups on a regular, fortnightly basis, on the basis of the different dimensions of empathy that it assesses.

Brain, empathy and ABI

In a study of 20 patients with acquired brain damage, a lower empathic capacity was observed, especially in the emotional component and in turn a lower psychophysiological response to feelings of anger or rage, factors that would condition their social performance after brain damage [21]. On the other hand, a group of researchers found that when there was damage to both the left and right frontal cortex, empathy was affected, as well as if the damage occurred in the right parietal cortex. They concluded that the medial region of the prefrontal cortex played a key role in empathy [22].

Also, more specifically, if there is a lesion in the dorsolateral part, there would be cognitive inflexibility which would affect a decrease in empathy. On the other hand, if the damage is in the ventromedial area, affective recognition and social behaviour will be altered [23]. Therefore, the ventromedial prefrontal cortex is considered the axis of empathy, the centre of understanding the feelings of others [24].

Many studies link social cognition to the right hemisphere [25,26]. And lesions in this hemisphere have been shown to impair facial expression recognition [27] and with poor performance on tests assessing mentalising ability [28].

Other relevant areas involved in empathy impairment, especially in the right hemisphere, are: the amygdala involved in processing basic and social emotions, the insula, the temporal pole, the lateral orbitofrontal cortex that assesses the importance of the context of emotional information for decision making [29-31]. In the study (2012) where empathy was assessed using the IRI, the results showed that patients with right frontotemporal lesion scored lower on the dimension 'empathic concern' and to a lesser extent on 'perspective taking'. This frontotemporal circuit appears to be susceptible to contusion during TBI according to authors [32,33].

Objectives

Although studies focusing on multifamily groups in social and health contexts are beginning to proliferate, there is still a long way to go to confirm what the different multifamily psychotherapeutic approaches offer patients and their families.

We set out to analyse whether changes in empathy were produced in the patients attending the multifamily ACD groups after 6 sessions. For this reason, we decided to apply the IRI as an instrument validated in the Spanish population, focusing more specifically on the dimensions that assess the empathic component at both the cognitive and emotional levels.

Based on the scientific literature, we questioned whether interfamilial groups could improve this quality in patients with right hemisphere lesions.

On the other hand, we wanted to check whether in our sample right brain lesions are accompanied by a worse performance in empathic concern and perspective taking, as shown in the scientific literature.

Method

We used the statistical software SPSS version 24.

Assessment instrument

Socio-demographic data

Interpersonal Reactivity Index (IRI) This is a self-administered questionnaire of 28 items rated on a Likert-type scale, from 'does not describe well' to 'describes very well', with a minimum score of 28 points and a maximum of 140. Factor analysis showed a structure consisting of four independent dimensions of seven items each: Fantasy: subjects' tendency to identify with fictional characters, such as characters in books or films. - Perspective-taking: subjects' tendency or ability to adopt the perspective or point of view of others. -Empathic concern: items assessing subjects' tendency to experience feelings of compassion and concern for others. -Personal discomfort: items indicating that subjects experience feelings

of anxiety and discomfort when witnessing negative experiences of others. In 2003, the Spanish validation of the assessment instrument was carried out with a university population, whose factor analyses showed a similar structure to that of the original version.

In a study on empathy and acquired brain injury, the researchers assessed this ability using the IRI to observe the change before and after the injury in the patients, with the family members being the informants. In our case, we used self-applied application of the IRI by the patient himself, although more time was needed than in the population without brain damage and the need to carry out some clarifications of certain items.

Ad hoc group satisfaction questionnaire, Likert-type scale

- The Multifamily treatment I attended was useful to me.
- The Multifamily treatment I attended was useful for my relatives.
- I would go back to the multi-family treatment again.
- Numerical rating of satisfaction with the interfamilial experience from 0-10.

Sample

The sample consisted of 34 patients with ACD attending the multifamily groups in the inpatient rehabilitation service, of whom the following acquired brain pathologies were present.

The mean age of the sample was 57.62%, with extremes of 27 and 83 years. The level of education was primary 47.1%, secondary 32.4% and higher education 20.6%.

As for the sex variable, 27 were male and 7 were female. Laterality was 85.3% right-handed and 2.9% left-handed.

Attendance to multifamily groups is offered as a complement to neuropsychological rehabilitation together with cognitive stimulation sessions. The measure is obtained from 0 attendance to more than 6 group sessions.

Results

The four indices measuring empathy (cognitive and emotional) have been analysed in order to determine whether there are significant differences in the ACD group or the inter-family group.

We have not found significant differences between the start of psychotherapeutic treatment of interfamilial groups, in any of the four indices p greater than 0.05, through the analysis of related samples.

Right middle cerebral artery stroke	**38,2%**
TCE trauma	8,8%
Left stroke	19,6%
Encephalitis	2,9%
Aneurysms	5,9%

Table 1

We have also found a reduction in the mean of the four indices at the level of the central tendency measure, results that are far from what we expected, and it is necessary to analyse the percentage of cases that show a certain tendency towards improvement in perspective-taking and empathic concern, aspects that encourage us to continue increasing the sample to verify whether there is a significant difference. The empathic concern index was our main hypothesis, because the MF group favours the bonding system of the group members and the attachment system through dialogic practices. 44.11% have improved in the capacity of compassion for the other and in concern. Another 44.11% improved in perspective-taking regardless of the location of the injury.

With regard to the group satisfaction questionnaire carried out ad hoc, we found the following results

- The Multifamily treatment I attended was helpful to me: 92.9% responded Very much.
- The Multifamily treatment I attended was helpful to my family members :89% Very much
- I would go back to the multifamily treatment again: 82% said Yes.
- Numerical rating of the interfamilial experience from 0-10 - the mean was 9.2 at the level of satisfaction.

Discussion and Conclusion

Recent studies showed that patients with right injuries had lower scores on empathic concern and to a lesser extent on perspective taking.

We wanted to check whether in our sample with right brain lesions and left lesions there was any difference based on the scientific literature. We found better empathy scores in both perspective taking and empathic concern in people with right lesions, so our data do not corroborate the findings.

On the other hand, it is interesting to note that perspective taking after attending multifamily groups shows an improvement in people with right injury. There are no differences between patients with left and right lesions in the improvement of empathic concern after the multifamily groups.

Our results point to the benefit of multifamily groups in ACD in that patients, after an average of 10 sessions, have been able to improve their perspective of the other (as empathy is traditionally defined), which has to do with cognition rather than emotion.

Analyses on the Spanish adaptation of the IRI should continue to be explored in samples with acquired brain injury, where the language area is not affected.

On the other hand, although we have not found statistically significant differences in the four indices with respect to pre- and post-treatment measures, we have observed in perspective taking that people with right lesions show an increase with respect to patients with left lesions before treatment, and in turn it is the patients with lesions in the right hemisphere who show more improvement. And in perspective taking, the left lesions also show a slight tendency to improve with the attendance to the 10 interfamilial sessions. In terms of empathic concern, two things are observed: people with right lesions score higher in both pre-treatment and post-treatment than people with left lesions. However, there is no evidence of improvement in empathic concern in the post-treatment.

Although the IRI has demonstrated a factorial structure in the Spanish sample similar to that found in the original, our sample has had difficulty in understanding certain items, due to not understanding the positive or negative meaning of the instruction, (this sample not presenting affectation in Wernicke's area mainly involved in language comprehension) resulting tedious for the evaluator, and generating certain doubts in the compilation of results. Other studies have used informants due to the frequency of attendance at neuropsychological rehabilitation, we opted to explain each item, so that the patients themselves were the ones to make the decision on the response.

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