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Training on emotional intelligence for caregivers of patients with acquired brain injury and cognitive impairment: A quasi-experimental study

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Abstract: Background: Cognitive-behavioral alterations can occur after an acquired brain injury. It is a stressful situation for patient and relatives.

Objectives: To develop and evaluate a synchronous online training program on emotional intelligence (EI) for caregivers of adult patients with cognitive-behavioral impairment due to acquired brain injury.

Methods: A quasi-experimental study was designed, a target population of ten caregivers attended to a one-month virtual synchronous course about EI. The emotional status of caregivers was registered one-month-previous and one-month-post program using comparative measures: The Trait Meta-Mood Scale (TMMS-24) and the Positive and Negative Affect Schedule (PANAS).

Results: Median age of the ten caregivers was 48 years, 80% of women with a median care-time of 6 years. 50% of them were spouses of the patients. 60% of the patients were affected by stroke (hemorrhagic or ischemic cause). The main cognitive impairment of the patients reported by relatives was memory deficit. After receiving training, favorable changes were found regarding emotional affect measured with the PANAS, both positive (increase) and negative (decrease), as well as with the TMMS-24-mood-repair area ($p < 0.05$).

Conclusions: Training in EI helps caregivers to make their mood more positive and improve aspects of their emotional intelligence such as emotional regulation.

Keywords: emotional intelligence; brain injury; cognitive impairment.

1. Introduction

Cognitive-behavioral alterations that occur suddenly in the life of an adult who has suffered an acquired brain injury (ABI) radically alter their quality of life and their relatives'. ABI can be caused for different reasons: traumatic brain injury (TBI) or stroke, among others. ABI immediately reduce patients' autonomy, their work capacity and, therefore, it affects their economic situation. This kind of injuries can even alter their ability to communicate and relate, which makes the whole family struggle. It is a very stressful situation of great emotional complexity for the patient and their relatives.

TBI is the cause of ABI, in which cognitive impairment has been more studied. Patients who survive to moderate-to-severe TBI frequently suffer from a wide range of cognitive deficits and behavioral changes caused by a diffuse axonal injury. These deficits can include slowed information-processing and impaired long-term memory, working memory, attention, executive function, social cognition, and self-awareness. Mental fatigue is also frequently associated and can exacerbate the consequences of neuropsychological deficits. Personality and behavioral changes may include combinations of impulsivity and apathy [1].

Some cognitive difficulties reported by patients with TBI are crying control, modulation of emotional expression, participation in group activities, and avoidance of depressed mood. Some caregivers highlight that patients struggle in accepting criticism and recognizing when they feel offended by others [2]. Families are most affected by these behavioral changes, often in the absence of appropriate information or advice. Many caregivers report high levels of distress, burden, and depression [3]. Emotional and behavioral changes in the injured person put significant pressure on close family members. The well-being of close relatives can be decisive for the well-being of the patient [4].

Decision-making in a home with a patient with cognitive impairment due to ABI becomes a collaborative work along with the caregiver. This needs to see the patient in a

This needs to see the patient in a positive light and learns from the experience to find a way to communicate while being committed to the relationship. Understanding the functional implications of the ABI on the patient is vital in this process [5].

“Some partners report that they feel abandoned and unsupported by services in the immediate aftermath of discharge, left to cope by themselves with little support or guidance at a time when their responsibilities and need for assistance have increased” [6]. The caregiver often plays a significant role in providing emotional support to the injured person. In some cases, it may not be safe to leave the patient on their own and, thus, constant supervision may be required. For many relatives, dealing with these extra demands means that they have little time left to address their own needs [6]. Long-lasting caring for a partner with ABI presents considerable challenges that can threaten a person’s health and well-being. Equipping caregivers with emotional regulation strategies to provide sustainable care is something that could benefit both the caregiver and the rehabilitation of the spouse. Caregivers’ anxiety episodes are often managed through hyper-vigilant and overprotective practices that put them at risk of burnout [7].

Emotional Intelligence (EI) refers in general to the ability to identify, express and understand emotions, assimilate them into thought, and reflexively regulate one’s own and others’ positive and negative emotions [8].

The most emotionally intelligent individuals, that is, those who possess an adequate capacity to attend, understand and regulate their emotions, will have better mental health, which will ultimately benefit the mental health of their partner and family [9]. A training course on EI could help caregivers improve their abilities to recognize the emotions that influence the relationship with patients, as well as better management of both verbal and non-verbal communication. In addition, patients with cognitive-behavioral affectation due to ABI tend to have difficulties in emotional management; therefore, the protective task of co-regulation falls on the caregiver. Due to the sudden appearance of this difficulty, training in this regard is highly valued by caregivers to learn how to cope with this situation in a resilient manner.

Several studies suggest that EI can be trained [10,11]. Other authors have designed a counselling program for caregivers of patients with TBI with the objectives of: (a) improving mutual understanding and building family consensus; (b) overcoming misconceptions about the injury; (c) shifting perspective from negative to positive aspects of the situation; (d) recognizing the impact of thoughts on emotions; (e) identifying red flags that indicate an emotional escalation; (f) learning to manage emotions; (g) communicating effectively; (h) understanding the importance of limits within the family and learning to state them clearly; and (i) reducing the levels of depression, anxiety, overwhelm, conflict and, even, health care utilization [12]. Nevertheless, there are not any results about the effectiveness of this type of interventions in caregivers published in the scientific literature, and our main objective aims to answer to this need.

Caregiver overload can be aggravated in difficult times, such as the situation of social distancing due to the COVID-19 pandemic. Some consequences of this health crisis are the reduction of social and sanitary support for patients with chronic diseases, the reduction or cessation of ambulatory therapies or day-center activities. Since the beginning of the pandemic, even attending a training course can be a challenge, so this program had to be redesigned into a virtual course.

Objectives

To develop and evaluate a synchronous online training program on EI for caregivers of adult patients with cognitive-behavioral impairment due to ABI.

2. Materials and Methods

A quasi-experimental study was designed and a target population of ten caregivers of patients with cognitive impairment after ABI attended a one-month virtual synchronous course about EI. Inclusion criteria: adult caregivers of an adult patient with cognitive impairment after ABI. Exclusion criteria: non-cognitive impairment of the patient and aged under 18 years old.

Through a web-link, caregivers were asked to answer several questions to get a complete description of the sample (age, gender, number of years as a caregiver, relationship with the patient, presence of more dependent people in their charge, cause of brain injury of the patient, primary cognitive deficit of the patient from the caregiver's point of view), Caregiver Burden Interview (Zarit's questionnaire) [13], the 10-item Connor-Davidson Resilience Scale (10-item CD-RISC) [14], and the Emotional Health Survey (MH5) [15].

Zarit's questionnaire evaluates factors contributing to feelings of burden experienced by the caregivers of patients [13]. The 10-item CD-RISC is an instrument for measuring resilience that has shown significant psychometric properties. Resilience has been defined as a dynamic process of adaptation to changes in life circumstances [14]. MH5 is part of the Short Form-36 Health Survey (SF-36). It is one of the most widely used and evaluated generic health-related quality of life questionnaires. MH5 is composed of 5 questions about mental health. The range of punctuation is 1–6, being 6 the maximum emotional health quality [15].

The intervention program consisted of four 3-hour sessions in which the following topics were addressed: (a) perception and expression of emotions; (b) assimilation of emotion into thought; (c) emotional understanding; and (d) reflective regulation of emotions. Dynamic interventions were used to promote group participation and interaction through experiential and reflective activities. Each week collaborative discussion about previous concepts was facilitated to relate them with emotional tools and cope strategies. Examples of daily life were used to understand key-messages.

Comparative measures were administered to record the emotional status of caregivers one month before and after the training program (pre- and post-tests):

1. The Trait Meta-Mood Scale (TMMS-24) [16]. The TMMS-24 is a EI questionnaire which was designed to assess relatively stable individual differences in people's tendency to attend to their moods and emotions, to discriminate and regulate them clearly. Results are divided into three dimensions: attention (I am able to feel and express feelings appropriately), clarity (I understand my emotional states well) and repair (I am able to regulate emotional states correctly). Scores are adapted to male and female population.

2. The Positive and Negative Affect Schedule (PANAS) [17]. It is a 20-item self-report questionnaire and one of the most used affect measures. The range of punctuation is 10–50 for positive affect as well as for negative affect; being 10 the less presence of negative/positive affect in life of the user in the previous month, and 50 the maximum.

Statistical analysis: Changes between pre- and post-intervention measurements were studied. The non-parametric test for paired data, Wilcoxon's test, was used. Statistical significance was established at a value of $p < .05$. To this end, StataIC software program (version 16.1.824) was used.

3. Results

Sample's description is displayed in Table 1. The median age of the ten caregivers was 48 years. 80% of women had a median care-time of 6 years, 50% of them were spouses of the patients, and 60% of the patients were affected by stroke (hemorrhagic or ischemic cause). The main cognitive impairment of the patients reported by their relatives was memory deficit.

Table 2 shows a description of the basal emotional status of caregivers. 50% of them presented an adequate level of emotional attention and emotional clarity, and 70% had an adequate (60%) or excellent (10%) emotional repair (TMMS-24). Moreover, 70% did not report overload (Zarit's questionnaire), 40% showed an adequate (20%) or excellent (20%) resilience level, and positive affect was higher than negative in the previous month (Mdn = 32 vs. 20; PANAS). Finally, the median emotional health quality was 4.1 (1–6 range; MH5).

After the training course, favorable changes related to emotional affect measured with the PANAS were found; both positive (increase; Mdn = 39.5) and negative (decrease; Mdn = 14.5) presented a statistical significance of $p < .05$. The TMMS-24 post-test showed that 90% of the caregivers reported an adequate or excellent emotional repair ($p < .05$; see Table 3).

Table 1. Sample characteristics

Age of the caregivers	Median 48 [21,62]
Gender of the caregivers	2 men (.20)
	8 women (.80)
Number of years being a caregiver	Median 6 [2,12]
Relationship with the patient	2 mothers of the patient (.20)
	5 spouses of the patient (.50)
	1 sibling of the patient (.10)
	1 daughter of the patient (.10)
	1 niece of the patient (.10)
More dependent people on their charge	2 yes (.20)
	8 no (.80)
Cause of brain injury of the patient	3 ischemic stroke (.30)
	3 brain haemorrhage (.30)
	2 traumatic brain injury (.20)
	2 other causes (.20)
Main cognitive deficit of the patient (observed by the caregiver)	9 memory (.90)
	1 planification (.10)

Table 2. Emotional status of caregivers

TMMS-24. Attention: I am able to feel and express feelings appropriately	Low 5 (.50)
	Adequate 5 (.50)
	Excessive 0 (.0)
TMMS-24. Clarity: I understand well my emotional states	Low 5 (.50)
	Adequate 5 (.50)
	Excellent 0 (.0)
TMMS-24. Repair: I am able to regulate emotional states correctly	Low 3 (.30)
	Adequate 6 (.60)
	Excellent 1 (.10)
Caregiver overload (Zarit's questionnaire)	No overload 7 (.70)
	Overload 3 (.30)
	Intense overload 0 (.0)
Resilience (CD-RISC-10)	Low 6 (.60)
	Adequate 2 (.20)
	High 2 (.20)
Positive affect (PANAS scale)	Median 32 [10,50]
Negative affect (PANAS scale)	Median 20 [10,50]
Emotional health (MH5)	Median 4.1 [1,6]

Table 3. Changes after the IE treatment

	Pre-IE training	**Post-IE training**
TMMS-24 Attention	Low 5 (.50)	Low 4 (.40)
	Adequate 5 (.50)	Adequate 5 (.50)
	Excessive 0 (.0)	Excessive 1 (.10)
TMMS-24 Clarity	Low 5 (.50)	Low 2 (.20)
	Adequate 5 (.50)	Adequate 8 (.80)
	Excellent 0 (.0)	Excellent 0 (.0)
TMMS-24 Repair	Low 3 (.30)	Low 1 (.10)*
	Adequate 6 (.60)	Adequate 6 (.60)*
	Excellent 1 (.10)	Excellent 3 (.30)*
PANAS- Positive affect	Median 32	Median 39.5*
PANAS- Negative affect	Median 20	Median 14.5*

* Statistical significance ($p < 0.05$).

4. Discussion

The objectives of this study aimed to develop and evaluate a synchronous online training program on EI for caregivers of adult patients with cognitive-behavioral impairment due to ABI. To our knowledge, there are not any published results about the effectiveness of this type of interventions in caregivers in scientific literature.

An ABI is a complex injury often followed by a broad range of physical, cognitive, emotional and behavioral disabilities. There exists a bidirectional relationship between the wellbeing of the patient and the family [18]. It is essential to highlight that physical and psychological health of the caregiver is often altered by the caregiving experience [19]. The situation is aggravated in the case of caregivers who are caring for someone with violent and/or disruptive behaviors. Specialized counselling programs could increase caregivers' quality-of-life, which will ultimately affect the rehabilitation outcomes of persons with ABI [20]. A coherent understanding of the mechanisms underlying coping, adjustment, and resilience is needed to develop appropriate interventions for the caregiver population [21].

A meta-analysis of 20 studies found that when individuals have a greater ability to recognize their emotions and can perceive those of others, they have a better conflict management capacity [22]. Families have adaptive capacities that help them to establish effective psychosocial coping while living with patients with ABI [23]. A training program directed to reinforce these competencies can be seen as a helpful tool to improve their quality of life.

The situation related to the COVID-19 pandemic worsens caregivers' situations. COVID-19 has required many countries across the globe to implement early quarantine measures as the fundamental disease control tool [24]. Isolation and lack of normal routines have turned the care of a patient with cognitive impairment due to ABI into a more challenging task. Caregivers may feel fear of getting themselves and their relatives infected. This fear becomes acute when patients have risk factors for potential severe infections and, in addition, they are not completely aware of the safety measures. Previous outbreaks have reported that the psychological impact of quarantine can vary from fear, irritability, anger, frustration, loneliness, confusion, denial, anxiety, insomnia, despair, and depression [24]. A family without a previous balanced emotional health could struggle in this challenging situation. Precisely, quarantine measures hinder face-to-face psychological training or group therapy to minimize the emotional impact. For this reason, the possibility of offering virtual options of counselling has to be considered as an essential need.

Before our synchronous online training program on EI for caregivers of adult patients with cognitive-behavioral impairment due to ABI, half of them showed low attention to their own emotions and low clarity or understanding of them, 30% of them showed low ability in emotional repair (measured with the TMMS-24). After the EI training course, 80% reported adequate clarity in emotional understanding and 90% either adequate or excellent levels of emotional repair. The predominance of positive affect (pleasant emotions) versus negative was increased (32 positive and 20 negative in the pre-test vs. 39.9 positive and 14.5 negative in the post-test).

Emotional regulation is the ability to influence our own emotions in relation to when we have them and how we experience and express them. Co-regulation occurs when caregivers use strategies to help their relatives regulate their emotions. EI abilities help caregivers cope with behavioral disturbances of patients and their own negative emotions in reaction to those disruptive behaviors: (a) lack of initiative and motivation, which can subside into frustration and anger; (b) the loss of beneficial attributes may be associated with a sense of sadness and loss; (c) aggression, which can subside into a state of perpetual vigilance; (d) difficulties in understanding why the person is behaving in these ways can lead to frustration; and (e) lack of success in managing their patients' behaviors can lead to a sense of hopelessness. Some caregivers see their process as an opportunity of personal growth and development as a result of meeting the challenges posed by the injury, including a new appreciation of what life offers, and the development of inner strength and resilience [6].

Limitations

Some weaknesses of our study are (a) the lack of a control group, (b) the small size of the sample, and (c) the heterogeneity among participants related to gender, cause of ABI, age, and relationship to the patient. Further studies with a larger and more homogeneous sample and a control group should be performed to confirm our results. However, this study can be considered a start point to future research.

5. Conclusions

Training in EI for caregivers of patients with cognitive impairment helps them boost their mood and manage negative emotions. It also improves aspects of their EI, such as mood repair or emotional regulation, which are key abilities in people who not only have to practice self-regulation but are also in charge of the co-regulation of their patients.

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