

## Research Article

# The Dyadic Complexity of Stressor-Related Disorders in Patients with Schizophrenia and their Caregivers

Pinheiro M<sup>1</sup>, Nunes C<sup>2</sup>, Carvalho N<sup>1</sup>, Mendes D<sup>1</sup> and Rocha J<sup>2\*</sup>

<sup>1</sup>Centro Hospitalar do Tamega e Sousa, Portugal

<sup>2</sup>IINFACTS, CESPU, Portugal

\*Corresponding author: Rocha J, IINFACTS, CESPU, Portugal

Received: March 28, 2017; Accepted: April 21, 2017;

Published: April 28, 2017

## Abstract

Stress impact in patients with schizophrenia is decisive on their well-being; however, there is not much evidence of the more complex aspects about the interaction with the caregivers, about Posttraumatic Stress Disorder symptoms (PTSD), Complex Posttraumatic Stress Disorder (C-PTSD) and Complicated Grief (CG). Pairing patients with their caregivers and using the most recent methodologies for C-PTSD and CG assessment it is possible to clarify connections between those comorbid interactions in such a specific paired sample.

The sample is composed of patients with schizophrenia (n=25) paired with their caregivers (n=21); patients without schizophrenia (n=24) paired with their caregivers (n=24) and a reference group (n=110). After informed consent procedures, we use a sociodemographic questionnaire, Positive and Negative Syndrome Scale (PANSS), Inventory of Complicated Grief (ICG), Trauma Questionnaire (ICD-11) and Life Events List (LEC).

Patients with schizophrenia and their caregivers present more PTSD and less CG symptoms than the reference sample. There is a pattern of reverse correlation between patients PTSD symptoms and their caregivers symptoms (PTSD; C-PTSD and CG), being especially relevant for C-PTSD symptoms. Such negative correlation does not exist in the paired group of caregivers and patients without schizophrenia.

This may be the result of the possible relation established (of protection/dependence) between the caregiver and the patient and may be specifically associated with difficulties of emotional regulation. We present evidence about CG, PTSD and C-PTSD symptoms relevance in both caregivers and patients with schizophrenia, therefore, the need to recognize and address those potential problems.

**Keywords:** Schizophrenia; Caregivers; Stress disorders; Posttraumatic Stress; Grief

## Introduction

Schizophrenia is one of the major psychiatric diseases, with dramatic impact on the life of those who have the disease, as well as on the life of those who are taking care of them. It is based on positive and negative symptoms which involve a complex cluster of thought, perception, affection, will, communication and behavior modifications.

Schizophrenia has aroused scientific curiosity by the intrinsic factors (ex: adverse conditions on perinatal period, traumatic events through life, post-traumatic stress disorder...) which may act over the clinical expression of the disease, exacerbating it or acting as a trigger for its outgrowth [1].

Schizophrenia's genetic and epigenetic component has been documented and fathomed over the last years [2-4], however, by the complexity of the disease, the effective and detailed causes of its origin and evolution are still unknown [5].

Despite the demand and curiosity of scientific researches about schizophrenia, there are few studies centered on the patients' caregivers

and their impact. According Health World Organization, there are several aspects that should be considered about the schizophrenic patients' caregivers such as: economic burden needed for support the patient with consequent loss of family unit productivity; feelings of guilt, sense of loss and fear of the future; stress on dealing with behavior disorders and the complexity on the approach of social isolation with family routine change [5]. As the above mentioned, it is understandable that the schizophrenic patients' caregivers are subjected to high levels of stress as the schizophrenic patients themselves, like all the human beings with or without associated mental illness are subjected to events that may give rise to stress, which may give rise to any sort of disorder.

## Stress-related disorders

The exposure to traumatic events and the presence of Post-traumatic Stress Disorders (PTSD) symptoms are often observed on individuals with schizophrenia [6-9]. About 4/5 of the schizophrenic patients report significant trauma compared with 3/5 of the population in general [6], there are studies indicating that the exposure to traumatic events through the life of these individuals ranges between

**Table 1:** Sociodemographic characteristics of the groups

		Schizophrenia Patients				Caregivers of Schizophrenia patients				Reference sample				Patients without Schizophrenia				Caregivers of non Schizophrenia patients			
		n	%	M	SD	n	%	M	SD	n	%	M	SD	n	%	M	SD	n	%	M	SD
Sex	Women	7	28			19	90.5			67	60.9			11	45.8			24	100		
	Men	18	72			2	9.5			43	39.1			13	54.2			0	0		
Age				46.68	10.25			66	13.92			30.25	12.54			71.33	17.63			51.83	10.18
School attendance	Without	0	0			3	14.3							8	33.4			2	8.3		
	4 years	10	40			11	52.4			5	4.5			15	62.4			14	58.4		
	9 years	11	44			5	23.8			22	20			1	4.2			7	29.1		
	More than 12 years	4	16			2	9.5			84	75.5							1	4.2		
Marital status	Married	4	16			11	52.4							10	41.7			19	79.2		
	Single	17	68			1	4.8							3	12.5			0	0		
	Divorced	4	16			2	9.5							0	0			3	12.5		
	Widow					7	33.3							11	45.8			2	8.3		
Profession	Active	2	8			4	19.0							7	29.2			12	50		
	Non active	23	92			17	82.1							16	70.8			12	50		

**Table 2:** Descriptives of symptoms and traumatic exposure in the groups of patients with Schizophrenia, their caregivers and a reference sample.

	Patients with Schizophrenia			Caregivers			Reference group			F	p
	n	M	SD	n	M	SD	n	M	SD		
ICG	20	4.05	6.55	18	11.94	9.68	78	16.44	14.58	7.52	0.001
LEC	-	-	-	20	1.45	1.16	110	3.33	2.09	-3.88	<.001
PTSD	20	12.35	4.88	19	11.79	6.09	110	7.61	6.72	6.97	0.001
C-PTSD	-	-	-	20	16.40	9.15	110	16.60	11.75	0.01	0.943

**Note:** Post Hoc: for ICG Patients <Caregivers and Reference group; for PTSD Patients and Caregivers > Reference group.

34% and 98% [7]. On the other hand, the predominance of PTSD emerges between 28-29%, compared with 8-9% of the population in general [9-11]. The higher the number of reported PTSD symptoms, the higher the increase of alienation and fear, the higher the sensitivity to rejection and the difficulty of empathy with others [6]. The studies on that field present some contradictory results, there are those that refer PTSD patients tend to have more severe psychotic symptoms [10,12], whereas others report that schizophrenics with PTSD present a higher emotional distress, a higher symptomatology chronicity but not a higher severity of symptoms associated to schizophrenia [13].

Recent studies also refer that, despite everything, the presence of trauma and/or PTSD as co-morbidity on schizophrenia doesn't seem to be associated to an increase of cognitive impairment [14], although there are other contradictory studies [12,15]. Despite the literature highlights the existence of traumatic events and potential PTSD, these are still sub-diagnosed in patients with severe mental illness [8,16]. It is assumed however, the existence of some difficulty on the appraisal of PTSD symptoms, easily neglected and not easily distinguished of the symptomatology presented on schizophrenia [10,14]. However, the exposure evaluation to different traumatic events and the PTSD presence on people with schizophrenia, which presents higher emotional reactivity and psychosis vulnerability, may reduce the anxiety-depressive symptomatology, the risk of suicide attempt [17] and contribute to better long-term clinical results [18]. On this field,

arises the doubt about the influence that the PTSD of the schizophrenic patient may have on his caregiver and if the PTSD of the caregiver, in turn, has any kind of influence on the schizophrenic patient. The emotional transmission refers to an emotional state on the observer as a direct result of the emotional state perception of somebody else [19,20] depending, above all, of body and non-verbal expressions, and may occur at a conscious or unconscious level. According recent studies, schizophrenic patients are more susceptible to emotional transmission for negative emotions than healthy individuals, however they may present difficulties in properly identifying the emotional states, despite of it is no different from the healthy controls on its capacity of feeling with them, emotional empathy [21]. Other studies approach, though incipiently, the possibility of a hypersensitivity to affective empathy on schizophrenic patients [22]. Nowadays, there is a concept gaining strength on the field of stress-related diseases, the Complex Post-Traumatic Stress Disorders (C-PTSD), on which the consequences of a continuous and prolonged exposure to interpersonal stressors reflects the severity of the symptomatology associated to psychological trauma. It is easy to understand the difficulty of its evaluation on schizophrenic patients and the lack of studies on this context (quoted on 2016 article). The Grief process is a period causing great stress is multidimensional, active, customized and determined by numerous factors of mourner's life. Besides the grief by the loss of someone, on the schizophrenics there is the grief for a life without the disease, a life without stigma and constraint.

**Table 3:** Correlations of stress related symptoms and traumatic exposure between paired diads of patients and their caregivers.

Patients with Schizophrenia						
		ICG	PTSD	PANSS +	PANSS -	LEC (Caregivers)
Caregivers	ICG	<u>.591*</u>	-0.489	-0.385	0.076	0.38
	PTSD	<u>-.479*</u>	-0.363	-0.064	0.235	.503*
	CPTSD	-0.169	<u>-.522*</u>	-0.044	0.296	0.388
	LEC	-0.221	0.383	-0.439	-0.231	-

\*Spearman value significant for .05 levels.

**Table 4:** Correlation of PTSD and C-PTSD subscales of symptoms between paired cases of Schizophrenia patients and their caregivers.

Schizophrenia Patients				
		PTSD TH	PTSD RE	PTSD AV
Caregivers	PTSD TH	-0.195	-0.418	-0.276
	PTSD RE	<u>-.526*</u>	-0.427	<u>-.566*</u>
	PTSD AV	-0.457	-0.204	<u>-.490*</u>
	CPTSD ER	<u>-.465*</u>	<u>-.495*</u>	<u>-.541*</u>
	CPTSD NSC	-0.385	-0.344	-0.384
	CPTSD DR	-0.360	-0.396	-0.354

\*Spearman value significant for .05 levels; TH-threat; RE-re-experiencing; AV: Avoidance; ER: Emotional Regulation; NSC: Negative Self-Concept; DR: Disturbed Relationship.

**Table 5:** Correlations between symptoms in diads of patients-caregivers without Schizophrenia.

		Patients (without Schizophrenia)	
		ICG	PTSD
Caregivers (without Schizophrenia)	ICG	<u>.559*</u>	0.301
	PTSD	0.084	<u>.769**</u>
	CPTSD	-0.05	0.198

\*Spearman value significant for a .05 level, \*\* Spearman value significant for a .01 level.

On the other hand, on the relatives there is also the perspectives and cravings grief, the grief of what they wanted to have been and was not [23]. Davis and Shultz on Grief, Parenting and Schizophrenia article refer that the grief experienced by parents of schizophrenic children is a prolonged grief, once it doesn't have definitive character and is recurrent. Is presented as a continuous distress, on a reaction to regular exposure to loss representations [6]. There are few evidences resulting from studies that pair the schizophrenic patients with its caregivers, especially on the field of stress-related disorders, however, these may offer a better understanding for the relational dynamics.

**Purpose**

Patients with schizophrenia are highly dependent on their caregivers and the way complex emotions affect the quality of such relationship is still unclear. We aim to clarify the impact that stress-related symptoms have on their caregivers and vice-versa. With specific purposes: a. to characterize and to distinguish the stress-related symptoms (traumatic exposure, PTSD and C-PTSD symptoms and grief) between the caregivers, schizophrenic patients and a reference group; b. to correlate the stress-related symptoms between the paired cases of caregivers and schizophrenic patients,

including effects of positive and negative symptoms of schizophrenia; c. to correlate the traumatic sub-dimensions of PTSD and C-PTSD symptoms (Hypervigilance, Avoidance, Emotional Regulation Difficulties, Negative self-concept, Interpersonal Difficulties) between the paired cases of caregivers and schizophrenic patients; d. to correlate the stress-related symptoms between paired cases of caregivers and patients without schizophrenia.

**Materials and Methods**

**Samples description**

The present study has five different groups. The group of patients with schizophrenia; the group of caregivers of patients with schizophrenia; the group of patients without schizophrenia; the group of caregivers of patients without schizophrenia which are paired with the reference group, described in (Table 1).

The sample of the group of patients with schizophrenia is composed of 25 participants, with ages between 27 and 64 years old ( $M= 46.68$ ;  $SD= 10.25$ ), being 72% ( $n=18$ ) male. Regarding the pathology, the group is characterized by 72% ( $n=18$ ) of paranoid schizophrenics and 24% ( $n=6$ ) of the residual type, being that on one of the patients that information wasn't obtained. Regarding the treatment, 80% ( $n=20$ ) are subjected to treatments with oral and injectable anti psychotics and 20% ( $n=5$ ) are only subjected to injectable anti psychotics. The number of years since the beginning of injectable treatment varies between 1 and 25 years ( $M=10.25$ ;  $SD= 6.03$ ). Concerning the sample of caregivers of patients with schizophrenia, it is composed of 21 participants, with ages between 44 and 95 years old ( $M=66.00$ ;  $SD=13.92$ ), being 90.48 ( $n=19$ ) female gender and 9.52 ( $n=2$ ) male gender. Regarding the group of patients without schizophrenia, the sample is composed of 24 participants. The average age of this group is 71.33 ( $SD=17.63$ ), being 54.2% ( $n=13$ ) female gender and 45.8% ( $n=11$ ) male gender. On the sample of the caregivers of patients without schizophrenia ( $n=24$ ), the average age is 51.83% ( $SD=10.18$ ), being all female. Finally, the reference group is composed of 110 participants with an average age of 30.25 ( $SD=12.54$ ), being that 60.9% ( $n=67$ ) are female and 39.1% ( $n=43$ ) are male (Table 1).

**Procedure**

Initially, contact was established with the ethics committee and, after protocol approval, the study was carried on to a group of schizophrenic patients and their caregivers, observed at their homes by a technical team (nursing) of the Unit Padre Americo of Centro Hospitalar do Tamega e Sousa - Penafiel. The home visits are performed by a nurse, which applies the injectable dose of medication. The nurse has total knowledge of the scales content as well as its application. It was performed a clarification before the application of protocols, about each volunteer participation, as well about how the data collected through the instruments are confidential and can't be used for other purpose, according the ethical requirements. An informed consent form was signed containing the research purposes and also with the possibility of abandonment of the research at any time.

It was collected data, at another stage of the study, of a convenience sample (at Penafiel) composed of patients without schizophrenia diagnose but with a non-psychiatric chronic illness

and their correspondent caregivers, in order to verify that the results initially obtained were linear. For this collection the protocol was the same, the only difference was that Positive and Negative Syndrome Scale (PANSS) was removed.

### Instruments

As above mentioned, the study was composed of five groups, being that a protocol for each one individually was developed. For the participants with schizophrenia, the protocol is composed of a sociodemographic survey, PANSS, Inventory of Complicated Grief (ICG), ICD-11 Questionnaire and its PTSD scale. Concerning the group of patients without schizophrenia, the protocol is composed of sociodemographic survey, ICG and ICD-11. For the caregivers of both groups, the applied protocol is also composed of a sociodemographic survey, ICG, ICD-11 and LEC. For the reference group, the protocol also consisted on a sociodemographic survey, ICD-11 and LEC.

**Sociodemographic questionnaire:** The purpose of the sociodemographic survey is to gather information from the study participants, concerning age, gender, literacy, marital status, professional activities and losses within family. In this survey, there are also the patients' clinical data, essentially laid on the type of pathology, on the received treatment, as well as on its initiation, frequency and mental illness record within the family. On the sociodemographic survey of the caregivers group, the initial data are equal, namely age, gender, literacy, marital status, professional activity, degree of relationship with the patient and losses within the family.

**PANSS:** Currently, PANSS is the most used schizophrenia symptomatology evaluation scale [24]. Portuguese version was accordingly validated by Vessoni [25]. It evaluates the positive and negative symptoms that characterize schizophrenia with good psychometric characteristics.

**ICG:** ICG was translated and validated for the Portuguese population by Frade [26]. On ICG a list of difficulties felt by people after losses is presented, evaluating the separation, denial and outrage difficulties, psychotic and depressive symptoms on a total of nineteen items. This is composed of a Likert scale from 0 to 4 and besides grief symptomatology; it still distinguishes between Prolonged and non-prolonged Grief [27]. Is one of the most used clinical instruments due to its specificity and integrity [27,28].

**ICD-11 Trauma Questionnaire:** ICD-11 TQ was translated to Portuguese version [29], from version 1.0 on English [30] based on the proposal of symptoms for C-PTSD diagnosis [31,32]. The instrument is composed of two scales: PTSD (sub-scales threat, re-experiencing and avoidance) and C-PTSD (emotional regulation, negative Self- Concept; disturbed relationship). The purpose of this scale is to evaluate the problems and the complaints that people have in response to a stressful event or life experience.

**LEC:** Life Events List [33] is an instrument composed of nineteen items and evaluates the exposure to eighteen events causing PTSD or stress. Its filling corresponds to situations the individual has passed, witnessed or assisted, knew that had happened to someone close, which he's not sure that it is applied to himself or not.

### Data analysis

It was used a quantitative approach with a computer software,

Statistical Package from Social Sciences (SPSS 20.0). It was used a descriptive statistics procedure, namely averages, standard deviation for sociodemographic data and for the used instruments. Spearman correlations were used for the correlations. On the differentiation between groups, the ANOVA with post hoc test was used.

### Results

Through the descriptive values of the symptoms, traumatic exposure and the use of ANOVA, it was observed that the symptoms of Prolonged Grief on schizophrenic patients are lesser than on the group of caregivers as well as on the reference group.

Given the traumatic exposure evaluated through LEC, it was observe that the values presented by the group of caregivers of patients without schizophrenia are inferior to the reference group.

Concerning the PTSD symptoms, it was observed that the values obtained for the group of patients and caregivers with schizophrenia are higher than the values of the reference group (Table 2). With a view of studying the pairing of symptoms between patients and caregivers with schizophrenia, it was observed positive and significant correlations between Prolonged Grief symptoms evaluated by the ICG (.591) among groups, and on the case of PTSD symptoms between caregivers and schizophrenic patients, significant and negative correlation was observed (-.479) (Table 3). Concerning traumatic exposure and PTSD symptoms was possible to observe a significant and positive correlation (.503). Finally, was observed a significant and negative (-.522) correlation when correlating PTSD and C-PTSD symptoms.

Specifying the type of involved symptoms, significant differences on the PTSD re-experiencing symptoms of the caregivers and PTSD threat symptoms of schizophrenic patients were observed, as well as a significant and negative correlation on the PTSD re-experiencing symptoms of the caregivers and PTSD avoidance symptoms (-.566). Were observed negative and significant correlations between PTSD avoidance symptoms among groups (-.490). On the other hand, on C-PTSD emotional regulation symptoms of the caregivers of schizophrenic patients, it was observed negative and significant correlations when correlated with PTSD threat symptoms (.465), with PTSD re-experiencing symptoms (-.495) and PTSD avoidance symptoms (-.541) (Table 4). With the purpose of verifying if the pattern of negative correlations is specific from the dyads with schizophrenia or not, the symptoms on paired cases of caregivers and patients without schizophrenia were correlated. Positive and significant correlations between the two groups on Prolonged Grief and PTSD symptoms are observed here (Table 5).

### Discussion

Patients with schizophrenia present less grief symptoms than the reference group. However, patients and their caregivers present more PTSD symptoms despite there are a lesser exposure to potentially traumatic events on the group of caregivers of schizophrenic patients when compared with the reference group. The most surprising result is the presence of a pattern of negative relation between the PTSD symptoms on schizophrenic patients and the stress-related symptoms (PTSD; C-PTSD and Grief) of the caregivers being particularly relevant on their C-PTSD symptoms. Based on this, it was verified that the C-PTSD symptoms that contribute for these results are

associated to the emotional regulation difficulties of the caregivers. Contrary of what would be expected, the existence of any correlation between schizophrenia positive or negative symptoms and the stress-related symptoms of the caregivers of schizophrenic patients was not observed. There is also a negative relation between PTSD symptoms (re-experiencing and avoidance) of the caregivers and patients with schizophrenia. This means that the more traumatic symptoms the schizophrenia patients have, the lesser PTSD symptoms will the caregivers have and vice-versa. On the other hand, concerning grief symptoms, the verified relation is positive with a bidirectional effort of the symptomatology, bearing on this context, the existence of emotional contagion. These results made us question if this negative relation would also be verified on caregivers of other patients (non-psychiatric), in relation to stressor-related symptoms. On these cases, the pairing of cases established a positive and significant relation given the Grief or PTSD symptoms, i.e., the negative relation was not repeated. This enhances that the underlying mechanism is related with the Psychiatric pathology itself and with the likely relation that is established (protection/dependence) between the caregiver and who receives the care and could be specifically related with the emotional regulation difficulties on this dyad. More studies will be necessary in order to validate these results, with stronger samples and including other variables which enable explication of fragilities and differences between symptoms. On the other hand, the traumatic symptoms pairing and its meaning on the context of so close relations is a new theme and limits the capacity of results interpreting. It can also be important to evaluate if this negative association could have impact on the relation quality between patient and caregiver and if implies a paradoxical emotional communication or difficulties on the empathy establishment in face of a secondary trauma. Considering that the relations of the caregivers on these samples are especially composed of family, mostly parent-son relation, the possibility of different intergenerational patterns also arises, in face of the stress on caregivers/patients with or without schizophrenia.

New approaches of schizophrenia pathogenesis research can improve their predictive value, considering the role of emotion regulation in families responding to traumatic events. Also, on a more direct perspective, the complex relationship between caregivers and schizophrenia patients can improve with the clarification of such dyadic impact of traumatic events and can be integrated in caregivers training, with expected effects on treatment process.

## References

- Read J, Perry BD, Moskowitz A, Connolly J. The contribution of early traumatic events to schizophrenia in some patients: a traumagenic neurodevelopmental model. *Psychiatry*. 2001; 64: 319-345.
- Duan J. Path from schizophrenia genomics to biology: gene regulation and perturbation in neurons derived from induced pluripotent stem cells and genome editing. *Neuroscience bulletin*. 2015; 31: 113-127.
- Akbarian S. Epigenetic mechanisms in schizophrenia. *Dialogues in clinical neuroscience*. 2014; 16: 405.
- Van Zelst C. Which environments for G×E? A user perspective on the roles of trauma and structural discrimination in the onset and course of schizophrenia. *Schizophrenia bulletin*. 2008; 34: 1106-1110.
- Barbato A, Initiative Wnfmh, Organization WH. *Schizophrenia and public health*. 1997.
- Chapleau KM, Bell MD, Lysaker PH. The relationship between post-traumatic symptom severity and object relations deficits in persons with schizophrenia. *British Journal of Clinical Psychology*. 2014; 53: 157-169.
- Calhoun PS, Stechuchak KM, Strauss J, Bosworth HB, Marx CE, Butterfield MI. Interpersonal trauma, war zone exposure, and posttraumatic stress disorder among veterans with schizophrenia. *Schizophrenia research*. 2007; 91: 210-216.
- Mueser KT, Goodman LB, Trumbetta SL, Rosenberg SD, Osher FC, Vidaver R, et al. Trauma and posttraumatic stress disorder in severe mental illness. *Journal of consulting and clinical psychology*. 1998; 66: 493.
- Resnick SG, Bond GR, Mueser KT. Trauma and posttraumatic stress disorder in people with schizophrenia. *Journal of abnormal psychology*. 2003; 112: 415.
- Fan X, Henderson DC, Nguyen DD, Cather C, Freudenreich O, Evins AE, et al. Posttraumatic stress disorder, cognitive function and quality of life in patients with schizophrenia. *Psychiatry research*. 2008; 159: 140-146.
- Breslau N, Kessler RC, Chilcoat HD, Schultz LR, Davis GC, Andreski P. Trauma and posttraumatic stress disorder in the community: the 1996 Detroit Area Survey of Trauma. *Archives of general psychiatry*. 1998; 55: 626-632.
- Sautter FJ, Brailey K, Uddo MM, Hamilton MF, Beard MG, Borges AH. PTSD and comorbid psychotic disorder: comparison with veterans diagnosed with PTSD or psychotic disorder. *Journal of traumatic stress*. 1999; 12: 73-88.
- Newman JM, Turnbull A, Berman BA, Rodrigues S, Serper MR. Impact of traumatic and violent victimization experiences in individuals with schizophrenia and schizoaffective disorder. *The Journal of nervous and mental disease*. 2010; 198: 708-714.
- Peleikis D, Varga M, Sundet K, Lorentzen S, Agartz I, Andreassen O. Schizophrenia patients with and without Post-traumatic Stress Disorder (PTSD) have different mood symptom levels but same cognitive functioning. *Acta Psychiatrica Scandinavica*. 2013; 127: 455-463.
- Duke LA, Allen DN, Ross SA, Strauss GP, Schwartz J. Neurocognitive function in schizophrenia with comorbid posttraumatic stress disorder. *Journal of clinical and experimental neuropsychology*. 2010; 32: 737-751.
- Cusack KJ, Grubaugh AL, Knapp RG, Frueh BC. Unrecognized trauma and PTSD among public mental health consumers with chronic and severe mental illness. *Community mental health journal*. 2006; 42: 487-500.
- Panagioti M, Gooding P, Tarrier N. Post-traumatic stress disorder and suicidal behavior: A narrative review. *Clinical psychology review*. 2009; 29: 471-482.
- Mueser K. Trauma, post-traumatic stress disorder, and schizophrenia. *Acta Psychiatrica Scandinavica*. 2013; 127: 440-441.
- Preston SD, de Waal FB. The communication of emotions and the possibility of empathy in animals. *Altruistic love: Science, philosophy, and religion in dialogue*. 2002: 284-308.
- Doherty RW. The emotional contagion scale: A measure of individual differences. *Journal of nonverbal Behavior*. 1997; 21: 131-154.
- Lehmann A, Bahçesular K, Brockmann EM, Biederbick SE, Dziobek I, Gallinat J, et al. Subjective experience of emotions and emotional empathy in paranoid schizophrenia. *Psychiatry research*. 2014; 220: 825-833.
- Michaels TM, Horan WP, Ginger EJ, Martinovich Z, Pinkham AE, Smith MJ. Cognitive empathy contributes to poor social functioning in schizophrenia: evidence from a new self-report measure of cognitive and affective empathy. *Psychiatry research*. 2014; 220: 803-810.
- Titelman D. Grief, guilt, and identification in siblings of schizophrenic individuals. *Bulletin of the Menninger Clinic*. 1991; 55: 72.
- Möller HJ. *Psychiatric Assessment: Negative Symptoms*.
- Vessoni ALN. *Adaptacao e estudo da confiabilidade da escala de avaliacao das sindromes positiva e negativa para esquizofrenia no Brasil*. 1993.
- Frade BMA. *Análise das Características Psicométricas da Versão Portuguesa do Inventory of Complicated Grief*. 2010.
- Prigerson HG, Maciejewski PK, Reynolds CF, Bierhals AJ, Newsom

- JT, Fasiczka A, et al. Inventory of Complicated Grief: a scale to measure maladaptive symptoms of loss. *Psychiatry research*. 1995; 59: 65-79.
28. Prigerson HG, Bierhals AJ, Kasl SV, Reynolds C, Shear MK, Day N, et al. Traumatic grief as a risk factor for mental and physical morbidity. *American journal of psychiatry*. 1997; 154: 616-623.
29. Rocha JSACSM. ICD-11 Versão portuguesa, tradução e validação. 2014.
30. Keeley JW, Reed GM, Roberts MC, Evans SC, Robles R, Matsumoto C, et al. Disorders specifically associated with stress: A case-controlled field study for ICD-11 mental and behavioural disorders. *International Journal of Clinical and Health Psychology*. 2016; 16: 109-127.
31. Maercker A, Brewin CR, Bryant RA, Cloitre M, Ommeren M, Jones LM, et al. Diagnosis and classification of disorders specifically associated with stress: proposals for ICD-11. *World Psychiatry*. 2013; 12: 198-206.
32. Cloitre M, Garvert DW, Brewin CR, Bryant RA, Maercker A. Evidence for proposed ICD-11 PTSD and complex PTSD: A latent profile analysis. *European journal of psychotraumatology*. 2013; 4.
33. Gray MJ, Litz BT, Hsu JL, Lombardo TW. Psychometric properties of the life events checklist. *Assessment*. 2004; 11: 330-341.