

DOI: 10.5455/msm.2019.31.258-261

Received: Oct 15 2019; Accepted: Dec 15, 2019

© 2019 Emir Tupkovic, Rusmir Softic, Jasmina Klebic, Senada Selmanovic, Elvir Becirovic, Mitra Mirkovic Hajdukovic, Miralem Smajic

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ORIGINAL PAPER

Mater Sociomed. 2019 Dec; 31(4): 258-261

Post-traumatic Stress Disorder, Metacognitions, Cognitive and Global Functioning in Bosnian War Veterans

Emir Tupkovic¹, Rusmir Softic², Jasmina Klebic³, Senada Selmanovic⁴, Elvir Becirovic⁵, Mitra Mirkovic Hajdukovic⁵, Miralem Smajic⁶

¹Department of Neuropsychiatry of Primary Health Centre Tuzla

75000 Tuzla, Bosnia and Herzegovina

²Department of Psychiatry, Clinical Center University of Sarajevo

Bolnička 25, 71.000 Sarajevo, Bosnia and Herzegovina

³Centar za rani rast, Public Health Center Tuzla, 75.000 Tuzla

⁴Family Medicine, Public Health Center Tuzla, 75.000 Tuzla

⁵Department of Psychiatry, University Clinical Center Tuzla, Solina b.b. 75000 Tuzla, Bosnia and Herzegovina

⁶Faculty of Pharmacy, University of Tuzla, Univerzitetska br. 8, 75.000 Tuzla

Corresponding

author: Rusmir Softić, MD, PhD, Associate Professor, Department of psychiatry, Clinical Centre University of Sarajevo, Bolnička 25, 71.000 Sarajevo, Phone: + 387 61 135 241, E mail: dr.softic@gmail.com, ORCID ID: <https://orcid.org/0000-0002-7420-1134>.

ABSTRACT

Introduction: Cognitive impairment is common finding in individuals with PTSD. Dysfunctional metacognitions in variety of anxiety disorders can represent generic vulnerability for anxiety disorders, as well as elements that contribute to maintaining the disorder. There is little empirical information about metacognition in war veterans with PTSD, and its relation to cognitive and/or social, occupational and psychological functioning. **Aim:** to determine the values and reciprocal correlations of different aspects of metacognition, with cognitive and global functioning in outpatient war veterans with PTSD. **Methods:** The study was conducted on 25 war veterans (24 male), with confirmed diagnosis of PTSD by a trained psychiatrist, average age 48,5±6,2 (38-63) years, with average duration of symptoms of 9,9±4,7 (0,5-16) years. We used the Metacognitions questionnaire, Mini Mental Status Examination, and Global Assessment of Functioning Scale to assess metacognition, cognitive impairment, and global functioning. Median values of Metacognitions questionnaire subcomponents, Global Assessment of Functioning Scale and Mini Mental Status Examination were determined, and also reciprocal correlations of all parameters expressed with Spearman Rank Correlation. **Results:** 12 patients (48%) had impaired cognitive function. Significant negative correlation of score on Mini Mental Status Examination, and negative beliefs about worry is observed ($r=-0,4278$, $p=0,034$), as well as non significant correlations between rest of metacognition subscales and score on Mini Mental Status Examination. Cognitive self-consciousness showed high positive correlation with Global Assessment of Functioning Scale ($r=0,7436$, $p<0,0001$). **Conclusion:** Follow up

of metacognitions, cognitive and global functioning, and its relations, may have an important role in assessment of war veterans with posttraumatic stress disorder.

Keywords: Metacognition, war veterans, posttraumatic stress disorder, cognitive impairment, global functioning.

1. INTRODUCTION

Post-traumatic stress disorder (PTSD) is the postponed or extended response to the provocative event or the situation of threatening or catastrophic nature (1). Chronic post-traumatic stress disorder (PTSD) has been associated with cognitive impairments involving memory and attention (2). Individuals with PTSD, particularly veterans, show signs of cognitive impairment when tested with neuropsychological instruments, more so than individuals exposed to trauma who do not have PTSD (3). There is a suggestion that some cognitive decrements occur in PTSD patients only when they have co morbid psychiatric diagnoses (4). Striking disturbances in cognition, especially memory, have prompted research on the cognitive mechanisms of PTSD (5).

The metacognitions questionnaire (MCQ) is an instrument for assessing beliefs that are involved in the way a person appraises his/her own thoughts. It consists of five subscales including positive beliefs about worry (19 questions), negative beliefs about worry (16 questions), cognitive confidence (10 questions), general negative belief (13 questions) and cognitive self-consciousness (7 questions). It is designed in purpose of assessment of individual's dif-

ferences in positive and negative beliefs about worry and intrusive thoughts, metacognitive monitoring and assessment if cognitive function is satisfying (6).

The presence of dysfunctional metacognitions in both patients with obsessive-compulsive disorder (OCD), and those with panic disorder (PD), suggests that such beliefs can represent not only generic vulnerability factors for anxiety disorders but also elements that contribute to maintaining the disorder, as evidenced by their associations with aspects of OCD and PD symptoms (7).

The study of participants with OCD, schizophrenia, and nonclinical controls assessed with the Metacognitions Questionnaire (MCQ-30), showed that, except for positive beliefs about worry, both patient samples exceeded nonclinical controls on all MCQ subscales. Notwithstanding large pathogenetic differences between OCD and schizophrenia, findings suggest that obsessions and hallucinations may share a common metacognitive pathway (8). In Turkish study significant positive correlations between subscales of MCQ-C and measures of anxiety and obsessive-compulsive symptoms, with standardization of Turkish form of metacognition questionnaire for children and adolescents (9).

Global Assessment of Functioning Scale (GAF) is the standard method in the approach in the clinical assessment of the entire level of functioning of a patient and it contains information about the axis V DSM IV (1). As such, it is widely used as the scale for the estimate of the level of disorders among patients with psychological, that is psychiatric disorders (10). It allows the hospital staff to examine the patient's immediate functioning as well as the highest level of psychological, social and professional functioning during several months of the past year, which has great importance in the foreseeing of the result of the treatment (11, 12).

However, the fact that there is relatively little empirical information about the adequateness of MCQ in patients with PTSD is surprising, especially those that metacognitions put in relations with cognitive functioning and GAF.

Aim is to determine the values and reciprocal correlations of subcomponent of MCQ, with values of GAF and MMS in ambulatory treated PTSD patients.

2. AIM

Aim is to determine the values and reciprocal correlations of subcomponent of MCQ, with values of GAF and MMS in ambulatory treated PTSD patients.

3. METHODS

The examined group consisted 25 war veterans, 24 male, with confirmed diagnosis of PTSD by a trained psychiatrist, with average age 48,5±6,2 (38-63) years, and average duration of symptoms of 9,9±4,7 (0,5-16) years. In all of them in the time of study in therapeutic scheme was ordained antidepressants, hypnotics and sedatives, antipsychotics in 18, while in 3 cases was ordained additional therapy. All of them respondents had a diagnosis of depressive or anxiety-depressive disorder. In Three patients was verified stroke, in one cortical brain atrophy, and additional diagnoses had 4 patients (epilepsy in 2, and cardiac arrhythmia in one of patients).

The metacognitions questionnaire (MCQ), Global Assessment of Functioning Scale (GAF), and cognitive function were determined. Level of cognitive function is assessed by Mini-Mental State examination (MMS). This test has a maximal score of 30; subjects with scores 27-30 have normal cognition; subject with scores 20-26 are considered mildly impaired, subjects with level 10-19 have moderate, and the ones less than 9 serious cognitive impairment.

Median values of MCQ subcomponents, GAF and MMS (in last one distribution of cognitive function) were determined, and also reciprocal correlations of all parameters expressed with Spearman Rank Correlation.

MCQ Subcomponents	Median	Percentile 25-75	Min.	Max
Positive beliefs about worry	48	43-55	25	76
Negative beliefs about worry	59	56-61	47	64
Cognitive confidence	39	35-40	19	40
General negative belief	43	38-47	24	52
Cognitive self-consciousness	21	17-23	11	28

Table 1. The values of metacognitions questionnaire (MCQ) subscales in patients with Posttraumatic Stress Disorders. 27-30 normal cognition; 20-26 mildly impaired, 10-19 moderate cognitive impairment, 0-9 serious cognitive impairment.

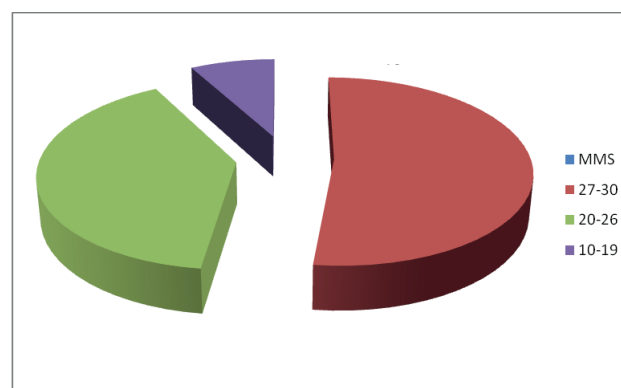


Figure 1. Distribution of patients with Posttraumatic Stress Disorders according to the level of cognitive functions assessed by Mini-Mental State examination (MMS).

	Median	Percentile 25-75	Min.	Max
MMS	27	23-30	12	30
GAF	45	40-53	35	60

Table 2. Values of level of cognitive functions assessed by Mini-Mental State examination (MMS) and level of global functioning measured with Global Assessment of Functioning Scale (GAF) in patients with Posttraumatic Stress Disorders.

MCQ / MMS	r	p
Positive beliefs about worry	0,1173	0,5738
Negative beliefs about worry	-0,4278	0,034
Cognitive confidence	-0,0409	0,8468
General negative belief	0,0248	0,8903
Cognitive self-consciousness	0,3	0,1439

Table 3. Correlation of Metacognitions questionnaire (MCQ) subscales with level of cognitive functions assessed by Mini-Mental State examination (MMS) in patients with Posttraumatic Stress Disorders. r=-0,4278, p=0,034

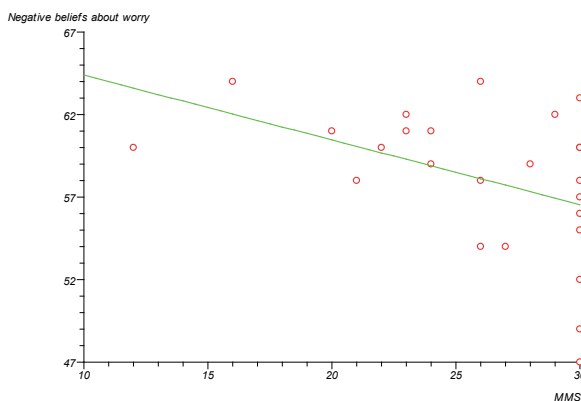


Figure 2. Correlation of level of cognitive functions assessed by Mini-Mental State examination (MMS) and negative beliefs about worry in patients with Posttraumatic Stress Disorders.

MCQ / GAF	r	p
Positive beliefs about worry	0,2271	0,2724
Negative beliefs about worry	-0,2303	0,2658
Cognitive confidence	-0,1765	0,358
General negative belief	0,3851	0,058
Cognitive self-consciousness	0,7436	<0,0001

Table 4. Correlation of Metacognitions questionnaire (MCQ) subscales with and level of global functioning measured with Global Assessment of Functioning Scale (GAF) in patients with Posttraumatic Stress Disorders.. $r=-0,7436$, $p<0,0001$

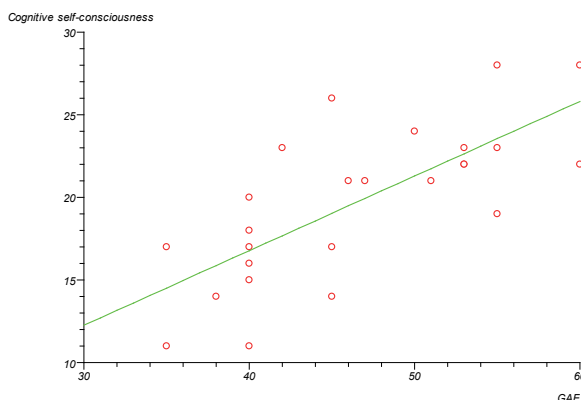


Figure 3. Correlation of level of global functioning measured with Global Assessment of Functioning Scale (GAF) and cognitive self-consciousness in patients with Posttraumatic Stress Disorders.

4. RESULTS

Values of MCQ subcomponents are exposed in table 1.

Even 12 patients had decreased values of cognitive function measured with MMS (figure 1).

Level of cognitive functions measured with MMS, and level of global functioning measured with GAF are exposed in table 2.

Significant negative correlation of MMS and negative beliefs about worry is observed (table 3, figure 2).

Not significant correlations between rest of MCQ subcomponents and MMS are determined (table 4, figure 3).

5. DISCUSSION

Even 48% of PTSD patients had decreased cognitive function. But, just one from five MCQ subscales, negative beliefs about worry, showed significant positive correlation with MMS, and also cognitive self-consciousness showed high positive correlation with Global Assessment of Functioning Scale (GAF).

These parameters, also their reciprocal correlations, might have some importance in following of disease process, and effect of therapy. Since cognitive behavioural therapy combined with medication significantly improves all metacognition subcomponents in anxiously depressive patients. These subcomponents are after therapy even lower compared with control group of healthy participants, that confirms not only sensitivity of the MCQ subscales, but also values of cognitive behavioural therapy (13).

Considering follow up of patients functioning, some studies confirmed correlation between symptoms severity cited by patients and Global Assessment of Functioning Scale of clinician (14). Due to fact that patients usually return to previous level of functioning after one episode of acute illness, assessment of patient’s highest level of functioning during previous year might have some prognostic importance.

Neuropsychological approaches may provide an important insight into susceptibility and resiliency factors by identifying pretrauma cognitive functions that relate to subsequent development of PTSD as well as posttraumatic cognitive processes that may influence development or maintenance of the disorder. Finally, understanding these cognitive processes may provide new approaches for treatment to improve long-term outcomes of individuals with PTSD (15).

On the other hand, follow up of metacognitions, cognitive and global functioning, and its relations, have an important place in evaluation of PTSP patients, from which prominent number have decreased cognition. That might determine further therapeutic strategy with appropriate pharmacological and psychotherapeutic treatments. For all that, like especially important appeared effect of cognitive self-consciousness on level of global functioning. All of that might have importance in assessment of disease process or healing results of PTSD patients.

6. CONCLUSION

Follow up of metacognitions, cognitive and global functioning, and its relations, have an important place in assessment of disease process or healing results of PTSD patients..

- **Author’s contribution:** Each author gave substantial contribution in acquisition, analysis and data interpretation. Each author had a part in preparing article for drafting and revising it critically for important intellectual content. Each author gave final approval of the version to be published and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.
- **Conflicts of interest:** There are no conflicts of interest.
- **Financial support and sponsorship:** Nil

REFERENCES

1. Anonimus. Diagnostic and statistical manual of mental disorders. 4th Ed. Washington, DC: American Psychiatric Association; 1994.
2. Brandes D, Ben-Schachar G, Gilboa A, Bonne O, Freedman S, Shalev AY. PTSD symptoms and cognitive performance in recent trauma survivors. *Psychiatry Res.* 2002; 31;110(3): 231-238.
3. Qureshi SU, Long ME, Bradshaw MR, Pyne JM, Magruder KM, Kimbrell T, Hudson TJ, Jawaid A, Schulz PE, Kunik ME. Does PTSD impair cognition beyond the effect of trauma? *J Neuropsychiatry Clin Neurosci.* 2011; 23(1): 16-28.
4. Hart J Jr, Kimbrell T, Fauver P, Cherry BJ, Pitcock J, Booe LQ, Tillman G, Freeman TW. Cognitive dysfunctions associated with PTSD: evidence from World War II prisoners of war. *J Neuropsychiatry Clin Neurosci.* 2008; 20(3): 309-316.
5. McNally RJ. Cognitive abnormalities in post-traumatic stress disorder *TRENDS in Cognitive Sciences.* 2006; 10: 6.
6. Sriram TG, Chandrashekar CR, Moily S, Kumar K, Raghuram A, Isaac MK, Srinivasa Murthy R. Standardisation of multiple-choice questionnaire for evaluating medical officers' training in psychiatry. *Social Psychiatry and Psychiatric Epidemiology.* 1989; 9: 327-333.
7. Cucchi M, Bottelli V, Cavadini D, Ricci L, Conca V, Ronchi P, Smeraldi E. An explorative study on metacognition in obsessive-compulsive disorder and panic disorder. *Compr Psychiatry.* 2012; 53(5): 546-553.
8. Moritz S, Peters MJ, Larøi F, Lincoln TM. Metacognitive beliefs in obsessive-compulsive patients: a comparison with healthy and schizophrenia participants. *Cogn Neuropsychiatry.* 2010; 15(6): 531-548.
9. Irak M. Standardization of Turkish form of metacognition questionnaire for children and adolescents: the relationships with anxiety and obsessive-compulsive symptoms. *Turk Psikiyatri Derg.* 2012; 23(1): 46-52.
10. Piersma HL, Boes J L. The GAF and psychiatric outcome: A descriptive report. *Community Mental Health Journal.* 1997; 33: 35-40.
11. Bodland O, Kullgren G, Ekselius L, Lindstrom E, Von Knorring L. Axis V-Global Assessment of Functioning Scale: Evaluation of a self-report version. *Acta Psychiatrica Scandinavica.* 1994; 90: 342-347.
12. Phelan M, Wykes T, Goldman H. Global function scales. *Social Psychiatry and Psychiatric Epidemiology.* 1994; 29: 205-211.
13. Petković J, Tupković E. Sensitivity of the metacognition survey in metacognitive therapy effects estimation, found with anxiously depressive patients, as well as with clinically healthy individuals. 39 th EABCT Annual Congress; Book of Abstract. 2009: 113.
14. Roy-Byrne P, Dagadakis C, Unutzer J, Ries R. Evidence for limited validity of the revised Global Assessment of Functioning Scale. *Psychiatric Services.* 1996; 47: 864-866.
15. Aupperle RL, Melrose AJ, Stein MB, Paulus MP. Executive function and PTSD: Disengaging from trauma. *Neuropharmacology.* 2012; 62(2): 686-694.