Potentially traumatic events, post-traumatic stress disorder and post-traumatic stress spectrum in patients with fibromyalgia

C. Conversano[1], C. Carmassi[2], C.A. Bertelloni[2], L. Marchi[1], T. Micheloni[1], M.G. Carbone[2], G. Pagni[2], C. Tagliarini[2], G. Massimetti[2], L. Bazzichi[3], L. Dell'Osso[2]

[1]Department of Surgical, Medical and Molecular Pathology, Critical and Care Medicine, University of Pisa;
[2]Psychiatric Clinic, Department of Clinical and Experimental Medicine, University of Pisa;
[3]Rheumatology Unit, Department of Clinical and Experimental Medicine, University of Pisa, Italy.

Ciro Conversano, PhD
Claudia Carmassi, MD
Carlo Antonio Bertelloni, MD
Laura Marchi, PhD
Tommaso Micheloni, PhD
Manuel Glauco Carbone, MD
Giovanni Pagni, MD
Claudia Tagliarini, MD
Gabriele Massimetti, MD
Laura Bazzichi, MD
Liliana Dell'Osso, MD

Please address correspondence to:
Ciro Conversano, MD,
Department of Surgical,
Medical and Molecular Pathology,
Critical and Care Medicine,
University of Pisa,
Via Roma 67,
56126 Pisa, Italy.
E-mail: ciro.conversano@unipi.it

Received on January 22, 2018; accepted in revised form on March 12, 2018.

Clin Exp Rheumatol 2019; 37 (Suppl. 116): S39-S43.

Key words: fibromyalgia, pain, PTSD, partial-PTSD, TALS

Competing interests: none declared.

ABSTRACT

Objective. *Fibromyalgia (FM) is defined as a severe, chronic, non-articular rheumatic condition characterised by widespread musculoskeletal pain, hyperalgesia and generalised tender points, in the absence of inflammatory or structural musculoskeletal abnormalities. Pain is the predominant symptom, allodynia and hyperalgesia are common signs. Extreme fatigue, impaired cognition and non-restorative sleeping difficulties coexist in addition to other somatic symptoms. Several studies suggest there is a meaningful relationship between FM and the psychological symptoms of depression and post-traumatic stress disorder (PTSD). PTSD is a mental disorder that can develop after a person has been exposed to a traumatic event, characterised by a specific set of symptoms including re-experiencing of the event, avoidance and numbing and arousal.*
The present study investigates the impact of lifetime potentially traumatic events, including losses, and of post-traumatic stress symptoms on the severity of illness in patients with fibromyalgia (FM).

Methods. *Sixty-one patients with FM, diagnosed according to the American College of Rheumatology criteria, were consecutively enrolled at the Unit of Rheumatology, University of Pisa, Italy. Assessments included: the SCID-5 and the Trauma and Loss Spectrum Self-Report (TALS-SR) lifetime version.*

Results. *21.3% of the subjects (n=13) met the criteria for "partial" PTSD: 57.4% criterion B, 42.6% criterion C, 31.1 criterion D and 44.3% criterion E. Fibromyalgia patients without PTSD reported significantly lower scores in all domains compared to the patients with partial PTSD, the latter ones reporting significantly lower scores in all domains compared to full PTSD with the exception of domain I. In particular, these differences were noticeable in Domain VI and Domain VIII.*

Conclusion. *The results of the study show that fibromyalgic patients with PTSD report more potentially traumatic events, avoidance symptoms, numbing, arousal, maladaptive coping and personality characteristics compared to patients with partial or without PTSD; these results could indicate that loss and/or trauma events represent a risk factor for the development of symptoms of FM in genetically predisposed individuals.*

Introduction

Fibromyalgia (FM) is a chronic non-articular rheumatologic disorder specified with chronic systemic musculoskeletal pains, hyperalgesia, morning stiffness, fatigue, sleep disorder, multiple tender points, low pain threshold (1, 2) in the absence of inflammatory or structural musculoskeletal abnormalities (3, 4), symptoms of depression and anxiety and intestinal dysmotility (5-8).

FM affects 2% of the population with a peak incidence in middle-aged women (1). Despite an incomplete understanding of its pathogenesis, there is increasing evidence for mechanism-based management approaches to this syndrome (9, 10).

The impact of stress to the pathophysiology of FM has been the subject of considerable debate (12, 13). To date, the most acclaimed hypothesis states that trauma and major life stressful events are not likely to cause FM itself but, in genetically susceptible people, early life events, besides acute or prolonged traumatic stress in adulthood, may affect the brain modulatory circuitries of both pain and emotions responsible for the enhanced pain responses and co-occurring symptoms that are reported by patients with FM (11, 14, 15).

Although rates of FM and psychiatric comorbidities vary among studies, most reported a higher proportion of psychiatric disorders among FM patients compared to controls (16-26). Dell'Osso *et al*. found a correlation between lifetime exposure to traumatic events and post-traumatic stress disorder (PTSD) symptoms, as well as the severity of FM (27). Galek *et al*. showed that 65.7% of patients with FM met the criteria for a depressive disorder, 67.9% for an anxiety disorder and 45.5% for PTSD (28). Soriano-Maldonado *et al*. (17) examined 451 women with FM in a cross-sectional study and showed that patients with FM who had various features of comorbid depression also experienced higher pain intensity, fatigue and poor sleep quality compared with their counterparts with minimal signs of depression. Post-traumatic stress disorder (PTSD, DSM-5) is a frequent chronic psychiatric condition, whose onset typically takes place after exposure to a traumatic event, characterised by a specific set of symptoms including re-experiencing, avoidance and numbing and arousal. When chronic, PTSD is often associated with an increased risk for several specific and non-specific somatic pathologies, such as cardiovascular and autoimmune disorders, physical complaints and chronic pain, including FM (29-32). High rates of PTSD have recently been reported in FM and increasing efforts have also been oriented towards exploring the clinical relevance of not only the full-blown disorder but also of the partial or subthreshold forms that have shown to be associated with severe impairment and need for treatment as well (33-39). In fact, lifetime post-traumatic stress symptoms have also been reported to influence negatively the quality of life and severity of pain/fatigue in patients with FM (45).

In our study we evaluate the presence and the influence of potentially traumatic events, PTSD and Post-traumatic stress spectrum in patients with FM.

Table I. Demographic characteristics of the study sample (n=61).

Age (years)		Mean ± SD	*p*
	Overall (n=61)	49.78 ± 12.00	0.001
	Female (n=52)	51.67 ± 10.76	
	Male (n=7)	35.71 ± 12.05	
			N (%)
Marital status	Single		15; 24.6%
	Married		32; 52.4%
	Separated/Divorced		11; 18%
	Widowed		3; 4.9%
Occupation	Student		2; 3.3 %
	Unemployed		6; 9.8%
	Housewife		15; 24.6%
	Employed		33; 73.8 %
	Retired		5; 8.2%
Occupational level achieved	Primary school		3; 4.9 %
	Secondary school		19; 31.1%
	High school diploma		31; 50.8 %
	University degree		5; 8.2 %
	Post-graduate degree		2: 3.3 %
Kind of family	Parental family		16; 26.2 %
	Couple		35; 57.4%
	Single		6; 9.8 %
Sent by	General practitioner		24; 39.3%
	Specialist		20: 32.8%
	Friend/family member/acquaintance		8; 13.1 %
	Spontaneous		4; 6.6 %
Development disorders	Language		1; 1,6 %
	Movement		5; 8.2%
Actual and/or previous drug use	Anti-depressants		42; 68.9%
	Benzodiazepines		9; 14.8%
	Anticonvulsants		10; 16.4%
	Antipsychotics		2; 3.3%

Materials and methods

Subjects

A cohort of patients with a diagnosis of FM was consecutively recruited at the Department of Internal Medicine, Rheumatology Division of the University of Pisa.

Eligible subjects included new and continuing patients, of at least 18 years of age, who met the 1990 American College of Rheumatology criteria for a diagnosis of FM.

Exclusion criteria were: the presence of any inflammatory cause of the pain, concomitant rheumatic diseases, neurologic complications or pregnancy, psychotic symptoms or any language impairment affecting the fulfillment of questionnaires.

The ethics committee of the Azienda Ospedaliero-Universitaria Pisana (Pisa, Italy) approved all recruitment and assessment procedures, in accordance with the Declaration of Helsinki (1996) and with the guidelines for Good Clinical Practice (1995). Eligible subjects provided a written informed consent after receiving a complete description of the study and having the opportunity to ask questions.

All patients enrolled in the study underwent a psychiatric assessment, performed by clinicians at the Department of Clinical and Experimental Medicine, University of Pisa (Italy).

Assesment

All patients enrolled were interviewed by trained psychiatrists of the Psychiatric Clinic of the University of Pisa using the Structured Clinical Interview for Mental Disorders according to DSM-5 criteria (SCID-5) and were also asked to fill in the following questionnaires: a demographic evaluation and the Trauma and Loss Spectrum-Self Report (TALS-SR) (32, 46) lifetime version, for post-traumatic stress spectrum.

The TALS-SR is composed of 116 items grouped into 9 domains. Items responses are coded dichotomously

Table II. Psychiatric diagnosis of DSM-5 PTSD (full-blown/partial PTSD) of the study sample.

	PTSD n (%)	Partial A PTSD* n (%)	Partial B PTSD** n (%)	Partial (A+B) PTSD n (%)	Cluster B n (%)	Cluster C n (%)	Cluster D n (%)	Cluster E n (%)
Totale (n=61)	11 (18%)	13 (21.3%)	8 (13.1%)	21 (34.4%)	35 (57.4%)	26 (42.6%)	19 (31.1%)	27 (44.3%)

Table III. TALS-SR Domain scores (mean±SD) in the study sample (n=61) and mean comparison in three different groups (full-blown PTSD, partial PTSD and absence of PTSD).

	Overall (Media±SD)	PTSD (Media±SD)	PTSD parziale (Media±SD)	No PTSD (Media±SD)	F (2,58); *p*	Differenze significative (*p*<.05)
I. Loss events	4.08±1.97	4.45±1.43	4.85±1.45	3.37±2.25	4.01; .023	NoPTSD<PTSDparz
II. Reactions to losses	8.62±5.84	13.90±6.45	10.14±5.78	5.51±3.42	13.02; .000	NoPTSD<PTSDparz, NoPTSD<PTSD
III. Potentially traumatic events	3.29±2.92	5.45±3.50	4.33±2.95	1.72±1.60	11.42; .000	NoPTSD<PTSDparz, NoPTSD<PTSD
IV. Reactions to losses or upsetting events	5.19±4.45	9.81±3.37	7.38±3.63	1.86±2.34	35.84; .000	NoPTSD<PTSDparz, NoPTSD<PTSD
V. Re-experiencing	2.40±2.26	4.63±1.80	3.76±1.70	0.58±1.01	45.99; .000	NoPTSD<PTSDparz, NoPTSD<PTSD
VI. Avoidance and numbing	2.32±2.80	7.00±2.09	2.71±1.58	0.27±0.70	98.03; .000	NoPTSD<PTSDparz<PTSD
VII. Maladaptive coping	0.68±1.44	2.27±2.24	0.80±1.28	0.00±0.00	14.48; .000	NoPTSD<PTSD, PTSDparz<PTSD
VIII. Arousal	1.70±1.88	4.09±0.94	2.61±1.56	0.13±0.35	71.60; .000	NoPTSD<PTSDparz<PTSD
IX. Personal characteristics/risk factors	1.47±1.32	2.45±1,50	1.76±0.99	0.89±1.20	7.66; .001	NoPTSD<PTSDparz, NoPTSD<PTSD

(yes/no) and domain scores are obtained by counting the number of positive answers in each domain. The first 2 domains focus on experiences of loss. Domain I includes loss events ranging from mild to extreme, including the death of a loved one, the loss of an important relationship, loss of property, losses of physical functioning, or loss of social and economic status. Domain II comprises a range of symptoms related to the possible occurrence of persistent grief in response to death. These items include difficulty accepting the death, recurrent grief, preoccupation with thoughts and memories of the deceased, avoidance of reminders of the loss, and guilt or remorse. This domain also includes a section targeting trait-like interpersonal functioning that might comprise a risk factor for persistent grief. Domain III (potentially traumatic events) lists potentially traumatic events such as combat, natural disasters, sexual abuse, severe accidents and "low-magnitude" events (*e.g.* failure at school or at work, sexual harassment, abortion) that the patient might have experienced in his/her lifetime. Domain IV (reactions to losses or upsetting events) evaluates acute reactions to the trauma or loss. Domains V (re-experiencing), VI (avoidance and numbing), and VIII (arousal) include a range of isolated criteria and no criteria symptoms related to re-experiencing, avoidance and hyperarousal, respectively. Domain VII (maladaptive coping) addresses maladaptive coping responses, for both loss and trauma. Domain IX (personal characteristics/ risk factors) explores some personality characteristics that may be related to loss and/or trauma and that may, based on the literature, represent risk factors for the development of symptoms. The TALS-SR explores psychopathologic manifestations associated with syndromes that might occur during the lifetime of an individual. This instrument assesses lifetime exposure to potentially traumatic events, as well as a range of symptoms occurring in the aftermath of the worst event.

Statistical analysis

To describe clinical and demographical characteristics in our sample we calculated the mean and the standard deviation for quantitative variables, the absolute and relative frequencies for the categorical variables. In addition, we used variance analysis (ANOVA), Bonferroni *t*-test to compare the average score for each domain in three different groups (full-blown PTSD, partial PTSD or absence of PTSD). The data were analysed using the Statistical Package for the Social Sciences (46) OSSO.

Results

A total sample of 61 patients, 7 (11.5%) men and 54 (88.5%) women, was consecutively recruited. Mean age was 49.78±12 years (37.7±12,1 men and 51.7±10.8 women, p=.009). Most (52.4% n=32) of the patients were married, employed (90.2%), with high levels of education (64%). Demographic characteristics of the study sample are reported in Table I.

A diagnosis of DSM-5 PTSD was reported by 18% (n=11) of the patients. Further, 21.3% of the subjects (n=13) met the criteria for "partial" PTSD (positive for three symptom domains). As far as the rates of endorsement of

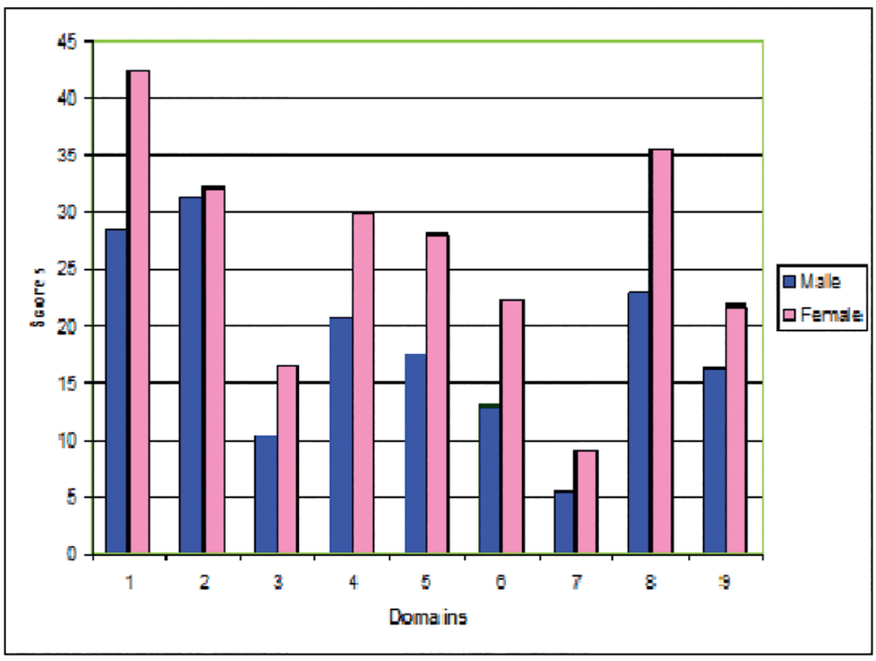

Fig. 1. Gender differences of percentage average scores of TAL-SR domains.

DSM-5 PTSD criteria were concerned: 35 subjects (57.4%) fulfilled criterion B (re-enhancement), 26 subjects (42.6%) met criterion C (avoidance), 19 subjects (31.1%) criterion D (negative cognition and mood disorders) and 27 subjects (44.3%) criterion E (arousal disorders and responsiveness). Percentages of psychiatric diagnosis of DSM-5 PTSD, full-blown and partial PTSD in the study sample are reported in Table II. Fibromyalgic patients with PTSD reported the following traumas: 7 (64%) the death of a close friend or a family member, 1 (9.1%) the separation from a dear friend, sentimental or family partners; 1 (9.1%) the experience of being neglected or abandoned, having received physical or sexual abuse; 1 (9.1%) reported to have been seriously threatened in their well-being, employment, professional, social status or economic security.

With regard to the TALS-SR scores, fibromyalgia patients without PTSD reported significantly lower scores in all domains compared to partial PTSD. Patients with partial PTSD reported significantly lower scores in all domains compared to full PTSD with the exception of domain I (loss event). In particular, fibromyalgia patients with partial PTSD reported statistically significant higher scores than those without PTSD but significantly lower than PTSD in Domain VI and Domain VIII (Table III).

Furthermore, in our study, gender differences in percentage average scores in each TALS domains emerged, although none of these differences were significant (Fig. 1).

Discussion

The results of the present study corroborate the clinical relevance of partial or subthreshold forms of PTSD in FM. 34.4% of the sample met the criteria for partial PTSD (A+B), 18% met the criteria for PTSD full-blown and the remaining 48% of the simple did not meet criteria for PTSD diagnosis.

Fibromyalgic patients with partial PTSD reported statistically significant lower scores in all domains compared to those with full PTSD, with the exception of domain I (loss events) and significantly lower scores than PTSD in Domain VI (avoidance and numbing) and VIII (arousal). These results show that fibromyalgic patients with PTSD, despite reporting similar scores to the ones observed in partial PTSD, report more potentially traumatic events (sexual abuse, severe accidents), avoidance symptoms, numbing, arousal, maladaptive coping and personality characteristics that may be related to loss and/or trauma and represent risk factors for the development of symptoms. Fibromyalgic patients with full-blown PTSD report in Domain III (potentially traumatic events) serious family quarrels, severe diseases or surgical operations, cases of abuse and rape.

Maladaptive coping strategies employed by PTSD patients include giving up taking care of themselves, suspending therapy and medical indications, using alcohol and drugs of abuse, and to adopting self-harm behaviours (scratching, burning, cutting).

Some limitations of the present study should be taken into account: the small sample size, the inhomogeneity of gender groups and the consideration that TALS-SR is a lifetime assessment that does not provide information about the severity and the temporal sequence of the post-traumatic spectrum symptoms, as well as the relationships with the onset of FM.

References

1. OLAMA SM, SENNA MK, ELARMAN MM, EL-HAWARY G: Serum vitamin D level and bone mineral density in premenopausal Egyptian women with fibromyalgia. *Rheumatol Int* 2013; 33: 185-92.
2. WOLFE F, SMYTHE HA, YUNUS MB *et al*.: The American college of rheumatology 1990 criteria for the classification of fibromyalgia. Report of the multicenter criteria committee. *Arthritis Rheum* 1990; 33: 160-72.
3. THEADOM A, CROPLEY M, HUMPHREY K: Exploring the role of sleep and coping in quality of life in fibromyalgia. *J Psychosom Res* 2007; 62: 145-51.
4. BRANCO JC: State-of-the-art on fibromyalgia mechanism. *Acta Reumatol Port* 2010; 35:10-5.
5. OKYAY R, KOÇYIGIT B, GÜRSOY S: Vitamin D levels in women with fibromyalgia and relationship between pain, tender point count and disease activity. *Acta Med Mediterr* 2016; 32: 243-7.
6. LABEEB AA, AL-SHARAKI DR: Detection of serum 25(OH)-vitamin D level in the serum of women with fibromyalgia syndrome and its relation to pain severity. *Egypt Rheumatol Rehabil* 2015; 42:196-200.
7. BAYGUTALP NK, BAYGUTALP F, ŞEFEROĞLU B, BAKAN E: The relation between serum vitamin D levels and clinical findings of fibromyalgia syndrome. *Dicle Med J* 2014; 41: 446-50.
8. ABOKRYSHA NT: Vitamin D deficiency in women with fibromyalgia in Saudi Arabia. *Pain Med* 2012; 13: 452-8.
9. MACFARLANE GJ, KRONISCH C, DEAN LE *et al*.: EULAR revised recommendations for the management of fibromyalgia. *Ann Rheum Dis* 2017; 76: 318-28.

10. Cochrane. Fibromyalgia. www.cochrane.org/search/site/ fibromyalgia [cited 2017 Sep 1
11. ABELES AM, PILLINGER MH, SOLITAR BM, ABELES M: Narrative review: the pathophysiology of fibromyalgia. *Ann Intern Med* 2007; 146: 726-34.
12. WOOD PB, HOLMAN AJ, JONES KD: Novel pharmacotherapy for fibromyalgia. *Expert Opin Investig Drugs* 2007; 16: 829-41.
13. BERGMAN S: Management of musculoskeletal pain. *Best Pract Res Clin Rheumatol* 2007; 21: 153-66.
14. ARNOLD LM, CLAUW DJ, DUNEGAN LJ, TURK DC, FIBROCOLLABORATIVE: A framework for fibromyalgia management for primary care providers. *Mayo Clin Proc* 2012; 87: 488-96.
15. BRADLEY LA: Pathophysiologic mechanism of fibromyalgia and its related disorders. *J Clin Psychiatry* 2008; 69: 6-13.
16. VAN HOUNDENHOVE B, KEMPKE S, LUYTEN P: State Psychiatric aspects of chronic fatigue syndrome and fibromyalgia. *Curr Psychiatry Rep* 2010; 12: 208-14.
17. HAVILAND MG, MORTON KR, ODA K, FRASER GE: Traumatic experiences, major life stressors, and self-reporting a physician-given fibromyalgia diagnosis. *Psychiatry Res* 2010; 177: 335-41.
18. ABLIN JN, COHEN H, CLAUW DJ *et al*.: A tale of two cities – the effect of low intensity conflict on prevalence and characteristics of musculoskeletal pain and somatic symptoms associated with chronic stress. *Clin Exp Rheumatol* 2010; 28 (Suppl. 63): S15-S21.
19. SCHWEINHARDT P, SAURO KM, BUSHNELL MC: Fibromyalgia: a disorder of the brain? *Neuroscientist* 2008; 14: 415-21.
20. CROFFORD LJ: Violence, stress, and somatic syndromes. *Trauma Violence Abuse* 2007; 8: 299-313.
21. BATEMAN L, SARZI-PUTTINI P, BURBRIDGE CL *et al*.: Burden of illness in fibromyalgia patients with comorbid depression. *Clin Exp Rheumatol* 2016; 34 (Suppl. 96): S106–13.
22. SORIANO-MALDONADO A, AMRIS K, ORTEGA FB *et al*.: Association of different levels of depressive symptoms with symptomatology, overall disease severity, and quality of life in women with fibromyalgia. *Qual Life Res* 2015; 24: 2951-7.
23. MERCIECA C, BORG AA: EULAR recommendations underplay importance of severe anxiety and depression in fibromyalgia treatment. *Ann Rheum Dis* 2017; 76: e53.
24. GOTA CE, KAOUK S, WILKE WS: The impact of depressive and bipolar symptoms on socioeconomic status, core symptoms, function and severity of fibromyalgia. *Int J Rheum Dis* 2017; 20: 326-39.
25. KAYHAN F, KÜÇÜK A, SATAN Y, İLGÜN E, ARSLAN Ş, İLIK F: Sexual dysfunction, mood, anxiety, and personality disorders in female patients with fibromyalgia. *Neuropsychiatr Dis Treat* 2016; 12: 349-55.
26. GELONCH O, GAROLERA M, VALLS J *et al*.: Cognitive complaints in women with fibromyalgia: are they due to depression or to objective cognitive dysfunction? *J Clin Exp Neuropsychol* 2017; 39: 1013-25.
27. BORTOLATO B, BERK M, MAES M *et al*.: Fibromyalgia and bipolar disorder: emerging epidemiological associations and shared pathophysiology. *Curr Mol Med* 2016; 16: 119-36.
28. PENFOLD S, ST DENIS E, MAZHAR MN: The association between borderline personality disorder, fibromyalgia and chronic fatigue syndrome: systematic review. *BJPsych Open* 2016; 2: 275-9.
29. COPPENS E, VAN WAMBEKE P, MORLION B *et al*.: Prevalence and impact of childhood adversities and posttraumatic stress disorder in women with fibromyalgia and chronic widespread pain. *Eur J Pain* 2017; 21: 1582-90.
30. WHIPPLE M, TOUSSAINT L, FLEMING K *et al*.: Associations between posttraumatic stress disorder symptoms and mental health in fibromyalgia. *J Pain* 2016; 17: S31.
31. CARMASSI C, BERTELLONI CA, MASSIMETTI G *et al*.: Impact of DSM-5 PTSD and gender on impaired eating behaviors in 512 Italian earthquake survivors. *Psychiatry Res* 2015; 225: 64-9.
32. DELL'OSSO L, CARMASSI C, CONSOLI G *et al*.: Lifetime posttraumatic stress symptoms are related to the health-related quality of life and severity of pain/ fatigue in patients with fibromyalgia. *Clin Exp Rheumatol* 2011; 29 (Suppl. 69): S73-8.
33. GALEK A, ERBSLÖH-MÖLLER B, KÖLLNER V *et al*.: [Mental disorders in patients with fibromyalgia syndrome: screening in centres of different medical specialties]. [Article in German] *Schmerz Berl Ger* 2013; 27: 296-304.
34. BOSCARINO JA: Posttraumatic stress disorder and physical illness: results from clinical and epidemiologic studies. *Ann NY Acad Sci* 2004; 1032: 141-53.
35. ROHELEDER N, KARL A: Role of endocrine and inflammatory alterations in comorbid somatic diseases of post-traumatic stress disorder. *Minerva Endocrinol* 2006; 31: 273-88.
36. BUSKILA D, ABLIN JN, BEN-ZION I *et al*.: A painful train of events: increased prevalence of fibromyalgia in survivors of a major train crash. *Clin Exp Reumatol* 2009; 27 (Suppl. 56): S79-85.
37. BOSCARINO JA, FORSBERG CW, GOLDBERG J: A twin study of the association between PTSD symptoms and rheumatoid arthritis. *Psychosom Med* 2010: 72: 481-6.
38. WEISS DS, MARMAR CR, SCHLENGER WE *et al*.: The prevalence of lifetime and partial post-traumatic stress disorder in Vietnam theater veterans. *J Trauma Stress* 1992; 3: 365-76.
39. STEIN MB, WALKER JR, HAZEN AL, FORDE DR: Full and partial posttraumatic stress disorder: findings from a community survey. *Am J Psychiatry* 1997; 154: 1114-9.
40. MARSHALL RD, OLFSON M, HELLMAN F, BLANCO C, GUARDINO M, STRUENING EL: Partial Comorbidity, impairment, and suicidality in subthreshold PTSD. *Am J Psychiatry* 2001; 158: 1467-73.
41. BRESLAU N, LUCIA VC, DAVIS GC: Partial PTSD versus full PTSD: an empirical examination of associated impairment. *Psychol Med* 2004; 34: 1205-14.
42. MYLLE J, MAES M: Partial posttraumatic stress disorder revisited. *J Affect Disord* 2004; 78: 37-48.
43. HEPP U, GAMMA A, MILOS G *et al*.: Prevalence of exposure to potentially traumatic events and PTSD. The Zurich Cohort Study. *Eur Arch Psychiatry Clin Neurosc* 2006; 256:151-8.
44. FRIDEMAN MJ, RESICK PA, BRYANT RA, BREWIN CR: Considering PTSD for DSM-5. *Depress Anxiety* 2010; 28: 750-69.
45. DELL'OSSO L, CARMASSI C, CONVERSANO C *et al*.: Lifetime post-traumatic stress symptoms are related to the health-related quality of life and severity of pain/fatigue in patients with fibromyalgia. *Clin Exp Rheumatol* 2011; 29 (Suppl. 69): S73-8.
46. DELL'OSSO L, SHEAR MK, CARMASSI C, RUCCI P, MASER JD, FRANK E: Validity and reliability of the Structured Clinical Interview for the Trauma and Loss Spectrum (SCI-TALS). *Clin Pract Epidemiol Ment Health* 2008; 4: 2-9.
47. DELL'OSSO L, RUCCI P, CARMASSI C *et al*.: A multidimensional spectrum approach to post- raumatic stress disorder: comparison between the Structured Clinical Interview for Trauma and Loss Spectrum (SCI-TALS) and the Self-Report instrument (TALS-SR). *Compr Psychiatry* 2009; 50: 485-90.