



## Original Article

# Psychiatric comorbidity and childhood trauma in fibromyalgia syndrome

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Received: March 2017 Accepted: July 2017

## ABSTRACT

**Objectives:** In this study, we aimed to compare patients with fibromyalgia syndrome (FMS) and those with myofascial pain syndrome (MPS) and healthy women and to investigate the prevalence of childhood traumatic experiences (CTEs) in relation to comorbid mood and anxiety disorders.

**Patients and methods:** Between February 2014 and May 2014, a total of 136 women including 52 with FMS, 35 with MPS, and 49 healthy controls were included in the study. The Sociodemographic Data Form, Mood and Anxiety Disorders Modules of Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders fourth edition (DSM-IV) Axis I Disorders (SCID-I), Fibromyalgia-related Symptom Scale (FSS), Hamilton Depression Rating Scale (HDRS), Hamilton Anxiety Rating Scale (HARS), and Childhood Trauma Questionnaire-28 (CTQ-28) were applied to participants.

**Results:** As a result of the semi-structured clinical interview conducted by a psychiatrist experienced in psychological trauma, the prevalence of any mood or anxiety disorder were found to be significantly more common in the FMS group. Childhood traumatic experiences, not only in general, but also with all subtypes, were also reported to be significantly more in FMS patients. Besides, only in patients with FMS, a significant relationship was found between the psychiatric diagnoses and the presence of CTEs. Furthermore, the CTQ-28 scores were correlated positively with the FSS scores as well as HDRS and HARS. Among the symptoms screened by the FSS, only crying and over-reacting to incidents were significantly associated with CTEs in FMS group.

**Conclusion:** Based on our study results, CTEs may play a critical role in the development of fibromyalgia and may be related with comorbid mood and anxiety disorders in FMS patients. Associating psychological symptoms such as crying or over-reacting to incidents in FMS patients should be, therefore, alerting for psychiatric consultation.

**Keywords:** Anxiety; childhood traumatic experiences; depression; fibromyalgia; myofascial pain.

Fibromyalgia syndrome (FMS) is a non-articular rheumatic disease (soft tissue pain syndrome) characterized by chronic, widespread body pain in combination with excessive tenderness at specific anatomical sites.<sup>[1]</sup> As a complex and difficult to treat condition, it is the most common cause of chronic musculoskeletal pain in women aged 20 to 55 years with a prevalence of approximately 2%.<sup>[2]</sup> In a study by Topbas et al.<sup>[3]</sup> in Trabzon, the prevalence of FMS was 3.6% among women aged between 20 and 64 and 0.9% among those between 20 and 29. Fibromyalgia syndrome is not only more frequent among women,

but also presents with a greater variety of signs and symptoms in women, compared to men. Complaints such as fatigue, sleep disturbances, impaired cognitive functions, and anxiety and depression are frequently reported in these patients.<sup>[4]</sup>

Psychiatric disorders such as major depression and anxiety disorders can also accompany FMS. The prevalence of major depression in these patients ranges from 29 to 70%.<sup>[5]</sup> The reason for this variance in prevalence may be related to the methodological differences used for diagnosing psychiatric problems

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Cite this article as:

Gündüz N, Polat A, Erzincan E, Turan H, Sade I, Tural Ü. Psychiatric comorbidity and childhood trauma in fibromyalgia syndrome. Turk J Phys Med Rehab 2018;64(2):91-99.

(depressive symptom-screening questionnaires vs clinical psychiatric interview) or sampling errors (psychiatric referral patients vs community screening). Anxiety disorders in FMS patients have been studied less frequently than depressive disorders. In general, it has been reported that treatment compliance in FMS patients with comorbid psychiatric disorder is worse.<sup>[5]</sup>

Although the etiology of FMS is still unknown, recent studies have shown that physical trauma and psychosocial stress factors may also play a role in the etiopathogenesis. Traumatic experiences such as emotional, physical, or sexual abuse are thought to be triggering factors in susceptible individuals for FMS.<sup>[6,7]</sup> In addition, several studies have suggested that childhood traumatic experiences (CTEs) are relatively high in FMS patients.<sup>[8-10]</sup> Although the history of childhood abuse may play an important role in the development of FMS, the exact and causal dimension of the relationship between them has not been revealed precisely.<sup>[11-14]</sup> However, patients reporting CTEs tend to experience more psychological distress, more severe physical symptoms, poorer functioning and more consumption of health care services.<sup>[15,16]</sup> It is especially important to study the role of childhood trauma in the etiology of FMS since psychiatric comorbidities are well known to accompany many chronic pain syndromes.

The history of abuse in the early stages of life can contribute to the development of chronic pain disorders in the adult period. In the literature, studies investigating the link between childhood neglect and abuse, and chronic pain disorders are shaped around four questions in general: 1- Do individuals with history of childhood abuse or neglect show more pain complaints or pain symptoms, compared to those without abuse or neglect? 2- Do patients with chronic pain report more childhood abuse or neglect than healthy controls? 3- Do patients who apply for treatment with chronic pain report more childhood abuse or neglect than that of the patients who have chronic pain but do not apply for treatment? 4- In community-based samples, do individuals with pain report more childhood abuse or neglect than those without pain?<sup>[17]</sup> In general, it is quite difficult to determine and even to interview about CTE. We designed this study around the second question above, where there is a dearth of FMS literature conducting face-to-face structured psychiatric interview.

In the present study, we aimed (*i*) to investigate the prevalence of different CTEs among women with FMS; and (*ii*) to determine the relationship of CTEs

with both FMS complaints and comorbid psychiatric disorders. The major motivation with this study design was to recognize FMS patients suspected of CTE at an earlier stage and to refer to a psychiatrist.

## PATIENTS AND METHODS

As FMS is more common in women, female subjects were included in this study alone. In addition to healthy women, we included a second comparison group consisting of women with myofascial pain syndrome (MPS). It is another soft tissue pain syndrome which is also more frequent in women and has similar age range with FMS. However they are fundamentally different as the importance of psychological factors in MPS etiology are much less.<sup>[18]</sup> The study included patients who met the American College of Rheumatology criteria for FMS, or Travell and Simons criteria for MPS and otherwise healthy females.<sup>[1,19]</sup> This study was conducted between February 2014 and May 2014. Patients who were illiterate, who had significant visual, hearing and cognitive impairment of communication, accompanied by inflammatory rheumatic disease or autoimmune disease, patients with mental retardation or psychotic disorder, those with steroid use, those with substance use, those with chronic neurological disease with significant cognitive decline were excluded. Ninety-two consecutive patients who applied to the outpatient clinic of Physical Medicine and Rehabilitation (PMR) Department in a university hospital were recruited for this study. Two patients with MPS and three patients with FMS refused to participate in the study. The sample group consisted of a total of 136 women including 52 with FMS, 35 with MPS, and 49 healthy controls. In this case-control study, necessary information concerning the questionnaires and the aim of the study was given to the patients prior to the interview. Following a semi-structured psychiatric interview by a psychiatrist experienced in psychological trauma, the relevant scales were applied. The study was approved by the University Ethics Committee for Clinical Trials. A written informed consent was obtained from each patient. The study was conducted in accordance with the principles of the Declaration of Helsinki.

*Instruments Sociodemographic Data Form:* In this form, the participants were asked about personal information such as age, clinical diagnosis, marital status, educational status, working status, place of residence, income level, comorbidities, and psychiatric history.

**Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders-fourth edition (DSM-IV) (SCID-I):** This is a semi-structured clinical interview developed for use of mental health professionals.<sup>[20]</sup> The SCID-I allows to diagnose both present and life-time Axis I mental disorders. In this study, we used modules for depression and anxiety disorders only and focused on the current diagnoses.

**Hamilton Depression Rating Scale (HDRS):** This 17-item scale questioning the depressive complaints in the last week is administered by the physician. The maximum score is 53 points. The scoring is as follows: 0-7 points indicates “no depression”, 8-15 points indicates “mild depression”, 16-28 points indicates “moderate depression”, 29 points and above indicates “severe depression”.<sup>[21]</sup> The reliability and validity of the Turkish version is available.<sup>[22]</sup>

**Hamilton Anxiety Rating Scale (HARS):** This physician administered scale consists of 14 questions about both psychological and physical symptoms of anxiety. It determines the level of anxiety within the last 72 hours. It is evaluated as follows: 0-5 points indicates “no anxiety”; 6-14 points indicates “minor anxiety”; 15 points and above indicates “major anxiety”.<sup>[23]</sup> The reliability and validity of the Turkish form is present.<sup>[24]</sup>

**Childhood Trauma Questionnaire (CTQ-28):** This 28-item retrospective questionnaire investigates the presence of the traumatic experiences such as abuse and neglect during childhood and adolescence. This self-reported form consists of five sub-dimensions as emotional neglect, physical neglect, sexual abuse, emotional abuse, and physical abuse.<sup>[25]</sup> It was first

developed as 70 items and reduced to 53 items later. Sar et al.<sup>[26]</sup> shortened the reduced form and adapted to Turkish as CTQ-28. It is assumed that a total score of 35 or higher indicates the presence of CTEs. The subscale evaluation is as follows: for sexual and physical abuse above 5 points is considered positive; for physical neglect and emotional abuse above 7 points is considered positive, and for emotional neglect above 12 points is considered positive.

**Fibromyalgia-related Symptoms Scale (FSS):** This is a simple, easy-to-use 11-item form developed by Wolfe et al.<sup>[27]</sup> to screen systematically for the most common complaints accompanying FMS. The presence of symptoms such as morning tiredness, morning stiffness, non-restful sleep, insomnia, crying, getting tired after a little work, overreacting to incidents, distractibility, headache, fatigue and intestinal complaints are questioned as “Yes” or “No” by the physician. It is adapted to the Turkish by Demirbag.<sup>[28]</sup>

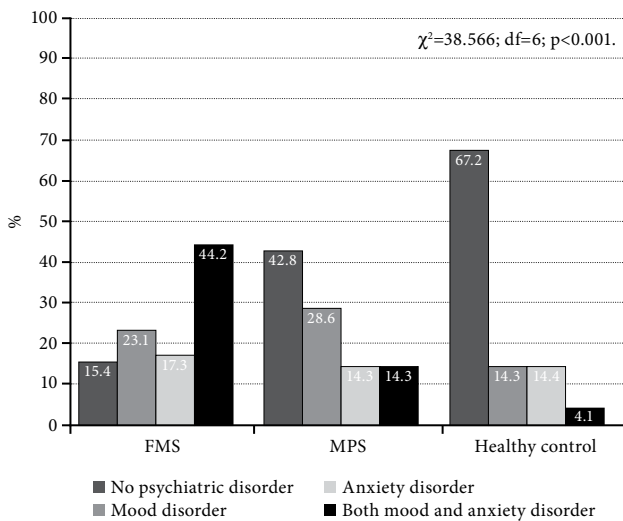
### Statistical analysis

The data obtained in the study were analyzed using the Statistical Program for Social Sciences (SPSS) version 16.0 (SPSS Inc., Chicago, IL, USA). Normally distributed data were expressed in mean and standard deviation (SD), while abnormally distributed data were expressed in median (min-max). The chi-square and Fisher's exact tests were used to compare the categorical data. Normal distribution of continuous data was investigated by visual (histogram and probability graphs) and analytical methods (Shapiro-Wilk test). For continuous data with normal distribution, one-way analysis of variance (ANOVA) was used to compare

**Table 1.** Sociodemographic characteristics of the study groups

	FMS patients (n=52)		MPS patients (n=35)		Healthy controls (n=49)		$\chi^2$	Df	p
	n	%	n	%	n	%			
Marital status									
Married	37	71.2	29	82.9	46	93.9	8.972	2	0.011
Divorced/Widowed	15	28.8	6	17.1	3	6.1			
Educational status									
Elementary school	27	51.9	17	48.6	15	30.6	6.775	4	0.148
Secondary school and high school	13	25	6	17.1	17	34.7			
College	12	23.1	12	34.3	17	34.7			
Socioeconomic status									
Low	18	34.6	5	14.3	8	16.3	7.34	4	0.134
Middle	24	46.2	23	65.7	30	61.2			
High	10	19.2	7	20	11	22.5			
Accompanying medical disorder									
Yes	43	82.7	23	65.7	18	36.7	22.874	2	<0.001
Psychiatric history									
Yes	39	75	14	40	11	22.5	28.907	2	<0.001

FMS: Fibromyalgia syndrome; MPS: Myofascial pain syndrome.



**Figure 1.** The Distribution of Mood and Anxiety Disorders' Frequency According to SCID-I.

means of more than two groups. For the analysis of non-normally distributed continuous data, the Mann-Whitney U test was used to compare continuous variables among two groups, while Kruskal-Wallis test was used for the comparison of more than two groups. The Bonferroni corrected Mann-Whitney U test was applied as post-hoc, when Kruskal-Wallis test showed a significant difference between the groups ( $p < 0.05$ ). The relationship between continuous variables with non-normal distribution was examined by the Spearman correlation analysis. A  $p$  value of  $< 0.05$  was considered statistically significant.

### RESULTS

Fifty-two female patients with FMS, 35 with MPS, and 49 healthy women were included in this study. The mean age of the groups were  $42.65 \pm 9.92$  years for FMS;  $41.97 \pm 10.58$  years for MPS, and  $37.86 \pm 12.01$  years for healthy controls ( $F = 2.747$ ;  $df = 2$ ;  $p = 0.068$ ).

Sociodemographic characteristics are presented in Table 1. The proportion of divorced or widowed female individuals was significantly higher in the FMS group than others. The presence of reported additional physical illness and any psychiatric history in FMS patients were significantly higher than that of MPS patients and healthy controls.

The proportion of patients diagnosed with any mood or anxiety disorder using SCID-I was significantly different among FMS ( $n = 44$ , 84.6%); MPS ( $n = 20$ , 57.1%) and healthy control ( $n = 16$ , 32.7%) groups ( $\chi^2 = 28.907$ ;  $df = 2$ ;  $p < 0.001$ ). Post-hoc pairwise comparisons revealed that the proportion of patients with psychiatric comorbidity was significantly higher in FMS group than those of MPS ( $\chi^2 = 8.119$ ;  $df = 1$ ;  $p = 0.004$ ) and control groups ( $\chi^2 = 28.246$ ;  $df = 1$ ;  $p < 0.001$ ). Psychiatric comorbidity was also significantly higher in MPS group, compared to healthy controls ( $\chi^2 = 5.00$ ;  $df = 1$ ;  $p = 0.025$ ). Besides, the distribution of mood and anxiety disorder comorbidity in the FMS group also reveals a significant difference than that of the others, as shown in detail in Figure 1 ( $\chi^2 = 38.566$ ;  $df = 2$ ;  $p < 0.001$ ). The most common psychiatric diagnosis in women in FMS group was major depressive disorder (MDD) (46.2%). The median HDRS scores were 26.50 (2.00-50.00) (moderate depression) in FMS group, 9.00 (2.00-34.00) (mild depression) in MPS group, and 5.00 (1.00-43.00) (no depression) in healthy controls. Depression levels were significantly different among three groups ( $\chi^2 = 44.664$ ;  $df = 2$ ;  $p < 0.001$ ). Post-hoc pairwise comparisons revealed that depression levels of FMS patients was significantly higher than those of MPS ( $Z = 3.917$ ;  $p < 0.001$ ) and controls ( $Z = 6.274$ ;  $p < 0.001$ ). Depression levels of MPS patients was also significantly higher compared to healthy controls ( $Z = 3.090$ ;  $p = 0.002$ ). The median HARS scores were reported as 22.00 (4.00-51.00) (major anxiety) in FMS group, 7.00 (1.00-41.00) (minor anxiety) in MPS group and 4.00 (1.00-36.00) (no anxiety) in healthy controls. Anxiety levels were significantly different among three

**Table 2.** Comparison of childhood traumatic experiences and subtypes

	FMS patients (n=52)		MPS patients (n=35)		Healthy controls (n=49)		$\chi^2$	df	p
	n	%	n	%	n	%			
CTE-general	39	75.0	23	65.7	18	36.7	16.175	2	<0.001
Sexual abuse	18	34.6	6	17.1	4	8.2	11.139	2	0.004
Physical abuse	26	50.0	11	31.4	9	18.4	11.399	2	0.003
Physical neglect	33	63.5	19	54.3	20	40.8	5.227	2	0.073
Emotional abuse	30	57.7	13	37.1	11	22.4	13.218	2	0.001
Emotional neglect	31	59.6	17	48.6	14	28.6	9.970	2	0.007

FMS: Fibromyalgia syndrome; MPS: Myofascial pain syndrome; CTE: Childhood traumatic experiences.

**Table 3.** Comparison of Childhood Trauma Questionnaire-28 scores according to the presence of any psychiatric disorder

	Childhood Trauma Questionnaire-28 total score						Z	p
	No psychiatric disorder			Presence of any psychiatric disorder				
	n	Median	Min-Max	n	Median	Min-Max		
Fibromyalgia syndrome patients (n=52)	8	32.00	25.00-51.00	44	50.50	25.00-99.00	-2.868	0.004
Myofascial pain syndrome patients (n=35)	15	38.00	25.00-62.00	20	36.50	25.00-70.00	-0.400	0.689
Healthy controls (n=49)	33	34.00	25.00-79.00	16	33.00	25.00-97.00	-0.609	0.542

Min: Minimum; Max: Maximum.

groups ( $\chi^2=47.369$ ;  $df=2$ ;  $p<0.001$ ). Post-hoc pairwise comparisons revealed that anxiety levels of FMS patients was significantly higher than those of MPS ( $Z=4.615$ ;  $p<0.001$ ) and controls ( $Z=6.552$ ;  $p<0.001$ ). However, anxiety levels of MPS patients was not significantly different than that of healthy controls ( $Z=1.669$ ;  $p=0.095$ ).

The median of the CTQ-28 scores were 47.50 (25.00-99.00) in FMS group; 38.00 (25.00-70.00) in MPS group and 32.00 (25.00-97.00) in healthy controls. The median CTQ-28 score of FMS patients was also significantly higher than that of both groups ( $\chi^2=23.778$ ;  $df=2$ ;  $p<0.001$ ). Individuals who scored  $\geq 35$  in the CTQ-28 were assigned as positive for CTE in all three groups. We determined the presence of CTE as 75% in FMS group, 65.7% in MPS group, and 36.7% in healthy controls ( $\chi^2=16.175$ ;  $df=2$ ;  $p<0.001$ ). As a result of the evaluation of the subscales of the CTQ-28, all trauma subgroups were found to be more common in the FMS group. In addition, the most common type of childhood trauma observed in all groups was physical neglect (63.5% for FMS, 54.3% for MPS, and 40.8% for healthy controls). Detailed data on the comparison of the childhood trauma subtypes are presented in Table 2. The comparison of CTQ-28 total scores with regard to the presence of any psychiatric diagnosis

among study groups were examined in Table 3. Only the comparison in FMS group revealed significantly higher CTQ-28 scores in patients with any psychiatric disorder than those of patients without psychiatric diagnosis ( $Z=-2.868$ ;  $p=0.004$ ). In addition, only in FMS group, there was a positive and statistically significant correlation of HDRS ( $r=0.246$ ; weak), HARS ( $r=0.372$ ; moderate), and FSS ( $r=0.285$ ; weak) with the CTQ-28 scores (for all correlations  $p<0.05$ ).

Fibromyalgia-related symptoms of FMS patients were also questioned in detail. The median number of reported fibromyalgia symptoms was 8.00 (3.00-11.00) in FSS. The most common symptom was non-restful sleep (92.3%). Other complaints as morning tiredness (90.4%), fatigue (86.5%), getting tired after a little work (86.5%), morning stiffness (82.7%), headache (80.8%), distractibility (76.9%), insomnia (67.3%), crying (61.5%), over-reacting to incidents (51.9%), and intestinal complaints (32.7%) were also observed at varying rates. We also investigated whether the presence of CTE was associated with a specific fibromyalgia symptom. While 69.2% of the FMS patients with childhood trauma reported crying, this ratio was only 38.5% in the FMS group with no history of childhood trauma ( $\chi^2=3.900$ ;  $df=1$ ;  $p=0.048$ ). In the same way, 64.1% of FMS patients with CTEs reported

**Table 4.** Comparison of fibromyalgia symptoms according to the presence of childhood traumatic experiences

	Childhood traumatic experience				$\chi^2$	df	p
	Absent (n=13)		Present (n=39)				
	n	%	n	%			
Morning tiredness (n=47)	11	84.6	36	92.3	0.664	1	0.589
Morning stiffness (n=43)	11	84.6	32	82.1	0.045	1	1.000
Fatigue (n=45)	12	92.3	33	84.6	0.495	1	0.664
Non-restful sleep (n=48)	12	92.3	36	92.3	0.000	1	1.000
Insomnia (n=35)	8	61.5	27	69.2	0.262	1	0.609
Headache (n=42)	9	69.2	33	84.6	1.486	1	0.244
Getting tired after a little work (n=45)	9	69.2	36	92.3	4.457	1	0.056
Distractibility (n=40)	8	61.5	32	82.1	2.311	1	0.128
Over-reacting to incidents (n=27)	2	15.4	25	64.1	9.270	1	0.003
Crying (n=32)	5	38.5	27	69.2	3.900	1	0.048
Intestinal complaints (n=17)	2	15.4	15	38.5	2.3601	1	0.178

that they over-reacted to incidents, whereas this was only 15.4% in FMS patients without childhood trauma history ( $\chi^2=9.270$ ;  $df=1$ ;  $p=0.003$ ). The data about each FSS are presented in Table 4 in detail.

## DISCUSSION

There are several studies in the literature investigating the relationship between FMS and childhood trauma; however, the number of studies in which a detailed and structured psychiatric interview was conducted is scarce. Psychiatric assessments used are mostly for screening purposes rather than being diagnostic. In particular, on sensitive issues such as childhood trauma, the importance of the therapeutic relationship established during psychiatric interview is obvious, in order to reach accurate results.<sup>[29]</sup> Thus, in our study SCID-I for diagnostic purposes have been performed by a psychiatrist trained in psychological trauma. The patients in need of treatment were referred to the psychiatry outpatient clinic for further follow-up and treatment.

In previous studies evaluating CTE in FMS, healthy individuals and patients with rheumatoid arthritis (RA) or neuropathic pain are chosen as control groups. However, in methodological reviews of the research in this area, it is reported that RA should not be used as a control group due to its inflammatory and multisystemic nature.<sup>[30]</sup> The use of neuropathic pain patients may not be appropriate, as well, due to the current emphasis on the similarity of this disorder to FMS.<sup>[30]</sup> Therefore, in our study, we decided to establish a second control group of patients with MPS.<sup>[18]</sup>

In the present study, sociodemographic data were similar in all groups. Only the proportion of divorced or widowed individuals in FMS group was significantly higher than the others. In a previous study by Yilmaz et al.,<sup>[31]</sup> tendency to divorce was also higher in FMS patients. This may be due to psychiatric comorbidity and sexual dysfunction in women with FMS.<sup>[32,33]</sup> There was a deviation of FMS group from MPS and healthy controls both in terms of medical and psychiatric history. Approximately 85% of the patients with FMS were diagnosed with any mood or anxiety disorder. In addition, about half of these patients had also comorbid mood and anxiety disorders. In accordance with previous studies, this finding supports the importance of psychological factors in development of FMS.<sup>[34,35]</sup> Almost half of FMS patients in our study were diagnosed as MDD, a clinically important disorder which requires appropriate treatment. In the relevant literature, the

association of FMS and depression have been explained from various perspectives. Fibromyalgia syndrome and depression can sometimes be conceptualized as different clinical manifestations of a single disorder called affective spectrum disorder.<sup>[36]</sup> To support this hypothesis, many common pathogenic pathways have been suggested, such as the HPA axis interaction with elevated corticotropin releasing hormone levels;<sup>[37]</sup> dysregulation of central and peripheral noradrenergic/serotonergic pathways;<sup>[38]</sup> dysfunction of SP and neurosteroids,<sup>[39]</sup> and deterioration of the functions of cytokines.<sup>[40]</sup> These patients with comorbid depression may constitute the high-risk group in terms of compliance and treatment resistance. As psychiatric comorbidity is a complicating factor, multidisciplinary follow-up including a psychiatrist would be, then, crucial.

We also investigated the impact of CTE on the development of psychiatric disorders in patients with chronic pain. Only in FMS group, there was a significant relationship between CTE and presence of any psychiatric diagnoses. Similarly, in a study by Häuser et al.<sup>[41]</sup> where the United States and German FMS patients were compared, all subtypes of childhood adversities were reported to be more common in the patients with probable psychiatric disorders. Unfortunately, they did not conduct a standard psychiatric interview for mental disorders and childhood maltreatment, as they reported in limitations. Traumatic life events in the early life stages can lead to permanent changes in the central nervous system circuits that play an integrative role in regulation of stress and emotions. These undesired changes makes the individual more vulnerable to development of anxiety or depression following stressful events in the later stages of life. It has also been reported that early life stress exposure increases the risk of developing diabetes mellitus, heart diseases, chronic pain disorders, and immune system diseases.<sup>[42]</sup> In a study conducted by Walker et al.<sup>[43]</sup> in FMS patients, there was a relationship between exposure to abuse and medically unexplained physical complaints, the presence of life-long psychiatric disorders, impaired sleep quality, deterioration in physical functioning, mean number of painful areas, severity of pain, and perceived stress level. Similarly, Alexander et al.<sup>[11]</sup> reported that FMS patients with a history of abuse had more severe pain, more fatigue, more functional impairment, and more psychiatric comorbidity and are more likely to use pain medication than those without history of abuse.

Childhood traumatic experiences were determined more frequently in both pain groups in our study than in healthy controls. The most common subtype of CTEs was physical neglect which was followed by emotional neglect, in all three groups. Almost half of FMS patients reported physical abuse, whereas one-third had a history of sexual abuse. The prevalence of physical and sexual abuse history have long been studied in FMS patients. However, emotional abuse and neglect have been mostly overlooked in these studies.<sup>[44-46]</sup> In a study by Goldberg et al.,<sup>[8]</sup> childhood trauma subtypes were evaluated in patients with MPS and FMS. They reported similar rates of abuse, compared to our results. However, the lack of a healthy control group is an important limitation of their study. In another study by Olivieri et al.,<sup>[47]</sup> adverse childhood experiences such as physical/verbal abuse from parents, emotional neglect and sexual abuse were correlated with the development of fibromyalgia, compared to the control group.

There are various studies on this field in the literature.<sup>[9,11,13,43-45]</sup> A recent research by Bayram and Erol<sup>[48]</sup> also revealed that FMS patients had more CTE and comorbid psychiatric distress, compared to RA patients and healthy controls. Unfortunately, due to the lack of a diagnostic psychiatric interview, neither the prevalence of psychiatric disorders nor their relationship to the presence of CTE have been reported in that study. Similarly, in a very recent study from Israel, specific aspects of childhood maltreatment, such as neglect and emotional abuse were particularly frequently reported by FMS cohort compared with RA patients. Sexual and physical abuse, however, were not found to be significantly more frequent among FMS patients.<sup>[49]</sup> In accordance with our results, the importance of less violent aspects of childhood adversities in the etiology of chronic pain may be stressed in future studies.

The most common FSS reported by our FMS patients was non-restful sleep (92.3%) and the least reported was intestinal complaints (32.7%), similar to the previous studies.<sup>[27,28,50]</sup> Most of the complaints screened in the FSS can also be seen in many psychiatric disorders, particularly depression. Determination of whether these symptoms are due to FMS itself or are result of a psychiatric disorder, is only possible after detailed physical and psychiatric examinations. After evaluating each fibromyalgia symptom's relation to CTE one by one, we could only determine a significant correlation with the symptoms of crying and over-reacting to incidents. This finding may have useful

clinical implication in psychiatric referral of selected patients.

Although the evaluation of CTE is performed by a psychiatrist who is experienced in trauma, there may be a "recall bias" caused by retrospective notifications. In addition, FMS patients in the study does not constitute a homogeneous group, but instead contains both newly diagnosed or treatment resistant patients. In this study, due to the heterogeneity in the sample group, the relationship between treatment resistance and CTE was unable to be examined. On the other hand, our study was performed in the patient group who were seeking for treatment. Therefore, the results of our study cannot be generalized to the general population. Individuals seeking treatment are more likely to report pain symptoms than those who do not. Reporting bias can also affect results. Due to this effect, the relationship between CTE and the FMS symptoms in patients may be exaggerated. Investigating this relationship in a healthy group might be helpful to define the extent of this effect. Finally, it should also be remembered that our study was only performed in the female patient group.

In conclusion, FMS, a mutisystemic disease requiring a multidisciplinary approach, is accompanied by many physical and cognitive complaints in addition to pain complaints. Considering the possibility of a complex etiological relationship between FMS and CTE, appropriate screening for the existence of childhood trauma and potential mental disorders should be performed in these patients.<sup>[41]</sup> However, it is known that those with a history of childhood abuse are not able to share their story unless they have proper conditions. When the daily routine of a PMR outpatient clinic is taken into consideration, it seems almost impossible to inquire about CTEs. The presence of an abuse history in patients with FMS not only correlates with the severity of FMS, but also with treatment resistance.<sup>[15,42]</sup> Therefore, in the PMR outpatient clinics, particularly in the presence of the two specific symptoms mentioned above and treatment resistance, patients should be referred to the psychiatric outpatient clinic for further investigation.

#### **Declaration of conflicting interests**

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

#### **Funding**

The authors received no financial support for the research and/or authorship of this article.

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