Dusunen Adam The Journal of Psychiatry and Neurological Sciences 2017;30:86-94
DOI: 10.5350/DAJPN2017300202

Research / Araştırma

The Relationship of Childhood Trauma, Dissociative Experiences and Depression with Pain in Female Patients with Fibromyalgia: A Cross-Sectional Study

Hakan Karas[1], Ejder Akgun Yildirim[2], Suat Kucukgoncu[3], Umut Yakut[4]

[1]Beykent University, Department of Psychology, Istanbul - Turkey
[2]Bakirkoy Prof. Dr. Mazhar Osman Training and Research Hospital for Psychiatry, Neurology and Neurosurgery, Secondary Care Psychotherapy Unit, Istanbul - Turkey
[3]Yale University, Department of Psychiatry, Connecticut Mental Health Hospital, New Haven-United States of America
[4]Istanbul Gelisim University, Vocational School of Health, Istanbul - Turkey

ABSTRACT

The relationship of childhood trauma, dissociative experiences and depression with pain in female patients with fibromyalgia: a cross-sectional study

Objective: The aim of this study was to investigate childhood trauma (CT) and dissociative symptoms in patients with fibromyalgia and evaluate the relationship of these characteristics with pain intensity.

Methods: Forty patients followed up with fibromyalgia diagnosis in the physical therapy and rehabilitation outpatient clinic; and as a control group, 38 healthy individuals who have similar age, gender, and educational status, were included in the study. A sociodemographic and clinical data form, Beck Depression Inventory (BDI), Childhood Trauma Questionnaire (CTQ), Dissociative Experiences Scale (DES), Somatoform Dissociation Questionnaire (SDQ) and Visual Analogue Scale (VAS) were administered to participants.

Results: Emotional abuse, physical neglect, physical abuse, CTQ total, SDQ and DES scores were found to be significantly higher in the fibromyalgia group than the control group. Only the difference for SDQ scores remained significant when a comparison made between groups by controlling depression levels. Somatoform dissociation scores were found to be a significant predictor of pain intensity in patients with fibromyalgia.

Conclusion: Somatoform dissociative symptoms are found to be higher in patients with fibromyalgia than the control group. These symptoms may contribute to development and exacerbation of pain in fibromyalgia. Taking the dissociative symptoms into account have an important role in the treatment of patients with fibromyalgia who have a frequent history of CT, so the treatment of these patients should be carried out in cooperation with psychiatrists.

Keywords: Childhood trauma, dissociation, fibromyalgia, somatoform dissociation

ÖZET

Kadın fibromiyalji hastalarında çocukluk çağı travmaları, disosiyatif yaşantılar ve depresyonun ağrı ile ilişkisi: Kesitsel bir çalışma

Amaç: Bu çalışmanın amacı fibromiyalji (FM) hastalarında çocukluk çağı travmaları ile disosiyatif belirtileri araştırmak ve bu özelliklerin FM'deki ağrı şiddeti ile ilişkisini incelemektir.

Yöntem: Fizik tedavi ve rehabilitasyon polikliniğinde fibromyalji tanısıyla takip edilmekte olan 40 hasta ile kontrol grubu olarak yaş, cinsiyet ve öğrenim durumu açısından benzer olan 38 sağlıklı kişi çalışmaya dahil edildi. Katılımcılara sosyodemografik ve klinik veri toplama formu, Beck Depresyon Ölçeği (BDÖ), Çocukluk Çağı Travmaları Ölçeği (ÇÇTÖ), Disosiyatif Yaşantılar Ölçeği (DYÖ), Somatoform Disosiyasyon Ölçeği (SDÖ) ve Görsel Analog Skala (GAS) uygulandı.

Bulgular: FM grubunda duygusal istismar, fiziksel ihmal, fiziksel istismar, ÇÇTÖ toplam, SDÖ ve DYÖ puan ortalamaları kontrol grubuna göre anlamlı derecede yüksek bulundu. Gruplar arasında depresyon düzeyleri kontrol edilerek karşılaştırma yapıldığında ise sadece SDÖ puan farklılığının anlamlı olarak devam ettiği görüldü. Somatoform disosiyasyon puanlarının FM hastalarında ağrı şiddetinin anlamlı belirleyicisi olduğu saptandı.

Sonuç: Somatoform disosiyatif belirtiler FM hastalarında kontrol grubuna göre yüksek bulunmuştur. Bu belirtiler FM'deki ağrının gelişmesine ve şiddetlenmesine katkı yapıyor olabilir. Çocukluk çağı travma öyküsünün sık olduğu FM hastalarının tedavisinde disosiyatif belirtilerin ele alınması önemli bir yer tutmaktadır ve bu nedenle bu hastaların tedavisinin psikiyatristlerle işbirliği içinde yürütülmesi önemlidir.

Anahtar kelimeler: Çocukluk çağı travmaları, disosiyasyon, fibromiyalji, somatoform disosiyasyon

How to cite this article: Karas H, Yildirim EA, Kucukgoncu S, Yakut U. The relationship of childhood trauma, dissociative experiences and depression with pain in female patients with fibromyalgia: a cross-sectional study. Dusunen Adam The Journal of Psychiatry and Neurological Sciences 2017;30:86-94.
https://doi.org/10.5350/DAJPN2017300202

Address reprint requests to / Yazışma adresi:
Hakan Karas,
Beykent University, Department of Psychology, Istanbul, Turkey

Phone / Telefon: +90-212-444-7350

E-mail address / Elektronik posta adresi:
hakankaras@yahoo.com

Date of receipt / Geliş tarihi:
October 18, 2016 / 18 Ekim 2016

Date of the first revision letter / İlk düzeltme öneri tarihi:
December 6, 2016 / 6 Aralık 2016

Date of acceptance / Kabul tarihi:
January 24, 2017 / 24 Ocak 2017

INTRODUCTION

Fibromyalgia (FM) is a rheumatic disease with chronic pain accompanied by hypersensitivity on sensitive anatomic regions. Chronic widespread pain is often accompanied by fatigue and restless sleep (1,2). The disease is predominatly seen in females (80-90%) and clinical manifestation is more severe in females than in males (3). The prevalence of this disease in females was found as 3.6%, in a general population study conducted in our country (4). Although the etiology is not clearly known, various factors such as genetic susceptibility, neuroendocrine system disorders, impaired central pain transmission, and psychosocial stressors are effective in the pathophysiology of FM disease (5). It is known that FM is accompanied by many psychiatric disorders including major depression, anxiety disorders and somatoform disorders (6,7). Some authors classify FM in "affective spectrum disorders", which includes diseases such as major depressive disorder, anxiety disorders, premenstrual dysphoric disorder, irritable bowel syndrome, and migraine, because of similar pathophysiological mechanisms, increased frequency of depressive symptoms, elevated comorbidity, and good response to antidepressant therapy (8,9).

A meta-analysis study has shown that childhood trauma (CT) in FM patients is significantly higher than both general population and control groups (10). When compared with other chronic pain groups, the childhood history of abuse in FM patients was significantly higher (11). In these patients, it is suggested that CT has a relationship between medically unexplained symptoms, intensity of pain, average number of tender points, and the effect of the disease on the quality of life (12). Large-scale studies have shown that the history of physical and sexual abuse is related to FM diagnosis and this data suggests that CT may advance a developmental tendency for FM disease (13-15).

It is known that the dissociative manifestations are very common in children with CT, and CTs are the most important etiological factor for the dissociative personality disorder (16). Dissociation, which is a phenomenon that eases to adapt to trauma, especially in children and adolescents, is becoming maladaptive if it has elongated duration, spreads to other areas of life, and increases in severity (17). Dissociative experiences include somatoform indications as well as psychoform indications reflecting amnesia, depersonalization, derealization, identity confusion, and identity fragmentation (18,19). Somatoform dissociation includes several somatic indications such as analgesia, anesthesia, changes in smell and taste senses, motor control loss and pain, which are characteristic for dissociative patients (20). Psychoform dissociative experiences were found to be high in FM patients in general and it was suggested that the intensity of pain and dissociative symptoms are related to each other (21,22). There are also studies reporting that the symptoms of psychoform dissociation are not specific to FM and that the rates associated with these symptoms are similar to other pain groups (23). In the literature, the frequencies of somatoform dissociation, a phenomenon closely related to pain in FM patients is relatively rare. In studies evaluating the FM patients with the somatoform dissociation questionnaire (SDQ), SDQ scores were found to be similar to those in patients with dissociative disorders (13,24). The fact that somatoform dissociation rates are higher in FM than in other pain groups, and that somatoform dissociation in FM is closely related to the severity and burden of disease, as in psychoform dissociation, has led to the view that dissociation perspective may help to better understand FM disease (15,22).

Our literature information suggests that CT is common in people with FM disease. However, the lack of studies on the dissociative experiences closely related to CT in FM patients, and the relationship between these experiences and the severity of pain, restrict our knowledge about of the subject. For this reason, our study aimed to compare CTs, psychoform, and somatoform dissociation in FM patients, with healthy control group. Another aim of our study was to investigate the relationship between CTs, depression levels and pain severity in dissociative experiences in FM patients.

METHOD

Interviews were performed with 47 female patients diagnosed with FM, according to American College of Rheumatology (ACR) diagnostic criteria by a physical therapy and rehabilitation specialist in physical therapy and rehabilitation clinic of Istanbul Physical Therapy Rehabilitation Training and Research Hospital, between June 2010 and August 2010, after the ethics committee approval was obtained (25). After the sociodemographic data were collected by the interviewer and the patients were informed about the study and scales, the patients were asked to complete the scales in the interview room. Patients filled out the scales in the same order under the supervision of the interviewer and then delivered scales to the interviewer. Three patients refused to participate in the study, stating that they did not want to spare time for it. Data of four patients were not included in the study because of missing values. Those with significant visual, hearing, and cognitive impairment of communication accompanying inflammatory rheumatic disease or autoimmune disease, clinically detected mental retardation were not included in the study. FM patients who received any psychiatric treatment were not included in the study.

The control group consisted of 38 healthy volunteers selected from employees of two different hospitals and their relatives who had similar sociodemographic characteristics with the patient group and had no pain, no systemic or psychiatric disease. Verbal and written information about the study were given to all participants and informed concetns were obtained.

Measures

Sociodemographic and Clinical Data Collection Form: This is an interview form developed by the research group in accordance with the purpose of the study to evaluate the sociodemographic characteristics of the patients, their pain-related characteristics, lifetime psychiatric illness story, suicide attempt and information about the clinical diagnosis process.

Childhood Trauma Questionnaire (CTQ-28): CTQ-28 a self-reported scale developed by Bernstein et al. (26) for the retrospective screening of childhood and adolescent abuse and neglect experiences. The five subscales of the scale are emotional neglect, physical neglect, sexual abuse, emotional abuse, and physical abuse. Turkish validity and reliability studies have been conducted (27).

Somatoform Dissociation Questionnaire (SDQ): A scale developed by Nijenhuis et al. (20) for screening for somatic dissociation symptoms. Turkish validity and reliability study has been performed by Sar et al. (28).

Dissociative Experiences Scale (DES): A self reported scale composed of 28 items developed by Bernstein and Putnam (29). The participants grade each item of the scale between 0 and 100, and the average of the scores is calculated to obtain total scores. The scores above 30 on the scale indicate the presence of a possible dissociative disorder. The Turkish validity and reliability study was conducted by Yargic et al. (30).

Beck Depression Inventory (BDI): This self-report scale, developed by Beck et al. (31), consists of 21 items scored between 0 and 3, therefore scoring between 0 and 63. The Turkish validity and reliability study of the scale was performed by Hisli (32).

Visual Analogue Scale (VAS): Patients were asked to mark the severity of the pain they experienced in the last month in a zero to 10cm chart.

Statistical Analysis

SPSS for Windows V. 19.0 statistical package program was used to analyze data. Chi-square test was used to compare categorical variables between groups, Student t test and Multivariate Covariance Analysis (MANCOVA) were used to compare means of the continuous variables in two groups. Pearson's Correlation Analysis was used to examine the

relationship between scale scores in FM patients. Hierarchical regression analysis was performed to determine the predictors of VAS scores in FM patients. VAS scores were accepted as dependent variables. In order to determine the effect of the depression scores on the dependent variable, the average BDI score at the first block and CTQ physical abuse, emotional abuse and SDQ scores at the second block were included in regression analysis. A p value of <0.05 was considered statistically significant for all results.

RESULTS

There were no statistical difference between the FM patients and the healthy control group (CG) in terms of mean age (FM:42.67±8.75, CG:41.81±8.57, t=0.438, p>0.05), educational status (χ^2=5.889, df=3, p>0.05) and marital status (χ^2=3.554, df=2, p>0.05). The mean disease duration of FM patients was 4.65±4.96 years.

When the clinical scales were compared, the total score of DES was 18.19±14.60 in FM group and 11.38±11.94 in CG and the mean of DES total score in FM group was significantly higher (0.249, p<0.05) than CG. The percentages of patients who have 30 and above DES scores were significantly higher in the FM group (In FM group: n=10, 25% and in CG group: n=3, 7.9%, χ^2=4.105, p<0.05). The mean SDQ total score was significantly higher in the FM group (36.70±14.05) than in the CG (11.38±7.63, t=4.003, p<0.01). In terms of CTQ-28 subscale and total scores, emotional abuse (FM:9.97±4.20, CG:6.86±2.96, t=3.752, p<0.01), physical neglect (FM:10.55±2.49, CG:9.36±2.11, t=2.255, p<0.05), physical abuse (FM:7.90±3.98, CG:5.71±2.43, t=2.908, p<4.641, p<0.01) and total score (FM:55.57±8.71, CG:47.36±6.71, t=4.641, p<0.01) were significantly higher in the FM group. There was no statistically significant difference between the groups in terms of mean scores of emotional neglect (t=1.087, p>0.05) and sexual abuse (t=1.019, p>0.05). The mean BDI score was significantly higher in the FM group (t=2.745, p<0.01). The comparison of clinical scores between the groups is summarized in Table 1.

MANCOVA was applied to evaluate the differences between the two groups because of the difference in the depression levels may effect the trauma and dissociation scores. In MANCOVA analysis, depression scores, test results that were significant among covariance groups, dependent variables and participant groups (FM and control) were taken as the fixed factor. After controlling for depression levels, there was a significant difference between the groups (Wilks' Lambda F=3.063, p<0.01). The MANCOVA analysis showed that the emotional abuse (F=7.154, p<0.01), physical abuse (F=5.068, p<0.05), and CTQ-28 total scores (F=13.509, p<0.01)) were significantly higher in the FM group. It was determined that the mean values of the DES total (F=0.220, p>0.05) and the DES physical neglect scores (F=3.454, p>0.05) did not show any significant difference when the depression levels were controlled among the groups.

Table 1: Comparison of patient and control group in terms of scale scores

	Control group (n=38)		FM group (n=40)			
	Mean	SD	Mean	SD	t	p
CTQ-28						
Emotional neglect	19.39	3.67	20.27	3.47	1.087	0.47
Emotional abuse	6.86	2.96	9.97	4.20	3.752	<0.001
Physical neglect	9.36	2.11	10.55	2.49	2.255	0.024
Physical abuse	5.71	2.43	7.90	3.98	2.908	0.004
Sexual abuse	6.02	2.81	6.87	4.33	1.019	0.311
Total	47.36	6.71	55.57	8.71	4.641	<0.001
DES	11.38	11.94	18.19	14.60	4.003	<0.001
SDQ	26.36	7.63	36.70	14.05	2.249	0.027
BDI	9.52	8.16	15.62	11.14	2.766	0.007

t: Student t test, FM: Fibromyalgia, Mean: Aritmetic mean, SD: Standard deviation, BDI: Beck Depression Inventory, CTQ: Childhood Trauma Questionnaire, DES: Dissociative Experiences Scale, SDQ: Somatoform Dissociation Questionnaire

Table 2: Relationship between depression, pain, CTQ, DES and SDQ scores in patients with fibromyalgia

	1	2	3	4	5	6	7	8	9
1. VAS	1								
2. BDI	0.604*	1							
3. Emotional neglect	-0.154	-0.262	1						
4. Emotional abuse	0.422*	0.528*	0.726*	1					
5. Physical neglect	0.155	0.028	-0.107	0.156	1				
6. Physical abuse	0.329[a]	0.208	0.468*	0.676*	0.295	1			
7. Sexual abuse	0.256	0.495*	-0.224	0.360[b]	0.247	0.245	1		
8. CTQ total	0.464*	0.500*	-0.306	0.726*	0.330[c]	0.803*	0.624*	1	
9. SDQ	0.697*	0.779*	-0.186	0.528*	0.026	0.243	0.375[d]	0.486*	1
10. DES	0.589*	0.718*	-0.212	0.510*	0.117	0.309	0.290	0.481*	0.929*

BDI: Beck Depression Inventory, CTQ: Childhood Trauma Questionnaire, DES: Dissociative Experiences Scale, SDQ: Somatoform Dissociation Questionnaire, VAS: Visual Analog Scale, [a]p=0.038, [b]p=0.022, [c]p=0.037, [d]p=0.017, *p<0.01

Table 3: Determinants of VAS point averages according to hierarchical regression analysis

Model		B	Standard error	Beta	t	p
1	Constant	4.122	0.4728		9.365	<0.001
	BDI	0.115	0.025	0.604	4.671	<0.001
2	Constant	2.561	0.739		3.467	<0.001
	BDI	0.030	0.036	0.156	0.835	0.409
	SDQ	0.087	0.028	0.575	3.087	0.004

Model 1: F=64.55, SD=1.38, p<0.001. Adjusted R^2=0.348, Model 2: F=43.78, SD=2.37, p<0.001. Adjusted R^2=0.468, VAS: Visual Analog Scale, BDI: Beck Depression Inventory, SDQ: Somatoform Dissociation Questionnaire

The relationship between the scales applied in the FM group and the VAS scores of pain levels are summarized in Table 2. The mean scores of VAS were significantly positive correlated with BDI (r=0.604), emotional abuse (r=0.422), physical neglect (r=0.329), CTQ-28 total (r=0.464), SDQ total (r=0.697), and DES (r=0.589) (Table 2).

Finally, in our study, hierarchical regression analysis was performed to determine the determinants of the VAS score in the FM group. The VAS score was taken as a dependent variable in the hierarchical regression analysis. BDI scores were analyzed as an independent variable in the first block of the analysis. In the second block, the variables that have a significant correlation with VAS; emotional abuse, physical abuse, and SDQ scores, were taken as independent variables.

As the mean DES score, which had significant relation with VAS, had also a relation with SDQ, it was not included in the analysis, by this reason As a result of the regression analysis, it was found that the significant determinants of the VAS score were, the mean BDI scores (F(1,38)=21.81, p<0.001) at first block and the mean SDQ score at second block (F(2,37)=43.78, p<0.001) (Table 3).

DISCUSSION

In our study, total scores of emotional abuse, physical abuse, CTQ, SDQ and DES scores in FM patients were significantly higher than the control group. When the depression levels were adjusted between the groups, only the SDQ score difference remained significant. In addition to these findings, we found that somatoform dissociation scores in FM patients were significant predictors of pain severity.

It has been suggested that CT is more frequent in FM patients than both healthy populations and other pain groups. It has also been suggested that CT may pose a risk for FM development (12,15). Our findings are similar to other studies and support the claim that CTs may predispose to FM disease. Because of the variety of literature on trauma subtype, it is difficult to define a specific subscale

score related with FM (12,15,33-35). Similar to the study of Taylor et al. (36), there was no difference in sexual abuse subscale of trauma between study and control groups in our study. One of the reason of this may be related to reporting bias. It has been reported that the persons, whose sexual abuse have been documented, have demonstrated significant variability in reporting sexual abuse during adulthood. Thus, it has been suggested that adults with CT history are less likely to report retrospective traumatic experiences (37).

In our study, DES and SDQ scores were significantly higher than controls in the FM group. It was also found that the mean score of DES and SDQ correlated with the severity of pain in FM patients. These findings are consistent with previous studies about this subject in the literature. Leavitt et al. (21,22) showed that the mean DES scores were higher than those of other rheumatologic diseases. Similarly, other related studies also found a significant relationship between pain intensity, pain severity, and dissociation levels. In addition, when we compared depression levels among the groups in our study, it was seen that the SDQ scores were still different and the DES scores lost this significance. This finding suggests that FM patients, a group with a high rate of CT and depression, may be more likely to develop somatoform dissociative symptoms than psychoform dissociation. The reason for this tendency may be that FM patients use more somatic referencing style than healthy individuals (38,39). In the study of Bohn et al. (24), FM patients were more likely to report somatic complaints than controls; the same study showed that somatoform dissociation is an independent determinant of depression or the tendency to report medical symptoms rather than childhood abuse. Although our findings can not explain how CTs lead to somatoform dissociation, this may be due to the inability of mental functioning of the anger after trauma. Psychoform dissociation and somatoform dissociation have been shown to result in different process of the post-traumatic anger (40). Kilic et al. (33) suggested that the posttraumatic anxiety in FM patients leads to somatoform dissociation due to inadequate mental processing.

It is known that people with depression have a significantly higher risk of developing FM than the normal population, and depression develops in a significant proportion of FM patients (41). It has also been shown that there is a significant correlation between depressive symptoms and pain severity in FM patients, as in other chronic pain groups (42,43). In the hierarchical regression analysis of our study, in the first block depressive symptoms affected the pain severity, in the second block this effect has resolved, and at the same time it was observed that the somatoform dissociation had an effect on the pain severity. These findings may indicate that the effect of depressive symptoms on pain in FM patients is due to somatoform dissociation. Pain and other somatic symptoms are often accompanied by depression, and these somatic symptoms are more frequent, especially in depression with dissociative components (44). Depressive symptoms that often accompany FM disease may exacerbate the pain in these patients by causing somatoform dissociation.

Leavitt et al. (22) suggested that the perspective of dissociation, especially somatoform dissociation, may help the painful sense of FM syndrome. The determination of somatoform dissociation score as a determinant of pain in our regression analysis shows that somatoform dissociation may pose a risk for the development or at least exacerbation of pain in FM and supports this opinion. Bohn et al. (24) reported that 46.2% of FM patients met a possible dissociative disorder criterion and 95.7% met a possible somatoform disorder criterion. It is also known that somatoform pain disorder and FM disease are significantly overlapped in clinical and pathogenetic aspects (34). In this context, the widespread pain in FM is both aetiologically and phenomenologically similar to somatoform dissociation manifestations, and the high level of coexistence with these symptoms suggests that widespread pain, in at least some of the FM patients has a strong association with these symptoms.

The limited sample size and the lack of inclusion of the patients with other diseases causing chronic pain were the limitations of our study. These limitations make it difficult to assess whether our findings are

specific to FM patients. Another important limitation of the study is that the cases have not been evaluated by the structured psychiatric interview. In addition, although a relationship between dissociation and CTs could be established, adequate reliable information about causality could not be obtained due to the cross-sectional patten and the fact that recent traumas have not been questioned in our study. The fact that the scales used in our study are self-reporting scales, also reduces the reliability of the data. The scores on the self-reported scales were reported to be higher than clinician assessments (45). There is a need for further research on large samples to determine if dissociative experiences pose a risk for chronic pain in FM.

In conclusion, the high rate of CTs and somatoform dissociation in the FM group in our study suggests that the dissociation perspective is an important part of understanding the etiology of idiopathic FM disease. Somatoform dissociative symptoms may pose a risk for the emergence and aggravation of pain in FM disease. Therefore, the evaluation of somatoform dissociation in clinical evaluation and treatment of FM patients has an important role. Longitudinal studies with large samples are needed to determine the association of FM syndrome with dissociative and somatoform disorders. In addition, there is a need for long-term studies for anger expression and emotional regulation strategies in order to understand how somatoform dissociation develops in FM patients, particularly in the CT group of these patients. However, both CTs and dissociative manifestations are associated with many psychiatric disorders. Therefore, the high rates of dissociative symptoms and the frequency of CT in FM patients require that these group of patients are treated in cooperation with psychiatrists.

Contributions category	Authors name
Development of study idea	H.K., E.A.Y.
Methodological design of the study	H.K., E.A.Y., S.K.
Data acquisition and process	H.K., U.Y.
Data analysis and interpretation	S.K., H.K.
Literature review	H.K., U.Y.
Manuscript writing	H.K., S.K.
Manuscript review and revisation	S.K., E.A.Y., U.Y., H.K.

Conflict of Interest: Authors declared no conflict of interest.

Financial Disclosure: Authors declared no financial support.

Acknowledgement: We would like to thank to Assoc.Prof. Erhan KURT, MD and Assoc.Prof. Duran Cakmak, MD for their contribution to development of the thesis, which this paper was derived.

REFERENCES

1. Hadler NM. A critical reappraisal of the fibrositis concept. Am J Med 1986; 81:26-30. **[CrossRef]**

2. Wolfe F, Clauw DJ, Fitzcharles MA, Goldenberg DL, Katz RS, Mease P, Russell AS, Russell IJ, Winfield JB, Yunus MB. The American College of Rheumatology preliminary diagnostic criteria for fibromyalgia and measurement of symptom severity. Arthritis Care Res 2010; 62:600-610. **[CrossRef]**

3. Yunus MB. Fibromyalgia syndrome: clinical features and spectrum. The fibromyalgia syndrome: Current research and future directions in epidemiology, pathogenesis and treatment. Pillemer R (Ed), New York, The Haworth Medical Press Inc. 1994; 5-21.

4. Topbas M, Cakirbay H, Gulec H, Akgol E, Ak I, Can G. The prevalence of fibromyalgia in women aged 20-64 in Turkey. Scand J Rheumatol 2005; 34:140-144.

5. Sommer C, Häuser W, Alten R, Petzke F, Späth M, Tölle T, Uçeyler N, Winkelmann A, Winter E, Bär KJ; Arbeitsgemeinschaft der Wissenschaftlichen Medizinischen Fachgesellschaften. Drug therapy of fibromyalgia syndrome. Systematic review, meta-analysis and guideline. Schmerz 2012; 26:297-310. **[CrossRef]**

6. Hudson JI, Goldenberg DL, Pope HG Jr, Keck PE Jr, Schlesinger L. Comorbidity of fibromyalgia with medical and psychiatric disorders. Am J Med 1992; 92:363-367. **[CrossRef]**

7. Aguglia A, Salvi V, Maina G, Rossetto I, Aguglia E. Fibromyalgia syndrome and depressive symptoms: comorbidity and clinical correlates. J Affect Disord 2011; 128:262-266. **[CrossRef]**

8. Hudson JI, Arnold LM, Keck PE Jr, Auchenbach MB, Pope HG Jr. Family study of fibromyalgia and affective spectrum disorder. Biol Psychiatry 2004; 56:884-891. **[CrossRef]**

9. Arnold LM, Hudson JI, Keck PE, Auchenbach MB, Javaras KN, Hess EV. Comorbidity of fibromyalgia and psychiatric disorders. J Clin Psychiatry 2006; 67:1219-1225. **[CrossRef]**

10. Häuser W, Kosseva M, Üceyler N, Klose P, Sommer C. Emotional, physical, and sexual abuse in fibromyalgia syndrome: A systematic review with meta-analysis. Arthritis Care Res 2011; 63:808-820. **[CrossRef]**

11. Albrecht WJ. Dissociation, childhood trauma, locus of control and coping style among fibromyalgia and other chronic pain patients. Dissertation Abstracts International 1998; 58:6223.

12. Walker EA, Keegan D, Gardner G, Sullivan M, Bernstein D, Katon WJ. Psychosocial factors in fibromyalgia compared with rheumatoid arthritis: II. sexual, physical, and emotional abuse and neglect. Psychosom Med 1997; 59:572-577. **[CrossRef]**

13. Näring GW, van Lankveld W, Geenen R. Somatoform dissociation and traumatic experiences in patients with rheumatoid arthritis and fibromyalgia. Clin Exp Rheumatol 2007; 25:872-877.

14. Haviland MG, Morton KR, Odac K, Fraser GE. Traumatic experiences, major life stressors, and self-reporting a physician-given fibromyalgia diagnosis. Psychiatry Res 2010; 177:335-341. **[CrossRef]**

15. Semiz M, Kavakci O, Peksen H, Tuncay MS, Ozer Z, Semiz EA, Kaptanoglu E. Post-traumatic stress disorder, alexithymia and somatoform dissociation in patients with fibromyalgia. Turkish Journal of Physical Medicine and Rehabilitation 2014; 60:245-251. **[CrossRef]**

16. Sar V. The many faces of dissociation: opportunities for innovative research in psychiatry. Clin Psychopharmacol and Neurosci 2014; 12:171-179. **[CrossRef]**

17. Cook A, Spinazzola J, Ford J, Lanktree C, Blaustein M, Cloitre M, DeRosa R, Hubbard R, Kagan R, Liautaud J, Mallah K, Olafson E, van der Kolk B. Complex trauma in children and adolescents. Psychiatr Ann 2005; 35:390-398.

18. Nijenhuis ERS. Somatoform dissociation: Major symptoms of dissociative disorders. J Trauma Dissociation 2001; 1:7-32. **[CrossRef]**

19. van der Hart O, van Dijke A, van Son M, Steele K. Somatoform dissociation in traumatized World War I combat soldiers: a neglected clinical heritage. J Trauma Dissociation 2001; 1:33-66. **[CrossRef]**

20. Nijenhuis ER, Spinhoven P, van Dyck R, van der Hart O, Vanderlinden J. Psychometric characteristics of the somatoform dissociation questionnaire: a replication study. Psychother Psychosom 1998; 67:17-23. **[CrossRef]**

21. Leavitt F, Katz RS, Mills M, Heard AR. Cognitive and dissociative manifestations infibromyalgia. J Clin Rheumat 2002; 8:77-84. **[CrossRef]**

22. Leavitt F, Katz RS. The dissociative factor in symptom reports of rheumatic patients with and without fibromyalgia. J Clin Psychol Med Settings 2003; 10:259-266. **[CrossRef]**

23. Sengul CB, Ates A, Sengul C, Okay T, Dilbaz N, Karaaslan Y. Anxiety, depression, dissociation and alexithymia in patients with fibromyalgia and rheumatoid arthritis and relationship of these parameters with severity of illness. Psychiatry in Turkiye 2008; 10:104-108. (Turkish)

24. Bohn D, Bernardy K, Wolfe F, Häuser W. The association among childhood maltreatment, somatic symptom intensity, depression, and somatoform dissociative symptoms in patients with fibromyalgia syndrome: a single-center cohort study. J Trauma Dissociation 2013; 14:342-358. **[CrossRef]**

25. Wolfe F, Smythe HA, Yunus MB, Bennett RM, Bombardier C, Goldenberg DL, Tugwell P, Campbell SM, Abeles M, Clark P, Fam AG, Farber SJ, Fiechtner JJ, Franklin CM, Gatter RA, Hamaty D, Lessard J, Lichtbroun AS, Masi AT, McCain GA, Reynolds WJ, Romano TJ, Russel IJ, Sheon RP. The American College of Rheumatology 1990 criteria for the classification of fibromyalgia: report of the multicenter criteria committee. Arthritis Rheum 1990; 33:160-172. **[CrossRef]**

26. Bernstein DP, Fink L, Handelsman L, Foote J, Lovejoy M, Wenzel K, Sapareto E, Ruggiero J. Initial reliability and validity of a new retrospective measure of child abuse and neglect. Am J Psychiatry 1994; 151:1132-1136. **[CrossRef]**

27. Sar V, Ozturk PE, Ikikardes E. Validity and reliability of the Turkish version of childhood trauma questionnaire. Turkiye Klinikleri Journal of Medical Sciences 2012; 32:1054-1063. (Turkish)

28. Sar V, Kundakci T, Kiziltan E, Bakim B, Bozkurt O. Differentiating dissociative disorders from other diagnostic groups through somatoform dissociation in Turkey. J Trauma Dissociation 2001; 1:67-80. **[CrossRef]**

29. Bernstein EM, Putnam PW. Development, reliability and validity of a dissociation scale. J Nerv Ment Dis 1986; 174:727-735. **[CrossRef]**

30. Yargic I, Tutkun H, Sar V. The reliability and validity of the Turkish version of the dissociative experiences scale. Dissociation 1995; 8:10-13.

31. Beck AT, Steer RA, Garbin MG. Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. Clin Psychol Rev 1988; 8:77-100. **[CrossRef]**

32. Hisli N. A study on the validity of Beck Depression Inventory. Turkish Journal of Psychology 1987; 6:118-122. (Turkish)

33. Kilic O, Sar V, Taycan O, Aksoy-Poyraz C, Erol TC, Tecer O, Emul MH, Ozmen M. Dissociative depression among women with fibromyalgia or rheumatoid arthritis. J Trauma Dissociation 2014; 15:285-302. **[CrossRef]**

34. Imbierowicz K, Egle UT. Childhood adversities in patients with fibromyalgia and somatoform pain disorder. Eur J Pain 2003; 7:113-119. **[CrossRef]**

35. Boisset-Pioro MH, Esdaile JM, Fitzcharles MA. Sexual and physical abuse in women with fibromyalgia syndrome. Arthritis Rheum 1995; 38:235-241. **[CrossRef]**

36. Taylor ML, Trotter DR, Csuka ME. The prevalence of sexual abuse in women with fibromyalgia. Arthritis Rheum 1995; 38:229-234. **[CrossRef]**

37. Goodman GS, Ghetti S, Quas JA, Edelstein RS, Alexander KW, Redlich AD, Cordon IM, Jones DP. A prospective study of memory for child sexual abuse: new findings relevant to the repressed-memory controversy. Psychol Sci 2003; 14:113-118. **[CrossRef]**

38. Gulec H, Sayar K. The reliability and validity of Turkish form of the symptom interpretation questionnaire. Turkish Journal of Clinical Psychiatry 2005; 8:31-36. (Turkish)

39. Gulec H, Sayar K, Gulec MY. The relationship between psychological factors and health care-seeking behavior in fibromyalgia patients. Turk Psikiyatri Derg 2007; 18:22-30. (Turkish)

40. Sar V, Ozturk E. What is trauma and dissociation? Journal of Trauma Practice 2005; 4:7-20. **[CrossRef]**

41. Chang MH, Hsu JW, Huang KL, Su TP, Bai YM, Li CT, Yang AC, Chang WH, Chen TJ, Tsai SJ, Chen MH. Bidirectional association between depression and fibromyalgia syndrome: a nationwide longitudinal study. J Pain 2015; 16:895-902. **[CrossRef]**

42. Magni G, Moreschi C, Rigatti-Luchini S, Merskey H. Prospective study on the relationship between depressive symptoms and chronic musculoskeletal pain. Pain 1994; 56:289-297. **[CrossRef]**

43. Soriano-Maldonado A, Amris K, Ortega FB, Segura-Jiménez V, Estévez-López F, Álvarez-Gallardo IC, Aparicio VA, Delgado-Fernandez M, Herniksen M, Ruiz JR. Association of different levels of depressive symptoms with symptomatology, overall disease severity, and quality of life in women with fibromyalgia. Qual Life Res 2015; 24:2951-2957. **[CrossRef]**

44. Sar V. Dissociative depression is resistant to treatment-as-usual. J Psychol Clin Psychiatry 2015; 3:128. **[CrossRef]**

45. Peveler R, Kilkenny L, Kinmonth AL. Medically unexplained physical symptoms in primary care: a comparison of self-report screening questionnaires and clinical opinion. J Psychosom Res 1997; 42:245-252. **[CrossRef]**