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Childhood trauma and dissociation in female patients with fibromyalgia

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Abstract

Fibromyalgia is a functional pain syndrome manifested by psychological symptoms such as dissociative symptoms, which are closely related to childhood trauma. The purpose of this research was to compare female fibromyalgia patients and healthy females and to investigate the prevalence of childhood trauma and dissociative symptoms. The study included 51 patients followed up with the diagnosis of fibromyalgia in the Physical Medicine and Rehabilitation Outpatient Clinic of Bezmialem Vakıf University, and a control group of 51 healthy females with identical sociodemographic characteristics. All the participants were aged 18-69 years, and free of pain conditions and other vital medical or psychiatric disorders. Evaluations were made using a sociodemographic form, the Childhood Trauma Questionnaire, Childhood Abuse and Neglect Question Form, Dissociative Experiences Scale and Visual Analogue Scale. One of the main findings was that 88.2% of fibromyalgia patients had experienced childhood trauma. The fibromyalgia patients stated a higher prevalence of childhood trauma than the control group ($p=.05$). With the exception of emotional neglect, the fibromyalgia patients scored higher than the control group in the other four sub-dimensions of Childhood Trauma Questionnaire. The Visual Analogue Scale pain score was found to be associated with overall childhood trauma, all sub-dimensions of childhood trauma and dissociative experiences. Dissociative experiences was the only predictor of pain. Based on the findings of this study, trauma-related dissociative experiences may be of critical importance in the onset of fibromyalgia. These findings emphasize the importance of preventing childhood traumas.

Keywords: Childhood trauma, dissociation, pain, fibromyalgia, child abuse, trauma psychotherapy

Introduction

Fibromyalgia (FM) is a complex clinical picture with diffuse body pain and many accompanying psychiatric symptoms [1]. FM, which is correlate with generalized stiffness, fatigue, poor sleep quality and pain can be comorbid with psychiatric diseases such as major depressive disorder, anxiety disorder and post-traumatic stress disorder [2]. FM, which is one of the most prevalent causes of chronic musculoskeletal pain in female aged 20-55, has a reported prevalence of 2-5% [3]. Despite extensive research on FM, there are uncertainties regarding the etiology and pathogenesis of this syndrome [4,5]. There is no single factor that causes FM, but factors such as neuroendocrine, central nervous system, genetics,

psychosocial variables, infection, physical and psychological trauma play a role in the pathophysiology [6,7]. Although the etiology of FM is not yet known, it has been reported that physical or emotional trauma can “trigger” this syndrome [5].

All subtypes of childhood traumas can be found significantly more in FM patients. Childhood trauma play a major role in the development of trauma-related dissociative disorders and fibromyalgia, and also be accompanied by mood disorders [8]. It has been stated that childhood traumas have a long-term effect on cortisol secretion patterns and this mediate symptom demonstration in chronic pain syndromes such as FM [9]. Several retrospective studies have found that FM patients have a higher incidence of sexual or physical abuse than control group [10-12]. Several studies have emerged that the frequency of childhood trauma in FM patients varies between 34-82% [2,13]. A comprehensive meta-analysis study of patients with FM found that individuals were 2.52 times more likely to develop FM after exposure to trauma [14].

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Dissociative experiences may have an effect on FM, which is associated with psychogenic factors. In addition to the pain felt due to FM, the pain felt may increase depending on the frequency, duration and severity of dissociative experiences [7]. Dissociative experiences include psychoform symptoms that reflect depersonalization, identity fragmentation, amnesia, identity confusion and derealization, as well as somatoform symptoms [15,16]. Childhood trauma, especially emotional neglect, can significantly predict FM and somatoform dissociation, which is pertinent to somatoform dissociation [17]. In a research conducted with chronic pelvic pain patients, the highest level of correlation was found between childhood emotional neglect and somatoform dissociation [15]. In another study, FM cases were found to be more traumatized than myofascial pain syndrome cases in terms of all childhood traumas except physical neglect [8]. The higher rates of somatoform dissociation in FM patients compared to patients diagnosed with other pain disorders indicate that this disease is closely related to the severity of somatoform dissociation [2]. Considering that there may be a complex etiological relationship between FM and childhood trauma, showing for the presence of childhood trauma and possible psychiatric diseases is a basic requirement in these patients [8]. Although the relationship between childhood traumas and dissociative experiences in fibromyalgia patients has been investigated in both international [4-6] and national [2,3,8] previous studies, the predictive role of dissociation has not been studied. This study contributes to the literature in terms of examining the predictive role of dissociative experiences in female fibromyalgia cases. Therefore, the purpose of this research was to compare female fibromyalgia patients and control group and to examine the prevalence of dissociative symptoms and childhood trauma. The hypotheses determined in line with the main purpose of our study are as follows:

1. Childhood traumas of FM patients would be more than the control group.
2. Dissociative experience levels of FM patients would be higher than the control group.
3. There would be a statistically significant relationship between fibromyalgia, and childhood traumas and dissociative experiences.
4. Dissociative experiences would be a predictor role on fibromyalgia.

Material and Methods

Design and Sample of the Study

FM is a syndrome with clinical symptoms associated with childhood traumas and dissociative experiences [16,18]. Power analysis was performed to determine the sample size. The minimum required sample size for comparison analyses was determined to be 26 participants per group, considering an alpha level of .05, a desired statistical power level of .80, and an anticipated large effect size (i.e., Cohen's *d* value of 0.8 or higher). The inclusion criteria for the experimental group of our study are as follows. Participants were diagnosed with fibromyalgia according to the 1990 American College of Rheumatology diagnostic criteria, being treated at the Bezmialem Vakıf University Physical Medicine and Rehabilitation

Department, and being female. The inclusion criteria for the control group of our study were women and did not meet the 1990 American College of Rheumatology diagnostic criteria. The exclusion criteria for the experimental and control group of our study were be illiterate, being under the influence of alcohol/substance, and having a physical disability that could prevent the completion of the data collection tools. The participants were not performed to any psychiatric evaluation before they were included in this study. The experiment (51 FM female patients) and control (51 healthy females) groups were compared with regards to dissociative experiences and childhood trauma, which were defined as the main variables of the study. This research population included 51 FM female patients and 51 healthy females aged 18 to 69 years. The mean age of participants was 43.29 ± 10.32 years for the experiment group and 40.27 ± 14.69 years for the control group. There was no difference between the experiment and control groups in terms of age variable ($p=0.233$). The study group of 51 women were diagnosed with FM based on the 1990 American College of Rheumatology diagnostic criteria and referred to the Bezmialem Vakıf University Physical Medicine and Rehabilitation Department (PMR), Turkey. The control group comprise 51 healthy females who worked as staff in the same hospital, had sociodemographic characteristics similar to the patient group, and had not received any psychiatric treatment. The implementations of the study were carried out by M.C. in November 2016 and June 2017 face to face with the participants. Participants completed the data collection tools in approximately 45 minutes. The study was approved by the Local Ethics Committee of Istanbul University Faculty of Medicine (Approved: 06/12/2016-442912). The study was performed complied with the Declaration of Helsinki. After informed consents were obtained, questionnaires were applied to all participants.

Data Collection Tools

Evaluations were made using a demographic information form (e.g., age, education, occupation, marital status) and four well-established instruments. The Childhood Trauma Questionnaire, developed by Bernstein et al., was utilized in this study to evaluate trauma and neglect experiences during childhood and adolescence [19]. The Turkish validity and reliability study of this questionnaire was carried out by Sar et al [20]. With this scale consisting of 28 questions and 5 sub-scales, sexual abuse, physical abuse, emotional abuse, emotional neglect and physical neglect are evaluated. It is a Likert-type scale that measures each type of trauma on a 5-point scale ranging from "never true" to "very often true". Higher scores point a higher level of childhood trauma. The Cronbach alpha value of the sub-scales in this study was calculated as 0.71-0.87. The Dissociative Experiences Scale (DES) is one of the most used self-report dissociation scales [21]. It is a self-reported scale of 28 items which includes the presence of a broad range of dissociative experiences (amnesia, depersonalisation, derealisation, and absorption). For each item of the scale, participants assign a score between 0-100. DES is calculated by averaging the total scores. The cut-off score of DES is accepted as 30. A score of $DES \geq 30$ indicates dissociation at the pathological level [22]. The Turkish validity and reliability study of this scale was conducted by Yargic et al. [23]. The Cronbach alpha value of the scale in this study was calculated as 0.76. Childhood Abuse and Neglect Question Form consists of nine questions on physical abuse in childhood,

physical neglect, emotional neglect, emotional abuse and sexual abuse. It is applied as a semi-structured interview. At the end of each question, participants are asked to explain their answers [24]. Visual Analogue Scale, participants rated the severity of their pain over in the last month between 0 → 10 (no pain → intolerable pain) [25].

Statistical analysis

SPSS 25.0 program was used for statistical analysis. Descriptive statistics were performed to describe the medical and sociodemographic characteristics of the participants. The Kolmogorov-Smirnov test was used to determine the normal distribution of the data. Kruskal-Wallis H test and Mann Whitney-U test were used to compare data that did not show normal distribution. Spearman Rho Correlation Coefficient analyses were applied to determine correlations between childhood trauma and dissociative experiences. Standart multiple regression was carried out using pain as the dependent variable and six clinical items as independent variables. In this standard multiple regression analysis, five subscales of childhood traumas and dissociative experiences were determined as the main variables in order to determine their predictive role on fibromyalgia.

Results

In line with the purpose of the study, statistical analyses were performed on the data collected from 51 FM patients and 51 healthy females.

Table 1. Descriptive results of participants (n=102)

Characteristic	Patient (n=51)	Control (n=51)
	n (%)	n (%)
Education level	Literate	19 (37.3%)
	Primary school	6 (11.8%)
	High school	19 (37.3%)
	Further education	7 (13.7%)
Marital status	Single	11 (21.6%)
	Married	34 (66.7%)
	Divorced or widowed	6 (11.8%)
Psychiatric Treatment	Yes	5 (9.8%)
	No	46 (90.2%)
Occupational Status	Yes	27 (52.9%)
	No	24 (47.1%)

The descriptive information of the participants is shown in Table 1. A significant number (86.3%) of the experiment and control group had an education level of high school or lower. A significant number of the experiment group (82.4%) were married, and approximately two-thirds (66.7%) of the control group. Approximately half the FM patients (49.0%) and a very small proportion (9.8%) of the control group had received psychiatric treatment. Approximately one third of the FM patients (31.4%) and 52.9% in the control group stated that they were employed.

Table 2. Psychometric characteristics of participants (n=102)

Questionnaires & subscales	Patient (n=51)	SD	Mean Rank	Control (n=51)	SD	Mean Rank	p
	Mean			Mean			
CTQ	40.04	15.93	59.69	32.45	8.81	43.31	.005*
Emotional abuse	8.53	5.06	6.37	6.37	2.41	44.51	.012*
Physical abuse	6.18	2.69	5.25	5.25	.72	47.13	.038*
Physical neglect	7.65	3.58	6.24	6.24	2.07	44.09	.007*
Emotional neglect	10.43	5.73	8.96	8.96	4.28	48.06	.234
Sexual abuse	7.25	4.13	5.63	5.62	2.21	45.07	.003*
DES	9.53	6.25	7.68	7.68	7.49	45.63	.045*
VAS	7.57	1.96	2.61	2.61	1.81	28.45	.001*

*: p<.05; CTQ: Childhood Trauma Questionnaire; DES: Dissociative Experiences Scale; VAS: Visual Analogue Scale

All the questionnaire scores are summarised in Table 2. The Mann-Whitney U-test was used to test the CTQ, DES and VAS scales for two groups. FM patients were seen to be more exposed to childhood trauma. All sub-dimensions of CTQ were higher in FM patients except sexual abuse. The FM patients had more dissociative experiences and severe pain than the control group.

Table 3. Frequency of childhood trauma in experiment and control groups (n=102)

	Experiment (n=51)	%	Control (n=51)	%
Emotional abuse	32	62.8	22	43.1
Physical abuse	33	64.7	7	13.7
Physical neglect	33	64.7	18	35.3
Emotional neglect	39	76.5	35	68.6
Sexual abuse	18	35.3	5	9.8
At least one childhood trauma experienced	45	88.2	38	74.5

Data on the frequency of childhood trauma in the experiment and the control group are presented in Table 3. One of the main findings is that 88.2% of FM patients and 74.5% of the control group had childhood traumas. Emotional neglect was the most frequently reported trauma in 76.5% of FM patients and 68.6% of controls. Physical abuse was seen to have the highest intergroup difference, reported by 64.7% of the experiment and 13.7% of the control group.

Table 4. Correlations among pain, childhood traumas and dissociative experiences

	VAS	EA	PA	PN	EN	SA	CTQ	DES
VAS	1	.314**	.223*	.266**	.280**	.230*	.370**	.353**
EA	.314**	1	.462**	.572**	.720**	.359**	.843**	.386**
PA	.223*	.462**	1	.439**	.515**	.319**	.553**	.084
PN	.266**	.572**	.439**	1	.522**	.326**	.728**	.270**
EN	.280**	.720**	.515**	.522**	1	.234*	.858**	.418**
SA	.230*	.359**	.319**	.326**	.234*	1	.522**	.297**
CTQ	.370**	.843**	.553**	.728**	.858**	.522**	1	.454**
DES	.353**	.386**	.084	.270**	.418**	.297**	.454**	1

Spearman's Rho Correlation Coefficient was used; *: p<.05; **: p<.001; CTQ: Childhood Trauma Questionnaire; DES: Dissociative Experiences Scale; EA: Emotional Abuse; EN: Emotional Neglect; PA: Physical Abuse; PN: Physical Neglect; SA: Sexual Abuse; VAS: Visual Analogue Scale

As shown in Table 4, the mean scores of VAS were significantly positively correlated with emotional abuse, $r=.314$; physical abuse, $r=.223$; physical neglect, $r=.266$; emotional neglect, $r=.280$; sexual abuse, $r=.230$; total childhood trauma, $r=.370$; and dissociative experiences $r=.353$.

Table 5. Standart multiple regression analysis with pain as the dependent variable

	B	Std. Error	Beta	t	p
Constant	1.974	1.038		1.902	.060
EA	.161	.110	.211	1.460	.148
PA	.090	.207	.058	.434	.665
PN	.089	.133	.085	.670	.505
EN	-.037	.091	-.060	-.404	.687
SA	.008	.091	.009	.091	.927
DES	.126	.047	.280	2.684	.009

R=0.425; Adjusted R2= 0.129; F= 3.485 p<.05

EA: Emotional Abuse; EN: Emotional Neglect; PA: Physical Abuse; PN: Physical Neglect; SA: Sexual Abuse; DES: Dissociative Experiences Scale

In the standart multiple regression analysis using pain (VAS Score) as the dependent variable and six items as covariates (physical abuse, sexual abuse, emotional abuse, emotional neglect, physical neglect and dissociative experiences) only dissociative experiences predicted pain (Table 5).

Discussion

The results of this research demonstrated that 88.2% of FM patients had experienced at least one childhood trauma. The experiment group (FM patients) reported more traumatic experiences than the control group. The major traumas reported in both the experiment and control groups were emotional abuse, physical neglect, emotional neglect and physical abuse, respectively. With the exception of emotional neglect, the experiment group scored higher than the control group in the other four sub-dimensions of the CTQ. These results were consistent with the findings of previous studies with [11,12,26,27] and without a control group [9,14,17] which emphasized the presence of exposure to childhood trauma in FM patients. The incidence of emotional abuse was dramatically higher in the FM patients than in the control group, which was consistent with studies that have reported the essential forms of trauma related to fibromyalgia to be emotional [11,12,26,29]. The findings were also consistent with the literature in respect of more physical trauma reported by FM patients than the control group [12,26].

In this research, the sociodemographic data were similar for both groups. The mean age of the FM patients was 43.29 years. There was no significance from the control group in terms of age. FM, which has a complex nature and has difficulties in its treatment, is one of the main causes of chronic musculoskeletal pain, especially in women aged 20-55 years [3]. The average age of the current study FM patients was consistent with many studies [30,31]. The groups differed in terms of psychiatric diagnosis as the FM patients had received more psychiatric treatment than the control group. 85% of FM patients are diagnosed with a mood or anxiety disorder. The importance of psychiatric factors in FM development is supported by previous studies [32,33]. It has been emphasized that patients with FM may have trauma-related dissociative disorders as well as mood and anxiety disorders [13,34]. Bohn et al. stated that 46.2%

of FM patients met the diagnostic criteria for dissociative disorder [35].

Many studies have explicitly indicated a correlation between dissociative experiences and childhood trauma and it can be stated, with certainty, that childhood trauma is one of the most basic etiological elements of somatoform dissociation and psychoform dissociation [13,15,35-37]. During or after traumatic experiences, these trauma victims show somatization reactions in the body (such as fibromyalgia) or psychoform dissociation reactions that occur mentally [15,16]. In the current study, the experiment group reported more trauma-related dissociative experiences than the control group. Trauma and revictimization are closely related to dissociation, and the lifetime prevalence of trauma and dissociation has been reported to be higher in FM patients compared to control group [38]. Consistent with the current study findings, other researchers have found that FM patients had highly dissociative experiences [2,7,29,34,39]. According to Duarte et al. FM patients had more dissociative symptoms than both those with other rheumatic diseases and asymptomatic cases in control group [3].

Psychoform dissociation (DES score) is associated with emotional neglect, physical abuse, emotional abuse, and sexual abuse. In a similar study, Nijenhuis et al. found a high correlation between psychoform dissociation and childhood emotional neglect in patients with chronic pelvic pain [15]. In general, psychoform dissociation was found to be high in FM patients and it was suggested that pain severity and dissociative symptoms were related [2,26,36]. It is a well-known fact that FM, which is characterized by traumatic experiences, has a close relationship with somatoform dissociation, in addition to the higher rate of psychoform dissociation in FM patients than control group [15,17,38]. It was reported by Karas et al. that diffuse pain in FM is etiologically similar to the symptoms of somatoform dissociation [26]. It is stated that somatoform dissociation rather than psychoform dissociation has a significant relationship with high level of pain severity [40].

An important finding of this study was that dissociative experiences are the only predictor of pain. Although childhood trauma was etiologically one of the main causes of fibromyalgia, dissociative experiences may play a major role in pain. Dissociative symptoms can also increase the severity of existing pain by using it as a defence mechanism, in addition to the pain that occurs as a symptom of FM disease [7]. Consideration of dissociative symptoms, which are closely related to childhood traumas, is a basic criterion in the treatment of FM patients. It is recommended that these patients be treated in cooperation with psychiatrists [26]. Kilic et al. stated that although the drug treatment taken by patients with FM has primary effects on pain, it has a limited effect on the dissociative symptoms of these patients [17]. Trauma-based psychiatric treatments evidence indicates that when looking at patients previously diagnosed with FM, many patients no longer meet [41]. FM patients with both somatoform dissociation and psychoform dissociation can recover more easily with trauma-oriented psychotherapeutic interventions [16,42-45].

Limitations and strengths

This study had some limitations, primarily that the patients were

from a single centre, from the PMR of a university hospital. The second limitation is that only females were included in this study. The third limitation of this study was that the control group in the sample consisted of healthy women and that women with other pain-related disorders were excluded. The sample size was the fourth limitation of the study. The fifth limitation of our study is the use of 1990 criteria of the American College of Rheumatology. Although the data of our study was collected in 2016, the criteria of 1990 were used to diagnose fibromyalgia. The lack of use of structured diagnostic criteria in 2010 is a shortcoming for this study. Since the practices within the scope of our study were carried out in 2016 and the participants did not continue their treatment in the same hospital, it is not possible to compare the criteria in 1990 with the criteria in 2010. Despite this limitations, the sample in this study was relatively enough. A further strong aspect is the inclusion of childhood trauma and dissociation, which are closely related to FM.

Conclusion

This study showed that all childhood traumas except emotional neglect were more common in experiment group than in the control group. Furthermore, all types of childhood trauma, except for physical neglect, were found to be significantly related with pain. A major finding of the study was that dissociative experiences was the only predictor of fibromyalgia. As a result, more prospective studies based on trauma and dissociation are needed in fibromyalgia patients. In future studies, somatoform dissociation, which is closely related with fibromyalgia, can be investigated with both childhood traumas and general traumatic experiences. Dissociative experiences in fibromyalgia patients also highlight the importance of trauma psychotherapy and taking action to prevent possible childhood trauma in following generations of this patient group.

Conflict of interests

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

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Ethical approval

The study was approved by the local ethics committee of Istanbul University Faculty of Medicine (Approval date and number: 06/12/2016-442912).

Authors contributions

MC and EO designed the study. MC and EO analyzed the data and planned the manuscript. MC, EO and GD contributed to the statistical analysis and interpretation of the results. All authors contributed to finalizing the manuscript and approved the final version of the paper prior to submission.

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