

The relationship of myofascial pain syndrome with type D personality and childhood trauma

Mine Uzgel¹, Sevtap Badil Guloglu² & Serhat Tunc³

¹ Psychiatry, Eregli State Hospital, Konya, Turkey

² Department of Physical Medicine and Rehabilitation, Antalya Training And Research Hospital, Antalya, Turkey

³ Department of Psychiatry, Yeditepe University, Faculty of Medicine, Istanbul, Turkey

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Summary

Background: This study aimed to explore the properties and impacts of D-type personality, sexual dysfunction, and childhood trauma on pain, quality of life, somatization, depression, and anxiety symptoms in Myofascial Pain Syndrome (MPS) patients.

Subjects and Methods: This case-control study was conducted in the University Hospital Physical Therapy and Rehabilitation Clinic, Turkey. Sociodemographic data form, visual analog scale (VAS), Short Form (SF-36), Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Childhood Trauma Questionnaire (CTQ), Type D Personality Scale (DS-14), Somatosensory Amplification Scale (SAS), Arizona Sexual Experience Scale (ASEX) were administered for all volunteers.

Results: VAS, BDI, BAI, SAS, ASEX scores, and all subgroup scores of CTQ, and DS-14 were remarkably higher in the patient group ($p < 0.05$) in comparison to the healthy control (HC) group. On the other hand, the Quality of Life Inventory subgroup scales were significantly lower in MPS patients than the control group ($p < 0.05$). Type D personality (OR=9.35), sexual dysfunction (OR=6.92), and childhood trauma (OR=3.74) were found as risk factors in MPS.

Conclusion: Type D personality, childhood trauma, depression, anxiety, somatization, sexual dysfunction, and decreased life quality were found more commonly in MPS patients compared to the control group. Type D personality characteristics, childhood trauma, and sexual dysfunction are directly related to MPS' risk. This study was thought to contribute to the literature on improving preventive mental health by determining and reducing the MPS risk factors.

Keywords: Childhood trauma, depression, myofascial pain syndrome, quality of life, sexual dysfunction, type D personality

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INTRODUCTION

Myofascial pain syndrome (MPS) is described as acute or chronic local pain from trigger points in the muscle (Şahin et al., 2008). In MPS, localized tissue damage develops due to acute tension in the muscles, and pathophysiological events occur in the muscle fibers. As a result, trigger points develop, which are local ischemic areas. The trigger points are associated with palpable and central sensitization within the muscle. Impulses radiating from trigger points in MPS cause local or reflected pain (Ozcan et al. 2000). These active trigger points lead to sensory, motor, and autonomic symptoms. Sensory disorders are dysesthesia, hyperalgesia, and reflected pain, while autonomic symptoms are nasal secretion, increased lacrimation, hypersalivation, body temperature changes, sweating, pilomotor dysregulation, proprioceptive disorders and skin erythema. Muscle spasm and decreased range of motion can also be seen as motor dysfunction (Şahin et al., 2008).

One of the major causes of musculoskeletal pain is MPS. The prevalence of MPS is 12% in the general population and reported most commonly in the 30-49 age range

with twice in women compared to men (Demir & Calis, 2004; Eyigör S, 2008). In various studies, it is stated that 85% of low back pain and 54.6% of headache and neck pain are produced by myofascial pain (Hubbard 2010).

The pathophysiology of myofascial trigger points (MTP) is not fully understood. Postural or ergonomic disorders, excessive muscle uses or repetitive mechanical micro-injuries, endocrine causes, a disparity of vitamins and minerals and emotional problems may lead to susceptibility to MPS (Yıldırım et al. 2016).

Myofascial pain syndrome is among chronic pain syndromes. Although chronic pain is characterized by unpleasant sensory and emotional features determined according to the nociceptive stimulus's intensity, it is also a condition related to psychological factors. The comorbidity between chronic pain and depression is reported between 18% and 56% in prevalence studies. The risk of depression is higher in individuals with severe and persistent pain (Braš et al., 2010; Costa et al., 2017). Şahin et al. stated that depression accompanies MPS (Şahin et al., 2008). Somatization responds in the form of body symptoms after psychosocial stress exposure and associated with seeking medical help. Individuals with

somatic symptoms perceive their physiological bodily perceptions as severe discomfort and ultimately harmful (Budh and Österåker 2007). An increased rate of depression, anxiety, and somatization is reported in MPS patients with widespread chronic pain than patients without diffuse pain. Life quality impairment is reported in MPS patients with depression, anxiety and chronic pain (Alexander et al. 1998; Sahin et al. 2008). As it adversely affects the quality of life, it causes severe labor loss and financial losses (Goldberg et al. 1999).

Childhood trauma is defined as “Adult behaviors willingly or unwillingly, that negatively affect the child’s health physically, psychologically and socially” (Kessler et al., 2010). Numerous mental factors, such as traumatic experiences, have a role in chronic pain. The history of childhood trauma should be evaluated in chronic pain patients. Chronic pelvic pain, low back pain and headache have been related to traumatic childhood experiences (Yücel et al., 2002). It has been reported that childhood problems are held responsible for 28.9% of mental disorders in advanced ages and it has been shown that the adverse effects of these problems can continue throughout life (Kessler et al., 2010). Traumatic experiences occupy an important place in psychiatric disorders. Childhood trauma was obtained in numerous mental disorders, such as major depression, somatization, personality and dissociation (Fergusson et al., 1996; Polusny & Follette, 1995; Ussher & Dewberry, 1995).

D type personality known as distressed personality includes two personality characteristics: social inhibition and negative affect. Negative affect tends to have unfavorable feelings such as depressive mood, restlessness, boredom, fear, hostility and irritability. On the other hand, social inhibition is associated with a tendency to inhibit emotional expression, severe insecurity in social situations and excessive self-control by fear of disturbing others (Denollet et al., 2000). These people have a personality that avoids expressing their emotions and tends to experience negative emotions (Leu et al., 2019). Type D personality is related to psychological problems that lead to life quality impairment (Akram et al., 2018). The increased prevalence of anxiety and depression was reported with type D personality (Babiü et al., 2021; Pedersen et al., 2011; Pedersen, Spindler, et al., 2009; Pedersen, Van Den Berg, et al., 2009). Some of the factors related to MPS, such as depression, anxiety, childhood trauma, life quality, somatization and D-type personality, have been studied. However, the predictive psychiatric factors most associated with MPS are not well-known. This study aimed to determine the properties and impacts of D-type personality, sexual problems, and childhood trauma on pain, life quality, psychiatric symptoms in MPS patients.

SUBJECTS AND METHODS

This study was a case-control type clinical observation study. From October 2018 to April 2019, eighty-one patients with upper trapezius muscle pain between 18-65 have been referred to the University Hospital Physical Therapy and Rehabilitation Clinic, Turkey.

All individuals were evaluated by psychiatrists, who were members of the research team. Following the guidelines established by Travell and Simons (1999), MPS diagnosis was developed based on clinical evaluation. Twelve patients were removed, and overall, this case-control study voluntarily enrolled 81 MPS patients and 81 healthy controls (HC). The criteria for the diagnosis of MPS were regional neck pain, referred pain through the trigger point palpation in the muscular region, tight tangible band and decrease in the range of motion of the involved muscle. Minor standards also facilitated the diagnosis process for individual patients. These were the signs of clinical pain caused by trigger point palpation, local needle acquisition twitch response and pain relief by trigger point inhibition (Simons, D. G., Travell, J. G., & Simons, 1999). Also, the individuals were evaluated clinically by a psychiatrist based on DSM-5 criteria and self-assessment scales.

History of fibromyalgia, disc herniation, radiculopathies, myelopathies, neuropathies, brachial plexus pathologies, injuries of the cervical vertebrae, cancer, general medical or psychiatric illness, mental retardation, gestation, breastfeeding, injection or physical therapy for MPS in the past three-month and persistent systemic corticosteroid or other medicinal substance were the exclusion criteria. Further laboratory or radiological examinations were not conducted for differential diagnosis. The patients were tested using current tests. Volunteers between the ages of 18-65 referred to the internal medicine outpatient clinic for routine control without any medical and psychiatric history were enrolled as healthy controls. The screening process explored the background of exercise levels, sleep problems or sports nutrition-taking habits of MPS patients and healthy controls. No one recorded exercise, injury, sleep problems or sports nutrition-taking habits.

The study was approved by the Ethics Committee of Kafkas University Faculty of Medicine (26.09.2018; Acceptance number: 13). Under the Helsinki Declaration and the guideline for good clinical practices, all study processes have been carried out. Written informed consent was obtained from all participants prior to their inclusion in the study.

Information (like age, gender, relationship status, education, height and weight) was gathered.

Data Collection Tools

Visual Analog Scale (VAS) assesses the pain severity associated with disorder activity. Patients are asked to rate their pain levels considering the last week according to numbers range 0 to 10 on the VAS; 0 “no pain,” 5 “moderate pain,” 10 “very severe pain.”

Beck Depression Inventory (BDI) includes 21 items for evaluating depression severity. Emotional, physical, cognitive, and motivational symptoms were assessed. Self-evaluation sentences listed between 0 and 3 points, determining the behavioral pattern specific to depression. Scale scores are between 0-63. 0-13, 14-19, 20-28, 29-63 scores show, respectively, minimal, mild, moderate, and severe depression (A T Beck et al., 1961). Hisli et al. (1998) validated the Turkish version of the scale (Hisli, 1988).

Beck Anxiety Inventory (BAI) includes 21 items for measuring the severity of anxiety (Aaron T. Beck et al., 1988). The individual was asked to evaluate the intensity of symptoms and emotions related to anxiety last week. The score range is between 0-63. The cut-off value is 17. The options of the questions are between 0 and 3 points with rising severity. Normal, mild, moderate and severe anxiety scores are shown from 0-9, 10-18, 19-29, 30-63. Ulusoy et al. (1998) conducted the Turkish version of the scale (Ulusoy et al., 1998).

Childhood Trauma Questionnaire (CTQ) consists of two forms, namely 28 and 53 questions (Bernstein et al., 1994). Sar et al. (2012) performed the Turkish reliability and validity of the scale (Şar et al., 2012). A 28-item version of the scale was used, CTQ-28. The cut-off value is 35 points. This scale has five sub-dimensions, such as childhood abuse of sexual, physical, emotional and neglect of physical and emotional. There are three questions about minimization-denial, too. Cronbach's alpha value, which indicates the scale's internal consistency, is 0.93.

Somatosensory Amplification Scale (SAS) consists of 10 items measuring how people experience their body symptoms and their susceptibility to somatization (A. J. Barsky et al., 1988). The questions range from 1-5 points. The scale has no cut-off score. Therefore, it can be used in comparative studies. Turkish reliability and validity were carried out by Güleç and Sayar (Güleç & Sayar, 2007).

Type D Personality Scale (DS-14): The scale includes 14 items with negative affect (NA) and social inhibition (SI) sub-dimensions. Each item is scored between 0 and 4. The cut-off value for both sub-dimensions is 10. Ten or more scores in each of the negative affect and social inhibition subtitles were evaluated as individuals with a D-type personality. The psychometric quality and predictive power of the scale has been statistically proven in

Belgian cardiac patients. Its reliability and validity were demonstrated (Denollet, 1998; Denollet et al., 2000). The structural and internal consistency of the scale was confirmed (Grande et al., 2004; Pedersen & Denollet, 2004).

Arizona Sexual Experience Scale (ASEX): Although the scale developed for identifying sexual problems in patients with the depressive disorder by Mc Gahuey et al., it was later used for screening in various patient groups and healthy populations (McGahuey et al., 2000). The scale is Likert-type with six-points. Each item is in the range of 1-6 points. Its sub-dimensions are arousal, desire, arousal, vaginal lubrication/erection, orgasm and satisfaction. The cut-off value is 11. Sexual dysfunction indicates a total scale score of ≥ 19 , a single item score of ≥ 5 or ≥ 4 on three separate items. Soykan (2004) validated the Turkish validity and reliability study of the scale (Soykan, 2004).

Short Form (SF-36) assesses the life quality related to general well-being. Physical function, physical and emotional role limitations, social function, mental function, vitality, pain and general perception of well-being were evaluated as eight dimensions of health with 36 items. The scale was formed by Ware et al. (Ware & Sherbourne, 1992). Koçyiğit et al. (1999) carried out the validity and reliability of the Turkish version (Kocyiğit et al., 1999). Although the scale does not have a total score, each SF-36 sub-scale is measured in the 0-100 point range. On this scale, higher scores reflect an improved level of health, while lower scores show a decline of health (Kocyiğit et al., 1999).

Statistical analysis

Statistical Package for the Social Sciences (SPSS, version 20; Chicago, IL) statistics program was used to analyze the results. In descriptive statistical analysis, mean \pm standard deviation, median, lowest-highest values, ratio and frequency were used. To determine the distribution of the variables, the Kolmogorov Smirnov test was used. On normally distributed variables, the Student's T-test was carried out. The Mann-Whitney U-test on non-normally distributed data was conducted. The Chi-Square test performed independent qualitative data analysis. In analyzing the relationship between continuous variables, Pearson and Spearman correlation analysis was used respectively if both scales were parametric and nonparametric. The limits of a correlation coefficient (such as 'negligible' between 0-0.29, 'low' between 0.30-0.49, 'moderate' between 0.50-0.69, 'high' between 0.70-0.89, 'very high' between 0.90-1) measured the correlation strength (McGahuey et al., 2000). Furthermore,

significant independent variables, according to the Chi-Square test, were analyzed with binary logistic regression (Enter) for determining the effect of independent variables on the dependent variable, myofascial pain syndrome. The statistical significance level was accepted as $p \leq 0.05$ for all tests (Confidence Interval-CI: 95%).

RESULTS

The demographic profiles of patients with MPS (sixty-eight females, thirteen males; mean age 39.47 ± 10.18) and controls (sixty-nine females, twelve males; mean age 37.57 ± 8.14) are shown in Table 1.

There was no remarkable statistical difference between the groups regarding age, gender, marital status, number of children, monthly income (evaluated as Turkish Lira), occupation and living place ($p > 0.05$). (Table 1). However, there was a significant difference between the groups regarding BMI and educational status ($p < 0.05$) (Table 1). BMI and university education was higher in the MPS group than the control group ($p < 0.05$). While 70.4% ($n=57$) of the patients were overweight and obese, this rate was 46.9% ($n=38$) in the control group and there was

a significant difference between the groups ($\chi^2 = 71.75$, $p < 0.001$). The mean VAS score of patients with MPS was 7.3 ± 1.7 . Pain severity was remarkably higher in the patient group than in the control group ($p < 0.001$) (Table 2).

Beck's depression ($\chi^2 = 71.75$, $p < 0.001$) and anxiety scores ($\chi^2 = 47.75$, $p < 0.001$) were significantly higher in MPS patients in comparison to control group. D-Type personality scores were significantly higher in the MPS patients in comparison to control group ($\chi^2 = 61.69$, $p < 0.001$). Sexual dysfunction scores were significantly higher in MPS patients in comparison to control group ($\chi^2 = 38.78$, $p < 0.001$). In MPS patients, CTQ physical neglect ($\chi^2 = 27.94$, $p < 0.001$), physical abuse ($\chi^2 = 4.82$, $p < 0.05$), emotional abuse ($\chi^2 = 8.56$, $p < 0.001$), emotional neglect ($\chi^2 = 11.05$, $p < 0.001$), sexual abuse ($\chi^2 = 9.24$, $p < 0.001$) and total scores ($\chi^2 = 27.46$, $p < 0.01$) were remarkably higher in comparison to control group.

Correlation analyses showed statistically moderate positive correlation between VAS score and total scores of BDS ($r = 0.596$, $p < 0.001$), BAS ($r = 0.565$, $p < 0.001$), DS-14 ($r = 0.524$, $p < 0.001$), ASEX ($r = 0.519$, $p < 0.001$) and also high positive correlation SAS score ($r = 0.731$, $p < 0.001$). There was also a low positive correlation between VAS score and CTQ total score ($r = 0.452$, $p < 0.001$). There was a moderate negative correlation between VAS score and

Table 1: Sociodemographic characteristics of the patient and control groups

Characteristics		MPS (n=81) n, %	CONTROLS (n=81) n, %	χ^2	P
Age(year)		39.47 ± 10.18	37.57 ± 8.14		0.191
Number of children (Mean±SD)		2.12±1.57	1.88±1.54		0.315
Monthly income (Mean±SD)		1131.48±946.53 TL	1151.23±760.13 TL		0.221
BMI(kg/m ²) (Mean±SD)		28.21±5.77	24.82±4.17		0.001
Gender	Female	68 84	69 85.2		0.828
	Male	13 16	12 14.8		
Marital status	Married	66 81.5	59 72.8	1.716	0.190
	Single/divorced	15 18.5	22 27.2		
Education	Literate	12 14.8	10 12.3	17.12	0.001
	Primary education	37 45.7	25 30.9		
	High School	10 12.3	33 40.7		
	University	22 27.2	13 16		
Occupation	Housewife	45 55.6	41 50.6	4.779	0.189
	Worker	17 21	27 33.3		
	Officer	11 13.6	10 12.3		
	Irregular income	8 9.9	3 3.7		
Living place	Province-District	66 81.5	74 91.4	3.360	0.067
	Village	15 18.5	7 8.6		
Psychiatric background	Yes	12 14.8	5 6.2	3.220	0.073
	No	69 85.2	76 93.8		

Kolmogorov Smirnov Test, Student's T-Test, Mann-Whitney U-Test, Chi-Square Test

Table 2: Comparison of scores in total and subgroups of scales in groups.

Scale	MPS(n=81) mean ± SD	CONTROLS(n=81) mean± SD	P
Pain intensity(VAS)	7.25±1.67	0.06±0.55	<0.001
Depression score	15.36±9.41	4.37±3.06	<0.001
Anxiety score	16.99±12.84	5.47±4.37	<0.001
SAS	33.84±8.11	17.44±6.87	<0.001
DS14 total	25.62±14.01	11.06±6.91	
Negative Affect	15.12±8.06	5.57±4.66	<0.001
Social Inhibition	10.49±7.98	5.49±3.27	
CTQ total	37.21±10.86	29.36±5.37	<0.001
Physical abuse	5.85±2.10	5.22±0.68	0.021
Physical neglect	8.26±2.57	6.23±1.49	<0.001
Emotional abuse	6.65±3.29	5.51±1.34	0.045
Emotional neglect	10.69±4.36	7.40±3.00	<0.001
Sexual abuse	5.69±1.90	5.09±0.48	0.002
Minimization	0.35±0.59	0.28±0.53	0.551
ASEX total	18.83±5.57	12.99±4.85	
Desire	3.59±1.43	2.56±1.05	
Arousal	3.86±1.13	2.70±1.04	
Lubrication/penile erection	3.82±1.09	2.69±1.04	<0.001
Orgasm	3.82±1.18	2.72±1.14	
Satisfaction	3.67±1.35	2.35±1.05	
SF-36			
Physical function	48.56 ± 26.52	89.07 ± 13.13	
Physical role limitation	24.69 ± 31.75	94.75 ± 16.16	
Pain	38.12 ± 17.76	90.04 ± 15.17	
The general perception of health	46.95 ± 19.35	74.42 ± 14.08	<0.001
Vitality (energy)	38.72 ± 22.54	72.53 ± 15.89	
Social function	55.27 ± 23.0	89.46 ± 11.75	
Emotional role limitation	27.40 ± 34.81	93.32 ± 17.17	
Mental health	45.51 ± 19.71	75.11 ± 10.93	

ASEX: Arizona Sexual Experience Scale; CTQ: Childhood Trauma Questionnaire; DS14: Type D Personality Scale; SAS: Somato-sensory Amplification Scale; SF-36: Short Form Health Survey VAS: Visual Analog Scale. Student's T-Test,

SF36 quality of life physical function ($r=-0.706$), general perception of health ($r=-0.646$), energy ($r=-0.614$), social function ($r=-0.674$) and mental function scores ($r=-0.637$) ($p<0.001$). A high negative correlation between VAS score and SF36 quality of life physical role limitation ($r=-0.751$, $p<0.001$), emotional role limitation ($r=-0.729$, $p<0.001$) and pain ($r=-0.834$, $p<0.001$) scores was found.

In the logistic regression analysis, the individual's MPS risk is 9.35 times higher with D-type personality, 6.92 times higher with sexual dysfunction and 3.74 times higher with exposure to physical neglect in childhood ($p<0.05$) (Table 3). These variables were found to be predictive for MPS. Logistic regression analysis was performed to determine the factors causing MAS formation in the participants. The model consists of type D personality, childhood traumas, anxiety, depression and sexual

experiences. The model including all predictors is significant ($\chi^2=89.93$, $p<0.001$). The model can distinguish individuals with MAS from those without. It can explain 81.5% of all participants ($R^2=0.87$ (Nagelkerke)). The logistic regression analysis results are shown in Table 3. As seen in the table, type D personality scale, physical neglect, which is a subgroup of childhood traumas scale and Arizona sexual experiences scale make significant contributions to the model. When other factors remain constant, it was observed that the probability of myofascial pain syndrome increases by 9.35 times with type D personality structure, 6.92 times with sexual dysfunction and 3.74 times with exposure to physical neglect in childhood ($p<0.05$). The sensitivity of the model was 77.8%, specificity was 85.2%, positive predictive value was 77.7% and negative predictive value was 85.1%.

Table 3. Binary logistic regression analysis results.

	B	Standard Error	Wald	df	P	Odds Ratio	%95 Confidence Interval	
Physical abuse	-0.974	0.829	1.379	1	0.240	0.378	0.074	1.918
Physical neglect	1.319	0.613	4.635	1	0.031	3.740	1.125	12.429
Emotional abuse	-0.177	0.899	0.039	1	0.844	0.838	0.144	4.874
Emotional neglect	0.575	1.065	0.292	1	0.589	1.777	0.220	14.329
Sexual abuse	0.184	0.808	0.052	1	0.820	1.202	0.247	5.858
CTQ Total	0.502	1.101	0.208	1	0.648	1.652	0.191	14.298
Type D personality	2.236	0.521	18.415	1	0.001	9.357	3.370	25.982
ASEX	1.935	0.634	9.306	1	0.002	6.927	1.998	24.022
Constant	-3.943	1.057	13.916	1	0.001	0.019		

ASEX: Arizona Sexual Experience Scale; CTQ: Childhood Trauma Questionnaire; $p < 0.05$.

DISCUSSION

MPS is commonly related to depressive and anxiety symptoms (Badil Güloğlu & Tunc, 2020; Novikova & Akopyan, 2015). Increased depression and anxiety scores in MPS patients compared to controls and the positive correlation between VAS score and total scores of BDI and BAI were shown. This result promotes the view that the higher depressive and anxiety scores in MPS are related to a propensity to increase pain severity, depression, and anxiety disorders, in line with the literature (Altindag et al., 2008; Arthur J. Barsky et al., 1990; Kwak et al., 2012; Norrbrink Budh & Österåker, 2007; Sayar et al., 2001; Yazıcı et al., 2003). As recommended in this research, depression and anxiety evaluation in MPS patients may open a new perspective for assessing and handling treatment for people who have a greater risk of pain severity, depression and anxiety.

In our research, significantly increased SAS score and the positive correlation between VAS score and total scores of SAS was found in MPS patients. Depression, anxiety and alexithymia were predictors of somatosensory amplification (SSA) in chronic pain patients (Kosturek et al., 1998). A study reported higher SAS scores in MPS patients in comparison to the control group (Raphael et al., 2000). Additionally, the depression and anxiety severity increased somatization. This result suggests that the higher SAS scores in MPS are related to a propensity to increase in pain severity.

The D-type personality score was significantly increased in MPS patients and a positive correlation was found between VAS score and total scores of DS14 in this study. It can be said that the severity of pain is higher in these people due to reasons such as failure in

stress management, problems in interpersonal relationships and thoughts of being negatively evaluated. Additionally, D-type personality was found as a predictor for MPS. The risk of MPS was found 9.35 times higher in those with type D personality. The D-Type personality rate was %70.4 in patients with MPS in our study, which was coherent with other studies on pain (Barnett et al., 2009; van Middendorp et al., 2016). Many studies reported the increased negative emotions in fibromyalgia (Kool et al., 2010; Low & Schweinhardt, 2012). Additionally, higher anxiety and depressive symptoms with decreased quality of life and sleep were recently reported in patients with MPS and Type-D personality (Can & Can Tuman, 2020). Therefore, the assessment of Type D-personality in MPS patients is significant for identifying the risk group for decreased life quality and psychiatric symptoms.

Higher sexual dysfunction score was reported in MPS patients compared to the HC group by this research, similar to a study in pelvic myofascial pain (Kayacan-Akman et al., 2014). A positive correlation was found between VAS scores and total scores of ASEX. The rate of sexual dysfunction was %48.1 in MPS patients, which was similar to the reported prevalence of sexual dysfunction in Turkish women (Çayan et al., 2004). The most common problems were arousal, lubrication/erectile dysfunction and orgasm-related, respectively. Similar to our results, researchers reported higher sexual dysfunction scores, especially lack of sexual desire in fibromyalgia (Amasyali et al., 2016; Granero-Molina et al., 2018). Moreover, sexual dysfunction was found as a predictive factor that may cause MPS. The risk of MPS was found 6.92 times higher in those with sexual dysfunction. There is no other research; however, as far as we know, it is not also studied

and determined the association between pain and sexual dysfunction in MPS.

Higher CTQ scores were reported in patients with MPS, and a positive correlation was found between VAS score and total CTQ score in this study. Moreover, childhood trauma (physical neglect) was seen as a risk factor that may cause MPS. The risk of MPS was found 3.74 times higher in those exposed to physical neglect in childhood. In our study, the childhood trauma rate was 43.2% and the physical neglect, emotional neglect, physical abuse, emotional abuse and sexual abuse, respectively, were the most common childhood traumas. There are not many studies on MPS and childhood trauma in the literature. A study reported the prevalence of childhood trauma as % 61.9 in MPS (Goldberg et al., 1999). Childhood trauma was also associated with FM patients (Alexander et al., 1998; Clauw & Williams, 2002). Therefore, childhood trauma evaluation in MPS patients may open a different perspective for assessing and handling treatment for people who have a greater risk of pain severity, depression and anxiety.

The quality of life is reduced in MPS patients (Badil Güloğlu and Tunç. 2020). Lower quality of life scores was reported in patients with MPS and a negative correlation was obtained between scores of life quality and VAS in this study. Similarly, in a recent study, reduced life quality with Type-D personality in MPS was reported (Cakit et al., 2010; Can & Can Tuman, 2020; Han & Harrison, 1997). Therefore, assessing D-type personality and childhood trauma in MPS patients is critical in the prognosis and treatment. The clinicians should have consciousness about these risk factors not also that may cause but also worsen the prognosis of MPS with reduced life quality and psychiatric complaints.

D-Type personality, sexual dysfunction and childhood trauma may lie in the etiology of psychiatric complaints in MPS patients that make up the iceberg's essential components. This study shed light on the personality traits and psychological factors underlying the etiology of myofascial pain syndrome and emphasized the importance of a multidisciplinary perspective. However, this study includes several restrictions, which are

as follows: The self-rating nature of the scales might have compromised objectivity. Since our study was conducted in a university hospital, it can be said that although the sample size is sufficient, the number of cases constituting the groups is limited. Culturally, the patients' traumas, their perceptions of these traumas and their support mechanisms might differ from those in other countries. For instance, somatization may be more prevalent in our population, whereas it might not be as common in others. Therefore, it could be challenging to generalize the findings. This highlights the need for more studies on a global scale. Additionally, in this study, we included a certain number of individuals at a specific time. Our findings should be supported by prospective studies.

To conclude, higher depression, anxiety, somatization, D-type personality, sexual dysfunction, childhood trauma scores were found in MPS patients with reduced life quality. These differences can affect the quality of life, clinical intensity and prognosis. D-type personality, sexual dysfunction and childhood trauma (physical neglect) were found to be risk factors that may cause MPS. Consequently, we think that identifying these risk factors for MPS can enable clinicians to predict and prevent psychiatric complaints in MPS patients. Therefore, it would be more appropriate to evaluate these patients from a psychiatric perspective. We think that multidisciplinary approaches may increase treatment success in MPS.

Ethical Considerations: Does this study include human subjects? YES

Authors confirmed the compliance with all relevant ethical regulations.

Conflict of interest: No conflict of interest

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Authors Contributions: Mine Uzgel: study design, data collection, first draft. Sevtap Badil Guloglu: study design, data collection, first draft. Serhat Tunc: study design, data collection, first draft, approval of the final version, statistical analysis

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Correspondence:

Serhat Tunc

Department of Psychiatry, Yeditepe University Faculty of Medicine, Istanbul, Turkey
drserhattunc@gmail.com

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