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Cognitive Behavioral Therapy for Female Patients with Fibromyalgia Syndrome: A Pilot Trial

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Abstract

The current study aimed to evaluate the role of Cognitive Behavioral Therapy (CBT) on pain, anxiety, alexithymia, depression and functional status in female patients with Fibromyalgia syndrome (FMS). Twenty female patients with FMS after the evaluation with sociodemographic and clinic data form, who attended 12 CBT sessions (40 minutes) regularly, were included in the study. The Beck Depression Inventory (BDI) for depression severity, Toronto Alexithymia Scale (TAS) for alexithymia level, Beck Anxiety Inventory (BAI) for anxiety level, Visual Analogue Scale (VAS) for pain severity and the Fibromiyalgia Impact Questionnaire (FIQ) for functional status, tests were administered pre and post CBT. FMS patients with the mean age 48.7±10.2 years, had statistically significant difference between pre CBT and post CBT in terms of BDI (p=0.000), VAS (p=0.000), and BAI (p=0.001) scores. Pre and post CBT scale scores were also statistically significant in terms of FIQ and TAS subgroups (p<0.05). The results of the current study, indicating that CBT might make statistically significant difference on pain, anxiety, depression, alexithymia levels and functional status in patients with FMS may have implications for the choice of treatment and course of FMS.

Keywords: Fibromyalgia, cognitive behavioral therapy, depression, anxiety

Öz

Fibromiyaljili Kadın Hastalarda Bilişsel Davranışçı Terapi: Bir Pilot Çalışma

Bu çalışmada Bilişsel Davranışçı Terapi'nin (BDT) Fibromiyalji Sendromu (FMS) tanılı kadın hastalarda ağrı yoğunluğu, aleksitimi, depresyon, anksiyete ve fonksiyonel kapasitelerinin üzerine etkisinin araştırılması amaçlanmıştır. FMS tanısı almış, demografik ve klinik özelliklerine yönelik değerlendirme yapıldıktan sonra, en az haftada bir kere, 12 seans, 40 dakikalık yapılandırılmış BDT görüşmelerine düzenli bir şekilde gelen 20 kadın hasta çalışmaya dâhil edildi. BDT görüşmelerinin başında ve sonlandırma aşamasında bireylerin Görsel Ağrı Skalası (GAS), Beck Depresyon Ölçeği (BDÖ), Beck Anksiyete Ölçeği (BAÖ), Toronto Aleksitimi Ölçeği (TAÖ), Fibromiyalji Etki Anketi (FEA) ile değerlendirildi. FMS hastaların yaş ortalaması 48,7±10,2 idi. BDT öncesine göre sonrasında BDÖ (p=0,000), GAS (p=0,000), ve BAÖ (p=0,001) skorları istatistiksel olarak anlamlı ölçüde azalmıştı. FEA alt grupları ve TAÖ alt grupları açısından da anlamlı farklılık mevcut idi (p<0,05). Sonuçlarımız FMS tanılı hastalarda BDT'nin ağrı şiddeti, anksiyete, depresyon, aleksitimi ve işlevsellik durumlarında anlamlı farklılık oluşturduğunu göstermesi açısından önemlidir. BDT bu grup hastaların tedavi sürecinde düşünülebilir.

Anahtar Kelimeler: Fibromiyalji, bilişsel davranışçı terapi, depresyon, anksiyete

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INTRODUCTION

Fibromyalgia syndrome (FMS) is a disorder that causes chronic widespread musculoskeletal pain and multiple tender points that are painful to palpation (Wolfe et al., 1990). FMS, with a 0.7–3.2% worldwide prevalence, is less prevalent in men than women

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(Lorentzen, 1994; Yücel ve Torun, 2016). Due to the biopsychosocial distress, patients with FMS may suffer from higher psychological and somatic symptom burden and decreased functionality (Schaefer et al., 2016).

Since psychological factors such as, psychological distress and interpersonal conflicts might play important role in the course of FMS, psychological therapies for FMS have been recommended in different strengths by interdisciplinary guidelines (Kavakçı et al., 2010). Patients with FMS show high levels of alexithymia, mainly characterized by difficulty in identifying subjective feelings, restricted process of imagination, and an externally oriented cognitive style (Ghiggia et al., 2017). Alexithymia, was suggested to play a key role in pain attribution to anger-related facial expressions in patients with FMS (Di Tella et al., 2018). The European League Against Rheumatism recommended in different strengths cognitive behavioural therapies (CBTs) mindfulness-based stress reduction (MBSR) as a weak strength (Macfarlane et al., 2017).

Much research has been done on the use of cognitive behavioral therapy (CBT) in FMS (Lumley et al., 2017; recent meta-analysis showed that CBT was beneficial for pain treatment, reducing negative mood and disability and improvement of health-related life quality (Bernardy et al., 2018). Even though the regulation of the cognitive and behavioral components towards FMS has been claimed to work, Cochrane Collaboration review including 23 studies with 2031 FMS patients demonstrated that CBT might reduce negative mood, pain and disability but only four among the ten studies showed a significant result at the end of treatment with an intention-to-treat design (Bernardy et al., 2013). On the other hand, there are other studies suggesting that CBT may be useful for patients with FMS. In a recent study by Karlsson et al., in the comparison of FMS patients (n: 24) who received CBT and control group of patients (n: 24) without CBT, CBT group showed higher improvement on the life control, in coping behaviour in response to chronic pain (Karlsson et al., 2015). Wicksell et al. suggested that the acceptance and commitment therapy (ACT) might improve psychological flexibility and pain-related functioning of FMS patients but could not reduce pain intensity (Wicksell et al., 2012).

Since the impact of CBT on FMS is controversial, there is a need for further research. In the current study, our aim was to examine the effects of CBT on pain severity, functional status, anxiety and depression levels and alexithymia for patients with FMS.

METHODS

This prospective interventional study included 30 female FMS patients who were refered from Şisli Hamidiye Etfal Research and Training Hospital Physical Medicine and Rehabilitation Outpatient Clinic to Şisli Hamidiye Etfal Research and Training Psychiatry Outpatient Clinic between January 2020 and April 2020. The diagnosis of FMS was made by experienced physical medicine and rehabilitation physicians according to the American College of Rheumatology (ACR) FMS diagnostic criteria (Wolfe et al., 1990). Patients who were referred to the Şisli Hamidiye Etfal Research and Training Hospital Psychiatry Outpatient Clinic were evaluated by an experienced psychiatrist for the current and past psychiatric diagnosis according to DSM 5. The patients with FMS included in the study were aged between 18 and 65 years, gave consent after being informed about the study, and attended CBT sessions regularly, once a week for 12 sessions, and had sufficient intelligence and language competence levels for cooperation. Patients with alcohol and substance use disorder according to DSM 5 were excluded from the study. The Ethics Committee of Şişli Hamidiye Etfal Hospital approved the study protocol (Date: January 28, 2020; Protocol number: 2659). This research was conducted in accordance with the Declaration of Helsinki and good clinical practice.

Among the 30 patients who presented in this time period, 3 expressed that they would not come regularly because they were trying a different type of treatment, 2 had alcohol abuse, 1 had substance abuse, 1 did not have the required mental capacity, 1 did not have the required language skills, and 2 did not continue their therapy regularly (after the third session, 1 patient dropped out of the therapy; another discontinued the therapy after the sixth session both without providing any reasons, and they could not be subsequently reached by phone), and thus were excluded from the study. This resulted in a sample of 20 female patients with FMS available for the study (Figure 1).

Following 1–2 sessions of taking history and performing psychiatric examinations, the patients chosen for the study had 12 sessions 40-min CBT individual therapy. The following assessments were undertaken before and after the therapy initiated: the Beck depression Inventory, Beck Anxiety Inventory, Visual Analogue Scale (VAS), Toronto Alexithymia Scale (TAS) and the Fibromyalgia Impact Questionnaire (FIQ). After the therapy was ended, the

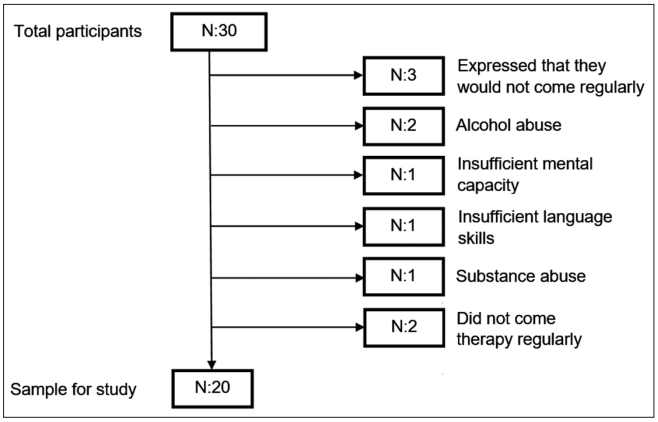

Figure 1. Assessment of patients for inclusion.

Beck Anxiety and depression scales, VAS, TAS and FIQ tests were reevaluated. In order to avoid clinical subjectivity, the first the Beck Anxiety and depression scales, VAS, TAS and FIQ tests were administered by the therapist practicing CBT, whereas the posttherapy these tests were conducted by a physician who was blinded to the treatment protocol to avoid bias in estimated treatment effects. All participants were asked to sign the informed consent forms.

Structured CBT interviews

Based on the CBT sessions of Falcao et al. and Karlsson et al. (Karlsson et al., 2015; Falcao et al., 2008) who claimed that CBT performed on patients with FMS was effective, the CBT sessions in our study were structured as follows:

Psychoeducation and Pain Diary (1–3 sessions)

The first three sessions were arranged as psychoeducation sessions; the anatomy and physiology of pain as well as the rationale of CBT and the latest information about FMS enhances were described to the patients. The patients were asked to keep a pain diary following these sessions. This pain diary is a chart of the severity of their pain; their frequency; factors that trigger pain; the events, thoughts and feelings that occurred during the pain; and any actions taken to terminate the pain.

Cognitive Restructuring, Behavioral Activation and Behavior (Skill) Training (4–10 sessions)

CBT was based on a pain self management paradigm, and involved the identification and reduction of maladaptive pain-related cognitions (i.e., catastrophizing) using techniques such as relaxation, visual imagery, thought challenging, and distraction.

In doing so, patients were asked to keep a log of scores ranging from 0 to 10 that they associated with their daily activities and the joy they brought them. Cognitive restructuring was performed in patients without depressive symptoms to help the patient avoid maladaptive response that might increase the pain. In particular, cognitive restructuring was used to discover the relationship among thoughts, feelings and behaviors. In these sessions, the aim is to identify, evaluate the cognitive distortions like selective negativity, generalization and catastrophizing and the relationship between the pain level and these cognitive distortions. Proof examination method is used to test the validity of cognitive distortions and to restructure alternative thoughts. Moreover, due to the relationship between emotional avoidance as a result of stress/conflict and amplification of pain; expressive writing, observing emotions and communication patterns, and engaging in emotionally activating daily activities were taught during sessions. Patients with depressive symptoms accompanying pain were advised behavioral activation before cognitive restructuring. Afterwards, self-monitoring, progressive muscle relaxation, muscle tension reduction, breathing exercises, guided imaginery and focusing techniques were taught to cope with pain. Moreover, basic interpersonal skills in the areas of communication, assertiveness and problem-solving were taught to better regulate their stress levels and increase their ability to manage and relieve pain effectively.

Termination (11–12 sessions)

Therapies were terminated with the last 1–2 sessions giving information on management of recurrence and summarization of sessions.

Scales For Assessments

1) Visual analogue scale (VAS): The VAS is a progressive line or band and the patients choose a point that identifies the pain intensity. In this study, VAS was used to evaluate the change of pain intensity of patients with FMS after CBT (for pain intensity, 0 means absence of pain and 10 means the highest possible pain) (Wewers & Lowe, 1990).

2) Sociodemographic data form: This form was constructed by the researchers evaluate the sociodemographic

characteristics and to determine whether the participants were suitable for to the inclusion and exclusion criteria

3) Fibromiyalgia Impact Questionnaire (FIQ): The FIQ was developed to measure the functional states of FMS patients. It measures physical disability, loss of working day, feeling good, difficulty in working, fatigue, anxiety, feeling fresh, pain, stiffness and depression. Burckhardt et al. developed the FIQ and the validity and reliability studies for the Turkish version were conducted by Sarmer et al. (Burckhardt, Clark, & Bennett 1991; Sarmer, Ergin, & Yavuzer, 2000).

4) Beck Depression Inventory (BDI): The BDI is a self-report scale that measures the physical, emotional, and cognitive indicators of depression. The maximum score is 63, and higher scores indicate more severe depression. The BDI was developed by Beck to determine the severity of depressive symptoms, and the validity and reliability studies for the Turkish form were conducted by Hisli (Beck et al., 1961; Hisli, 1989).

5) Beck Anxiety Inventory: The aim of the scale is to measure the frequency of anxiety symptoms experienced by the individual. It was developed by Beck et al. and the reliability and validity study in our country was conducted by Ulusoy et al. (Beck et al., 1988; Ulusoy, Sahin, & Erkmen, 1998).

6) Toronto Alexithymia Scale (TAS): This is a 20-item self-report scale to measure difficulty in identifying feelings and distinguishing them from bodily sensations of emotion, difficulty expressing feelings, and externally oriented thinking and TAS total score). Items are rated on a 1–5 scale and summed; higher scores indicate greater levels of alexithymia. Bagby et al. developed this scale (Bagby, Parker, & Taylor, 1994; Bagby, Taylor, & Parker, 1994). The Turkish reliability and validity study in our country was conducted by Sayar et al. (Sayar, Gulec, & Ak 2001).

Statistical Analysis

SPSS 18.0 was used in the study as the statistical analysis program. The paired-sample t test was used to compare repeated quantitative measurements in the group, as well as descriptive statistical methods (mean, standard deviation, frequency). Statistical significance was evaluated as $p<0.05$.

RESULTS

The participants were consisted of 20 (100.0%) females with the mean age 48.7±10.2 years. Among the patients, 4 (20.0%) were single, 14 (70.0%) were married, and 2 (10.0%) were divorced. The mean duration of education was 9.2±2.8 years. Only 6 (30.0%) patients had a regular job. Among those with prior psychiatric admission, 3 patients had been diagnosed as having depression, 1 patient was diagnosed as having obsessive–compulsive disorder (OCD), 1 patient had been diagnosed as having panic disorder, 2 patients had been diagnosed as having generalized anxiety disorder, and 1 patient was diagnosed as having post-traumatic stress disorder. Seventeen (85.0%) patients received duloxetine and 3 (15.0%) duloxetine and trazadone antidepressant treatment for (16 of patients were taking these medicine for more than 6 months; 4 of them for more than 1 year) FMS. The duration of FMS was 4.75±2.12 years (Table 1).

Table 1: Clinical characteristics of patients with FMS

n:20	*m*	*±/n%*	*s.d.*
Age	48.7	±	10.2
Education	9.2	±	2.8
Duration of disease (years)	4.75	±	2.12
Gender			
Female	20	100%	
Male	0		
Marital status			
Marriage	14	70%	
Single	4	20%	
Divorced	2	10%	
Occupational status			
Present/regular	6	30%	
Absent	14	70%	
Comorbid diseases			
Absent	1	55%	
Hypertension	4	20%	
Hyperlipidemia	2	10%	
Myocardial infarction	1	5%	
Diabetes mellitus	1	5%	
Other	1	5%	
Pharmacological treatment of fibromyalgia			
Duloxetine	17	85%	
Duloxetine + trazodone	3	15%	

FMS, fibromyalgia syndrome.
mm, mean; **s.d.,** standard deviation; **n,** number of participants.

The Beck depression scores of the patients showed a statistically significant difference before (26.6±14.6) and after (16.2±10.2) CBT, and there was a significant decrease in Beck depression scores after CBT (p: 0.000). Beck anxiety scores were before CBT (21.9±8.4) and after (13.9±6.0); there was a significant decrease in Beck anxiety scores after CBT (p: 0.001). VAS scores showed a statistically significant difference before (8.5±1.7) and after (5.4±1.6) CBT (p: 0.000). There was a statistically significant difference in Toronto Alexithymia Scale total scores before (58.6±7.4) and after CBT (45.7±8.2) (p: 0.000). We also found a significant decrease in terms of externally oriented thinking scores between the pre-CBT (23.9±2.2) and post-CBT scores (20.2±3.3) (p: 0.002); difficulty identifying feelings scores between the pre-CBT (14.1±3.2) and post-CBT scores (11.3±2.1) (p: 0.001) and difficulty describing feeling scores between the pre-CBT (20.6±4.6) and post-CBT scores (14.2±4.8) (p: 0.000) There was not statistically significant difference between the first and last dosage of duloxetine (p: 0.126) (Table 2).

FIQ scores showed a statistically significant difference for all subgroups and total scores (before (5.8±1.7) and after (4.3±1.3) CBT (p: 0.000) in terms of physical disability; before (4.1±1.3) and after (7.9±1.6) CBT (p: 0.000) in terms of feeling good; before (6.3±2.6) and after (4.7±1.9) CBT (p: 0.013) in terms of loss of work power; before (8.1±2.8) and after (4.0±1.9) CBT (p: 0.000) in terms of working ability (p: 0.000); before (8.1±2.0) and after (5.4±1.6) CBT (p: 0.000) in terms of pain; before (8.0±2.7) and after (5.2±2.1) CBT (p: 0.000) in terms of fatigue; before (7.6±3.6) and after (4.9±2.4) CBT (p: 0.001) in terms of feeling fresh; before (8.7±2.6) and after (5.6±2.0) CBT (p: 0.000) in terms of stiffness; before (7.2±4.1) and after (4.5±2.7) CBT (p: 0.001) in terms of anxiety; before (7.1±3.6) and after (4.4±2.3) CBT (p: 0.001) in terms of depression; before (75.1±21.0) and after (47.3±12.3) CBT (p: 0.000) in terms of total FIQ scores) (Table 3).

Table 2: Clinical characteristics of patients before and after CBT

	Before CBT			*After CBT*			
Toronto Alexithymia Scale	*m*	±	*s.d.*	*m*	±	*s.d.*	*p*
Externally oriented thinking	23.9	±	2.2	20.2	±	2.2	**0.002**
Difficulty identifying feelings	14.1	±	3.2	11.3	±	3.2	**0.001**
Difficulty describing feeling	20.6	±	4.6	14.2	±	4.6	**0.000**
Total score	58.6	±	7.4	45.7	±	7.4	**0.000**
Beck anxiety inventory	21.9	±	8.4	13.9	±	8.4	**0.001**
Beck depression inventory	26.6	±	14.6	16.2	±	14.6	**0.000**
Visual analog scale	8.5	±	1.7	5.4	±	1.7	**0.000**
Dosage of duloxetine	72	±	17.9	66.5	±	19.5	**0.126**

Paired samples t test Bold indicates statistical significant value.
m, mean; **s.d.,** standard deviation; **CBT,** cognitive behavioral therapy.

Table 3: Comparison of FIQ subgroups between Before CBT and after CBT

	Before CBT			*After CBT*			
FIQ	*m*	±	*s.d.*	*m*	±	*s.d.*	*p*
Physical disability	5.8	±	1.7	4.3	±	1.3	**0.000**
Feeling good	4.1	±	1.3	7.9	±	1.6	**0,000**
Loss of workpower	6.3	±	2.6	4.7	±	1.9	**0.013**
Working ability	8.1	±	2.8	4.0	±	1.9	**0.000**
Pain	8.1	±	2.0	5.4	±	1.6	**0.000**
Fatigue	8.0	±	2.7	5.2	±	2.1	**0.000**
Feeling fresh	7.6	±	3.6	4.9	±	2.4	**0.001**
Stiffness	8.7	±	2.6	5.6	±	2.0	**0.000**
Anxiety	7.2	±	4.1	4.5	±	2.7	**0.001**
Depression	7.1	±	3.6	4.4	±	2.3	**0.001**
Total score	75.1	±	21.0	47.3	±	12.3	**0.000**

Paired samples t test Bold indicates statistical significant value.
m, mean; **s.d.,** standard deviation; **FIQ,** fibromyalgia impact questionnaire; **CBT,** cognitive behavioral therapy.

DISCUSSION

The focus of the present study was on the effect of CBT on depression and anxiety, alexithymia, severity of pain, and disability in patients with FMS. A significant improvement was detected after CBT in terms of these parameters.

A study conducted with FMS patients showed that depressive symptoms may improve after CBT (Karlsson et al., 2015). Williams et al. suggested traditional CBT techniques may be useful for depressive symptomatology in patients with chronic pain (Williams, Eccleston, & Morley, 2012). We also found that the Beck Depression scores were lower after CBT than before. In contrast Cochrane Collaboration review demonstrated that among the ten studies only four showed a significant improvement to reduce pain, negative mood and disability at the end of CBT treatment as intention-to-treat design (Bernardy et al., 2013). This finding may be related to the the type of CBT. There is a rich variety of psychological therapy techniques classified as behavioral and cognitive behavioral. A recent review distinguished CBT techniques as Operant therapy, Traditional CBT, Self-management education programmes, Acceptance-based CBTs. FMS patients are proposed to get in a vicious circle where pain and negative emotions may contribute to fears of more pain (Bernardy et al., 2018). Cognitive distortions, like catastrophizing, may lead to avoidance behaviors (Jensen et al., 2011). Behavioral techniques which include positive strategies such as relaxation, stress management, may be effective in breaking cycle by changing negative strategies such as isolation and avoidance. Individualization of CBT such as behavioral activation before cognitive restructuring in FMS patients with depressive symptoms in the current study may play an important role in the psychological treatment of FMS patients.

Sayar et al. found that the FMS patients may have more difficulty in understanding and identifying emotions than the healthy controls and rheumatoid arthritis patients (Sayar, Gulec, & Topbas, 2004) whereas Brosschot and Aarsse reported higher scores on the TAS-20 for FMS patients than healthy controls (Brosschot & Aarsse, 2001). In our study TAS scores were higher in FMS patients before CBT than in after CBT. Since alexithymia has been linked to depression in some studies, decrease of TAS scores might be related with the decrease of depression scores after CBT (Kurtaran et al., 2019). Since alexithymic individuals may tend to misinterpret their emotional arousal as symptoms of physical illness (Lumley et al., 1996) our results suggest that contribution of expressive writing, observing emotions and communication patterns, and engaging in emotionally activating daily activities in CBT sessions may be important in patients with FMS.

In previous studies, pain and related functional disability were found to increase depression and anxiety, in turn aggravating the primer symptoms of disorders like FMS (Galvez-Sánchez et al., 2020). Higher level of pain, anxiety and FIQ scores other than feeling good before than after CBT in the current study, seems similar with previous studies suggesting pain may have a negative impact on quality of life and also increase stress and negative affect levels although the central feature of FMS is pain (Galvez-Sánchez et al., 2020). A study conducted in 37 FMS patients using FIQ documented lower functional status in patients with FMS than in healthy controls (Turkyilmaz et al., 2012). Since negative emotional states can increase symptom perception and disability by different mechanisms, such as increased interceptive attention, and symptom amplification, CBT could change symptom perception and this might contribute the functional status of patients with FMS (Watson & Pennebaker, 1989). Babaoğlu et al. also reported that CBT might increase the effect of multidisciplinary treatments in patients with chronic pain (Babaoğlu, Inan, & Özdel, 2017). The fact that CBT methods differ in studies with FMS patients, in the current study we observed that CBT could improve the FMS treatment in our Physical Medicine and Rehabilitation Outpatient Clinic.

The current study has several limitations including the small sample size, not having a control group, consisting only female patients, the heterogeneity caused by patients having CBT with different dosages of antidepressants, the effect of past psychiatric diagnosis and drug use. The strengths of our study include the planning of the patients' first CBT with a semi-structured interview with a psychiatrist, a pain diary keeping patients' pain frequency, duration and severity, individualization of CBT according to these logs and evaluation of alexithymia.

CONCLUSION

Our results suggest that psychiatric evaluation of female patients with FMS in routine Physical Medicine and Rehabilitation clinics, referring them to related units, and teaching methods of coping with disease might improve the treatment process of FMS in female patients.

Ethics Committee Approval: The study was approved by the Ethics Committee of Şişli Hamidiye Etfal Hospital (date and number of approval: 28..01.2020 / 2659).

Informed Consent: Informed consent was obtained from all individual participants included in the study.

Peer-review: Externally peer-reviewed.

Conflict of Interest: The authors declare no conflict of interest.

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REFERENCES

Babaoğlu, G., İnan, L. E., & Özdel, K. (2017). Bilişsel Davranışçı Terapinin Kronik Ağrı Tedavisindeki Yeri. *JCBPR, 6*(3),133-140. https://doi.org/10.5455/JCBPR.263365

Bagby, R. M., Parker, J. D. A., & Taylor, G. J. (1994). The 20-Item Toronto-Alexithymia-Scale-1. Item Selection and Cross-Validation of the Factor Structure. *J Psychosom Res, 38*, 23-32. https://doi.org/10.1016/0022-3999(94)90005-1

Bagby, R. M., Taylor, G. J., & Parker, J. D. (1994). A. The 20-Item Toronto-Alexithymia-Scale-2. Convergent, Discriminant, and Concurrent Validity. *J Psychosom Res, 38*, 33-40. https://doi.org/10.1016/0022-3999(94)90006-X

Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical anxiety: psychometric properties. *J Consult Clin Psychol, 56*, 893-897. https://doi.org/10.1037/0022-006X.56.6.893

Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Arch Gen Psychiatry, 4*, 561-571. https://doi:10.1001/archpsyc.1961.01710120031004

Bernardy, K., Klose, P., Busch, A. J., Choy, E. H., & Hauser, W. (2013). Cognitive behavioural therapies for fibromyalgia. *Cochrane Database Syst Rev, 9*. https://doi.org/10.1002/14651858.CD009796.pub2

Bernardy, K., Klose, P., Welsch, P., & Häuser, W. (2018). Efficacy, acceptability and safety of cognitive behavioural therapies in fibromyalgia syndrome –A systematic review and meta-analysis of randomized controlled trials. *Eur J Pain, 22*(2), 242-260. https://doi.org/10.1002/ejp.1121

Brosschot, J. F., & Aarsse, H.R. (2001). Restricted emotional processing and somatic attribution in fibromyalgia. *Int J Psychiatry Med, 31*, 127-146. https://doi.org/10.2190/K7AU-9UX9-W8BW-TETL

Burckhardt, C. S., Clark, S. R., & Bennett, R. M. (1991). The fibromyalgia impact questionnaire: development and validation. *J Rheumatol, 18*, 728-733. https://pubmed.ncbi.nlm.nih.gov/1865419/

Di Tella, M., Enrici, I., Castelli, L., Colonna, F., Fusaro, E., Ghiggia, A., ..., & Adenzato, M. (2018). Alexithymia, not fibromyalgia, predicts the attribution of pain to anger-related facial expressions. *J Affect Disord, 227*, 272-279. https://doi.org/10.1016/j.jad.2017.10.048

Falcao, D. M., Sales, L., Leite, J. R., Feldman, D., Valim, V., & Natour, J. (2008). Cognitive-behavioral therapy for the treatment of fibromyalgia syndrome: A randomized controlled trial. *J Musculoskelet Pain, 16*, 133-140. https://doi.org/10.1080/10582450802161796

Galvez-Sánchez, C. M., Montoro, C. I., Duschek, S., & Reyes del Paso, G. A. (2020). Depression and trait-anxiety mediate the influence of clinical pain on health-related quality of life in fibromyalgia. *J Affect Disord, 265*, 486-495. https://doi.org/10.1016/j.jad.2020.01.129

Ghiggia, A., Romeo, A., Tesio, V., Di Tella, M., Colonna, F., Geminiani, G. C., …, & Castelli, L. (2017). Alexithymia and depression in patients with fibromyalgia: When the whole is greater than the sum of its parts. *Psychiatry Res, 255*, 195–197.https://doi.org/10.1016/j.psychres.2017.05.045

Hisli, N. (1989). Beck Depresyon Envanteri'nin Üniversite Öğrencileri için geçerliği, güvenirliği. *Türk Psikoloji Derg, 7*, 3–13. https://www.psikolog.org.tr/tr/yayinlar/dergiler/1031828/tpd1300443319890000m000366.pdf

Jensen, M. P., Moore, M. R., Bockow, T. B., Ehde, D. M., & Engel, J.M. (2011). Psychosocial factors and adjustment to chronic pain in persons with physical disabilities: a systematic review. *Arch Phys Med Rehabil, 92*,146–60. https://doi.org/10.1016/j.apmr.2010.09.021

Karlsson, B., Burell, G., Anderberg, U. M., & Svärdsudd K. (2015). Cognitive behaviour therapy in women with fibromyalgia: A randomized clinical trial. *Scand J Pain, 9*(1), 11-21. https://doi.org/10.1016/j.sjpain.2015.04.027

Kavakçı, Ö., Kaptanoğlu, E., Kuğu, N., & Doğan, O. (2010). EMDR fibromiyalji tedavisinde yeni bir seçenek olabilir mi? Olgu sunumu ve gözden geçirme. *Klinik Psikiyatri Derg, 13*(3), 143-151. https://jag.journalagent.com/kpd/pdfs/KPD_13_3_143_151.pdf

Kurtaran, M., Baktır, S., Abanoz, E. Ş., & Yeldan, İ. (2019). Evaluation of Pain, Alexithymia, Depressive Symptom Prevalence and Quality of Life in University Students. *Sakarya Med J, 9*(3), 433-441. https://dergipark.org.tr/tr/download/article-file/807499

Lorentzen, F. (1994). Fibromyalgia: a clinical challenge. *J Intern Med, 235*, 199–203. https://doi.org/10.2217/pmt-2018-0024

Lumley, M. A., Schubiner, H., Lockhart, N. A., Kidwell, K. M., Harte, S. E., Clauw, D. J., & Williams, D. A. (2017). Emotional awareness and expression therapy, cognitive-behavioral therapy, and education for fibromyalgia: a cluster-randomized controlled trial. *Pain, 158*(12), 2354. https://doi.org/10.1097/j.pain.0000000000001036

Macfarlane, G. J., Kronisch, C., Atzeni, F., Häuser, W., Choy, E. H., Amris, K., …, & Jones, G. T. (2017). EULAR recommendations for management of fibromyalgia. *Ann Rheum Dis, 2017*, 76:54. https://doi.org/10.1136/annrheumdis-2017-211587

Sarmer, S., Ergin, S., & Yavuzer, G. (2000). The validity and realibility of the Turkish version of the Fibromyalgia Impact Questionnaire. *Rheumatol Int, 20*, 9–12. https://doi.org/10.1007/s002960000077

Sayar, K., Gulec, H., & Ak, I. (2001). Yirmi soruluk Toronto Aleksitimi Olcegi'nin guvenirligi ve gecerligi (The reliability and validity of the Twenty-Item Toronto Alexithymia scale). Ulusal Psikiyatri Kongresi Bilimsel Calismalar Ozet Kitabi, Istanbul.

Sayar, K., Gulec, H., & Topbas, M. (2004). Alexithymia and anger in patients with fibromyalgia. *Clin Rheumatol, 23*(5), 441-448. https://doi.org/10.1007/s10067-004-0918-3

Schaefer, C., Mann, R., Masters, E. T., Cappelleri, J. C., Daniel, S. R., Zlateva, G., …, & Staud R. (2016). The comparative burden of chronic widespread pain and fibromyalgia in the United States. *Pain Pract, 16*, 565-79. https://doi.org/10.1111/papr.12302

Turkyilmaz, A. K., Kurt, E. E., Karkucak, M., & Capkin, E. (2012). Sociodemographic characteristics, clinical signs and quality of life in patients with fibromyalgia. *Eurasian J Med, 4*(2), 88. https://doi.org/10.5152/eajm.2012.21

Ulusoy, M., Sahin, N. H., & Erkmen, H. (1998). Turkish version of the beck anxiety inventory: Psychometric properties. *J Cogn Psychother Int Q, 12*, 163-172. https://www.researchgate.net/profile/Nesrin-Hisli-Sahin/publication/233792003_Turkish_Version_of_the_Beck_Anxiety_Inventory_Psychometric_Properties/links/0912f50b89f36c598c000000/Turkish-Version-of-the-Beck-Anxiety-Inventory-Psychometric-Properties.pdf

Watson, D., & Pennebaker, J.W. (1989). Health complaints, stress, and distress: exploring the central role of negative affectivity. *Psychol Rev, 96*(2), 234. https://doi.org/10.1037/0033-295X.96.2.234

Wewers, M. E., & Lowe, N. K. (1990). A critical review of visual analogue scales in the measurement of clinical phenomena. *Res Nurs Health, 13*, 227-236. https://doi.org/10.1002/nur.4770130405

Wicksell, R. K., Kemani, M., Jensen, K., Kosek, E., Kadetoff, D., Sorjonen, K., …, & Olsson, G. L. (2012). Acceptance and commitment therapy for fibromyalgia: a randomized controlled trial. *Eur J Pain, 17* (4), 599–611. https://doi.org/10.1002/j.1532-2149.2012.00224.x

Wolfe, F., Smythe, H. A., Yunnus, M. B., Robert M. B., Claire, B., Don, L. G., …, & Robert, P. S. (1990). The American College of Rheumatology 1990 criteria for the classification of fibromyalgia. *Arthritis Rheum, 33*, 160-172. https://doi.org/10.1002/art.1780330203

Yücel, H., Torun, P. (2016). Sağlık Üniversitesinde Okuyan Öğrencilerde Bel Ağrısı Görülme Sıklığı ve Risk Faktörleri. *Bezmialem Sci, 4*, 12-18. https://doi.org/10.14235/bs.2016.618