

Research Article

Relationships among Pain, Occupational Balance and Quality of Life in Women with Fibromyalgia Syndrome

Fibromiyalji Sendromu Olan Kadınlarda Ağrı, Okupasyonel Denge ve Yaşam Kalitesi Arasındaki İlişkinin İncelenmesi

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ABSTRACT

Purpose: This study was conducted to investigate the relationships among pain, occupational balance and quality of life in women with fibromyalgia syndrome (FMS). **Material and methods:** The study included 52 women with FMS with pain severity of 5 or more according to the Visual Analog Scale. Sociodemographic data were recoded; Occupational Balance Questionnaire and Nottingham Health Profile (NHP) were used. **Results:** According to the results, correlations were found between pain intensity and sub-parameters of quality of life (energy, pain, emotional reactions and physical mobility) ($r=.428$ $p=.002$; $r=.339$ $p=.014$; $r=.451$ $p=.001$; $r=.277$ $p=.046$ and $r=.399$ $p=.003$, respectively). In addition, significant relationships were detected between occupational balance and NHP-energy; emotional reaction; and total score ($r=.365$ $p=.008$; $r=.320$ $p=.021$, $r=0.301$ $p=.030$, respectively). **Discussion:** In this syndrome, where the most prominent symptom is pain, it has been particularly observed that the intensity of pain adversely affects an individual's quality of life. Quality of life, which is an indicator of an individual's health and well-being, has also been found to be associated with occupational balance. In conditions such as fibromyalgia, which negatively impact various aspects of life, it would be beneficial to utilize indicators such as occupational balance and quality of life during intervention planning with a holistic approach.

Keywords: Fibromyalgia; Occupation; Pain; Quality of Life; Women.

ÖZ

Amaç: Bu çalışma, fibromiyalji sendromu (FMS) olan kadınlarda ağrı, okupasyonel denge ve yaşam kalitesi arasındaki ilişkinin incelenmesi amacıyla yapılmıştır. **Gereç ve Yöntem:** Çalışmaya Görsel Analog Skala'ya göre 5 ve üzeri ağrı şiddetine sahip 52 FMS'li kadın dahil edilmiştir. Sosyodemografik veriler kaydedilmiş; Okupasyonel Denge Anketi ve Nottingham Sağlık Profili (NSP) kullanılmıştır. **Sonuçlar:** Sonuçlara göre, ağrı şiddeti ile yaşam kalitesinin alt parametreleri (enerji, ağrı, emosyonel reaksiyonlar ve fiziksel aktivite) arasında korelasyonlar bulunmuştur (sırasıyla $r=.428$ $p=.002$; $r=.339$ $p=.014$; $r=.451$ $p=.001$; $r=.277$ $p=.046$ ve $r=.399$ $p=.003$). Ayrıca, okupasyonel denge ile NSP-enerji, emosyonel reaksiyon ve toplam puan arasında ilişkiler belirlenmiştir (sırasıyla $r=.365$ $p=.008$; $r=.320$ $p=.021$, $r=0.301$ $p=.030$). **Tartışma:** Ağrının ön planda olduğu bu sendromda özellikle ağrı şiddetinin bireyin yaşam kalitesini olumsuz etkilediği görülmüştür. Bireyin sağlık ve iyilik halinin bir göstergesi olan yaşam kalitesi aynı zamanda okupasyonel denge ile de ilişkili bulunmuştur. Fibromiyalji gibi yaşamı olumsuz etkileyen durumlarda bütüncül bir bakış açısıyla değerlendirmeler yapıp müdahale planlamaları sırasında okupasyonel denge ve yaşam kalitesi gibi göstergelerden yararlanmak faydalı olacaktır.

Anahtar Kelimeler: Fibromiyalji; Okupasyon; Ağrı; Yaşam Kalitesi; Kadın.

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Fibromyalgia syndrome (FMS) is a musculoskeletal disease characterized by chronic pain, widespread pain, fatigue and cognitive difficulties (Wolfe et al., 1990). In addition to these symptoms, soft tissue edema, sleep disorders, irritable bowel syndrome, restless leg syndrome, chronic headache and psychological problems are also observed (Sarzi-Puttini et al., 2020; Wolfe et al., 1990). Although the global prevalence of FMS is between 0.2% and 6.6%, it is reported to be more common in women with a 9:1 ratio (Córdoba-Torrecilla et al., 2016; Marques et al., 2017).

The etiology of FMS, is incompletely understood; however, it is thought to be associated with genetic, environmental, immunological, inflammatory, autonomic, neuroendocrine, psychosocial, and environmental factors (Chinn et al., 2016). According to the updated diagnostic criteria published in 2019, the pain in at least six out of nine specified body regions is required, including the head, left arm, right arm, right lower limb, left lower limb, thorax, abdomen, upper back, and lower back. (Arnold et al., 2019). Due to the complexity of the etiology of FMS, it is emphasized that interventions should involve multidimensional approaches. Comprehensive treatments incorporating both pharmacological and non-pharmacological interventions are considered appropriate in managing the symptoms (Aman et al., 2018; Bernard et al., 2000; Sarzi-Puttini et al., 2020).

Pain, which is the main symptom of FMS, includes sensory, emotional, autonomic, cognitive and behavioral factors (Bushnell et al., 2013; Cortelli et al., 2013). The inclusion of multiple components in pain constitutes a subjective experience, leading to variations in individuals' awareness of pain (Raison, 2009). Negative pain experiences and other accompanying symptoms experienced by individuals diagnosed with FMS lead to behavioral changes, limiting their participation in activities and affecting their habits (Nielsen et al., 2013; van Hecke et al., 2013). Individuals need more rest for self-care, fatigue management and symptom adaptation than individuals without chronic pain. Changes in the activity-rest cycle associated with chronic pain intensify the severity of pain, increase the frequency of catastrophizing, and lead to a decrease in sleep quality. All these factors pose obstacles to maintaining occupational balance by affecting the occupations to be carried out the next day (Nielsen et al., 2022). It is emphasized that there is a need for more information regarding the occupational balance of individuals with conditions such as FMS, which may create potential differences in occupational

balance, in addition to healthy individuals (Wagman & Håkansson, 2014).

When developing FMS, changes in occupational performance hinder the fulfilment of valued roles within the family or workplace, thereby restricting societal participation (Lazarus & Folkman, 1984). Under the new conditions imposed by unpredictable diseases such as FMS, the disparity between individuals' occupational requests and the emerging occupational performance leads to a decrease in occupational satisfaction. If individuals fail to develop appropriate coping strategies in response to this situation, life satisfaction may be affected. Life satisfaction, a crucial component of quality of life, is associated with the development and exacerbation of chronic illnesses (Boonstra et al., 2013). In a study comparing FMS and other rheumatic diseases, it has been reported that FMS has a greater impact on daily life activities. Additionally, individuals with FMS experience more difficulty in adapting to the disease and demonstrate less success in implementing coping strategies (Luque-Reca et al., 2021).

In conclusion, according to the literature, it is thought that the negative impact of chronic pain on occupational rhythm could lead to the disruption of occupational balance. However, the possible relationship between these variables and the impact of FMS on individuals' quality of life have not been sufficiently investigated (Luque-Reca et al., 2021; Nielsen et al., 2022; Nielson et al., 2013; van Hecke et al., 2013; Wagman & Håkansson, 2014). To the best of our knowledge, there is no study in the literature that examines the relationship between pain, occupational balance, and quality of life in women diagnosed with FMS. Therefore, the aim of this study is to determine the relationship between these variables on the lives of individuals diagnosed with FMS.

METHODS

This study was conducted at Ankara Medipol University, Faculty of Health Sciences, Department of Occupational Therapy. The X University Non-Interventional Clinical Research Ethics Committee approved this research on 25.12.2023 with decision number 176. Detailed information about the study was given to those who met the inclusion criteria and informed consent forms were approved for those who voluntarily agreed to participate in the study. The study included 55 voluntary women diagnosed with FMS who applied to the occupational therapy department. Three of the volunteers dropped out of the study for various reasons. The study was

completed with 52 volunteers. The study included female volunteers diagnosed with FMS, aged between 18-65, literate, and experiencing a pain level of 5 or above. Participants who were currently using psychotropic drugs or had used them within the past 4 weeks, receiving non-pharmacological treatment, diagnosed with a chronic disease other than FMS, breastfeeding or pregnant, lacking adequate oral and written Turkish language skills, not meeting these criteria were excluded from the study. After recording the sociodemographic information of the volunteers included in the study, Visual Analogue Scale was used to measure the pain level of the participants, Occupational Balance Questionnaire (OB-Quest) was used to examine their occupational balance, and Nottingham Health Profile (NHP) was used to examine the effect of health problems on different areas of quality of life.

Sociodemographic Data: Participants' age and body mass index information were recorded.

Visual Analogue Scale (VAS): It was developed by Albersnagel (1988). It expresses emotion adjectives in which individuals mark each emotion they are experiencing at that moment with a vertical line on a plane. Each labelled emotion provides an assessment between not experiencing that emotion at all (e.g., I am not tense at all = 0) and experiencing it completely (e.g., I am extremely tense = 100). A value of '0 = no pain at all' and '10 = extreme pain'. Cronbach's alpha score was between 0.70 and 0.95 (Araz & Asan, 2011).

Occupational Balance Questionnaire (OB-Quest): OB-Quest, developed by Dür et al. (2014). OB-Quest, is a measurement tool used to assess occupational balance. The questionnaire consists of 10 closed-ended questions. Occupational balance improves as the total score of OB-Quest, decreases. The Turkish validity and reliability was conducted by Bahadır et al. (2023). Cronbach's alpha score was 0.645 (Bahadır et al., 2023).

Nottingham Health Profile (NHP): NHP developed by Hunt et al. is a quality of life scale to measure the effect of health problems on activities of daily living (Hunt et al., 1985). It consists of 6 sections including physical activity, pain, sleep, social isolation, emotional reactions and energy level and a total of 38 questions. These parameters are pain (8 items), physical activity (8 items), energy (3 items), sleep (5 items), social isolation (5 items), emotional reactions (9 items). Each sub-parameter is scored between 0-

100. "0" indicate the best health status and "100" indicates the worst health status. Turkish validity and reliability of the questionnaire was performed by Küçükdeveci et al. (2000). Cronbach's alpha score was 0.87 (Küçükdeveci et al., 2000).

Statistical Analysis

Statistical power analysis determined the sample size as 49 participants, with a power of 80% and a significance level of 5% ($p=0.05$). SPSS 22.0 (IBM Corp., Armonk, NY) statistical software was used for data analysis. The arithmetic mean \pm standard deviation ($X\pm SD$) was calculated for the mean values of body mass index (BMI), pain intensity, occupational balance and quality of life. The Kolmogorov-Smirnov test was used to evaluate whether the outcome measurements were normally distributed. It was observed that the results did not show normal distribution. The relationships among pain intensity, occupational balance and quality of life scores were evaluated by Spearman correlation analysis. The significance level was accepted as $p<0.05$ in all analyses.

RESULTS

This study was completed with 52 women diagnosed with FMS. It has been observed that the participants were middle-aged (45.55 ± 10.48) and overweight according to their BMI (26.79 ± 6.03).

The mean values of pain intensity, occupational balance and quality of life scores were given in Table 1. The results in Table 1 were shown to indicate that the participants had a high level of pain and that their occupational balance was also affected. When the quality of life results were analyzed, significant effects were reported in the sub-parameters energy, pain, and sleep.

The relationships among pain intensity, occupational balance and quality of life in individuals were given in Table 2. According to the table 2, pain is positively correlated with total and many sub-parameters of quality of life (energy, pain, emotional reactions and physical mobility) ($r=.428$ $p=.002$; $r=.339$ $p=.014$; $r=.451$ $p=.001$; $r=.277$ $p=.046$ and $r=.399$ $p=.003$, respectively). The increase in pain intensity negatively affects quality of life. Occupational balance showed correlation with total quality of life and its subdomains, such as energy level and emotional reactions ($r=0.301$ $p=.030$; $r=.365$ $p=.008$ and $r=.320$ $p=.021$, respectively). Changes in occupational balance and quality of life were found to mutually influence each other.

Table 1. Mean values of pain intensity, occupational balance and quality of life (n=52)

	X ± SD	Min	Max
Pain Instensity			
VAS (0-10 cm)	6.28 ± 1.36	5.00	9.00
Occupational Balance			
OB-QUEST (0-30)	20.32 ± 1.76	17.00	24.00
Quality of Life			
NHP- energy (0-100)	71.59 ± 35.26	0.00	100.00
NHP-pain (0-100)	63.89 ± 23.99	9.00	100.00
NHP-emotional reactions (0-100)	36.67 ± 28.92	0.00	100.00
NHP-social isolation (0-100)	16.57 ± 23.16	0.00	80.00
NHP-sleep (0-100)	56.48 ± 33.40	0.00	100.00
NHP-physical mobility (0-100)	28.23 ± 18.38	0.00	76.00
NHP-total (0-600)	269.71 ± 105.08	45.00	457.00

*OB-QUEST: Occupational Balance Questionnaire ** NHP: Nottingham Health Profile

Table 2. Relationships among pain intensity, occupational balance and quality of life in individuals (n=52)

	OB- QUEST	NHP- Energy	NHP- Pain	NHP- Emotional reactions	NHP- Social isolation	NHP- Sleep	NHP- Physical mobility	NHP- Total
PAIN	r	-.043	.339	.451	.277	.185	.287	.399
INSTENSITY	p	.760	.014*	.001*	.046*	.190	.039	.003*
OB-QUEST	r		0.301	.222	.365	.187	.267	.147
	p		.030*	.114	.008*	.184	.055	.298
NHP-Energy	r			.593	.336	.414	.301	.344
	p			.001*	.015*	.002*	.030*	.013*
NHP-Pain	r				.205	.150	.433	.372
	p				.114	.287	.001*	.007*

p<0,05; Spearman correlation test; *OB-QUEST: Occupational Balance Questionnaire **NHP: Nottingham HealthProfile

Continued (Table 2)

NHP-Emotional reactions	r	.394	.067	.137	.544
	p	.004	.638	.333	.001*
NHP-Social isolation	r		.292	.344	.725
	p		.036*	.012*	.001*
NHP-Sleep	r			.280	.527
	p			.044*	.001*
NHP-Physical mobility	r				.513
	p				.001*

p<0,05; Spearman correlation test; *OB-QUEST: Occupational Balance Questionnaire, **NHP: Nottingham HealthProfile

DISCUSSION

The aim of this study was to analyze the relationships among pain, occupational balance, and quality of life in women diagnosed with FMS. The relationship between quality of life, both pain intensity and occupational balance, was observed. An increase in quality of life reduces pain intensity and improves occupational balance.

Worldwide, FMS is observed more frequently in women than in men (Wolfe et al., 2018). For this reason, the female population was analyzed in our study. Previous studies have reported that individuals with diseases such as FMS or rheumatoid arthritis, where chronic pain is a primary symptom, experience a decrease in the variety and appropriate amount of participation in daily occupations, leading to impacts on occupational balance (Keponen & Kielhofner, 2006; Ortiz-Rubio et al., 2022; Wagman et al., 2020). Contrary to these previous studies, our study found that the pain symptom did not affect occupational balance. We believe one reason for obtaining different results from other studies is that the data were collected momentarily during interviews with the participants. In a study examining occupational balance that symptoms vary over days and weeks, which can lead to fluctuations in occupational balance in individuals with chronic pain (Stamm et al., 2004). Another reason could be that, although the number of participants was sufficient according to the G power analysis, it was at a minimum level, suggesting the need for a larger sample group. Although treatments for chronic pain have reduced disability, existing problems with occupational balance persist (Wagman et al., 2020).

In individuals with FMS, pain is not the primary determinant in daily life activities; personal factors, environment, and participation are also important parameters (Offenbaecher et al., 2021). Individuals with FMS require more effort and time to perform their occupations due to symptoms and they need to prioritize their occupations in order to use limited time and energy efficiently. This situation reportedly affects individuals' occupational balance, leading to unhealthy lifestyle choices and social isolation. (Arnold et al., 2008). In another study conducted in women aged 24-54 years diagnosed with FMS, the effect of symptoms on daily life and symptom management were analyzed and similar findings were found (Arnold et al., 2008). The study categorized individuals based on their symptom behaviors as adaptors, strugglers, those in despair, and those who gave up. Participants in the 'quitters' group reported that they were adjusting their lives according to their symptoms and had given up many of their daily (Mannerkorpi et al., 1999). In our study, similar to the literature, it was found that an increase in quality of life improves occupational balance. Therefore, including occupational balance in the intervention planning for FMS is crucial for improving individuals' quality of life.

When the literature was reviewed, the main reason for the decrease in quality of life observed in FMS was defined as chronic pain (Galvez-Sánchez et al., 2020; Hadi et al., 2019; Samami et al., 2021; Senem et al., 2019). Additionally, it has been reported that the severity of pain is also one of the parameters affecting quality of life (Biccheri et al., 2016; Çetin et al., 2009; Fernandez-Feijoo et al.,

2022). In our study, participants with moderate and over pain were included. Similar to previous studies, our study found that an increase in pain intensity reduces overall quality of life. However, quality of life is a multifactorial concept that encompasses many areas. Therefore, this relationship plays an important role in the course of daily life. It has been reported that widespread pain in FMS leads to a decrease in quality of life by affecting people's daily activities and communication with their environment. (Çetin et al., 2009; Sezgin Özcan et al., 2013). Pain symptoms might affect many parameters such as physical activity, sleep, communication with relatives and participation in productive occupations. (Dureja et al., 2014). Individuals reported struggling to continue their work, adapting to their families, and feeling misunderstood by their surroundings. The pain experienced by an individual can result in financial cost due to the inability to work and the need for care. Considering all these negative effects, FMS has been reported to highly reduce the quality of life of individuals. (Biccheri et al., 2016). In line with all these findings, the symptom of pain associated with FMS poses challenges in many sub-domains of health-related quality of life, such as energy, emotional reactions, and physical mobility. Consequently, it creates obstacles for individuals' participation in daily life.

The fact that our study was conducted on a sample with moderate to severe levels of pain differs from other studies that have investigated the relationship between pain and quality of life. Although it has been reported that pain intensity may influence quality of life scores, studies on this topic have been conducted in people with different levels of pain. In addition, in people with FMS, the rhythm of activities is strongly influenced by symptoms. However, studies investigating the relationship between pain, which is the main symptom of FMS, and quality of life as a possible consequence of this disruption in occupational balance are limited. Although our study provides new evidence in these areas, it has some limitations. The data in the study were collected through momentary interviews, but symptoms can vary over days and weeks. Therefore, it is recommended that future studies consider the situation over the last three months and increase the number of participants. Additionally, since only women were included in the study, the results cannot be generalized.

As FMS affects the life of the individual in many ways, it is important to examine not only pain but also

the parameters that make up the whole of life, such as mental, physical and occupational balance. Occupational balance and quality of life are important indicators of meaningfulness and overall health in the lives of people with FMS. The results of this study highlight the importance of considering occupational balance and quality of life when planning of interventions for FMS.

Ethical Approval

This study was conducted at Ankara Medipol University, Faculty of Health Sciences, Department of Occupational Therapy. The Ankara Medipol University Non-Interventional Clinical Research Ethics Committee approved this research on 25.12.2023 with decision number 176.

Authors' Contribution

Design: SA, GE Data Collection: SA, GE Analysis: SA, GE Manuscript Writing: SA, GE

Conflicts of Interest Statement

There is no conflict of interest between the authors.

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References

- Albersnagel, F. A. (1988). Velten and musical mood induction procedures: a comparison with accessibility of thought associations. *Behav Res Ther.*, 26, 79- 96. doi: 10.1016/0005-7967(88)90035-6
- Aman, M. M., Jason Yong, R., Kaye, A. D., & Urman, R. D. (2018). Evidence-based non-pharmacological therapies for fibromyalgia. *Curr Pain Headache Rep.*, 22, 1-5. doi: 10.1007/s11916-018-0688-2
- Araz, A. A. A., & Asan, A. (2011). Görsel analog ölçeği ve duygu kafesi: kültürümüze uyarılma çalışması. *Türk Psikolojileri Yazıları*, 14(27), 1-13.
- Arnold, L. M., Bennett, R. M., Crofford, L. J., Dean, L. E., Clauw, D. J., Goldenberg, D. L. et al. (2019). AAPT diagnostic criteria for fibromyalgia. *J Pain*, 20(6), 611-628. doi: 10.1016/j.jpain.2018.10.008
- Arnold, L. M., Crofford, L. J., Mease, P. J., Burgess, S. M., Palmer, S. C., Abetz, L. et al. (2008). Patient perspectives on the impact of fibromyalgia. *Patient Educ Couns*, 73(1), 114-120. doi: 10.1016/j.pec.2008.06.005.
- Bahadır, Z., Yaran, M., Özkan, E., Ekici, G., Huri, M., & Akel, S. (2023). Translation, psychometric and concept analysis of the occupational balance-questionnaire based on a Turkish population. *Occup Ther Health Care.*, 37(1), 101-118. doi: 10.1080/07380577.2021.2010160.
- Bernard, A. L., Prince, A., & Edsall, P. (2000). Quality of life

- issues for fibromyalgia patients. *Arthritis Care Res.*, 13(1), 42-50.
- Biccheri, E., Roussiau, N., & Mambet-Doué, C. (2016). Fibromyalgia, spirituality, coping and quality of life. *J Relig Health.*, 55, 1189-1197. doi: 10.1007/s10943-016-0216-9
- Boonstra, A. M., Reneman, M. F., Stewart, R. E., Post, M. W., & Schiphorst Preuper, H. R. (2013). Life satisfaction in patients with chronic musculoskeletal pain and its predictors. *Qual life Res.*, 22, 93-101. doi: 10.1007/s11136-012-0132-8
- Bushnell, M. C., Čeko, M., & Low, L. A. (2013). Cognitive and emotional control of pain and its disruption in chronic pain. *Nat Rev Neurosci.*, 14(7), 502-511. doi: 10.1038/nrn3516
- Chinn, S., Caldwell, W., & Griksenko, K. (2016). Fibromyalgia pathogenesis and treatment options update. *Curr Pain Headache Rep.*, 20, 1-10. doi: 10.1007/s11916-016-0556-x
- Córdoba-Torrecilla, S., Aparicio, V., Soriano-Maldonado, A., Estévez-López, F., Segura-Jiménez, V., Álvarez-Gallardo, I., et al. (2016). Physical fitness is associated with anxiety levels in women with fibromyalgia: the al-Andalus project. *Qual Life Res.*, 25, 1053-1058. doi: 10.1007/s11136-015-1128-y
- Cortelli, P., Giannini, G., Favoni, V., Cevoli, S., & Pierangeli, G. (2013). Nociception and autonomic nervous system. *Neurol Sci.*, 34, 41-46. doi: 10.1007/s10072-013-1391-z
- Çetin, N., Yalbuzağ, Ş. A., Cabioğlu, M. T., & Turhan, N. (2009). Factors affecting the quality of life in patients with fibromyalgia/Fibromiyalji sendromunda yaşam kalitesi üzerine etkili faktörler. *Turkish Journal of Rheumatology*, 24(2).
- Dureja, G. P., Jain, P. N., Shetty, N., Mandal, S. P., Prabhu, R., Joshi, M., et al. (2014). Prevalence of chronic pain, impact on daily life, and treatment practices in India. *Pain Pract.*, 14(2), E51-E62. doi: 10.1111/papr.12132.
- Dür, M., Steiner, G., Fialka-Moser, V., Kautzky-Willer, A., Dejaco, C., Prodinger, B. et al. (2014). Development Of A New Occupational Balance-Questionnaire: incorporating The Perspectives Of Patients And Healthy People in The Design Of A Self-Reported Occupational Balance Outcome Instrument. *Health And Qual Life Outcomes*, 12(1), 45. doi: 10.1186/1477-7525-12-45
- Fernandez-Feijoo, F., Samartin-Veiga, N., & Carrillo-de-la-Peña, M. T. (2022). Quality of life in patients with fibromyalgia: contributions of disease symptoms, lifestyle and multi-medication. *Front Psychol.*, 13, 924405. doi: 10.3389/fpsyg.2022.924405
- Galvez-Sánchez, C. M., Montoro, C. I., Duschek, S., & Del Paso, G. A. R. (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. doi: 10.1016/j.jad.2020.01.129
- Hadi, M. A., McHugh, G. A., & Closs, S. J. (2019). Impact of chronic pain on patients' quality of life: a comparative mixed-methods study. *J Patient Exp*, 6(2), 133-141. doi: 10.1177/2374373518786013
- Hunt, S. M., McEwen, J., & McKenna, S. P. (1985) Measuring health status: a new tool for clinicians and epidemiologists. *J R Coll Gen Pract.*, 35(273), 185-8.
- Keponen, R., & Kielhofner, G. (2006). Occupation and meaning in the lives of women with chronic pain. *Scand J Occup Ther.*, 13(4), 211-220. doi: 10.1080/11038120600672975.
- Küçükdeveci, A., McKenna, S., Kutlay, S., Gürsel, Y., Whalley, D., & Arasil, T. (2000). The development and psychometric assessment of the Turkish version of the Nottingham Health Profile. *Int J Rehabil Res.*, 23(1), 31-38. doi: 10.1097/00004356-200023010-00004
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping* (pp. 334-376). New York: Springer Publishing Company.
- Luque-Reca, O., Pulido-Martos, M., Gavilán-Carrera, B., García-Rodríguez, I. C., McVeigh, J. G., Aparicio, V. A. et al. (2021). Emotional intelligence impairments in women with fibromyalgia: associations with widespread pain. *J Health Psychol*, 26(11), 1901-1912. doi: 10.1177/1359105319890916
- Mannerkorpi, K., Kroksmark, T., & Ekdahl, C. (1999). How patients with fibromyalgia experience their symptoms in everyday life. *Physiother Res Int*, 4(2), 110-122. doi: 10.1002/pri.157
- Marques, A. P., Santo, A. d. S. d. E., Berssaneti, A. A., Matsutani, L. A., & Yuan, S. L. K. (2017). Prevalence of fibromyalgia: literature review update. *Rev Bras Reumatol Engl Ed.*, 57, 356-363. doi: 10.1016/j.rbre.2017.01.005
- Nielsen, S. S., Skou, S. T., Larsen, A. E., Bricca, A., Søndergaard, J., & Christensen, J. R. (2022). The effect of occupational engagement on lifestyle in adults living with chronic pain: a systematic review and meta-analysis. *Occup Ther Int.*, 2022. doi: 10.1155/2022/7082159
- Nielson, W. R., Jensen, M. P., Karsdorp, P. A., & Vlaeyen, J. W. (2013). Activity pacing in chronic pain: concepts, evidence, and future directions. *Clin J Pain*, 29(5), 461-468. doi: 10.1097/AJP.0b013e3182608561
- Offenbaecher, M., Kohls, N., Ewert, T., Sigl, C., Hieblinger, R., Toussaint, L. L. et al. (2021). Pain is not the major determinant of quality of life in fibromyalgia: Results from a retrospective "real world" data analysis of fibromyalgia patients. *Rheumatol Int*, 41(11), 1995-2006. doi: 10.1007/s00296-020-04702-5
- Ortiz-Rubio, A., Cabrera-Martos, I., Haro-Piedra, E., López-López, L., Rodríguez-Torres, J., Granados-Santiago, M. et al. (2022). Exploring perceived occupational balance in women with fibromyalgia: a descriptive study. *Scand Occup Ther.*, 29(5), 395-402. doi: 10.1080/11038128.2020.1865449
- Raison, V. (2009). Neurobiology of depression, fibromyalgia and neuropathic pain. *Front Biosci*, 14, 5291-5338. doi: 10.2741/3598
- Samami, E., Shahhosseini, Z., & Elyasi, F. (2021). The effect of psychological interventions on the quality of life in women with fibromyalgia: a systematic review. *J Clin Psychol Med Settings.*, 28(3), 503-517. doi: 10.1007/s10880-021-09794-0
- Sarzi-Puttini, P., Giorgi, V., Marotto, D., & Atzeni, F. (2020). Fibromyalgia: an update on clinical characteristics, aetiopathogenesis and treatment. *Nat Rev Rheumatol.*, 16(11), 645-660. doi: 10.1038/s41584-020-00506-w
- Senem, Ş., Koçak, F. A., & Tuncay, F. (2019). Fibromiyalji sendromunda yaşam kalitesinin değerlendirilmesi. *Ahi Evran Medical Journal*, 3(2), 48-53.
- Sezgin Özcan, D., Aras, M., Köseoğlu, B. F., & Şentürk Güven, Ş. (2013). Fibromiyalji sendromlu kadın hastalarda yaşam kalitesi ve ilişkili durumlar. *Türk Osteoporoz Dergisi* 19: 42-47
- Stamm, T., Wright, J., Machold, K., Sadlo, G., & Smolen, J.

- (2004). Occupational balance of women with rheumatoid arthritis: a qualitative study. *Musculoskeletal Care*, 2(2), 101-112. doi: 10.1002/msc.62
- van Hecke, O., Torrance, N., & Smith, B. H. (2013). Chronic pain epidemiology—where do lifestyle factors fit in? *Br J Pain.*, 7(4), 209-217. doi: 10.1177/2049463713493264
- Wagman, P., Ahlstrand, I., Björk, M., & Håkansson, C. (2020). Occupational balance and its association with life satisfaction in men and women with rheumatoid arthritis. *Musculoskeletal care*, 18(2), 187-194. doi: 10.1002/msc.1454
- Wagman, P., & Håkansson, C. (2014). Exploring occupational balance in adults in Sweden. *Scand J Occup Ther.*, 21(6), 415-420. doi: 10.3109/11038128.2014.934917
- Wolfe, F., Smythe, H. A., Yunus, M. B., Bennett, R. M., Bombardier, C., Goldenberg, D. L. et. al. (1990). The American College of Rheumatology 1990 criteria for the classification of fibromyalgia. *Arthritis & Rheum.*, 33(2), 160-172. doi: 10.1002/art.1780330203
- Wolfe, F., Walitt, B., Perrot, S., Rasker, J. J., & Häuser, W. (2018). Fibromyalgia diagnosis and biased assessment: sex, prevalence and bias. *PloS one*, 13(9), e0203755. doi: 10.1371/journal.pone.0203755