ORİJİNAL ARAŞTIRMA ORIGINAL RESEARCH

The Effect of Pain Belief of the Elderly People with Chronic Low Back Pain on Quality of Life and Disability

Kronik Bel Ağrısı Olan Yaşlılarda Ağrı İnancının Yaşam Kalitesi ve Dizabiliteye Etkisi

 Zeynep KILIÇ[a], Berat Meryem ALKAN[b]

ᵃDepartment of Physical Medicine and Rehabilitation, Ankara City Hospital, Ankara, TURKEY
ᵇDepartment of Physical Medicine and Rehabilitation, Ankara Yıldırım Beyazıt University Faculty of Medicine, Ankara City Hospital, Ankara, TURKEY

ABSTRACT Objective: In the present study, the purpose was to investigate the effect of pain beliefs on the quality of life and functional condition in the elderly with chronic low back pain. **Material and Methods:** Patients over 65 years old who applied to our outpatient clinic with chronic low back pain were included in the study. The patients with a history of trauma, malignancy, inflammatory diseases, those who were operated in the lumbar region, who had neurological deficits, those with hip and knee arthroplasty, those who were mobilized with support, receiving treatment for anxiety, depression and dementia were not included. The demographic and clinical data were recorded. The Visual Analog Scale (VAS) was used for the pain severity, the Pain Beliefs Scale was used for the pain beliefs, the Roland Morris Disability Scale was used for the disability, and the Nottingham Health Profile was used for quality of life. **Results:** The mean age of the 52 patients who were included in the study was 71±4.78 and 12 were male, 40 were female. The mean Pain Beliefs Scale psychological score was 4.77±0.73, mean organic score was 4.57±0.9. The average score of Roland Morris Disability Scale was 14.58±5.88 and the average of Nottingham Health Profile score was 281.68±123.55. The organic score was found to be significantly related to movement VAS, total score of Nottingham Scale and pain, social isolation, physical activity, energy sub-scores, age, and Roland Morris scores (p<0.05). The psychological score was associated significantly with the movement VAS and Nottingham Health Profile sleep score (p<0.05). **Conclusion:** As the level of pain increased the scores of beliefs in pain also increased. Physical activity levels and quality of life were also closely related to pain beliefs.

Keywords: Elderly; low back pain; pain belief; disability; quality of life

ÖZET Amaç: Bu çalışmada, kronik bel ağrısı olan yaşlılarda ağrı inançlarının yaşam kalitesi ve fonksiyonel duruma etkisini araştırmak amaçlanmıştır. **Gereç ve Yöntemler:** Polikliniğimize, kronik bel ağrısı şikâyetiyle başvuran 65 yaş üstü hastalar çalışmaya alındı. Travma, malignite, inflamatuar hastalık öyküsü olan, lomber bölgeden operasyon geçiren, nörolojik defisiti olan, kalça ve diz artroplastisi yapılan, destekle mobilize olan, anksiyete/depresyon ve demansı nedeniyle tedavi alan hastalar çalışmaya alınmadı. Demografik ve klinik veriler kaydedildi. Ağrı şiddeti değerlendirmesi için Vizüel Analog Skala (VAS), ağrı inancını değerlendirmek amacıyla Ağrı İnançları Ölçeği, dizabilite değerlendirmesinde Roland Morris Dizabilite Ölçeği, yaşam kalitesi için Nottingham Sağlık Profili kullanıldı. **Bulgular:** Çalışmaya alınan 52 hastanın yaş ortalaması 71±4,78 ve 12'si erkek 40'ı kadındı. Ağrı İnançları Ölçeği psikolojik puan ortalaması 4,77±0,73; organik puan ortalaması 4,57±0,9 idi. Roland Morris Dizabilite Ölçeği skoru ortalaması 14,58±5,88; Nottingham Sağlık Profili skoru ortalaması 281,68±123,55 idi. Organik puan; hareket VAS, Nottingham ölçeğinin total puanı, ağrı, sosyal izolasyon, fiziksel aktivite, enerji alt puanları, yaş ve Roland Morris skorları ile anlamlı derecede ilişkili bulundu (p<0,05). Psikolojik puan ise hareket VAS ve Nottingham Sağlık Profili uyku skoru ile anlamlı düzeyde ilişkiliydi (p<0,05). **Sonuç:** Hastalarda ağrı düzeyi arttıkça, ağrıya dair inanç skorları da artmaktadır. Fiziksel aktivite düzeyi, yaşam kalitesi, sosyal destek ve kaliteli uyku da ağrı inançları ile yakından ilişkilidir.

Anahtar Kelimeler: Yaşlı; bel ağrısı; ağrı inancı; dizabilite; yaşam kalitesi

It was shown that chronic pain in the elderly is more common than in other age groups, and its prevalence can range from 24% to 86%.[1-8] Among these painful conditions, musculoskeletal pains and espe-

cially chronic low back pain are in the first place.[9-11] The pain, which is considered to be a biological response to tissue damage, has a dimension related to genetics, emotional, cultural characteristics, beliefs and individual factors; and for this reason, individual pain experience and differences in severity are observed.[12] In the elderly, it was shown in previous studies that characteristics like being women, being separated from a spouse or being divorced increase the frequency of pain, and the experience of pain shows different characteristics according to the region, different ethnic groups and races.[13-15] These findings show that pain is a very complex event that cannot be explained only in biological terms, and it has social, cultural and psychological aspects.

There are many studies conducted on the localization, severity, duration, intensity and quality of pain in the elderly. However, it is not possible to cope with pain only by identifying the pain. It is also known that the beliefs of individuals who suffer from pain because of organic or psychological origins can cause differences in their strategies to deal with pain.[16,17] Determining the beliefs of the patient in pain will contribute significantly to compliance with treatment and the content of the treatment. Especially in the elderly patient group that has musculoskeletal pain most commonly, it is important to know the pain beliefs of individuals and the coping mechanisms used against pain, and to improve quality of life.[18-20]

In this study, the purpose was to investigate the effect of pain beliefs on the quality of life and functional condition in the elderly with chronic low back pain.

▌ MATERIAL AND METHODS

The patients over the age of 65, who applied to our clinic with low back pain between May and August 2018, who had chronic low back pain, were included in the study.

The patients who had history of traumas, malignancy, inflammatory disease, those who were operated in the lumbar region, who had neurological deficits, who had hip and knee arthroplasty, who were mobilized with support, who received treatment because of anxiety, depression and dementia were not included in the study.

The demographic and clinical data of the patients were recorded. The Visual Analog Scale (VAS) was used for pain severity assessment, Pain Beliefs Scale was used to evaluate pain beliefs, Roland Morris Disability Scale (RMDS) was used for disability assessment, Nottingham Health Profile (NHP) was used for quality of life.

OUTCOME MEASURES

Pain Severity

VAS, which is used to assess the severity of low back pain in patients, consists of a 10 cm line evaluating pain severity. Increased scores mean increased pain severity. In the present study, the pain felt in the form of rest and activity from patients was measured with VAS.

Pain Belief

The Pain Beliefs Questionnaire (PBQ) consists of 12 questions evaluating organic (8 questions) and psychological (4 questions) beliefs. Each question has 6 options that range from "never" to "always". The six items were "All of the time", "Most of the time", "A lot of the time", "Some of the time", "A little of the time", "None of the time" (e.g. pain when tissues in the body are damaged result occurs). The total score for organic and psychological sub-tests is calculated by collecting the scores received from the items in the relevant subtest and by dividing them into the number of items in that subtest. Higher scores indicate greater agreement with the beliefs.

The Pain Beliefs Scale was developed by Edward et al. in 1992. Its Turkish validity and reliability study was done for chronic pain.[21]

DISABILITY

RMDS consists of a total of 24 items to assess functional condition and disability in patients who have lower back pain. Answers are given as Yes/No for each item. "Yes" answer is given 1 point, "No" response is given "0" point. The score is found with the sum of the points. High scores indicate insufficient physical activity. Turkish validity and reliability study was proven in patients with lower back pain.[22,23]

QUALITY OF LIFE

NHP consists of 6 subsections evaluating emotional, social and physical health problems detected by the patient as: Energy level, pain, physical activity, sleep, emotional reactions, and social isolation. The questionnaire consists of a total of 38 questions. Questions are answered as Yes/No. The complaints at the time of the questionnaire are questioned. Positive responses to specific fields have a pre-determined scoring chart. The total score for each subcategory is 100. The sum of subcategories can be given as a profile. High scores indicate that the quality of life of the patient is affected negatively. The Turkish validity and reliability study of the NPH, which is used to assess the quality of life, was conducted, and it is used in many studies involving different groups of patients.[24]

The approval of the ethics committee for this study was received from the Yıldırım Beyazıt University Faculty of Medicine Clinical Research Ethics Committee (24.10.2018-227). The ethical rules reported in the 1964 Helsinki Declaration, which was revised in 2013, were adopted in the present study. The data and results obtained in this study were reported to patients that these data would be used only for scientific purposes and their consents were received.

STATISTICAL ANALYSIS

The SPSS 22.0 package program was used in the study. The data were given in the form of mean±standard deviation (SD) and median (minimum-maximum) by making descriptive statistics. The normal distribution of the data was investigated with the Kolmogorov-Smirnov and Shapiro-Wilk tests. The Mann-Whitney U test was performed in cross-group comparisons. The demographic and clinical characteristics were examined with PBQ, and correlations between RMDS and NHP were examined with the Spearman correlation test. $p < 0.05$ value was considered to be statistically significant.

▌ RESULTS

The mean age of the 52 patients who were included in the study was 71±4.78 (minimum-maximum: 65-82). Among these, 12 were male, 40 were female, and 45 (86.54%) had not received higher education. The demographic characteristics of the patients are shown in Table 1.

The mean PBQ psychological score was 4.77±0.73 (minimum-maximum: 2-6), the mean organic score was 4.57±0.9 (minimum-maximum: 2.13-6.63). The mean RMDS score was 14.58±5.88 (minimum-maximum: 1-23), the mean NHP score was 281.68±123.55 (minimum-maximum: 8.96-522.14). The VAS, pain belief, disability and quality of life scores of the patients are shown in Table 2.

In the statistical analysis, the PBQ organic score was found to be significantly related to movement VAS, NHP's pain, social isolation, physical activity, energy sub-scores, and the NHP total score was found to be significantly related with age and RMDS scores ($p < 0.05$). The organic score was not associated with gender, education level, living alone status, symptom durations, and resting VAS. Although the PBQ psychological score was statistically significantly related to the movement VAS and

TABLE 1: Demographic characteristics of the geriatric patients with chronic low back pain.	
n=52	
Age (Mean±SD) (minimum-maximum) (median)	71±4.78 (65-82) (70)
Female/Male n (%)	40 (76.92)/12 (23.08)
Body mass index (Mean±SD) (minimum-maximum) (median)	29.67±4.36 (22.30-42.80) (29.05)
Education n (%)	
Primary school	41 (78.85)
Secondary school	4(7.69)
Higher education	7 (13.46)
Profession n (%)	
Heavy	3 (5.77)
Desk job	12 (23.08)
Housewife	37 (71.15)
Home life	
Alone	15 (28.85)
With family	37 (71.15)
Diagnosis	
Lumbar spondylosis	31 (59.62)
Lumbar spinal stenosis	18 (34.62)
Lumbar spondylolisthesis	3 (5.76)
Systemic disease	
Yes	48 (92.31)
No	4 (7.69)

SD: Standard deviation.

TABLE 2: Clinical characteristics of the geriatric patients with chronic low back pain.	
n=52	(Mean±SD) (minimum-maximum) (median)
Symptom duration (Year)	9.35±6.31 (1-30) (9)
Resting VAS	2.27±1.39 (0-5) (2)
Movement VAS	7.08±1.19 (4-10) (7)
Pain Belief Scale	4.77±0.73 (2-6) (5)
Psychological	4.57±0.9 (2.13-6) (4.7)
Organic	
RMDS	14.58±5.86 (1-23) (15.5)
NHP	281.68±123.55 (8.96-522.14) (283.64)
Pain	54.03±28.49 (0-100) (49.87)
Emotional reactions	31.05±23.71 (0-100) (28.83)
Sleep	51.49±25.42 (0-100) (55-93)
Social isolation	26.23±28.65 (0-100) (20.69)
Physical activity	43.70±16.95 (0-79.5) (41.86)
Energy	73.07±37.26 (0-100) (100)

SD: Standard deviation; VAS: Visual Analog Scale; RMDS: Roland Morris Disability Scale; NHP: Nottingham Health Profile.

NHP sleep score, it was not related at a statistically significant level with age, gender, educational status, living alone status, symptom time, resting VAS, RMDS and NHP total scores. The relation between the demographic and clinical characteristics of the patients' PBQ, organic and psychological scores is shown in Table 3 and Table 4.

PBQ's psychological and organic scores were found to be statistically similar in both genders. The pain and NHP total scores that occurred with the movement were higher in female patients. Table 5 shows the comparison of demographic and clinical data according to gender and PBQ scores.

DISCUSSION

In the chronic process of pain in patients, avoiding activities for fear of pain and believing in passive treatment rather than active treatment are important in addition to organic pathology psychosocial factors like the belief that pain will cause injury.[25,26] For this reason, identifying the variables that determine pain beliefs besides conventional treatments, and developing a strategy for it increases the effectiveness of the treatment. In the present study, in which the beliefs of pain were evaluated, it was determined that organic and psychological belief scores were similar and high. In this respect, it can be argued that patients believe that psychological beliefs are accompanied as well as the belief that pain is accompanied by organic factors in chronic lower back pain geriatric patients. The high organic belief scores in the patient group show that they think that changes in the body

TABLE 3: Correlation of Pain Beliefs Scale-organic score, psychological score and clinical and demographical data.						
n=52	Roland Morris	Age	Education status	Resting-VAS	Movement-VAS	Symptom duration
PBS-OP	r=0.434*	r=0.365*	r=0.120	r=0.247	r=0.391*	r=0.101
	p=0.001	p=0.008	p=0.397	p=0.077	p=0.004	p=0.476
PBS-PP	r=0.217	r=0.075	r=0.002	r=0.189	r=0.347*	r=0.009
	p=0.122	p=0.595	p=0.989	p=0.181	p=0.012	p=0.951

PBS-OS: Pain Beliefs Scale-organic score; PBS-PS: Pain Beliefs Scale-psychological score.
*p≤0.05 and r≤-0.300/p≤0.05 and r≥0.300.

TABLE 4: Correlation of Pain Beliefs Scale-organic score, psychological score and quality of life scores.						
n=52	NHP-Pain	NHP-DR	NHP-Sleep	NHP-FA	NHP-E	NHP-SI	NHP-total
PBS-OS	r=0.544*	r=0.261	r=0.222	r=0.381*	r=0.261	r=0.311*	r=0.529*
	p<0.001	p=0.062	p=0.114	p=0.005	p=0.062	p=0.025	p<0.001
PBS-PS	r=0.267	r=0.156	r=0.322*	r=0.082	r=0.090	r=0.228	r=0.272
	p=0.055	p=0.269	p=0.034	p=0.564	p=0.527	p=0.104	p=0.051

PBS-OS: Pain Beliefs Scale-organic score; PBS-PS: Pain Beliefs Scale-psychological score; NHP-DR: Nottingham Health Profile-emotional reactions;
NHP-FA: Nottingham Health Profile-physical activity; NHP-SI: NHP-social isolation; NHP-E: NHP-energy.
*p≤0.05 and r≤-0.300/p≤0.05 and r≥0.300.

TABLE 5: Comparison of the Pain Beliefs Scale scores and demographical and clinical data according to gender.			
Mean±SD	**Female**	**Male**	
(median) (minimum-maximum)	**n=40**	**n=12**	**p value**
Age	70.58±4.68	72.42±5.03	0.294
	70 (65-82)	74 (65-79)	
Resting VAS	2.35±1.35	2±1.53	0.503
	2 (0-5)	2 (0-4)	
Movement VAS	7.25±0.95	6.50±1.67	0.044*
	7 (4-9)	6 (4-10)	
Roland Morris Scale	15.27±5.38	12.25±6.96	0.174
	16.50 (2.23)	12.50 (1-23)	
Pain Belief Scale psychological score	4.83±0.65	4.54±0.92	0.375
	5 (3.25-6)	4.50 (2-5.50)	
Pain Belief Scale organic score	4.62±0.81	4.32±1.04	0.446
	4.75 (2.75-6)	4.38 (2.13-5.63)	
NHP total score	303.32±119.56	209.53±112.70	0.030*
	317.11 (57.31-522.14)	210.72 (8.96-383.51)	

SD: Standard deviation; *p<0.05; VAS: Visual analog scale; NHP: Nottingham Health Profile.

with old age are inevitable. The high psychological belief scores can indicate that they believe that some of the things they can do for themselves will at least improve their quality of life, even if it does not fully treat their illnesses.

Edwards et al. who developed the original scale, reported that pain beliefs did not change according to pain severity.[21] In contrast, the present study found that the pain scores that occurred due to movement and the scale of organic scores of the pain belief were related. The increase in pain in a movement of patients was associated with an increased belief that the cause of the pain was mechanical, and therefore was organic. Meanwhile, the pain scores that stemmed from the movement and the psychological scores of the pain belief scale were also associated. Similarly, in their study, Ulus et al. determined that the increase in the scale of pain beliefs in the elderly was associated with increased psychological pain severity.[27]

The increase in pain in our patients, especially during an activity, will also affect the quality of life negatively, and will force them to avoid from moving or exercising. Studies show that people with chronic musculoskeletal pain often experience fear of movement, which limits the adequate application of a movement or exercise, and directs them to behaviors

where movement is less.[28,29] It was found in another study that there is more kinesiophobia in those with high pain severity, which increases disability and affects the quality of life negatively.[30]

In our study, the pain scores of the patients were associated with organic and psychological scores of the pain belief scale. In other words, as the level of pain increased in the patients, their beliefs in pain were also significantly affected, which made them think that their beliefs in pain were also modifiable with the effective treatment of pain. Walsh and Radcliffe examined how organic and psychological belief references in people with low back pain changed after a multidisciplinary pain treatment program, a marked drop was detected in the organic belief scores of patients after the treatment.[20]

In their studies evaluating the effect of pain beliefs on quality of life, Dysvik et al. did not find a significant relationship between SF-36's physical health dimension and pain beliefs.[31] Otherwise in our study, we determined that the quality of life of patients was significantly affected by pain beliefs. PBQ organic score was found to be significantly related to the NHP total score. In the present study, it was determined that as the belief that patients' pain was organically increased in physical activities measured with the NHP's physical activity sub-scores. In addition, or-

ganic pain belief scores were related to NHP's pain, social isolation and energy sub-scores, and the psychological scores of the pain faith scale were also associated with sleep status. Evidence suggests social interactions and sleep status play an important role in pain perception.[32]

In our study, it was determined that the disability level also affected organic scores of the pain belief scale. Similarly, it was reported in other studies that various attitudes and behaviors related to the development of persistent pain and disability, in which beliefs helped fast stimuli by providing shortcuts, and this could cause potentially harmful reactions.[29,33] For example, some beliefs that lay the ground for activity restrictions are acquired after long-term pain and disability. If an activity results in pain, a belief occurs that the person must stop it before harming himself/herself, and that s/he should rest to heal.[34]

In the present study, when the relationship between sociodemographic characteristics of elderly patients with chronic low back pain and PBQ organic and psychological scores was examined, it was determined that there was no statistically significant relation between pain beliefs and gender and education level. In addition, the pain level and NHP total scores occurring with activity were higher in female patients. In recent years, several studies were published on pain mechanisms, pain control, and gender differences in treatment modalities. The data in the literature show that gender is an important factor in the modulation of pain, and that men and women respond differently to pain.[35] It was reported that pain sensitivity increased in women, and they were more affected by chronic pain syndromes.[36,37]

LIMITATIONS OF THE STUDY

The study was conducted in one center. The sampling of the study consisted of a group of geriatric patients who had chronic low back pain. In addition, since the pain belief is affected by cultural and environmental factors, the findings cannot be generalized to all patients. The low sampling number and the lack of a control group are also among the weaknesses of the study.

The number of studies conducted by the physical medicine and rehabilitation (PM&R) department in geriatric patients about pain is limited. Pain is one of the areas with which PM&R is most interested. The fact that one of the symptoms most affecting a large patient population, a neglected aspect of pain, was investigated in the present study is the strength of the study.

Further studies can be conducted with a large number of sampling, in the multi-centered fashion, in diverse cultural and environmental areas.

CONCLUSION

As the pain levels increase, the belief scores of pain also increase. High levels of pain during activity in the elderly will push them into avoiding mobility and daily life activities. Physical activity levels, disability, quality of life, social support, and quality sleep are closely related to pain beliefs. Pain beliefs should also be evaluated to improve quality of life, disability and pain in the elderly.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

REFERENCES

1. Patel KV, Guralnik JM, Dansie EJ, Turk DC. Prevalence and impact of pain among older adults in the United States: findings from the 2011 National Health and Aging Trends Study. Pain. 2013;154(12):2649-57.[Crossref] [PubMed] [PMC]

2. Docking RE, Fleming J, Brayne C, Zhao J, Macfarlane GJ, Jones GT; Cambridge City over-75s Cohort Study collaboration. Epi-demiology of back pain in older adults: prevalence and risk factors for back pain onset. Rheumatology (Oxford). 2011;50(9):1645-53.[Crossref] [PubMed]

3. Yu HY, Tang FI, Kuo BI, Yu S. Prevalence, interference, and risk factors for chronic pain among Taiwanese community older people. Pain Manag Nurs. 2006;7(1):2-11.[Crossref] [PubMed]

4. Jakobsson U. The epidemiology of chronic pain in a general population: results of a survey in southern Sweden. Scand J Rheumatol. 2010;39(5):421-9.[Crossref] [PubMed]

5. Larsson C, Hansson EE, Sundquist K, Jakobsson U. Chronic pain in older adults: prevalence, incidence, and risk factors. Scand J Rheumatol. 2017;46(4):317-25.[Crossref] [PubMed]

6. Naumov AV, Moroz VI, Khovasova NO, Manevich TM, Balaeva MM, Tkacheva ON. [Chronic pain in patients older than 60 years: a view of the geriatrics]. Zh Nevrol Psikhiatr Im S S Korsakova. 2019;119(6):53-9.[Crossref] [PubMed]

7. Stompór M, Grodzicki T, Stompór T, Wordliczek J, Dubiel M, Kurowska I. Prevalence of chronic pain, particularly with neuropathic component, and its effect on overall functioning of elderly patients. Med Sci Monit. 2019;25:2695-701.[Crossref] [PubMed] [PMC]

8. Rapo-Pylkkö S, Haanpää M, Liira H. Chronic pain among community-dwelling elderly: a population-based clinical study. Scand J Prim Health Care. 2016;34(2):159-64.[Crossref] [PubMed] [PMC]

9. Ghanei I, Rosengren BE, Hasserius R, Nilsson JÅ, Mellström D, Ohlsson C, et al. The prevalence and severity of low back pain and associated symptoms in 3,009 old men. Eur Spine J. 2014;23(4):814-20. [Crossref] [PubMed] [PMC]

10. Hartvigsen J, Christensen K, Frederiksen H. Back pain remains a common symptom in old age. a population-based study of 4486 Danish twins aged 70-102. Eur Spine J. 2003;12(5):528-34.[Crossref] [PubMed] [PMC]

11. de Souza IMB, Sakaguchi TF, Yuan SLK, Matsutani LA, do Espírito-Santo AS, Pereira CAB, et al. Prevalence of low back pain in the elderly population: a systematic review. Clinics (Sao Paulo). 2019;74:e789.[Crossref] [PubMed] [PMC]

12. Tan BK, Smith AJ, O'Sullivan PB, Chen G, Burnett AF, Briggs AM. Low back pain beliefs are associated to age, location of work, education and pain-related disability in Chinese healthcare professionals working in China: a cross sectional survey. BMC Musculoskelet Disord. 2014;15:255.[Crossref] [PubMed] [PMC]

13. Koçoğlu D, Özdemir L. [The relation between pain and pain beliefs and sociodemographic-economic characteristics in an adult population]. Agri. 2011;23(2):64-70.[PubMed]

14. Edwards CL, Fillingim RB, Keefe F. Race, ethnicity and pain. Pain. 2001;94(2):133-7. [Crossref] [PubMed]

15. Hardt J, Jacobsen C, Goldberg J, Nickel R, Buchwald D. Prevalence of chronic pain in a representative sample in the United States. Pain Med. 2008;9(7):803-12.[Crossref] [PubMed]

16. Jakobsson U, Klevsgård R, Westergren A, Hallberg IR. Old people in pain: a comparative study. J Pain Symptom Manage. 2003;26(1):625-36.[Crossref] [PubMed]

17. Leveille SG, Fried L, Guralnik JM. Disabling symptoms: what do older women report? J Gen Intern Med. 2002;17(10):766-73.[Crossref] [PubMed] [PMC]

18. Yildizeli Topcu S. Relations among pain, pain beliefs, and psychological well-being in patients with chronic pain. Pain Manag Nurs. 2018;19(6):637-44.[Crossref] [PubMed]

19. Berk HO, Bahadir G. [The experience of chronic pain and pain beliefs]. Agri. 2007;19(4):5-15.[Crossref] [PubMed]

20. Walsh DA, Radcliffe JC. Pain beliefs and perceived physical disability of patients with chronic low back pain. Pain. 2002;97(1-2):23-31.[Crossref] [PubMed]

21. Edwards LC, Pearce SA, Turner-Stokes L, Jones A. The Pain Beliefs Questionnaire: an investigation of beliefs in the causes and consequences of pain. Pain. 1992;51(3):267-72.[Crossref] [PubMed]

22. Roland M, Morris R. A study of the natural history of back pain. Part I: development of a reliable and sensitive measure of disability in low-back pain. Spine (Phila Pa 1976). 1983;8(2):141-4.[Crossref] [PubMed]

23. Küçükdeveci AA, Tennant A, Elhan AH, Niyazoglu H. Validation of the Turkish version of the Roland-Morris Disability Questionnaire for use in low back pain. Spine (Phila Pa 1976). 2001;26(24):2738-43.[Crossref] [PubMed]

24. Kücükdeveci AA, McKenna SP, Kutlay S, Gürsel Y, Whalley D, Arasil T. The development and psychometric assessment of the Turkish version of the Nottingham Health Profile. Int J Rehabil Res. 2000;23(1):31-8.[Crossref] [PubMed]

25. Barr KP, Harrast MA. Bel ağrısı. In: Braddom RL, Buschbacher RM, eds. Sarıdoğan M, çeviri editörü. Fiziksel Tıp ve Rehabilitasyon. 3. Baskı. Ankara: Güneş Tıp Kitabevleri; 2010. p.883-927.

26. Polat M, Karaoğlan B. [Approach to lumbar pain: recognition treatment]. Klinik Tıp Aile Hekimliği Dergisi. 2017;9(6):13-21.[Link]

27. Ulus B, İrban A, Bakırcı N, Yılmaz E, Uslu Y, Yücel N, et al. Determination of pain characteristics, pain belief and risk of depression among elderly residents living at nursing home. Turkish Journal of Geriatrics. 2014;17(2):180-7.[Link]

28. Main CJ, Foster N, Buchbinder R. How important are back pain beliefs and expectations for satisfactory recovery from back pain? Best Pract Res Clin Rheumatol. 2010;24(2):205-17.[Crossref] [PubMed]

29. Leeuw M, Goossens ME, van Breukelen GJ, de Jong JR, Heuts PH, Smeets RJ, et al. Exposure in vivo versus operant graded activity in chronic low back pain patients: results of a randomized controlled trial. Pain. 2008;138(1):192-207.[Crossref] [PubMed]

30. Luque-Suarez A, Martinez-Calderon J, Falla D. Role of kinesiophobia on pain, disability and quality of life in people suffering from chronic musculoskeletal pain: a systematic review. Br J Sports Med. 2019;53(9):554-9.[Crossref] [PubMed]

31. Dysvik E, Lindstrøm TC, Eikeland OJ, Natvig GK. Health-related quality of life and pain beliefs among people suffering from chronic pain. Pain Manag Nurs. 2004;5(2):66-74.[Crossref] [PubMed]

32. Mewes R, Rief W, Kenn K, Ried J, Stenzel N. Psychological predictors for health-related quality of life and disability in persons with chronic obstructive pulmonary disease (COPD). Psychol Health. 2016;31(4):470-86.[Crossref] [PubMed]

33. Main CJ, Foster N, Buchbinder R. How important are back pain beliefs and expectations for satisfactory recovery from back pain? Best Pract Res Clin Rheumatol. 2010;24(2):205-17.[Crossref] [PubMed]

34. Linton SJ, Shaw WS. Impact of psychological factors in the experience of pain. Phys Ther. 2011;91(5):700-11.[Crossref] [PubMed]

35. Pieretti S, Di Giannuario A, Di Giovannandrea R, Marzoli F, Piccaro G, Minosi P, et al. Gender differences in pain and its relief. Ann Ist Super Sanita. 2016;52(2):184-9.[Crossref] [PubMed]

36. Fillingim RB, King CD, Ribeiro-Dasilva MC, Rahim-Williams B, Riley JL 3rd. Sex, gender, and pain: a review of recent clinical and experimental findings. J Pain. 2009;10(5):447-85.[Crossref] [PubMed] [PMC]

37. Miró J, Paredes S, Rull M, Queral R, Miralles R, Nieto R, et al. Pain in older adults: a prevalence study in the Mediterranean region of Catalonia. Eur J Pain. 2007;11(1):83-92. [Crossref] [PubMed]