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Research Article / Araştırma Makalesi

Are Pain and Depression Levels Related to the Quality of Life in Elderly People with Chronic Non-Specific Low Back Pain?

Kronik Non-Spesifik Bel Ağrılı Yaşlılarda Ağrı ve Depresyon Düzeylerinin Yaşam Kalitesi ile İlişkisi Var mıdır?

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Abstract

This study aimed to investigate the relationship between pain severity and depression level and quality of life in elderly patients with chronic non-specific low back pain (CNLBP) and determine the effect of age group on the quality of life, pain severity and depression symptom levels of patients. Evaluation parameters were obtained using scales specific to geriatric patients. Pain severity, depression, and quality of life were evaluated using the Geriatric Pain Measure (GPM), Geriatric Depression Scale (GDS), and World Health Organization Quality of Life Questionnaire-Older Adults Module (WHOQOL-OLD), respectively. The study included a total of 231 patients with CNLBP (age ≥65 years), of whom 62.3% (n=144) were female and 37.7% were male (n=87). There was a moderate correlation between the patients' GDS and GPM scores (r=0.53; p<0.05). GDS also had a moderate correlation with the 'past-present-and-future activities' (r=-0.52) and 'social participation' (r=-0.48) subdomains of WHOQOL-OLD (p<0.05). According to age groups, the only statistically significant difference was observed in 'sensory abilities' (p<0.05). Quality of life is negatively affected by the level of depression and pain intensity in elderly individuals with CNLBP. Evaluation of pain severity and depressive symptom levels in elderly patients with CNLBP may contribute to the establishment of an elderly population with improved quality of life and treatment approach. There is a need for further studies to reveal the reasons for poorer quality of life and increased depression and pain.

Keywords: Low back pain, Age groups, Quality of Life, Elderly, Depression

Özet

Bu çalışmada kronik non-spesifik bel ağrılı (KNBA) yaşlı hastalarda ağrı şiddeti ile depresyon düzeyi ve yaşam kalitesi arasındaki ilişkinin araştırılması ve yaş grubunun yaşam kalitesi, ağrı şiddeti ve depresyon semptom düzeylerine etkisinin belirlenmesi amaçlanmıştır. Değerlendirme parametreleri, geriatrik hastalara spesifik ölçekler kullanılarak elde edildi. Ağrı şiddeti, depresyon ve yaşam kalitesi sırasıyla Geriatrik Ağrı Ölçeği (GPM), Geriatrik Depresyon Ölçeği (GDS) ve Dünya Sağlık Örgütü Yaşam Kalitesi Anketi-Yaşlı Yetişkinler Modülü (WHOQOL-OLD) kullanılarak değerlendirildi. Çalışmaya %62,3'ü (n=144) kadın ve %37,7'si erkek (n=87) olmak üzere KNBA'li (yaş ≥65 yaş) toplam 231 hasta dahil edildi. Hastaların GDS ve GPM puanları arasında orta düzeyde bir korelasyon vardı (r=0,53; p<0,05). Ayrıca GDS ile WHOQOL-OLD'un geçmiş, bugün ve gelecek faaliyetleri(r=-0.52) ve sosyal katılım(r=-0.48) alt alanları orta düzeyde bir korelasyona sahipti (p<0.05). Yaş gruplarına göre sadece duyusal işlevlerde istatistiksel olarak anlamlı farklılık gözlemlendi (p<0.05).KNBA'lı yaşlı bireylerde depresyon düzeyi ve ağrı şiddeti yaşam kalitesini olumsuz yönde etkilemektedir. KNBA'lı yaşlı hastalarda ağrı şiddeti ve depresif semptom seviyelerinin değerlendirilmesi, yaşam kalitesi artmış yaşlı populasyon oluşturulmasına ve tedavi yaklaşımına katkı sağlayabilir. Düşük yaşam kalitesinin, artan depresyon ve ağrının nedenlerini ortaya koyacak daha ileri çalışmalara ihtiyaç vardır.

Anahtar Kelimeler: Bel ağrısı, Yaş grupları, Yaşam kalitesi, Yaşlı, Depresyon

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1. Introduction

The growing number of elderly individuals in developed societies and Turkey has warranted new approaches to the health problems in this population (1). In Turkey, in 2020, the rate of the population aged 65 years and over was 9.5%, of whom 44.2% were male and 55.8% were female. It is estimated that this rate will reach 12.9% by 2030 (2). With the ageing population, there is an increase not only in chronic diseases but also in the prevalence of low back pain, patient care burden, and related costs (3-5).

Chronic non-specific low back pain (CNLBP) is a type of low back pain that persists for 12 weeks or longer and is not due to any specific pathology (6). With the increase in the elderly population, the prevalence of CNLBP also increases, resulting in physical limitations, reduced quality of life, balance problems, and psychosocial disorders (7,8).

One of the psychosocial disorders frequently encountered in the elderly population with CNLBP is depressive symptoms. In addition, the risk of low back pain development is doubled in elderly individuals with high depressive symptom scores (9). Due to this cause-and-effect relationship, chronic low back pain and depressive symptom circulation should be evaluated together. However, the increased rate of comorbid diseases, impaired cognitive functions, and loss of compensatory mechanisms in the elderly make it difficult to evaluate pain in a multifaceted manner (3,10). Therefore, it is recommended to use clear and easy-to-understand geriatric scales in the assessment of pain and depressive symptoms in the elderly population (11). In the literature, traditional scales have been used to investigate the localization, severity, and duration of pain, quality of life, and depression in the elderly (12,13). However, there are only limited studies that explored the relationship between quality of life, pain intensity, and depressive symptoms using isolated geriatric scales in elderly individuals with CNLBP, which is an important cause of disability (14,15).

Quality of life is a multi-dimensional concept related to an individual's interactions with other people, physical and social environment, expectations, and daily life experiences. As a result of the growing elderly population and emerging health problems, the evaluation of the quality of life of these individuals has become one of the main objectives (16). In the literature, it has been stated that it remains unclear whether questionnaires used in adults are sufficient in the assessment of the health-related quality of life in the elderly (17). In this context, it is recommended to develop short, easy-to-apply, clear, and face-to-face scales in the evaluation of the quality of life in this population (17).

This study investigated the relationship between quality of life, depression level, and pain severity in elderly patients with CNLBP using geriatric scales. In addition, we aimed to evaluate the quality of life, pain severity, and depressive symptom level according to age groups. Thus, we consider that the results of this study will contribute to a better understanding of the complex nature of CNLBP, which is an important health problem in increasingly ageing societies, and to the development of treatment programs.

2. Materials and Methods

This observational and descriptive study was carried out at the Physical Medicine and Rehabilitation Polyclinic of Kutahya Health Sciences University between June 2019 and June 2020 and conducted within the framework of ethical rules in accordance with the Declaration of Helsinki. Before the study, all patients were informed about the evaluations to be performed, and those aged 65 years and older, who met the study criteria and signed the voluntary consent form were included in the sample.

2.1. Participant Selection

2.1.1. Inclusion criteria

- Being aged 65 years and older
- Having low back pain lasting more than three months without an identifiable cause in the mechanical musculoskeletal system or lumbosacral spine;
- Having a mini-mental state examination score of 21 or greater

2.1.2. Exclusion criteria

- Having hearing or vision problems
- Having a current psychiatric diagnosis
- Using antidepressants
- Having inflammatory low back pain
- Diagnosis of any other pathology in the lumbar region (spondylolisthesis, spinal stenosis, spondylosis, disc herniation e.g.)
- Having a history of hip or knee arthroplasty
- Having trigger point in the lumbar region according to the myofascial pain syndrome criteria
- Being mobile with support
- Having a history of back surgery

2.2. Sampling

The sample size calculation was performed using G*Power version 3.1.2 software (Germany) based on the results of Akyol et al. for the correlation between pain intensity and depression level (18). Using a two-way hypothesis test, it was determined that at the 0.05 significance level (95.0% confidence interval) and 80% power, a sample size of 98 was required to reveal that the 0.28-unit correlation value was different from the 0 correlation value.

2.3. Measures

The patients' demographic data (gender, age, height, weight, educational status, etc.) were recorded in the prepared information form. Pain levels were evaluated using the Geriatric Pain Measure (GPM), depression levels using the Geriatric Depression Scale (GDS), and quality of life levels using the World Health Organization Quality of Life Questionnaire-Older Adults Module (WHOQOL-OLD). All the evaluations were undertaken through face-to-face interviews (E.Ş.).

2.3.1. Geriatric pain measure

GPM was developed by Ferrell et al. to describe the pain of patients and evaluate physical, emotional, cognitive, and behavioural responses that occur with pain (11). In 2017, Dursun et al. found that the 24-item Turkish version of GPM was a valid and reliable tool for use in elderly individuals (19). Scores obtained from GPM are evaluated in the range of 0-42 points. Each 'yes' answer is summed up, and the total score is evaluated out of a total of 100 points. A total score of 0-30 points is defined as mild pain,30-69 points as moderate pain, and 70 or greater as severe pain.

2.3.2. Geriatric depression scale

This scale was developed by Yesavage et al. to determine depression in the elderly and consists of 30 questions (20).The validity and reliability study of the Turkish version of GDS has been previously performed (21). High scores in GDS indicate high levels of depressive symptoms.

2.3.3. World Health Organization quality of life questionnaire-older adults module

WHOQOL-OLD is an elderly-specific version of WHOQOL-100. The validity and reliability analyses study of the Turkish version of this scale were performed by Eser et al (17). WHOQOL-OLD consists of 24 Likert-type questions and six subdomains, namely sensory abilities (effect of changes in the senses of sight, hearing, smell, taste, appetite, and touch on the quality of life), autonomy and independence (independence, respect, control of life in general, free choice, and the effect of these factors on the quality of life), past-present-and-future activities (feelings and thoughts concerning successes achieved in the past and life-long satisfaction with this success), social participation (views on using time and participation in important activities), death and dying (views on whether death is acceptable and inevitable), and intimacy (relationships with others and social support). Each subdomain has four questions. When all the questions are answered, a minimum of 4 points and a maximum of 20 points can be obtained from each subdomain. The raw scores obtained from the subdomains can be converted to the 0-100 range using the formula, "converted score = 6.25 x (raw score – 4)" (22). High scores indicate high levels of quality of life.

2.4. Statistical Analysis

The Statistical Package for the Social Sciences v. 21.0 was used for the analysis of the data. Skewness and kurtosis values were obtained to examine the normality of the distribution of continuous variables, parameters with values between +1 and -1 were considered to have a normal distribution (23). The Mann-Whitney U test was used to compare data that did not show a normal distribution. The relationship between non-normally distributed numerical variables was investigated using the Spearman correlation analysis. The Kruskal-Wallis H test was undertaken to evaluate the difference between the mean values of three or more groups in those that did not show a normal distribution. The statistical significance level was determined as $p<0.05$. In the correlation analysis, a correlation coefficient of 0-0.1 was evaluated as a non-significant correlation, 0.1-0.39 as a weak correlation, 0.4-0.69 as a moderate correlation, 0.7-0.89 as a strong correlation, and 0.9 and greater as a very strong correlation (24).

3. Results

A total of 231 patients with a mean age of 71.78 ± 4.60 years were included in the study. Of the patients, 37.7% (n=87) were male, and 62.3% (n=144) were female. Approximately half (n = 116; 50.2%) of the participants were primary school graduates. There was a concomitant chronic disease in 89.6% of the patients. Table 1 shows the data regarding the demographic characteristics. The most common chronic disease was hypertension (n=151; 65.4%), followed by cardiac diseases (n=82; 35.5%), diabetes mellitus (n=68; 29.4%), and gastrointestinal problems (n=55; 23.8%).

Table 1. Demographic characteristics of the patients

Variables		N	%
Gender			
	Male	87	37.7
	Female	144	62.3
Age groups (years)			
	65-69	81	35.1
	70-74	86	37.2
	75-79	45	19.5
	80-85	19	8.2
Education level			
	Illiterate	38	16,5
	Literate	34	14,7
	Primary school	116	50.2
	High school/undergraduate	43	18.6
Status of Income			
	Yes	191	82.7
	No	40	17.3
Marital status			
	Married	189	81.8
	Single/divorced	42	18.2
Chronic disease			
	Yes	207	89.6
	No	24	10.4

n: Number, %: Per cent

A moderate positive correlation was found between the GDS and GPM scores (r=0.53, $p<0.05$). In addition, GDS had a moderate negative correlation with the past- present-and future activities (r=-0.52) and social participation (r=-0.48) subdomains of WHOQOL-OLD. The correlation between the quality of life scores is shown in Table 2.

Table 2. Correlation between quality of life and pain intensity and level of depression

		GPM	GDS
GPM	r	1.00	**0.53**
	p	.	**0.00**
GDS	r	**0.53**	1.00
	p	**0.00**	.
WHOQOL-OLD-Turkish version – Total	r	-.070	**-0.23**
	p	0.29	**0.00**
WHOQOL – Sensory abilities	r	**0.37**	**0.28**
	p	**0.00**	**0.00**
WHOQOL – Autonomy and independence	r	**-0.22**	**-0.33**
	p	**0.01**	**0,00**
WHOQOL – Past, present, and future activities	r	**-0.34**	**-0.52**
	p	**0.00**	**0.00**
WHOQOL – Social participation	r	**-0.37**	**-0.48**
	p	**0.00**	**0.00**
WHOQOL – Death and dying	r	0.09	**0.32**
	p	0.20	**0.00**
WHOQOL – Intimacy	r	0.11	**-0.20**
	p	0.11	**0.01**

r: Spearman correlation coefficient, p: statistical significance level, GPM: Geriatric Pain Measure, GDS: Geriatric Depression Scale, WHOQOL-OLD: World Health Organization Quality of Life Questionnaire-Older Adults Module

When the results were evaluated according to age groups, it was determined that there was a statistically significant difference only in the sensory abilities subdomain of WHOQOL-OLD ($p<0.05$). As a result of the post-hoc analysis, this significance was determined to be due to the difference between the patients aged 65-69 years and those aged 75-79 years. The post hoc analyses of the statistically significant different data were performed using the Mann–Whitney U test. Table 3 shows the comparison of the GPM, GDS, and quality of life scores according to the age groups.

Table 3. Assessment of quality of life, pain intensity, and depression level according to age groups

Variables	Age (years)	Mean rank	d.f.	X^2	p*
GPM	65-69 (n = 81)	110.27	3	3.085	0.38
	70-74 (n = 86)	113.19			
	75-79 (n = 45)	131.19			
	80-85 (n = 19)	117.21			
GDS	65-69 (n = 81)	116.81	3	2.720	0.44
	70-74 (n = 86)	109.70			
	75-79 (n = 45)	117.62			
	80-85 (n = 19)	137.18			
WHOQOL-OLD-Turkish version – Total	65-69 (n = 81)	113.49	3	0.407	0.94
	70-74 (n = 86)	116.74			

	75-79 (n = 45)	120.69			
	80-85 (n = 19)	112.26			
	65-69 (n = 81)	106.10			
	70-74 (n = 86)	111.35			
WHOQOL – Sensory abilities	75-79 (n = 45)	138.29	**3**	**7.847**	**0.04**
	80-85 (n = 19)	126.42			
	65-69 (n = 81)	111.06			
	70-74 (n = 86)	116.60			
WHOQOL – Autonomy and independence	75-79 (n = 45)	118.46	3	1.212	0.75
	80-85 (n = 19)	128.50			
	65-69 (n = 81)	120.27			
	70-74 (n = 86)	114.19			
WHOQOL – Past-present-and-future activities	75-79 (n = 45)	112.27	3	0.562	0.91
	80-85 (n = 19)	114.82			
	65-69 (n = 81)	111.52			
	70-74 (n = 86)	123.46			
WHOQOL – Social participation	75-79 (n = 45)	110.33	3	1.815	0.61
	80-85 (n = 19)	114.74			
	65-69 (n = 81)	114.05			
	70-74 (n = 86)	119.09			
WHOQOL – Death and dying	75-79 (n = 45)	114.80	3	0.304	0.96
	80-85 (n = 19)	113.18			
	65-69 (n = 81)	121.18			
	70-74 (n = 86)	111.18			
WHOQOL – Intimacy	75-79 (n = 45)	127.03	3	5.825	0.12
	80-85 (n = 19)	89.61			

p: statistical significance level, GPM: Geriatric Pain Measure, GDS: Geriatric Depression Scale, WHOQOL-OLD: World Health Organization Quality of Life Questionnaire-Older Adults Module, X^2: chi-square value, d.f.: degrees of freedom **Kruskal-Wallis H test*

4. Discussion and Conclusion

This study investigated the relationship between quality of life, pain severity, and depression level in elderly individuals with CNLBP using geriatric scales. In addition, we evaluated whether these parameters were affected by the age variable. According to the results, there was a significant relationship between pain severity and depression level in the elderly with CNLBP. In addition, as the quality of life scores of patients in the past-present-and-future activities and social participation subdomains improved, their depression scores decreased, revealing a moderate correlation.

When the relationships between pain, depression, and quality of life in patients with CNLBP were examined, it was determined that as the severity of pain increased, the severity of depression also increased. Our results are consistent with studies in the literature indicating a relationship between low back pain and psychological factors (25). In addition, the positive effects of psychological support provided for patients with CNLBP on low back pain also support our results. There is also evidence suggesting that the increase in depressive symptoms increases perceived pain intensity by lower the pain threshold (26,27).

We observed that as depression severity increased, the quality of life of patients related to independence, respect, control of life, living independently, and social participation decreased. In a study conducted with individuals aged over 60 years, Soósová reported a relationship between depressive symptoms and all the quality of life subdomain scores and total scores, similar to our study (28). However, the author noted a moderate correlation between depression and all the quality of life subdomains, except for death and dying, which is different from our study (28).This discrepancy is considered to be due to these studies being conducted in countries with different cultures. In addition, the majority of the participants in this study had different chronic diseases, which may also have affected the results (28).

Many physiological changes that develop with increasing age in humans can affect the quality of life. In a previous study, it was emphasized that all the subdomains of quality of life might be affected by increasing age (29).In another study examining the quality of life of elderly individuals, no significant difference was found in the scores of the quality of life subdomains according to age groups (30). Another study evaluating participants aged 60 years and over in Turkey showed that the sensory abilities, social participation, and intimacy subdomains of quality of life were more negatively affected in individuals aged 75 years and over (31). In the current study, we did not detect any difference in any of the quality of life subdomains according to age groups, except for the sensory abilities subdomain. This suggests that the decrease in quality of life in the elderly population due to pain may be related to additional factors rather than ageing alone.

In conclusion, we determined that in a geriatric population with CNLBP, the depression level, pain severity, and quality of life were adversely affected. Depressive symptom severity besides the pain severity should be evaluated to create an elderly population with CNLBP with improved quality of life. We also consider it important to establish qualified geriatric rehabilitation centres according to the needs of the increasing elderly population to achieve goals in the management of accompanying factors, especially chronic pain and depressive symptoms in the elderly.

Certain limitations in this study should be taken into account. First, due to its cross-sectional design, the causal issue could not be addressed. Second, although evaluation parameters were obtained by a single researcher through face-to-face interviews in light of the literature recommendations (17), therecall bias of patients cannot be overlooked. Third, the high number of women included in the study may have had an impact on the results.

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Ethics

Ethics Committee Approval: This study was approved by the Ethics Committee of the Kutahya Health Sciences University (Decision no:2019/05, Date: 25.04.2019).

Informed Consent: The authors declared that it was not considered necessary to get consent from the patients because the study was a retrospective data analysis.

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