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Original Article

Comparison of pain, kinesiophobia and quality of life in patients with low back and neck pain

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Abstract. [Purpose] The purpose of this study was to compare patients with low back and neck pain with respect to kinesiophobia, pain, and quality of life. [Subjects and Methods] Three-hundred patients with low back (mean age 43.2±11 years) and 300 with neck pain (mean age 42.8±10.2 years) were included in this study. Pain severity was evaluated by using the Short-Form McGill Pain Questionnaire, which includes a Visual Analogue Scale, quality of life by the Nottingham Health Profile, and kinesiophobia by the Tampa Scale for Kinesiophobia. [Results] Pain severity was similar in both groups, with a Visual Analogue Scale score of 6.7±2 in the low back pain and 6.8±2 in the neck pain group. Nottingham Health Profile pain [z=−4.132] and physical activity scores [z=−5.640] in the low back pain group were significantly higher. Kinesiophobia was also more severe in the low back pain group, with a mean 42.05±5.91 versus 39.7±6.0 Tampa Scale for Kinesiophobia score [z=−4.732]. [Conclusion] Patients with low back pain developed more severe kinesiophobia, regardless of the pain severity, and had greater pain perception and lower physical activity levels. Kinesiophobia adversely affects the quality of life and requires effective management of low back pain.

Key words: Pain, Quality of life, Kinesiophobia

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INTRODUCTION

Low back and neck pain are commonly seen in the workplace, and are the two most common spinal problems encountered in clinical practice. Back and neck pain are important clinical conditions that can limit the ability to perform routine daily activities, decrease productivity, and negatively affect quality of life. It is reported that 80% of individuals have complained of back pain in some period of their lives[1)]. Although neck pain does not occur as frequently as low back pain, it is also a common problem, with a 10% lifetime prevalence[2)]. In Turkey, as in other countries[1)], low back and neck pain are major health problems that affect individual motivation, and result in physical and psychological problems.

Kinesiophobia is among the most extreme forms of fear of pain due to movement or re-injury. In chronic cases, pain severity and cognitive responses to pain are associated with functional impairment. The cognitive responses to pain form the fear avoidance model (FAM). A person with chronic pain may develop negative beliefs about their experience of pain or negative thoughts about themselves[3)]. Patients with kinesiophobia believe that movement will cause re-injury and additional pain; therefore, kinesiophobia is a risk factor for persistent pain. In the long term, kinesiophobia causes physical deconditioning, avoidance of physical activity, functional disability, and symptoms of depression. It is reported that psychological factors play an important role in the process of chronicity of the disease[3–6)].

Several scoring systems have been reported, such as the Tampa Scale for Kinesiophobia (TSK), Fear Avoidance Beliefs Questionnaire (FABQ), and Pictorial Fear of Activity Scale-Cervical (PFActS-C), and are used to assess fear of movement-

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related pain/re-injury in patients with low back and neck pain[7]. In a study on patients with neck and shoulder pain, a strong relationship between kinesiophobia, disability, and musculoskeletal system injuries was reported[8]. In addition, patients who have chronic low back pain with high levels of fear of movement-related pain have high pain and disability scores[8]. Pain and restricted movement in patients with chronic low back and neck pain result in boredom, anxiety, and depression, negatively affecting the quality of life and causing disability[9–12]. Pain results in varying degrees of kinesiophobia, affective problems, and ultimately negatively affects the quality of life. The present study aimed to compare pain, kinesiophobia, and quality of life scores in patients with low back and neck pain.

SUBJECTS AND METHODS

The study was performed at Hacettepe University Hospital, Department of Physical Medicine and Rehabilitation, Ankara, Turkey. Patients 20–65 years old with various diagnoses such as disc herniation, spondylosis, strain, sprain, or mechanical pain in the cervical (neck, n=300) or lumbar (low back, n=300) region with ≥6 months of pain were included in the study. Patients who had any history of malignancy or a spinal fracture, had undergone any surgical procedure in the previous 6 months, or had orthopedic or neurological disease affecting ambulation were excluded from the study. Patients who agreed to participate in this study signed informed consent forms, and the study was approved by the Hacettepe University, Non-invasive Medical Research and Ethics Committee, protocol number LUT 09/41-56.

Demographic data including gender, diagnosis, age (years), height (cm), weight (kg), body mass index (BMI, kg/cm^2), and duration of pain (months) were recorded.

The Turkish version of The Short-Form McGill Pain Questionnaire (SF-MPQ) was used to assess pain severity and properties[13]. The main component of the SF-MPQ consists of 15 descriptive adjectives for the sensation of pain (11 sensory and 4 affective) that are self-rated according to their level of intensity on a 4-point Likert-type scale (0=none, 1=mild, 2=moderate, 3=severe). The 3 pain scores are derived from the sum of the intensity scores for sensory, affective, and total description. The sensory and affective scores are calculated by adding the sensory and affective intensity scores. The total score is the sum of the intensity scores. SF-MPQ also includes a visual analogue scale (VAS) for measuring the severity of pain. The total pain severity score was evaluated using a 6-point Likert-type scale (0=no pain, 1=mild, 2=uncomfortable, 3=distressing, 4=horrible, 5=intolerable)[14].

The Nottingham Health Profile (NHP) is used in epidemiological studies of health and disease. The scale measures the health status of patients from their own perspectives. This scale is preferred for its detailed dimensions including many items used to elicit quality of life impressions in patients with kinesiophobia. The scale consists of 2 parts. Part I of the scale includes 38 yes/no questions across 6 dimensions of health: pain, physical mobility, affective reactions, energy, social isolation, and sleep. Part II includes 7 general yes/no questions concerning daily living problems. The 2 parts can be used independently and part II was not used in the present study. Part I is scored using weighted values that provide a range of possible scores from zero (no problems at all) to 100 (presence of all problems within a dimension). In this study, the validated and reliable Turkish version of NHP developed by Küçükdeveci et al. was used[15].

Kinesiophobia was assessed by using the Tampa Scale for Kinesiophobia-Turkish Version (TSK). The TSK is used to assess patients with diseases associated with acute and chronic low back pain, fibromyalgia, and musculoskeletal and whiplash injuries. The 17-item TSK questionnaire assesses the subjective rating of kinesiophobia. Each item is scored by using a 4-point Likert-type scale ranging from strongly disagree to strongly agree. A total score is calculated after inversion of the individual scores of items 4, 8, 12, and 16. The total score ranges between 17 and 68. Higher TSK total score means higher severity of kinesiophobia. Vlaeyen et al. defined a cut-off score of 37 as a high degree of kinesiophobia[4]. In this study, the validated and reliable Turkish version of the TSK reported by Yılmaz et al. was used to assess kinesiophobia in patients with low back and neck pain[16, 17].

In statistical analysis, mean ± standard deviation (SD) values were calculated for the quantitative variables and percentages were calculated for qualitative variables. The scores of the above-mentioned tests were compared using the χ^2 test for qualitative and Student's t-test and Mann Whitney-U test for quantitative variables in low back and neck pain groups. The level of statistical significance was set at a p-value <0.05[18].

RESULTS

The diagnostic distribution of 600 patients is shown in Table 1. Of 300 patients in the low back pain group, 273 (91%) were diagnosed with lumbar disc herniation, while 214 (71.3%) of 300 in the neck pain group had cervical disc herniation (Table 1).

Demographic data and comparison of the groups are shown in Table 2. Mean age (t=0.473; p>0.05) and height (t=1.844; p>0.05) in both groups were similar; weight (t=2.992; p<0.05) and BMI (t=2.162; p<0.05) were significantly greater and duration of pain (t=3.586; p<0.05) was longer in the low back pain group (Table 2). In the low back pain group, 208 (69.3%) were female and 92 (30.7%) were male; 230 (76.7%) were female and 70 (23.3%) were male in the neck pain group.

The results related to pain severity and other pain characteristics of the SF-MPQ such as sensory, affective, total pain, VAS pain, and total density scores are shown in Table 3. The subscores of the SF-MPQ were similar in both groups (p>0.05).

Pain ($z=-4.132$; $p<0.01$) and physical activity ($z=-5.640$; $p<0.01$) sub-scores of the NHP were significantly higher in the low back pain group than the neck pain group while other NHP domain scores were similar between groups ($p>0.05$) (Table 4).

Kinesiophobia scores measured by the TSK were significantly more severe in the low back pain group ($z=-4.732$; $p<0.01$) (Table 4).

DISCUSSION

Our study was performed to evaluate and compare the characteristics of pain, kinesiophobia, and quality of life in patients with low back and neck pain. Pain duration was longer, body weight was greater, kinesiophobia was more severe, and pain and physical activity domains of quality of life scales were worse in the low back pain group, without any difference in pain severity or other pain characteristics between the groups.

Kinesiophobia was defined by Kori et al. as excessive, irrational, and debilitating fear of physical movement that limits physical activity, and is a result of a painful injury[19]. Patients with kinesiophobia believe that physical movement will cause additional pain. In the long term, kinesiophobia is reported to be associated with decreased physical fitness, avoidance of physical activity, functional disability, inability to fulfill social roles, and depression[4, 20, 21]. Many studies have examined fear of movement-related pain/re-injury in patients with low back and neck pain. Feleus et al. used TSK in their research on patients with neck and shoulder pain and reported that there was a strong relationship between kinesiophobia and musculoskeletal disorders[7]. Studies that assessed patients with chronic low back and neck pain reported that pain and disability scores increased as the fear of movement-related pain increased[20–24]. Wilgen et al.[21] used the TSK and Pain Disability Index to evaluate fear of movement and disability in patients with low back pain. Their findings showed that there was a significant relationship between kinesiophobia, leg pain, and disability[21]. A relationship between kinesiophobia, disability, and quality of life in patients with chronic low back pain was also reported by Thomas et al[22]. Gheldof et al. reported that both pain severity and pain-related fear were factors negatively affecting routine daily and social activities in individuals with low back pain[24]. In patients with neck pain because of whiplash syndrome, Vangronsveld et al. found a relationship between kinesiophobia (based on TSK) and the severity of pain, difficulty in concentrating, and falling asleep[23]. Thompson et al. studied chronic whiplash patients and reported that the severity of pain was associated with the severity of kinesiophobia[20]. According to our findings, although the severity of pain was moderate and similar in the low back and neck pain groups, kinesiophobia was more severe in the low back pain group. The decreased physical activity levels in the low back pain group derived from quality of life assessment also support this movement-related fear; patients with lumbar problems are thought to limit physical activities that require great muscle effort such as walking because of kinesiophobia. This finding may highlight an important difference between patients with lumbar and cervical problems in terms of fear of movement or re-injury. Clinicians and therapists should consider the tendency toward inactivity in patients with lumbar problems rather than in those with cervical problems, and institute measures to prevent complications caused by inactivity.

It is well known that there is an interaction between pain and quality of life at different levels in patients with low back and neck pain. Dündar et al. showed that physical activity and quality of life were decreased and depression was more severe in patients with chronic low back pain compared with healthy controls[5]. In a study by Yazıcı et al., all quality of life parameters were statistically significantly decreased in patients with back pain[25]. Rezai et al. studied 1,100 neck pain patients and healthy controls aged 20–69, and used the Chronic Pain Questionnaire to assess pain and the SF-36 to evaluate health-related quality of life. They reported that there was a weak correlation between neck pain and the physical component of health-related quality of life[26]. Ay et al. evaluated the severity of pain based on a VAS (0–10 cm), quality of life based on the NHP, and the severity of depression using the Beck Depression Inventory. They observed that the severity of pain and depression were closely correlated. The quality of life decreased as the severity of pain and symptoms of depression increased[9]. Lin et al. studied 52 chronic neck pain patients, and assessed health-related quality of life and psychological factors. The researchers concluded that health-related quality of life in patients with chronic neck pain was lower than in healthy controls, and that patients with neck pain had many physical and mental health symptoms. In addition, the majority of patients had psychiatric disorders, including psychosomatic symptoms, depression, and anxiety[27]. In another study on 195 patients with low back pain by Kovacs et al., a weak correlation was found between the severity of pain, disability, and quality of life[28].

In our study, NHP pain and physical activity scores significantly differed between the low back and neck pain groups. Our NHP findings showed that the perception of pain was lower and the level of physical activity was higher in patients with neck pain; consequently, quality of life was higher in the neck pain group than in the low back pain group. The severity of pain in both groups did not differ according to SF-MPQ scores, but when the quality of life is considered, the negative effect of pain perception in the low back pain group calls attention to another difference between the groups. The longer duration of pain and higher levels of kinesiophobia in the low back pain group may also be associated with lower quality of life.

Obesity is among the lifestyle factors that cause low back pain. Bener et al. reported that there was a moderate positive relationship between obesity and low back pain[29]. Webb et al. reported that there was a significant relationship between obesity and low back pain. They also showed that the severity of pain and disability in patients with low back pain increased as the BMI increased[30]. In our study, body weight was the other important difference observed between the groups. Greater body weight may also be a predisposing factor for increased pain perception and may indirectly affect kinesiophobia in

Table 1. Distribution of diagnosis in the low back pain (n=300) and neck pain (n=300) groups

Distribution of diagnosis	n	%
Low back pain group		
Lumbar disc herniation	273	91
Lumbar spondylosis	14	4.7
Low back strain	13	4.3
Total	300	100
Neck pain group		
Cervical disc herniation	214	71.3
Cervical spondylosis	68	22.7
Neck strain	18	6
Total	300	100

Table 2. Demographic characteristics of the patients and comparison between low back (n=300) and neck pain (n=300) groups

Demographic Characteristics	Low back pain group	Neck pain group
	X ± SD	X ± SD
Age (years)	43.2 ± 10.9	42.8 ± 10.2
Height (cm)	166.2 ± 9.3	164.9 ± 7.8
Weight (kg)*	73.6 ± 13.8	70.4 ± 12.8
BMI (kg/cm^2)*	26.7 ± 4.5	25.9 ± 4.5
Duration of pain (months)**	66.8 ± 78.1	46 ± 63.1

*p<0.05, **p<0.01

Table 3. Short Form-McGill Pain Questionnaire [SF-MPQ] scores and their comparison in low back (n=300) and neck pain (n=300) groups

Pain characteristics of Short Form-McGill Pain Questionnaire	Low back pain group	Neck pain group
	X ± SD	X ± SD
SF-MPQ sensory pain (0–33)	7.9 ± 5.9	7.8± 6.1
SF-MPQ affective pain (0–12)	3.2 ± 3.1	3.2 ± 3
SF-MPQ total score (0–45)	11.2 ± 8.3	11 ± 8.3
SF-MPQ VAS score (0–10)	6.7 ± 2.1	6.8 ± 2
SF-MPQ total pain severity (0–5)	2.5 ± 1.1	2.5 ± 1.1

Table 4. Nottingham Health Profile and Tampa Scale for Kinesiophobia scores and their comparison in low back (n=300) and neck pain (n=300) groups

Nottingham Health Profile Domains and Kinesiophobia	Low back pain group	Neck pain group
	X ± SD	X ± SD
Energy level (0–100)	50.2 ± 36.4	52.2 ± 35.3
Pain (0–100)*	54.9 ± 26.2	45.1 ± 29.5
Affective reactions (0–100)	26.4 ± 27.2	28.7 ± 26.4
Sleep (0–100)	18.2 ± 25.1	19.8 ± 26.4
Social isolation (0–100)	24.7 ± 27.3	26.6 ± 28.3
Physical activity (0–100)*	33.4 ± 16.2	25.7 ± 17.5
Nottingham Health Profile Total Score (0–600)	208 ± 113.2	199.3 ± 113.2
Tampa Scale for Kinesiophobia (17–68)*	42.1 ± 5.9	39.7 ± 6

*p<0.01

patients with low back pain.

The primary goal of treatment in patients with low back and neck pain is to reduce the severity of pain; however, our findings indicate that the differences observed between the groups in terms of pain perception, body weight, kinesiophobia, and physical activity should be taken into consideration when planning preventive and curative physical therapy programs for patients with low back and neck pain. Patients should be educated about kinesiophobia, and the long-term goals of treatment should include increasing patient confidence and reducing the severity of kinesiophobia.

The primary aim of this study was not to determine the factors that cause kinesiophobia. Therefore, the lack of evaluation for the causes of kinesiophobia in patients with neck and low back pain is a limitation of our study.

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