What is the Role of Kinesiophobia and Catastrophizing in Physiotherapists with Low Back Pain during Manual Handling of Patients?

Care Este Rolul Kineziofobiei și Catastrofizării la Kinetoterapeuții cu Lombalgie în Timpul Manipulării Manuale a Pacienților?

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Abstract

Introduction: Chronic low back pain (LBP) is one of the leading causes of years of disability worldwide, resulting in a slew of related health issues and a significant financial burden on society. Professional duties cause both acute and cumulative musculoskeletal disorders and pain in physiotherapists (PT). However, very few studies have found the psychological stress caused by this LBP in physiotherapists, especially fear of movement and catastrophizing. *Aim:* The current study aimed to assess the kinesiophobia and catastrophic effects of LBP caused by manual patient transfers on PT. *Material and methods*: This cross-sectional study was carried out face-to-face with PT. Patients treated per day, pain severity, number of patients admitted daily, worked years, daily working hours were recorded. The kinesiophobia [The Tampa Kinesiophobia Scale (TKS)], chronic LBP [The Oswestry Low Back Pain Disability (ODI) Index], and catastrophizing (The Pain Catastrophizing Scale) were evaluated. *Result*s: Fifty-six physiotherapists (24 males and 32 females), between the ages of 23 and 50 years were included. PT's score of ODI was 10(6-16), and TKS was 35.16±5.77. There were low degree positive correlations between LBP and catastrophizing (r:0.307; p:0.021), kinesiophobia (r:0.338; p:0.010), pain intensity (r:0.473; p<0.001) and patients treated per day (r:0.364; p:0.006). *Discussion:* It was found that LBP was associated with catastrophizing and fear of movement in physiotherapists. In addition, LBP was associated with the number of hospital admissions and pain severity, and the number of patients admitted daily. Therefore, it is necessary to deliver and increase the education programs on work-related biomechanics among PT's. It is recommended that future studies be carried out with a larger sample of physiotherapists.

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Key words: *low back pain, physiotherapists, catastrophizing, kinesiophobia*

Rezumat

Introducere: Lombalgia cronică este una dintre principalele cauze de dizabilitate care se întinde pe durata mai multor ani la nivel mondial, rezultând o serie de probleme de sănătate asociate și o povară financiară semnificativă pentru societate. Activitățile profesionale la kinetoterapeuți cauzează durere și tulburări musculo-scheletale atât acute, cât și cumulative. Cu toate acestea, foarte puține studii au reușit să aprecieze stresul psihologic cauzat de lombalgia cronică la kinetoterapeuți, în special frica de mișcare și catastrofizarea. *Scop:* Studiul actual și-a propus să evalueze kineziofobia și efectele nefaste ale lombalgiei cronice apărute la kinetoterapeuți în urma activităților de transfer desfășurate cu pacienții lor. *Material și metode:* Acest studiu transversal a fost realizat față în față cu kinetoterapeuții. A fost înregistrat numărul de pacienți tratați zilnic, severitatea durerii, numărul de pacienți internați zilnic, anii lucrați, orele zilnice de lucru. Au fost evaluate kineziofobia [The Tampa Kinesiophobia Scale (TKS)], lombalgia cronică [The Oswestry Low Back Pain Disability (ODI) Index] și catastrofizarea (The Pain Catastrophizing Scale). *Rezultate:* În cadrul acestui studiu au fost incluși 56 de kinetoterapeuți (24 de bărbați și 32 de femei), cu vârste cuprinse între 23 și 50 de ani. Scorul kinetoterapeuților în cazul ODI a fost 10 (6-16), iar în cazul TKS a fost 35,16±5,77. Au existat corelații pozitive de grad scăzut între lombalgia cronică și catastrofizare (r:0,307; p:0,021), kineziofobie (r:0,338; p:0,010), intensitatea durerii (r:0,473; p<0,001) și numărul pacienților tratați pe zi (r:0,364). ; p:0.006). *Discuții:* S-a constatat că lombalgia cronică a fost asociată cu catastrofizarea și frica de mișcare la kinetoterapeuți. În plus, lombalgia cronică a fost asociată cu numărul de internari în spital și severitatea durerii și numărul de pacienți internați zilnic. Prin urmare, este necesară furnizarea mai multor programele de educație privind biomecanica profesională în rândul kinetoterapeuților. Se recomandă ca studiile viitoare să fie efectuate cu un eșantion mai mare de kinetoterapeuți.

Cuvinte cheie: lombalgie, kinetoterapeuți, catastrofizare, kineziofobie

Introduction

Chronic low back pain (LBP) is one of the causes of years of disability globally, causing many related health problems and placing a high economic burden on society [1]. In the occupational environment, biomechanical overload, including manual handling of patients (e.g., lifting, lowering, carrying, pushing, pulling, and moving people in hospital), contributes to the onset of acute spinal pain [2]. In addition, the aging of the working population leads to a lower tolerance for overloads [3]. Workers are exposed to back overloads for at least a quarter of their working time; tiring or painful positions may cause 44%, 32% to carry heavy loads, and 10% to lift or carry people. Interestingly, it has been reported that psychological factors may also contribute to the burden of chronic LBP, although fewer data are available, especially when carrying patients by hand [4, 5]. Many studies have reported psychological factors as a result of patients suffering from chronic LBP,

including thoughts of catastrophizing (catastrophe) and fear of movement (kinesiophobia) [6, 7]. According to the fear-avoidance model, catastrophizing is a psychological variable that reflects the tendency to misinterpret or exaggerate seemingly threatening situations, which can lead to the onset of kinesiophobia; this is another maladaptive thinking characterized by avoidance behaviors that interfere with common behaviors [8]. Chronic LBP sufferers eventually become trapped in a vicious cycle of diminished physical abilities, leading to permanent pain and disability. Therefore, early identification of pain-related considerations has been suggested, as it may contribute to adopting adequate strategies in the management of chronic conditions. Postural problems caused by heavy loading also affect the daily life and professional life of physiotherapists. Conditions such as outpatient admission, inpatient treatments, heavy lifting in rehabilitation, long-standing time, and long sitting time have been observed as important causes of LBP [9, 10]. Physiotherapists transfer patients [from treatment bed to chair or parallel bar, from wheelchair to treatment bed, from wheelchair (WC) to WC, WC to vehicle, other special situations requiring therapy], assisting with activities in the treatment bed and they routinely and they perform activities of using and lifting. These professional duties cause both acute and cumulative musculoskeletal disorders and pain in physiotherapists [11]. However, very few studies have been found on the psychological stress caused by this LBP in physiotherapists, especially on fear of movement and catastrophizing.

Therefore, the current study aimed to assess the kinesiophobia and catastrophic effects of LBP caused by manual patient transfers on physiotherapists.

Materials and Methods

This cross-sectional study was conducted face-to-face with volunteer physiotherapists working in clinics, hospitals, and special education and rehabilitation centers in Hatay, between 01 and 30 April 2022. Demographics, physical characteristics data, pain intensity, and working status of the physiotherapist were recorded (worked years, daily working hours). The kinesiophobia with the Tampa Kinesiophobia Scale, chronic LBP with the Oswestry Low Back Pain Disability Index, and catastrophizing were evaluated with the Pain Catastrophizing Scale.

Inclusion criteria

1. Physiotherapists who are actively working and agree to participate in the research,
2. Ages between of 20-65 years,
3. Diagnosed with chronic LBP at least 3 months,
4. Independently mobilized were included.

Exclusion criteria

1. PT who have flexion or extension limitation in the lumbar region,
2. PT with radicular pain,
3. PT have a history of surgery for the lumbar region,

4. Having a history of interventional treatment (such as epidural steroid injection, medial branch block) for the lumbar region in the last 3 months,
5. Having a rheumatic, inflammatory disease or the presence of spine-related avascular necrosis (Spondyloarthropathies, Scheuermann Kyphosis),
6. PT with progressive neurological diseases (such as Parkinson's disease, multiple sclerosis, motor neuron disease),
7. Presence of scoliosis,
8. History of malignancy,
9. Alcohol use, drug or substance abuse (pregabalin, gabapentin, etc.),
10. Dementia,
11. Pregnants
12. PT with cognitive dysfunction that interferes with the normal functions of the central and peripheral nervous system were excluded.

Fear of movement was evaluated with the Tampa Kinesiophobia Scale. This scale is a 17-question checklist and is used in acute and chronic LBP, fibromyalgia, musculoskeletal injuries, and whiplash-related diseases. Four-point Likert scoring (1= strongly disagree, 4= totally agree) is used in the scale. A total score is calculated after reversing items 4, 8, 12, and 16. A total score between 17-68. A high score indicates that kinesiophobia is also high [12].

The Pain Catastrophizing Scale (PAS) is a 13-item questionnaire created to assess the extent of the destructive thoughts and feelings of the patient in pain associated with the sensation of pain. It consists of three subscales: helplessness, exaggerated perception, and rumination. Each item is scored on a 5-point scale, with higher values representing greater destructiveness. The sum of all items calculates the total score. Scores range from 0 to 52 points [13].

Oswestry Low Back Pain and Disability Index (ODI): It was developed to evaluate the degree of loss of function in LBP. It consists of 10 items. The items question the severity of pain, self-care, lifting-carrying, walking, sitting, standing, sleep, the degree of change in pain, travel, and social life. Under each item, there are six statements that the patient marked as appropriate for his/her condition. The first statement is scored as “0,” and the sixth statement is scored as “5”. When the total score is calculated, it is multiplied by two and expressed as a percentage. The maximum score is "100", and the minimum score is "0". As the total score increases, the disability level also increases [14].

The Non-Interventional Clinical Research Ethics Committee approved the study of the Hatay Mustafa Kemal University (no: 17/03/2022-26). Written informed consent was obtained from the participants.

Statistical Analysis

SPSS for Windows version 20.0 was used to analyze the data (IBM SPSS Inc., Armonk, NY, USA). The Kolmogorov–Smirnov test determined whether the data were normally distributed. Number and % were used to express categorical variables, whereas mean ±standard deviation and median (IQR)

were used to express countable variables. Correlations between Oswestry Low Back Pain Scale score and Pain Catastrophizing Scale score, TAMPA totaL score, number of hospitalizations in the last year, pain intensity, duration of kinesiophobia (months), profession years, hours of work per day, number of patients treated per day were analyzed using Pearson's/Spearman's rank correlation coefficients.

GPower 3.1.9.4 (Franz Faul-Universität Kiel, Germany) program determined the effect size and power analysis. The effect size and power were calculated for the ODI score [15]. Power (1-β err prob) 0.95, α err prob 0.05 with 20% drop out, the total sample size 40 was calculated.

Results

Sixty-six PT participated in the study. Ten PT were excluded; 7 had no low back pain for at least 3 months, 2 with rheumatoid arthritis, and 1 was pregnant. The study included 56 PT (24 males and 32 females) between the ages of 23 and 50 years. Demographic and clinical characteristics of the PT are presented in Table 1. Most of the PT have not had any disease, and nearly half were non-smokers.

Table 1. Demographic and clinical characteristics of the PT

Variables	Mean±SD/ Median (IQR)/ n (%)
Age(years)	29(26-36)
Gender Male/Female	24 (42.9) / 32 (57.1)
Height (cm)	168 (162-177)
Weight(kg)	62(54-75.75)
BMI (kg/m^2)	22.07 (20.46-25.72)
Marital Status Married Never married	 22(39.3) 34(60.7)
Disease History Orthopedic diseases HT COVID Rheumatoid arthritis None	 3(5.4) 1(1.8) 1(1.8) 1(1.8) 50 (89.3)
Family history DM Cardiac disease DM+cardiac DM+ cerebrovascular disease RA Thyroid COPD None	 2 (3.6) 10 (17.9) 2(3.6) 1(1.8) 1(1.8) 1(1.8) 1(1.8) 35(62.5)
Smoking status yes none quit smoking	 10 (17.9) 44 (78.6) 2 (3.6)

DM: diabetes mellitus, RA: rheumatoid arthritis, COPD: chronic obstructive pulmonary disease, SD: Standart Deviation

Pain intensity, kinesiophobia, and catastrophizing status of the participants were shown in Table 2. 41% of PT who has been working actively in the clinic for an average of eight years, working eight hours meanly in a day, has kinesiophobia at various periods. Most participants with a mean pain intensity of 4, did not have to exercise habits and expressed verbally that they fear movement by manual handling of patients. The median score of ODI was 10(6-16), and the mean kinesiophobia score was 35.16±5.77.

Table 2. Pain, Kinesiophobia and Catastrophizing Scores

	n (%) / Mean±SD/ Median (IQR)
Professional experience (years)	5.5(3-12.25)
Daily hours of working (hours)	8(8-8)
Patients treated per day	8(8-12)
Are you afraid of manual patient transfer?	
Yes	23(41.1)
No	33(58.9)
Are you afraid to movements?	
Yes	23(41.1)
No	33(58.9)
Kinesiophobia duration (months)	
no	33(58.9)
1 month	3(5.4)
3 months	6(10.8)
6 months	7(12.8)
12 months	3(5.4)
15 months and above	1(1.8)
How often does the pain occur?	
Every day	11(19.6)
Once in three days	5(8.9)
Once in a week	6(10.1)
Once in a month	4(7.2)
more than once per month	3(5.4)
Once in a year	7(12.8)
Sometimes	11(9.6)
Rarely	3(5.4)
None	6(10.1)
Exercise habit	
Yes	22(39.3)
No	34(60.7)
Number of hospital admissions in the last year	
0	21(37.5)
1	10(17.9)
1 -5	19(34.2)
5 and above	4(7.2)
Pain severity (VAS, 0-10)	4(3-5)
OSWESTRY TOTAL SCORE	10(6-16)
TAMPA TOTAL SCORE	35.16±5.77
Pain Catastrophizing Scale	11(6-15.75)

VAS: Visual Analog Scale

The correlations of LBP with fear of movement, pain intensity, catastrophizing, working time, and number of patients were shown in Table 3. There were low degree positive correlations between LBP and catastrophizing (r:0.307; p:0.021), kinesiophobia (r:0.338; p:0.010), pain intensity (r:0.473;

p<0.001) and patients treated per day (r:0.364; p:0.006). No statistical significance was found between gender in catastrophizing (Figure 1) and kinesiophobia (Figure 2), and ODI (p>0.05).

Table 3. The correlations of low back pain with fear of movement, pain, catastrophizing, working time and number of patients

	Oswestry Total Score	
	r	p
Pain Catastrophizing Scale	0.307	0.021*
TAMPA TOTAL Score	0.338	0.010*
Number of hospital admissions in the last year	0.348	0.010*
Pain severity (VAS)	0.473	<0.001*
Duration of kinesiophobia (months)	0.168	0,224
Professional experience (years)	0.203	0,142
Daily working time (hours)	-0.056	0.698
Patients treated per day	0.364	0.006*
Exercise habits	-0.009	0.947

Pearson Correlation test, *p<0.05

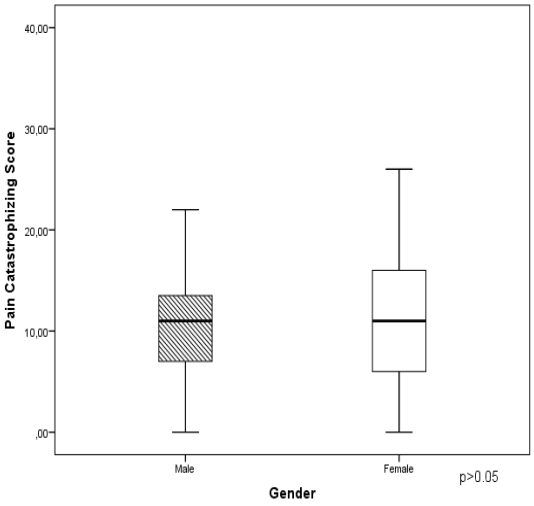

Figure 1. Pain catastrophizing score between gender

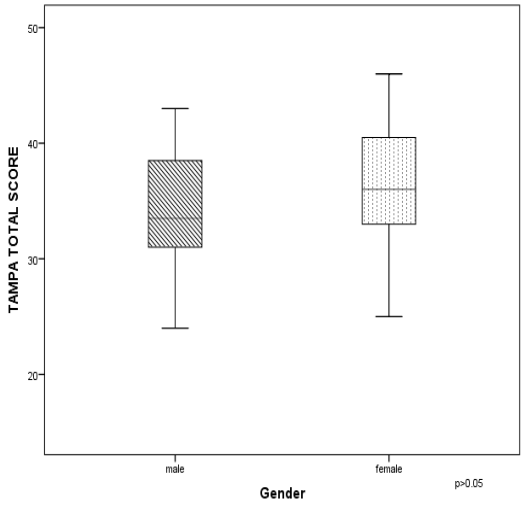

Figure 2. Kinesiophobia between gender

Discussion

The main results of the study, which was aimed to assess the kinesiophobia and catastrophizing effects of LBP caused by manual patient transfers on physiotherapists, were; 1) LBP was low related to pain catastrophizing, kinesiophobia, pain intensity, patients treated per day 2) Gender was not correlated with LBP and catastrophizing 3) ODI and kinesiophobia score were high in PT with LBP.

Many jobs still require manual handling of loads, an activity that puts the musculoskeletal system at risk of LBP. Sudden maximal effort lifting" and "bending and twisting" were common injury mechanisms and are also common in physiotherapists [16]. 89.65% of therapists working in Saudi Arabia reported LBP after starting PT practices [17], the incidence of work-related LBP was high among physical therapists in Edmonton, Canada [18], and the most common work-related affected part was the lower back [19, 20]. According to the 2018 BIBB/BAuA Employment Survey, manual handling of loads is still prevalent in the German workforce and has a strong link to LBP [21]. Similar

to previous studies, pain intensity was correlated with LBP (r:0.473; p<0.001), and 41% of PT were afraid of the manual handling of the patients in the current study. The necessity of the physiotherapy profession may have caused this with the use mostly of body movements and flexion posture.

Kinesiophobia and fear-avoidance attitudes are critical variables in the progression of LBP and its progression to chronicity. The Fear-Avoidance Model reflects patients' beliefs about illness, movement, and pain, with false thoughts resulting from painful experiences. These thoughts lead to avoidance of movement and catastrophizing the pain [22]. The effects of kinesiophobia and pain catastrophizing behavior on disability linked to LBP were investigated in a multicenter, cross-sectional study including 64 health personnel exposed to overuse loading on the low back area due to physical handling of patients. Finally, they discovered that most health personnel with load exposure owing to overuse exhibited kinesiophobia and catastrophizing pain behavior and that these negative psychological characteristics had a moderately positive link with LBP impairment [8]. Ekinci and Dal, 2021 investigated the kinesiophobia, catastrophe, and LBP-related disability (with Oswestry Disability Index) data of 54 patients with chronic non-specific LBP. They stated that psychosocial disorders such as kinesiophobia and pain catastrophizing behavior might have a negative impact on LBP disability. Similar to previous studies, there is a significant positive correlation between LBP and catastrophizing, pain intensity, and kinesiophobia in the present study. Treatment should involve a psychosocial-based assessment and the pathoanatomic/biomedical approach. If psychosocial pathology is diagnosed, interventions such as pain education and cognitive behavioral therapy should be added to current treatments.

There is a good match between physical workload and individual physical capacities; it seems reasonable to focus on strategies for health care workers to reduce physical loads [23]. About 61% of the physiotherapists participating in the study were not physically active. This may be due to fear of movement or catastrophizing the pain.

Gender is thought to be a risk factor for developing work-related diseases due to women having a smaller body build than men. In the previous study, the prevalence of work-related lower back problems was strongly connected to the participant's gender, with more females reporting lower back complaints than males [24]. Contrary to the previous study, there was no statistically significant difference between gender in pain catastrophizing and the Tampa kinesiophobia score. Daily working hours, number of patients treated in a day, age, and years of actively working may be related to this different result. It is recommended that future studies explore this issue with more participants.

Although the current study is the first comprehensive study to evaluate the psychosocial effects of LBP on physiotherapists working in Hatay, Turkey, there were limitations. One of them was that physical activity levels were not assessed objectively. Researchers can evaluate the quality of life (QoL) of the PT and find the relations between pain catastrophizing and QoL.

Conclusion

As a result, in this study, it was found that LBP was associated with catastrophizing and fear of movement in physiotherapists working in Hatay, Turkey. In addition, it was found that physiotherapists working actively were sedentary, and LBP was associated with the number of hospital admissions and pain severity, and the number of patients admitted daily. There were no statistically significant results in LBP, pain catastrophizing, and kinesiophobia between male and female PT. Therefore, it is necessary to deliver and increase the education programs on work-related biomechanics among PT's. It is recommended that future studies be carried out with a larger sample of physiotherapists working in Turkey.

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Declaration of conflicting interest

All the authors declare that there is no conflict of interest.

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