



# Correlation between Pain, Functional Status, Kinesiophobia and Quality of Life in Patients with Non-Specific Chronic Low Back Pain

Seid AA<sup>1\*</sup> and Demirdel E<sup>2</sup>

<sup>1</sup>Department of Nursing, College of Medicine and Health Sciences, Samara University, Samara, Ethiopia

<sup>2</sup>Department of Physiotherapy and Rehabilitation, Ankara Yildirim Beyazit University, Ankara, Turkey

## Abstract

**Background:** Different interdependent factors are responsible for the development of non-specific chronic Low Back Pain (LBP). The purpose of this study was to investigate the relationship between pain and functional status with kinesiophobia and quality of life in non-specific chronic LBP patients.

**Methods:** Ninety patients with non-specific chronic LBP were included in the study. Pain and functional status were evaluated using Visual Analog Scale and Quebec Back Pain Disability Scale respectively. Tampa Scale of kinesiophobia was used for the assessment of kinesiophobia & Nottingham Health Profile was used for quality of life.

**Results:** There was no significant correlation between pain and kinesiophobia ( $P > 0.05$ ). It was determined that there was a relationship between intensity of pain and quality of life of the patients ( $r = 0.280$ ,  $P = 0.008$ ). Functional status was found correlated with kinesiophobia and quality of life ( $r = 0.399$ ,  $P = 0.000$ ,  $r = 0.508$ ,  $P = 0.000$ , respectively).

**Conclusion:** In understanding, managing and treating of individuals with chronic nonspecific LBP, therapeutic interventions should be planned not only for pain and dysfunction but also for other factors such as quality of life along with psychological factors such as fear.

**Keywords:** Non-specific chronic LBP; Kinesiophobia; Quality of life; Functional status

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### \*Correspondence:

Abubeker Alebachew Seid, Department of Nursing, College of Medicine and Health Sciences, Samara University, Samara, Ethiopia, Tel: 251931573486; E-mail: abubeker2008h@gmail.com

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## Introduction

Low Back Pain (LBP) is a highly prevalent symptom occurring in all age group in all over the world. Globally, the years of disability from LBP grew by 54% between 1990 and 2015, mainly due to population growth and aging, with the highest increases in low-income and middle-income countries. LBP is becoming the top cause of disability worldwide [1-4]. Estimates of LBP prevalence are highly variable depending on the source of data and definitions used. Approximately 75% to 85% of all individuals will experience LBP for some time during their lifetime (lifetime prevalence). From these 80% to 85% of all low back complaints are defined as non-specific [1,2,4].

Non-specific LBP is defined by symptoms happening mainly in the back that suggest neither nerve root compression nor a serious underlying condition with no causal physical pathology, anatomical lesion, or deformity being identified. It is also defined as LBP not attributed to any recognizable, known specific pathology (e.g., infection, tumor, osteoporosis, ankylosing spondylitis, fracture, inflammatory process, radicular syndrome or cauda equina syndrome) [1,5-8].

The inability to reliably identify a clear anatomic structure and pathophysiology that could lead for symptoms development and inability to cure by an intervention targeted at that anatomic structure has led to great frustration among those involved in the management of non-specific LBP. Findings from various studies that socioeconomic factors often predict prognosis better than clinical characteristics led to theories that common/nonspecific LBP was merely a social or psychological issue [9,10]. Psychosocial factors, such as presence of psychological comorbidities, maladaptive coping strategies (e.g., fear avoidance [avoiding activities because of fears that they will further damage the back or catastrophizing [anticipating the worst possible outcomes from LBP]), presence of nonorganic signs (symptoms without a distinct anatomical or physiological basis), high baseline functional impairment and low quality of life all predispose to chronic LBP. Back pain is

mostly associated with the presence of depression and anxiety [8].

Until now, there is lack of enough studies investigating the relationship and effect between pain and functional states with kinesiophobia and quality of life in patients with non-specific chronic LBP. From this fact, our study aimed to determine the relationship between pain intensity and functional status with fear of movement (kinesiophobia) and quality of life in patients with chronic non-specific LBP.

## Methods

### Study participants and eligibility

This study includes patients treated in two private physical therapy and rehabilitation center found in Ankara, Turkey from December 2018 to May 2019. The inclusion criteria in the study were diagnosed with nonspecific LBP, aged 18 to 65, had a history of back pain lasting more than 6 months, had no neurological or other serious orthopedic complaints, and pain severity at least 3 according to Visual Analogue Scale (VAS) score. All participants in the study period who fulfill the inclusion criteria were considered for inclusion. Those who underwent surgery in the lumbar region, patients with cognitive dysfunction, patients diagnosed with severe psychiatric disease, and those with lower extremity deformity or surgery were excluded from the study.

### Outcome measurement tools

The Turkish version validity and reliability study of all the questionnaires used was previously performed by other studies [11-13]. VAS was used to evaluate the severity of pain felt by the individuals in their lumbar regions, with no pain being 0 points, and very severe pain being 10 points. In the evaluation of LBP functional status, The Quebec Back Pain Disability Scale (QBPDS) was used. The scale has sufficient width of reliability to detect improvement or deterioration in most patients [5]. It is a scale that evaluates how difficult back problems cause in performing twenty different activities. Evaluation is made with a numerical score between 0 and 5. A score of zero indicates that the activity is done without difficulty, while a score of 5 indicates that the activity cannot be done. The total score takes values between 0 to 100 and the higher the score the more reduced functioning it is. Individuals' fear of movement was assessed using the Tampa Scale of Kinesiophobia (TSK). It is a scale developed to measure the fear of movement due to pain/re-injury. The scale includes the injury/re-injury and fear-avoidance parameters in work-related activities. For this 17-item questionnaire, the value range is 17 to 68, with higher scores associated with higher fear of pain due to activities. The Nottingham Health Profile (NHP) was used to assess the quality of life of individuals. It includes six categories: Energy perceived by the patient, pain, physical mobility, sleep, emotional reactions, and social isolation, and consists of 38 different questions with yes or no answers. The current complaints are questioned in the questionnaire. High scores indicate poor quality of life.

### Ethical approval

To carry out this study, both the rehabilitation centers and the patients signed informed consent form approved by Ankara Yildirim Beyazit University ethics committee with approval number 2018-380/54.

### Sample size and statistical analysis

The sample size was calculated using statistical software (G\*Power 3.1.5). In order to get a minimum of 95% power of the

study (true correlation) with a medium level of correlation (0.3) and 95% confidence interval and 0.05 effect size we estimate to include 100 participants. But the final analysis was done on 90 respondents which give 93% power of the study with 0.32 minimum correlation detected and 95% CI and 0.05 effect size. For statistical evaluation of the data SPSS (Statistical Package for Social Sciences, SPSS Inc., Chicago, IL, USA) program version 25.0 was used. Descriptive statistics for continuous variables were summarized in terms of mean and standard deviation, and descriptive statistics for categorical data were summarized in terms of frequency and percentage. Correlation between variables was obtained using Pearson correlation coefficient scale, because the outcome variables (VAS, QBPDS and TSK) were found normally distributed upon test of normality. The correlation levels were classified as 0.00 to 0.10 (very weak correlation), 0.10 to 0.39 (weak correlation), 0.40 to 0.69 (moderate correlation), 0.70 to 0.89 (strong correlation) and 0.90 to 1.00 (very strong correlation). Statistical significance value was accepted at  $P < 0.05$  in all data used.

## Results

A total of 115 patients were assessed for eligibility during the study period. A final total of 90 patients completed the assessment and the rest 25 were excluded from the study for many reasons. The socio demographic and physical characteristics of the individuals participating in the study were shown in Table 1, 2. The average age of the participants was  $49.32 \pm 13.88$  years, average weight was  $75.54 \pm 13.12$  kilograms, average body mass index was  $27.51 \pm 4.78$  kg/m<sup>2</sup> and average pain duration was  $5.81 \pm 6.74$  years (Table 1).

The average values of pain intensity, functional status, fear of movement and quality of life of the individuals were summarized

**Table 1:** Sociodemographic and physical characteristics of the study individuals (N=90).

Variables	No. (%)	
Sex	Men	26 (28.9)
	Women	64 (71.1)
Marital status	Single	16 (17.8)
	Married	71 (78.9)
	Widowed	3 (3.3)
Educational status	Read & write	5 (5.6)
	Primary	23 (25.6)
	Secondary	4 (4.4)
	High school	29 (32.2)
Employment status	University	29 (32.2)
	Employed	25 (27.8)
	Unemployed	29 (32.2)
	Student	6 (6.7)
Cigarette smoking	Retired	30 (33.3)
	Yes	23 (25.6)
	No	67 (74.4)
Alcohol use	Yes	8 (8.9)
	No	82 (91.1)
History of surgery	Yes	42 (46.7)
	No	48 (53.3)
Exercise doing habit	Yes	34 (37.8)
	No	56 (62.2)

**Table 2:** Pain, functional status, kinesiophobia and quality of life in study subjects (N=90).

Variables	Mean ± SS
Pain Intensity (VAS)	6.08 ± 1.83
Functional Status (QBPDS)	40.92 ± 19.48
Kinesiophobia (TSK)	43.20 ± 4.74
Quality of Life (NHP)	232.62 ± 122.30

SD: Standard Deviation; VAS: Visual Analogue Scale; QBPDS: Quebec Back Pain Disability Scale; TSK: Tampa Scale of Kinesiophobia; NHP: Nottingham Health Profile

**Table 3:** Relationship between pain and functional status with kinesiophobia and quality of life.

	VAS	QBPDS	TSK	NHP
VAS		0.235*	0.139	<b>0.280**</b>
QBPDS			<b>0.399**</b>	<b>0.508**</b>
TSK				<b>0.480**</b>
NHP				

Pearson correlation coefficient scale

\*Correlation is significant at the 0.05 level (2-tailed)

\*\*Correlation is significant at the 0.01 level (2-tailed)

VAS: Visual Analogue Scale; QBPDS: Quebec Back Pain Disability Scale; TSK: Tampa Scale of Kinesiophobia; NHP: Nottingham Health Profile

below (Table 2).

The relationships between pain intensity and functional status, fear of movement and quality of life were shown in Table 3. The relationship between pain intensity and fear of movement is not significant ( $P > 0.05$ ). However, the pain severity of the individuals is weakly related with the quality of life ( $r = 0.280$ ,  $P = 0.008$ ). On the other hand, functional status is moderately associated with both fear of movement and quality of life;  $r = 0.399$ ,  $P = 0.000$ ;  $r = 0.508$ ,  $P = 0.000$  respectively.

## Discussion

The aim of this study was to evaluate the relationship between pain and functional status with kinesiophobia and quality of life in patients with non-specific chronic LBP. The results show that there is correlation between pain intensity and quality of life. In addition, functional status was correlated with both fear of movement and quality of life among individuals with nonspecific chronic LBP. But pain severity was not found correlated with fear of movement.

Based on our findings, pain intensity and Kinesiophobia were higher in individuals with non-specific chronic LBP. Functional status and quality of life levels are also low. Our findings are consistent with the findings of other studies [14-16]. In many studies, it has been found that there is a significant relationship between pain intensity and kinesiophobia in people with chronic LBP [13-16]. However, other studies, including our study, did not find a significant relationship between pain intensity and fear of movement [17]. This may be due to a positive personality (character) that improves adherence to threats possibly present among the participants of this study.

When evaluating the relationship between pain intensity and quality of life, our result found a significant but weak correlation in non-specific chronic LBP individuals. Our results are similar to the findings of other studies that detected a weak to strong correlation [14-16,18,19]. From these results, we can say that the severity of pain may be one of the factors that negatively affect the quality of life in individuals with non-specific chronic LBP. Pain severity reduces

the physical, social, mental and spiritual aspect of quality of life as the patient tends to withdraw from social activity and feels more depressed because of worsening pain. Therefore, it is also important to determine the severity of a patient's pain than to know merely whether pain is present or not.

When evaluating the correlation between functional status with fear of movement (kinesiophobia) and quality of life, we found a moderate significant correlation in both. The findings of our study are consistent with other studies that have a moderate relationship between functional status with fear of movement, and quality of life [14-16,18,19]. Low-level functional status may be caused by fear of movement or fear of movement may result in low functional capacity; this can be a vicious circle effect. Individuals with nonspecific chronic LBP and high fear of movement have a higher risk of developing functional disability. This leads to a low perception of quality of life. This suggests that in physiotherapy treatment these factors influence each other and affect the patients' condition and all of them should be considered in the treatment period.

Our findings show that pain intensity is associated with quality of life and functional status is associated with both kinesiophobia and quality of life. It was determined that individuals with non-specific chronic LBP who had low quality of life had higher pain intensity. Functional status was found to be low in individuals with non-specific chronic LBP who had a low quality of life. Low functional status was determined in individuals with nonspecific chronic LBP who had a high fear of movement.

The study has limitations. The first is the patients were selected from private physiotherapy clinics, so the results may not be generalized to other group of patients. The second limitation was there may be subjectivity and/bias as the tools used were all subjective measurements. It is recommended that a similar study be conducted in large and mixed group of peoples with the addition of objective outcome measurement tools.

This study clarified that, in understanding, managing and treating individuals with chronic nonspecific LBP, therapeutic interventions should always be planned in a way that pays attention not only to pain and dysfunction, but also to psychological factors such as fear and quality of life. In these patients, with the treatments planned by taking into account the different effects, it will be possible to handle the patients with a holistic approach, and thus, it will be possible to carry out the treatment process more successfully.

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## References

- Boos N AM. Spinal disorders; fundamentals of diagnosis and treatment. Germany: Springer; 2008.
- Roberto VL, Wang Jeffrey C. CL. AO Spine Masters Series: Back Pain. New York: Thieme Medical Publisher Inc; 2017;8.
- Hartvigsen J, Hancock MJ, Kongsted A, Louw Q, Ferreira ML, Genevay S, et al. What low back pain is and why we need to pay attention. *Lancet*. 2018;391(10137):2356-7.
- Foster NE, Anema JR, Cherkin D, Chou R, Cohen SP, Gross DP, et al. Prevention and treatment of low back pain: Evidence, challenges, and promising directions. *Lancet*. 2018;391:2368-83.

5. Davidson M, Keating JL. A comparison of five low back disability questionnaires: Reliability and responsiveness. *Phys Ther.* 2002;82(1):8-24.
6. Airaksinen O, Brox JJ, Cedraschi C, Hildebrandt J, Klüber-Moffett J, Kovacs F, et al. European guidelines for the management of chronic non-specific low back pain. *Eur Spine J.* 2006;15:S192-300.
7. National Collaborating Centre for Primary Care (UK). Low back pain: Early Management of Persistent Non-specific LBP [Internet]: Royal College of General Practitioners (UK). 2009.
8. Chou R, Deyo R, Friedly J, Skelly A, Hashimoto R, Weimer M, et al. Noninvasive treatments for low back pain. Comparative Effectiveness Review No. 169. AHRQ Publication No. 16EHC004-EF. Rockville, MD: Agency Heal Care Res Qual 2016.
9. Dagenais SH. Evidence-Based Management of low back pain. USA: Mosby; 2012.
10. Abbasi S, Hadian Rasanani M, Ghotbi N, Olyaei GR, Rasouli O. The effect of Kinesio taping on pain, functional disability, and trunk range of motion in people with nonspecific chronic low back pain: A single-group pretest-posttest trial. *J Mod Rehabil.* 2020;14(1):47-54.
11. Tunca Yılmaz Ö, Yakut Y, Uygur F, Naime U. Turkish version of Tampa Kinesiophobia Scale and test-retest reliability. *Fiz Rehabil.* 2011;22(1):44-9.
12. Bicer A, Yazicib A, Camdevirenc H, Abtullah M, Canan E. Assessment of pain and disability in patients with chronic low back pain: Reliability and construct validity of the Turkish version of the Quebec back pain disability scale and pain disability index. *J Back Musculoskelet Rehabil.* 2005;15(1):37-44.
13. Küçükdeveci 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. Int J Rehabil Res.* 2000;23(1):31-8.
14. Altuğ F, Ünal A, Kilavuz G, Kavlak E, Çitişli V, Ugur U. Investigation of the relationship between kinesiophobia, physical activity level and quality of life in patients with chronic low back pain. *J Back Musculoskelet Rehabil.* 2016;29(3):527-31.
15. Comachio J, Magalhães MO, Carvalho E, Silva APMC, Marques AP. A cross-sectional study of associations between kinesiophobia, pain, disability, and quality of life in patients with chronic low back pain. *Adv Rheumatol.* 2018;58(1):8.
16. Pitchai P, Chauhan SK, Sreeraj SR. Impact of kinesiophobia on quality of life in subjects with low back pain: A cross-sectional study. *Int J Physiother Res.* 2017;5(4):32-9.
17. Ishak NA, Zahari Z, Justine M. Kinesiophobia, pain, muscle functions, and functional performances among older persons with low back pain. *Pain Res Treat.* 2017;2017:3489617.
18. Kovacs FM, Abreira V, Zamora J, Gil del Real MT, Liobera J, Fernández C, et al. Correlation between pain, disability and quality of life in patients with common low back pain. *Spine (Phila Pa 1976).* 2004;29(2):206-10.
19. Wettstein M, Eich W, Bieber C, Tesarz J. Pain intensity, disability, and quality of life in patients with chronic low back pain: Does age matter? *Pain Med.* 2019;20(3):464-75.