

Relation Of Disease Activity With Quality Of Life and Sleep Quality İn Knee Osteoarthritis

Diz Osteoartritinde Hastalık Aktivitesinin Yaşam Kalitesi ve Uyku Kalitesi İle İlişkisi

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ABSTRACT

Introduction: The aim of this study was to assess the relation of disease activity with quality of life and sleep quality in knee osteoarthritis.

Methods: The study was performed on patients with knee osteoarthritis (n=100; 28 males, 72 females; mean age 58.09 years; range 23 to 85 years). Kellgren-Lawrence (KL) classification system, Visual Analog Scale (VAS), Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), World Health Organization Quality of Life (WHOQOL-BREF), and Pittsburgh Sleep Quality Index (PSQI) were used to evaluate radiological grading, pain, physical function (disease activity), quality of life, and sleep quality, respectively.

Results: There were significant positive correlations among KL, VAS, WOMAC, and PSQI scores, while significant negative correlations were found between WHOQOL-BREF profiles and KL, VAS, WOMAC, and PSQI scores (all p<0.01).

Conclusion: Our results suggest that higher disease activity is related to lower quality of life and poorer sleep quality in knee osteoarthritis.

Key Words: osteoarthritis, knee pain, quality of life, sleep quality

ÖZET

Amaç: Bu çalışmanın amacı diz osteoartritinde hastalık aktivitesinin yaşam kalitesi ve uyku kalitesi ile ilişkisini değerlendirmektir.

Yöntem: Bu çalışma diz osteoartriti olan hastalar üzerinde yapıldı (n = 100; 28 erkek, 72 kadın; ort. yaş 58.09 yıl; dağılım 23-85 yıl). Kellgren-Lawrence (KL) sınıflandırma sistemi, Görsel Analog Skala (VAS), Western Ontario ve McMaster Üniversiteleri Osteoartrit İndeksi (WOMAC), Dünya Sağlık Örgütü Yaşam Kalitesi (WHOQOL-BREF) ve Pittsburgh Uyku Kalitesi Endeksi (PSQI) sırasıyla radyolojik derecelendirme, ağrı, fiziksel fonksiyon (hastalık aktivitesi), yaşam kalitesi ve uyku kalitesini değerlendirmek için kullanılmıştır.

Bulgular: KL, VAS, WOMAC ve PSQI skorları arasında anlamlı pozitif, WHOQOL-BREF profilleri ile KL, VAS, WOMAC ve PSQI skorları arasında anlamlı negatif korelasyon bulundu (tümü p<0.01).

Sonuçlar: Sonuçlarımız diz osteoartritinde daha yüksek hastalık aktivitesinin daha düşük yaşam kalitesi ve daha kötü uyku kalitesi ile ilgili olduğunu göstermektedir.

Anahtar Kelimeler: Osteoartrit, diz ağrısı, yaşam kalitesi, uyku kalitesi

Introduction

Knee osteoarthritis is the most common painful articular disease and exhibits a heterogeneity in terms of underlying pathophysiological mechanisms and phenotypic characteristics (1). It is associated with high burden and disability rates and such rates vary depending on sociodemographic factors (2). Also, knee osteoarthritis has various harmful effects on health (3). There are various treatment options including pharmacological, surgical, and non-pharmacological and surgical interventions for knee osteoarthritis (4).

Previous studies have shown that knee osteoarthritis is related to both low quality of life and poor sleep

quality (3,5). Nevertheless, investigation or confirmation of such data in different societies and different times is important, because there are racial/ethnic differences in knee osteoarthritis-related pain and disability (6,7). Therefore, this study aimed to address the relation of disease activity with quality of life and sleep quality in knee osteoarthritis.

Material and Methods

In accordance with the principles of the Declaration of Helsinki, the study was performed at our Department of Physical Medicine and Rehabilitation. The Local Ethics Committee approved the study protocol (Decision No: 2009-08; Date: June 26,

Table 1. Participants Characteristics

	Patients with knee osteoarthritis (n=100)
Age, years	58.09±12.64 (23 – 85)
Gender, F/M	72/28
Disease duration, years	10.67±3.41 (3.0 – 18.4)
VAS, motion	84.25±13.71 (50 – 100)
WOMAC, total	61.17±13.74 (32 – 89)
PSQI	13.31±4.41 (3.0 – 20.0)
WHOQOL-BREF	
Physical health	42.16±14.97(10.0 – 76.0)
Psychological	47.90±13.88 (11.0 – 76.0)
Social relationships	45.61±18.83(12.0 – 85.0)
Environment	51.01±16.23(13.0 – 89.0)

F/M: Female/Male; VAS: Visual analogue scale; WOMAC: Western Ontario and McMaster Universities Osteoarthritis Index; PSQI: Pittsburgh Sleep Quality Index (PSQI); WHOQOL-BREF: World Health Organization Quality of Life; Values were given as mean±SD (min. – max.) or number

2009), and written informed consent was obtained from each participant.

A total of 100 knee osteoarthritis patients (28 males, 72 females; mean age 58.09 years; range 23 to 85 years) diagnosed according to American College of Rheumatology criteria (8) were evaluated in this study. Visual Analog Scale (VAS) (9), Kellgren-Lawrence (KL) radiological classification system (10), Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) (11), World Health Organization Quality of Life (WHOQOL-BREF) (12), and Pittsburgh Sleep Quality Index (PSQI) (13) scores were used to evaluate pain, radiological grading, physical function, quality of life, and sleep quality, respectively.

The KL classification represents radiographic severity of osteoarthritis according to presence of osteophyte formation, narrowing of the joint space, subchondral sclerosis, and deformity of bony ends (10). The WOMAC index is a questionnaire developed to assess disease activity in patients with hip or knee osteoarthritis, and consists of 24 questions evaluating pain, stiffness, and physical function (11). The WHOQOL-BREF contains 26 items, and addresses four domains (physical health, psychological, social relationships, environment) (12). The PSQI contains 19 items assessing sleep quality and sleep disturbances over one-month time interval (13). Higher scores in VAS, KL, WOMAC, and PSQI, while lower scores in WHOQOL-BREF are associated with worsening status (9-13).

The knee joint with greater pain was included in the evaluations, but right knee was evaluated when the pain severity was equal in both knees. The knee pain intensity, VAS score, was measured after 20m walking. Patients with grade 2-3-4 knee osteoarthritis

according to KL radiological rating scale and who suffering from knee pain VAS score ≥ 50 mm were included in the study.

Patients who have the following medical conditions were excluded: inflammatory joint disorders, use of corticosteroid and/or hyaluronic acid within the last three months, history of physical therapy or antidepressant use within the last six months, history of knee surgery, serious and decompensated systemic disease, presence or history of malignancy, diabetes mellitus, restless leg syndrome, polyneuropathy, and fibromyalgia syndrome.

Statistical analysis: All statistics were calculated by SPSS, version 13.0 software program (SPSS Inc., Chicago, IL, USA). The Student's t test was used to compare continuous variables, while the Chi-square test was used to compare categorical variables. The Pearson's correlation test was applied for correlation analyses. Continuous data were presented as mean (min.-max.) and categorical variables were presented as number. A p-value is less than 0.05 was considered as statistically significant.

Results

Table 1 demonstrates patients characteristics including age, sex, disease duration, VAS, WOMAC, PSQI, and WHOQOL-BREF scores.

Table 2 presents correlation analyses: There were significant positive correlations between KL scores and VAS, WOMAC, and PSQI scores, while significant negative correlations were found between KL scores and WHOQOL-BREF profiles (all $p < 0.01$). There were significant positive correlations between VAS scores and WOMAC, and PSQI scores, while significant negative correlations were found

Table 2. Correlation analyses

	KL	VAS	WOMAC	PSQI
KL				
VAS	0.492*			
WOMAC	0.716*	0.750*		
PSQI	0.685*	0.702*	0.823*	
Physical health	-0.574*	-0.64*§	-0.690*	-0.760*
Psychological	-0.624*	-0.538*	-0.682*	-0.701*
Social relation	-0.550*	-0.554*	-0.708*	-0.721*
Environment	-0.603*	-0.492*	-0.661*	-0.649*

*: $p < 0.01$; KL: Kellgren-Lawrence; VAS: Visual analogue scale; WOMAC: Western Ontario and McMaster Universities Osteoarthritis Index; PSQI: Pittsburgh Sleep Quality Index

between VAS scores and WHOQOL-BREF profiles (all $p < 0.01$). There were significant positive correlations between WOMAC and PSQI scores, while significant negative correlations were found between WOMAC scores and WHOQOL-BREF profiles (all $p < 0.01$). Also, the correlations between PSQI scores and WHOQOL-BREF profiles were significantly negative (all $p < 0.01$).

Discussion

In this study, we aimed to address the relation of disease activity with quality of life and sleep quality in knee osteoarthritis. For this purpose, we used appropriate assessment scales including VAS, KL, WOMAC, PSQI, and WHOQOL-BREF. As a result, we found that as disease activity increases, quality of life and sleep quality decrease in knee osteoarthritis.

There are racial/ethnic differences in knee osteoarthritis-related pain and disability (6,7), and the rates of burden and disability vary depending on sociodemographic factors of knee osteoarthritis patients (2). Also, knee osteoarthritis is related to genetic and biomechanic characteristics (14,15). Therefore, although previous studies on the topic have shown that knee osteoarthritis is associated with both low quality of life and poor sleep quality (3,5), to address such subject in different societies and different times is important.

To date, many studies performed on different societies have revealed significant relationship between knee osteoarthritis and sleep quality and quality of life (3,5,16,17). In accordance with the results of these studies, our study showed and confirmed that higher disease activity is associated with lower quality of life and poorer sleep quality in knee osteoarthritis patients. It has been reported that many chronic pain conditions affect quality of life and sleep quality negatively (18,19). In addition, some health problems-related to knee osteoarthritis such as

overweight and obesity (20) are also associated with low scores pertaining both sleep and life qualities (21). Therefore, chronic painful in nature of knee osteoarthritis and its coexistence with various health problems can explain underlying causal mechanisms for worsening quality of life and sleep quality in knee osteoarthritis patients.

On the other hand, there are some potential limitations to this study that should be taken into account. The present study was performed with grade 2-3-4 knee osteoarthritis according to KL classification. For this reason, our results may not valid for early stage of knee osteoarthritis. Another limitation may be related to the assessment scales which are based on self-reported data used to evaluate pain intensity, physical function, quality of life, and sleep quality.

In conclusion, as disease activity increases, quality of life and sleep quality decrease in patients with knee osteoarthritis. Clinicians dealing with knee osteoarthritis should be consider these important relations.

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