

Original Research Article

Incidence of kinesiophobia in patients with osteoarthritis knee an observational cross-sectional study

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ABSTRACT

Background: The effects of kinesiophobia on pain perception in osteoarthritis patients have remained elusive. The intension of this study is to assess psychometric aspect of pain, functional activity, and kinesiophobia in patients with chronic osteoarthritic knee pain.

Methods: The study was time bound observational cross-section study, including 50 patients. Kinesiophobia was assessed using Tampa scale of kinesiophobia (TSK-11), while physical function and pain are assessed using WOMAC and VAS scores. Patients were included as per inclusion criteria in the OPD in Department of Orthopedics, AIIMS, Rishikesh, India.

Results: It was observed 64% of patients were females while 36% were males. 46% patients had BMI range of 18.5-24.9, while 26% had BMI ≥ 30 , 20% had BMI between 25-29.9 and 8% of patients had BMI < 18.5 . Mean BMI was 25.44 ± 5.70 with minimum BMI of 14 and maximum BMI of 38. It was observed female patients mean WOMAC score was 44.44 ± 19.41 , while mean VAS score 4.25 ± 1.05 and mean TSK-11 was 33.34 ± 12.57 , male patients mean WOMAC score was 35.39 ± 13.62 while mean VAS score was 4.39 ± 0.92 , mean TSK-11 was 35.78 ± 14.52 . It was observed that there was no substantial difference on basis of gender in all three parameters when compared. This study suggests, there was no significant association between Age and VAS score (p-value 0.017) with Pearson correlation of 0.335.

Conclusions: Prospective therapies for kinesiophobia should attempt to reduce pain intensity and functionality improvement.

Keywords: Chronic pain, Functionality, Kinesiophobia, Osteoarthritis

INTRODUCTION

In individuals with musculoskeletal pain, fear of movement is an obstacle to restoration and wellbeing. The TSK-11 questionnaire was used to examine the phobia of movement in people with persistent musculoskeletal pain.¹ From a cognitive-behavioural perspective, pain impairment is influenced by intrinsic pathologies and cognitive-perceptual, psychophysiological variables. Some researchers have found that kinesiophobia, as

measured by the TSK-11, can assist in predicting pain impairment.²

People having fear of pain tend to abstain from physical activities and movements. To overcome the knee OA pain and disability it is important to perform an adequate level of activities and exercises.¹¹

On the other hand knee OA patients with kinesiophobia may be more reluctant in performing activities of daily life and exercises. Curtailment to physical activities due to fear

of movement tends to increase disability and pain contributing to progression of knee OA.¹²

Within the perspective of a fear-avoidance theory, fear of mobility could be considered one phenomenon. The underlying concept is that pain induces agitation that contributes to resistive behaviour like averting movements associated with daily life activities. Avoidance of physical activity due to fear is known as phobic fear of movement or kinesiophobia, and chronic pain behavior.³ "Kinesiophobia is an intense, irrational, and crippling fear of body movement and activity. A feeling of insecurity causes it due to a painful condition/injury." Cognitive-perceptual reactions pertain to how a patient perceives and analyze their surroundings and the extent to which the patient believes they have control over the situation.⁴

Self-perception of health is another cognitive factor highly linked to the development of pain in older persons.⁵ The study's main objective was to evaluate how pain, functional activity, and fear of mobility affected people suffering from knee osteoarthritis. In this research, no correlations have been found between five parameters (Age, BMI, WOMAC, VAS and gender with TSK-11).

METHODS

Patients were enrolled from the Department of Orthopaedics, AIIMS Rishikesh, from September 2021 to December 2021. Patients included in the study were both men and women, 23-91 years (mean age 57.42 year) with history of pain, unilateral or bilateral osteoarthritis knee with Kellgren-Lawrence grade.^{2,3} Kinesiophobia was assessed using Tampa scale of kinesiophobia (TSK-11), while physical function and pain are assessed using WOMAC and VAS scores. Patients with any assisted device needed for ambulation, pregnancy, patients using prescribed footwear modification and any intra-articular injection within last 3 months were excluded from the study. The study comprised 50 patients both male and female, aged 23 to 91 years, with unilateral or bilateral osteoarthritic knee, KL grade 2 or 3 who met the inclusion criteria. Based on their symptoms the patients were categorized into two groups. Sex, age, and BMI, with 25 males and 25 females each. All of the patients were asked to complete questionnaires (WOMAC, VAS, and TSK-11). The study do not needed separate ethical approval as it is a sub part of thesis on osteoarthritis knee patients and already got ethical clearance from the institutional ethics committee.

Procedure

Three questionnaires, WOMAC, VAS, and TSK-11, were used to assess pain, functional activities, quality of life, kinesiophobia, fear of movement, including their demographic details in the patients with knee osteoarthritis.

WOMAC

The WOMAC is a standard patient-reported evaluation instrument for knee OA.⁶ The WOMAC is a 24-item self-administered questionnaire which includes parameters of pain, stiffness and physical function. The pain parameter asked about pain intensity associated with functional activities and certain positioning(5 questions); while the functional parameter asked about difficulty of executing activities(17 questions)and the stiffness parameter asked about the intensity of stiffness (2 questions). WOMAC gives a single overall score as well as subscale scores, with higher subscale scores indicating worsening conditions.⁷

VAS

The severity of pain during rest and activity was determined by VAS scale i.e., 0 (no pain) to 10 (extreme pain). Patients can also be asked to mark their maximum, minimum, and average pain. The pain was reported for the knee both during rest and activity.⁸

TSK-11

It is a 17-item questionnaire evaluates Kinesiophobia. Individually scored four-point Likert scale, with options from "strongly disagree" to "strongly agree." The answers to questions 4, 8, 12, and 16 are graded in ascending order. Final score runs from 17 to 68, with higher values indicating a substantially increased kinesiophobia.^{9,10} In addition, the questionnaires addressed socio-demographic data, workload and satisfaction, physical activity, and past treatment.

Statistical analysis

The Fisher's exact test or Chi-squared test were used to compare nominal categorical data between the groups. Statistical testing was carried out using SPSS 17.0, a statistical tool for analyzing complex data. The data is expressed in the form of mean, standard deviation, median, and percentages. The student's t-test compared normally distributed continuous variables WOMAC score, VAS score, and TSK-11 concerning gender. Pearson correlation was used to establish the magnitude of the relationship between various scores and age and BMI. It was determined that p value 0.05 was statistically significant

RESULTS

Age distribution

The age distribution of the patients in the study is depicted in the Table 1. It was shown that 46 percent of the patients were 51-60 years, 34 percent were >60 years, 16 percent were 41-50 years, and 4% were under <=40 years old. Further, it was noticed that the average age of the patients was 57.42±10.94 years, with a minimum age of 23 years and maximum age of 91 years.

Table 1: Age distribution.

Age groups	Frequency	%
≤40 years	2	4
41-50 years	8	16
51-60 years	23	46
>60 years	17	34
Total	50	100
Mean±SD	57.42±10.94	
Min - Max	23 - 91 years	
Median (IQR)	57 (51.75 - 63.25)	

Sex distribution

The Table 2 show the sex distribution of the patients in the study. It was observed that 64% of the patients were females while 36% were males.

Table 2: Sex distribution.

Sex	Frequency	%
Female	32	64.0
Male	18	36.0
Total	50	100

BMI distribution

The Table 3 show the distribution of the patients under the study according to their BMI levels. It was observed that 46% of the patients had BMI in the range of 18.5-24.9, while 26% had BMI ≥30, 20% had BMI between 25-29.9 and 8% of the patients had BMI <18.5. Further, it was observed that the mean BMI of the patients was 25.44±5.70, with a minimum BMI of 14 and a maximum BMI of 38.

Table 3: BMI distribution.

BMI	Frequency	%
<18.5	4	8.0
18.5-24.9	23	46.0
25-29.9	10	20.0
≥30	13	26.0
Total	50	100
Mean±SD	25.44±5.70	
Min - Max	14-38	

Table 6: Correlations between different parameters.

Correlations		Age	BMI	WOMAC score	VAS score	TSK-11
Age	Pearson Correlation	1	0.155	0.146	.335*	-0.168
	p value		0.282	0.312	0.017	0.243
	N	50	50	50	50	50
BMI	Pearson Correlation		1	0.09	-0.078	0.085
	p value			0.532	0.591	0.556
	N		50	50	50	50

Continued.

The Table 4 show the mean WOMAC score, VAS score, and TSK- 11 score for the patients under the study. It was observed that the mean WOMAC score was 41.18 ± 17.94 minimum of 14 and maximum of 19. The mean VAS score was 4.30±1.00 with minimum of 2 and maximum of 6. Mean TSK- 11 was 34.22±13.21 with minimum of 11 and maximum of 66.

The Table 5 compares various parameters between the males and females under the study. It was observed that for the female patients mean WOMAC score was 44.44±19.41, while mean VAS score was 4.25±1.05 and mean TSK-11 was 33.34±12.57 and for the male patients mean WOMAC score was 35.39±13.62, while mean VAS score was 4.39±0.92 and mean TSK-11 was 35.78±14.52. It was also noticed that when all the three parameters were compared among male and females there is no distinctive difference were found.

Table 4: WOMAC score, VAS score, and tsk- 11 score.

	Mean±SD	Min-Max	Median (IQR)
WOMAC score	41.18±17.94	14-91	36.50 (26-53.75)
VAS score	4.30±1.00	2-6	4 (4-5)
TSK-11	34.22±13.21	11-66	33 (24.75-42)

Table 5: Comparison of scores in male and female.

	Sex		p value
	F	M	
	Mean±SD	Mean±SD	
WOMAC score	44.44±19.41	35.39±13.62	0.060
VAS score	4.25±1.05	4.39±0.92	0.640
TSK-11	33.34±12.57	35.78±14.52	0.537

The Table 6 show the correlation between the five parameters studied. This observation reveals the significant correlation between age and VAS score (p-value 0.017) with pearson correlation of 0.335.

The Table 7 shows comparison of mean of TSK-11 with male and female in which p-value is 0.537.

Correlations		Age	BMI	WOMAC score	VAS score	TSK-11
WOMAC score	Pearson Correlation			1	0.218	0
	p value				0.129	0.996
	N			50	50	50
VAS score	Pearson Correlation				1	-0.019
	p value					0.895
	N				50	50
TSK-11	Pearson Correlation					1
	p value					
	N					50

Table 7: Comparison of mean TSK-11 between male and female.

Sex	N	Mean TSK-11	SD	p value
M	18	35.78	14.52	0.537
F	32	33.34	12.57	

DISCUSSION

The study's significant findings were that kinesiophobia worsened and recovered with time, although the mean score of kinesiophobia stayed constant. Pain severity and poor health were both linked to kinesiophobia.

It's significant to highlight that kinesiophobia isn't a definite trait; however, it's a disorder with varying degrees of severity.¹¹ There is no threshold value for TSK-11 distinguishing between strong and low kinesiophobia. The total score for the 17-item TSK-11, on the other hand, varies from 17 to 68, with values >37 indicating a significant level of kinesiophobia.² This cohort represents a general community of older persons with various chronic conditions had relatively low levels of kinesiophobia.¹²

When analyzing the complete range of the scale, a shift of more than 10 percent correlates with a significant clinical shift and is comparable to a change of more than three points on the TSK-11 (11-44 points). According to the study, a three-point decrease is needed to be 95 percent certain that a change has happened. Previous studies have indicated that the cognitive fear avoidance model's relevance varies depending on the type of pain, which could have influenced the outcome.¹³

This study has some limitations. These results cannot be applied to the entire KOA population because the sample size for this cross-sectional study was only 50 people. To achieve a more thorough functional performance study, additional outcomes, such as walking endurance, speed tests, and back endurance, may be advised. Additionally, muscle size, strength, and proprioceptive ability all decline with age. Therefore, rather than kinesiophobia, the functional performance observed in this study may be related to ageing processes. Age, formal education, recreational activities, smoking, and sleep duration were not taken into account while analysing the study's findings.

Future studies should look into these confounding factors and how they affect the results.

CONCLUSION

In patients with chronic pain, low levels of kinesiophobia were observed. Even though kinesiophobia worsened and recovered throughout time, the mean score of kinesiophobia remained the same. Kinesiophobia was identified high amongst physically weaker and older persons, regardless of gender. The results of this study assist in determining who is most prone to suffer from severe kinesiophobia by linking poor self-perceived wellbeing and high pain intensity to kinesiophobia. The findings suggest that prospective kinesiophobia therapies should reduce pain intensity while strengthening these individuals' psychological beliefs.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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