

Original Research Article

Impact of anxiety, depression, and stress among knee osteoarthritis patients: a percentage-based study

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ABSTRACT

Background: Mental health challenges play an important role in pain and progression of knee osteoarthritis (KOA). Two prevalent psychological comorbidities that affect patients' quality of life (QoL) are anxiety and depression. The functional condition of patients with KOA may be influenced by feelings of depression and anxiety.

Methods: The study was conducted on 108 individuals diagnosed with osteoarthritis knee according to European League Against Rheumatism (EULAR) classification knee OA. Age, gender, and body mass index (BMI) were recorded, pain and functional activities were assessed using Western Ontario and McMaster Universities osteoarthritis index (WOMAC), and depression, anxiety and stress scales-21 (DASS-21) was used for stress, anxiety, and depression.

Results: The 108 patients with osteoarthritis knee were included in the study. The mean age of patients was 55.92±0.8 years, and the mean BMI was 27.24±0.4 kg/m². The majority of patients with knee OA had typical levels of stress (64.75%), anxiety (39.57%), and depression (50.36%). There was mild to severe degrees of stress (17.27–10.79%), anxiety (9.35–22.30%), and depression (20.14–22.30%). Anxiety had a higher prevalence of severe to extremely severe cases (28.78%) than depression (11.52%) and stress (7.19%), indicating the psychological load experienced by a subgroup of patients.

Conclusions: According to the findings, to maximize patient care and rehabilitation, psychological support, especially for anxiety, should be incorporated into the treatment of KOA.

Keywords: Osteoarthritis, Anxiety, Depression, Stress

INTRODUCTION

Osteoarthritis (OA) of the knee is a chronic degenerative joint disease and a primary cause of disability globally, affecting almost 22% of people over the age of 40.¹ KOA, characterized by increasing cartilage loss, joint stiffness, and chronic pain, significantly negatively impacts quality of life and functional independence. While the physical symptoms are well-documented, the psychological repercussions, particularly anxiety, despair, and stress, have received increasing attention due to their substantial impact on disease progression, pain perception, and treatment outcomes.^{2,3}

Osteoarthritis severity is measured by the Western Ontario and McMaster Universities osteoarthritis index (WOMAC) score, which considers stiffness, discomfort during activities, and difficulty standing or climbing stairs. It is frequently used to monitor the disease's progression and treatment efficacy; higher scores denote worse symptoms.⁴ The short form, depression, anxiety and stress scales-21 (DASS-21), is a valid tool for assessing poor mental states, including stress, anxiety, and depression in adults (both patients and non-patients).⁵⁻⁷ The objective of this study was to evaluate whether stress, anxiety, and depression exacerbate KOA pain, increase inflammation, and impede healing.

METHODS

This cross-sectional time-bound study was conducted after getting ethical clearance from the institutional ethical committee, from September 2022 to December 2024 in the Department of Orthopaedics, AIIMS Rishikesh. A total of 108 patients with KOA, both men and women, were diagnosed by European League Against Rheumatism (EULAR) diagnostic criteria 2010 for classification of KOA with a history of pain, unilateral or bilateral osteoarthritis knee with Kellgren-Lawrence grade 2 or 3, and Karnofsky performance score between 80–90%. were included in the study. Patients with any assisted device needed for ambulation, prescribed footwear modification, and intra-articular injection within the last 3 months were excluded from the study. Anxiety, depression, and stress were assessed using DASS-21 scores, while physical function and pain were evaluated using WOMAC (CRD Pune version).

Statistical analysis

The mean and standard deviation followed by a 95% confidence interval were used in frequency tables, among other descriptive statistics, for normally distributed data. A 't test was used when comparing means between two sets of normally distributed data.' A descriptive analysis was used to find the percentage level, and p values of 0.05 or less were considered significant. Statistical package for the social sciences (SPSS) version 21 was used to do the statistical analysis.

RESULTS

A total of 108 knee osteoarthritis patients were in the study: 40 men and 68 women. There was a significant difference between the groups ($p < 0.05$); the mean age was 55.92 ± 0.8 . There was no significant difference (p value = 0.20) in the mean BMI of 27.24 ± 0.4 . Regarding education, there were no discernible variations (p value 0.85), with 19.4% having a higher degree, 35.1% having completed high school, and 45.3% being illiterate. With a

total WOMAC score of 29.37 ± 1.03 (pain score nearing statistical significance at p value of 0.092), the mean WOMAC scores were 4.57 ± 3.26 for pain, 2.60 ± 0.12 for stiffness, and 22.20 ± 7.55 for functionality. With 36.1% in grade II and 57.4% in grade III, the KL grading did not reveal any significant difference (p value = 0.869) (Table 1).

Table 1: Demographics.

Variables	Mean±SD	P value
Age (years)		
45-59	50.50±0.68	<0.05
59-70	66.5±6.63	
Total	55.92±0.8	
BMI	27.24±0.4	0.20
Education (%)		
Illiterate	49 (45.3)	0.85
Up to high school	38 (35.1)	
Above high school	21 (19.4)	
WOMAC		
Pain	4.57±3.26	0.092
Stiffness	2.60±0.12	
Function	22.20±7.55	
Total	29.37±1.03	
Kl grade (%)		
II	39 (36.1)	0.869
III	62 (57.4)	

A significant portion of subjects showed signs of psychological distress. In particular, 50.36% of people had normal depression levels, but 20.14% had mild depression, 17.99% had moderate depression, and 5.76% each had severe and extremely severe depression. With 39.57% reporting normal anxiety, 9.35% light anxiety, 22.30% moderate anxiety, 11.51% severe anxiety, and 17.27% extremely severe anxiety, anxiety levels also varied. 64.75% reported normal stress levels, compared to 17.27% who reported light stress, 10.79% who reported moderate stress, 6.47% who reported severe stress, and 0.72% who reported extremely severe stress (Table 2).

Table 2: Level of depression, anxiety, and stress along with percentage.

Level of depression	Percentage	Level of anxiety	Percentage	Level of stress	Percentage
Normal (0-9)	50.36	Normal (0-7)	39.57	Normal (0-14)	64.75
Mild (10-13)	20.14	Mild (8-9)	9.35	Mild (15-18)	17.27
Moderate (14-20)	17.99	Moderate (10-14)	22.30	Moderate (19-25)	10.79
Severe (21-27)	5.76	Severe (15-19)	11.51	Severe (26-33)	6.47
Extremely severe (28+)	5.76	Extremely severe (20+)	17.27	Extremely severe (34+)	0.72

DISCUSSION

Psychological comorbidities are common in chronic pain diseases such as KOA owing to continuous discomfort, movement constraints, and fear of impairment.^{8,9} Considering these recognized pathophysiological

linkages, epidemiological knowledge of the prevalence and distribution of anxiety, depression, and stress among knee osteoarthritis patients is lacking, especially in resource-constrained settings.¹⁰ This study shows a percentage-based analysis of anxiety, depression, and stress prevalence in KOA patients. Emphasizing the

relationship between physical and psychological health. By concentrating on these comorbidities, we highlight the need for multidisciplinary approaches to OA management, which combine orthopedic care with mental health therapies to improve patient outcomes and reduce the total disease burden.¹¹

Physical limitations that limit mobility and social integration, as well as pain and difficulty doing activities of daily life can exacerbate feelings of discouragement and anxiety. Anxiety symptoms may arise as a result of depressed condition when accompanied by physical sickness.¹²

Along with depression and anxiety, pain and its effects on OA patients' physical and mental health seem to be significant factors that significantly impact their quality of life. Both the domains most directly associated with physical health (physical functioning, bodily pain, role limitations resulting from physical health, vitality, and overall health state) and those associated with social aspects and psychological health (role limitations resulting from emotional problems and mental health) indicated this pattern.¹³

Limitations

The cross-sectional design, dependence on self-reported measurements, and absence of OA severity categorization are the study's limitations. Unaccounted variables may alter results, and demographic diversity may affect generalizability. Notwithstanding these drawbacks, it highlights the crucial relationship between managing OA and mental distress.

CONCLUSION

With 43.65% reporting moderate to severe depression, 60.43% reporting mild to extreme anxiety, and 35.25% reporting mild to severe stress, a sizable portion of knee OA patients expressed psychological distress. These results highlight the psychological burden faced by patients with KOA.

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