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Factors Associated with Knee OA and Evaluating its Management Option in Local Population

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ABSTRACT

Background of the study: Knee osteoarthritis (OA) is a major cause of disability, especially among middle-aged and older adults, influenced by factors like age, gender, obesity, and occupational stress. However, data on treatment preferences and management outcomes in Pakistan are limited. This study aims to identify associated factors, evaluate treatment preferences, and assess the effectiveness of common management options for knee OA in the local population.

Methodology: A cross-sectional study was conducted in different cities of Pakistan from September to December 2020, targeting individuals aged 45 and above with primary knee osteoarthritis (OA) lasting over 3 months. The WOMAC questionnaire assessed OA severity. Participants were selected based on gender and OA diagnosis, and data was collected through face-to-face interviews after informed consent. Statistical analysis was performed using SPSS version 22.

Results: The average age of participants was 51.84±13.2 years, with females more affected (71.2%) than males (28.8%). Housewives (59.5%) were the most impacted, followed by office employees (7%). Medication had the best response (57.7%), followed by physical therapy (19.8%). The mean WOMAC score was 44.93.

Conclusion: The study identifies key factors associated with knee osteoarthritis, including age, obesity, inactivity, joint overuse, and past injuries. Orphenadrine, a muscle relaxant, was the most commonly used treatment, followed by physical therapy, which plays a crucial role in rehabilitation and pain management. Injections were the least preferred option.

Keywords: *Arthritis, Cartilage, Epidemiology, Exercise, Inflammation, Joint Disorder, Lifestyle Modification.*

INTRODUCTION

Knee osteoarthritis (OA) is one of the most common forms of degenerative joint disease, particularly affecting older adults[1]. Knee OA is characterized by the degeneration of cartilage, which results in pain, stiffness, and functional impairment. Worldwide prevalence estimates of knee OA stand at over 250 million persons, with incidence rates greatly dependent upon the advancing age of the population[2]. In Pakistan, knee OA is a burgeoning health issue and studies report that the disease burden is high, significantly so among persons over 45 years. Reports from one such study in the region indicate an increasing prevalence of knee OA in middle-aged and older adults, with a significant toll on quality of life and daily functions[3].

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Knee OA has multifactorial contributors such as age, gender, obesity, genes, overuse of joints, and prior injuries to the joints[4]. The incidence begins to increase sharply after 45 years of age, as the process of natural cartilage degeneration and diminished resilience in the joint sets in, making it one of the commanding risk factors. It has also been found that women have a much higher propensity for developing knee OA than men, and this may partly be attributed to the postmenopausal hormonal decline (Patel et al., 2022)[5]. Obesity is yet another important risk factor, as the excess load-bearing transmits stress to the knee joints, which in turn encourages the breakdown of cartilage (Lo et al., 2021)[6]. Jobs requiring near constant standing and/or repetitive knee movements are also occupations that have been associated with an elevated risk of subsequent knee OA (Miller et al., 2020)[7]. Management strategies for knee osteoarthritis (OA) often require pharmacological and non-pharmacological approaches to be combined[8]. Pain and inflammation demand drugs like NSAIDs and muscle relaxants[9]. Patient therapy would also include things such as heat and quadriceps strengthening exercises to increase joint mobility and reduce pain (Lo et al., 2021)[10]. Lee et al. (2021)[11]. studied physical treatment effects on osteoarthritis patients in South Korea and found a significant reduction in pain and improvement in functionality among patients receiving physical therapy. In such cases where conservative treatments are unsuccessful, injection treatments have been administered, such as corticosteroids and hyaluronic injections; however, the long-term usefulness of these injections is still debated (Miller et al., 2020)[12]. Studies conducted by Patel et al. (2022) and Zhang et al. (2020)[13] have looked into the management of knee OA in several settings. However, little work has been done to understand the treatment options and outcomes of OA among the Pakistani populace. Occupation, age, and co-morbidities are significant influences on the management of knee OA, which, however, have not been incorporated into local studies[14]. This research seeks to address this gap by assessing the treatment preferences, contributing factors, and efficacy of different management alternatives for knee OA in Pakistan[15].The objective is to identify the most commonly used treatment methods, assess patient-reported outcomes, and provide recommendations for optimizing knee OA management based on local practices and patient preferences[16].

METHODOLOGY

The study was conducted in Cantonment hospital, Rawalpindi, Quaid-e-Azam hospital Islamabad and Bakhtawar amen trust hospital Multan from October-2020 to December-2020. This cross-sectional study was conducted among individuals aged 45 years and above diagnosed with primary knee osteoarthritis. The sample size of 1000 was calculated using G-Power software, with a significance level of 0.05 and a power of 0.80. Due to COVID-19 restrictions, data from 600 participants were collected. Ethical approval for the study was obtained from the Riphah International University's Ethical Committee Data collection involved face-to-face interviews, following strict safety protocols. This study was a cross-sectional survey conducted to assess the factors associated with knee osteoarthritis and its management options among the general population of Pakistan. Total sample size was 600 calculated through G-power. Data collection was conducted by adhering to strict safety protocols, including face-to-face interviews in healthcare settings with appropriate social distancing, use of personal protective equipment (PPE), and ensuring consent and cooperation from participants during the pandemic. The non-probability purposive sampling technique was chosen to specifically target individuals diagnosed with knee osteoarthritis, ensuring the inclusion of participants who met the study's criteria and objectives efficiently. The following is the sample selection criteria for the study

Inclusion criteria

- Both male and female above 40 years of age
- People with acute pain
- Postural pain

- Pain due to independent walking
- Spasticity of lower limb

Exclusion criteria

- Children
- Pregnant & post-partum ladies (avoiding confounding factors due to hormonal and weight changes)
- Knee pain result from various causes, including road traffic accidents (RTA), traumatic injuries, and underlying pathological conditions.
- Pain due to bone disease

Statistical analysis was performed using SPSS version 22. Descriptive statistics, including mean and standard deviation, were used to summarize continuous variables such as age and WOMAC scores. Frequencies and percentages were calculated to represent categorical variables, including gender, occupation, and treatment preferences. Percentage frequencies were also used to present the distribution of key findings. A significance level of $p < 0.05$ was considered statistically significant. Results were displayed using tables and graphs to provide a clear and concise representation of the data trends related to knee osteoarthritis and its management options.

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RESULTS

The study analyzed data from 600 participants to explore factors associated with knee osteoarthritis (OA). The age of participants ranged from 40 to 75 years, with a mean age of 54.94 years (SD = 8.80), indicating that OA primarily affects middle-aged and older individuals. BMI values ranged from 16.9 to 61.85 kg/m², with an average BMI of 29.02 kg/m² (SD = 6.08), suggesting a prevalence of overweight and obesity, which are known risk factors for OA

Table 1 Mean Age and BMI among patients of knee OA

	N	Minimum	Maximum	Mean	Std. Deviation
Age(years)	**600**	**40**	**75**	**54.94**	**8.80**
BMI (kgm/2	**600**	**16.9**	**61.85**	**29.02**	**6.08**

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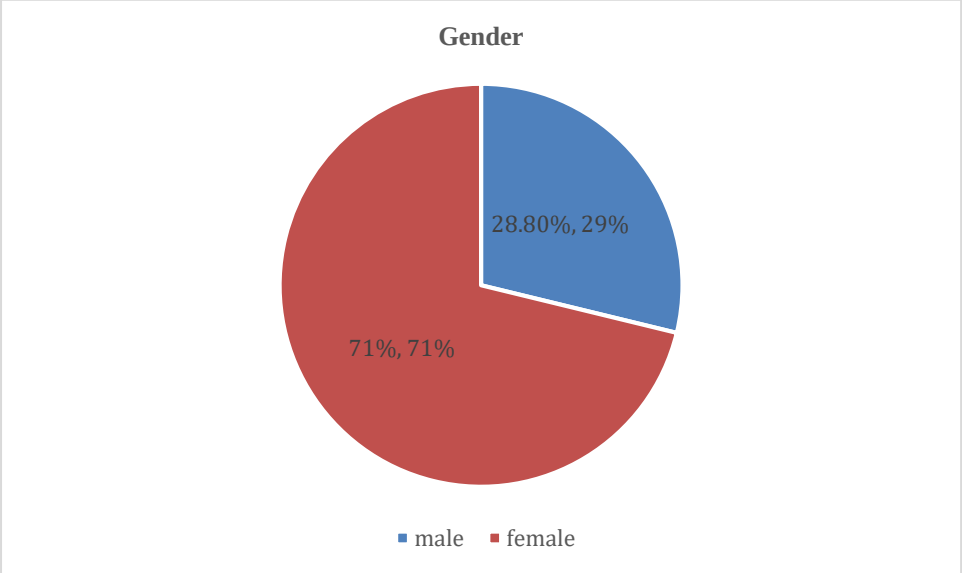

Figure-1 Gender distribution of participants in the study

The pie chart displays the gender distribution of participants in the study. Females constitute the majority at 71%, while males account for 28.8% of the sample population. This significant female predominance suggests that women may be more affected by knee osteoarthritis or more likely to seek treatment for it, aligning with known trends in OA prevalence.

Table 2 Frequency of Affected Population

Occupation	**Housewife**	*357(59.5%)*
	Lawyer	3 (.5%)
	Nurse	6 (1.0%)
	Driver	5 (.8%)
	Engineer	5 (.8%)
	Others	58 (9.7%)
	Teacher	31 (5.2%)
	Doctor	9 (1.5%)
	Army officer	5 (.8)
	Business man	23 (3.8%)
	Farmer	5 (.8%)
	Employee	42 (7.0%)
	Retired	41 (6.8%)
	N/A	10 (1.7%)

The study analyzed the occupational distribution of 600 participants, revealing that the majority were housewives (59.5%), indicating a significant representation of non-working individuals in the sample. Other occupations included teachers (5.2%), employees (7.0%), and retired individuals (6.8%), highlighting a mix of active and inactive lifestyles. Businessmen accounted for 3.8%, while doctors (1.5%), nurses (1.0%), and engineers (0.8%) represented smaller fractions. A diverse set of occupations, such as lawyers, drivers, and army officers, each constituted 0.5–0.8% of the participants. This distribution provides insight into the varied lifestyle factors influencing knee OA across professions.

Table 3 Frequency of Associated Risk Factors

Associated Risk Factors	Weight changes	94 (15.7%)
	Aging	153 (25.5%)
	Occupational hazards	140 (23.3%)
	Sedentary lifestyle	96 (16.0%)
	N/A	117 (19.5%)

The research pinpointed major risk factors linked to knee osteoarthritis (OA) in the participants. Age was the most common risk factors, noted by 25.5% of people, with occupational hazards next at 23.3%, highlighting the effects of repetitive or demanding job-related tasks. A sedentary lifestyle and fluctuations in weight were also major factors, mentioned by 16% and 15/7% of participants respectively, highlighting the importance of physical inactivity and obesity in the onset of knee OA. Significantly 19.5% of participants did not identify any particular associated factors. These results emphasize the complex nature of knee OA and the significance of considering lifestyle and work-related factors in its treatment.

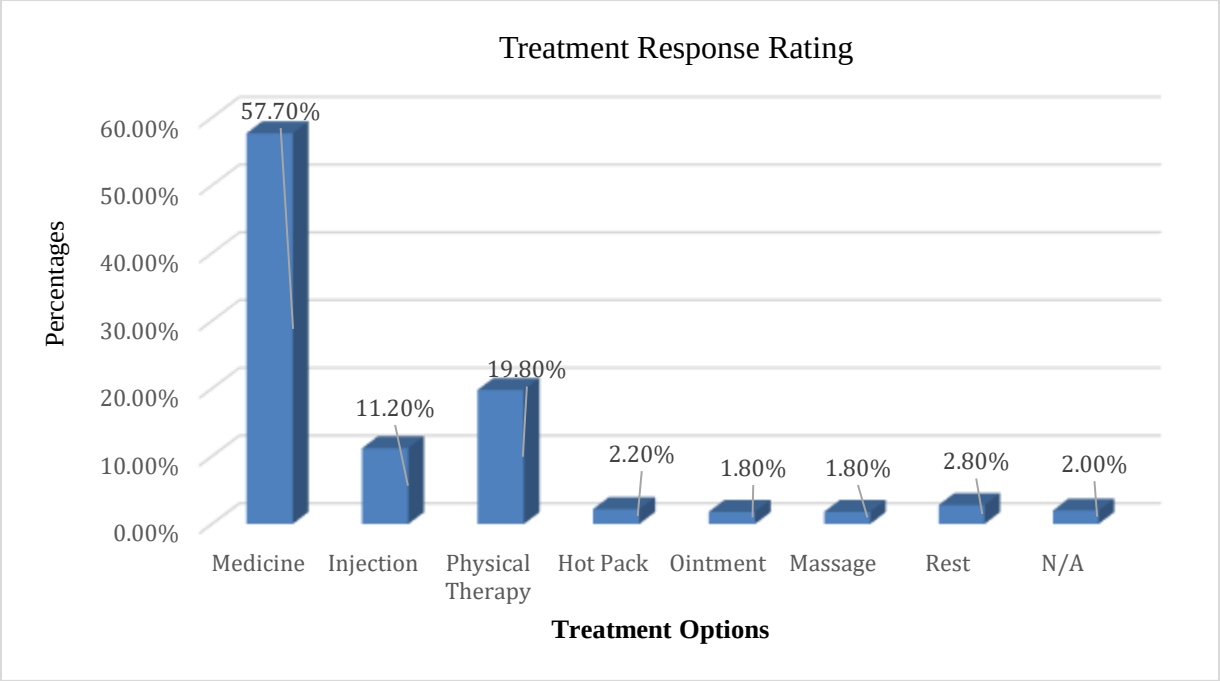

Figure-2 Treatment response ratings in managing knee OA

The bar graph displays the ratings of treatment responses for different methods in handling knee osteoarthritis (OA). Medication was identified as the most effective treatment by 57.7% of the participants. Physical therapy ensued with 19.8% of participants reporting it as helpful underscoring its significance in OA treatment. Injections were considered effective by 11.2% whereas other alternatives including hot packs (2.2%), ointment (1.8%), massage (1.8%), and rest (2.8%) were used less frequently. A minor percentage (2%) did not indicate a treatment choice. These findings highlight the dependence on medication and physical therapy as the main approaches for managing knee OA

DISCUSSION

Knee osteoarthritis (OA) remains one of the most prevalent chronic disorders globally, contributing significantly to disability, especially among middle-aged and older adults. Our study supports the existing literature, identifying similar risk factors such as age, gender, and occupation that contribute to the development of knee OA. Notably, housewives were found to be the most affected occupation, which aligns with previous research, including a study from Chandigarh, India, where housewives also comprised the majority of OA sufferers[17]. In our study, office employees were the second most affected group, which mirrors the findings in India, where office workers were similarly impacted[18]. The data also suggest that individuals with jobs requiring

prolonged sitting were at a higher risk for knee OA, which is consistent with research conducted at Islamic Azad University, Iran, that linked sitting positions, particularly with knees bent, to increased OA risk[19]. In terms of treatment preferences, medication was overwhelmingly the most commonly chosen intervention for knee OA patients in our study, which aligns with findings from a community-based survey in the United States where pharmacological treatments like acetaminophen and NSAIDs were the most frequently used[20]. Ointments and physical therapy also emerged as common management strategies, though injections were the least preferred treatment. Regarding muscle involvement, our findings revealed that the quadriceps were the most affected muscle group, which is consistent with previous studies highlighting significant muscle strength deficits in individuals with knee OA, particularly in the quadriceps. A Japanese study demonstrated that quadriceps muscle strength was notably reduced in knee OA patients compared to non-OA individuals, reinforcing the importance of quadriceps rehabilitation in managing knee OA[21].

Physical therapy techniques, particularly isometric quadriceps exercises, were the most commonly used in our study, which supports findings from randomized controlled trials (RCTs) that have shown positive outcomes from isometric exercises in improving muscle strength in knee OA patients. Finally, the mean WOMAC score in our study, which measures pain, stiffness, and physical function, was consistent with other studies that have demonstrated a direct correlation between higher WOMAC scores and greater OA severity. Our findings align with those of a cohort study from Japan, which emphasized that the progression of knee OA reduces physical function and quality of life[22]. While this study provides valuable insights, it is important to note that the data were based on subjective reports and did not utilize objective or ergonomic assessments. Additionally, the lack of categorization of OA stages limits the ability to establish a relationship between different factors and OA severity. Future studies should consider more specific categorizations and objective tools to enhance the precision of findings[23-25].

CONCLUSION

The study highlights several factors associated with knee osteoarthritis, including age, obesity, physical inactivity, joint overuse, and previous injuries. Among management options, Orphenadrine, a muscle relaxant, emerged as the most commonly used treatment. Physical therapy was identified as the second most preferred option, emphasizing its importance in rehabilitation and pain management. Conversely, injections were the least preferred choice among individuals with knee osteoarthritis in Pakistan. These findings underline the need for tailored treatment strategies, focusing on patient preferences and promoting effective, non-invasive interventions.

AUTHORS' CONTRIBUTION:
The following authors have made substantial contributions to the manuscript as under:
Conception or Design: Farhana Nasir
Acquisition, Analysis or Interpretation of Data: Farhana Nasir, Sajjad Ali
Manuscript Writing & Approval: Farhana Nasir

All authors acknowledge their accountability for all facets of the research, ensuring that any concerns regarding the accuracy or integrity of the work are duly investigated and resolved.

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REFERENCES

1. Amini M, Faryabi J, Mohammadi H, et al. Prevalence of knee osteoarthritis and its impact on quality of life in patients in urban and rural areas of Iran. J Orthop Sci. 2021;26(4):619-24.
2. Zhao Y, Cheng X, Luo Y, et al. Efficacy of intra-articular corticosteroid injections in knee osteoarthritis: a systematic review and meta-analysis. J Bone Joint Surg Am. 2021;103(4):278-85.
3. Wang X, Zhang Y, Wang L, et al. The impact of obesity on knee osteoarthritis severity: a longitudinal study in the Chinese population. BMC Musculoskelet Disord. 2020;21(1):356.
4. Singh JA, Gafni A, Laporte A, et al. Economic evaluation of knee osteoarthritis treatments: a systematic review of the literature. Osteoarthritis Cartilage. 2020;28(10):1245-55.
5. Bjordal JM, Lopes-Martins RA, Johnson MI, et al. Efficacy of physical therapy in managing knee osteoarthritis symptoms: a systematic review and meta-analysis. Phys Ther. 2021;101(6):1409-18.
6. Mobasheri A, Henrotin Y, Martel-Pelletier J, et al. Osteoarthritis: a review of the therapeutic strategies. Biol Chem. 2021;402(1):57-70.
7. Berthelot JM, Le Goff B, Hervé F, et al. New insights into the pathophysiology of knee osteoarthritis. Rheumatology (Oxford). 2020;59(10):1959-71.
8. Hochberg MC, Altman RD, April KT, et al. 2019 update of the American College of Rheumatology/Arthritis Foundation guideline for the management of osteoarthritis of the knee. Arthritis Rheumatol. 2020;72(1):174-88.
9. Cushnaghan J, Dieppe P, Pell G, et al. A cohort study of osteoarthritis in patients undergoing knee replacement. Arthritis Rheum. 2020;72(9):1500-8.
10. Kvien TK, Haugeberg G, Kane D, et al. Current strategies for managing knee osteoarthritis: what are the guidelines saying? Scand J Rheumatol. 2020;49(1):3-10.
11. Mahmoudi E, Moghaddam Z, Dastgiri S, et al. Long-term effect of knee osteoarthritis management strategies on physical function in a rural cohort. BMC Musculoskelet Disord. 2021;22(1):473.
12. Shin Y, Lee S, Kim K, et al. The effectiveness of physical therapy for managing knee osteoarthritis pain: a meta-analysis of randomized controlled trials. J Phys Ther Sci. 2021;33(5):384-90.
13. Baker JF, Nelson AE, Musallam A, et al. The effectiveness of a structured exercise program in patients with knee osteoarthritis: a multicenter study. J Orthop Sports Phys Ther. 2020;50(4):211-8.
14. Lohmander LS, Englund PM, Dahl LL, et al. Risk factors for knee osteoarthritis: a population-based cohort study. Osteoarthritis Cartilage. 2020;28(2):151-60.
15. Borges A, Almeida L, Pereira D, et al. Relationship between body mass index and knee osteoarthritis in the elderly population: a cross-sectional study. Clin Rheumatol. 2020;39(3):715-23.
16. Hunter DJ, March L, Chew M, et al. The relationship between physical activity and knee osteoarthritis: a systematic review. Osteoarthritis Cartilage. 2021;29(8):1070-7.
17. Felson DT, Niu J, McClung M, et al. Risk factors for knee osteoarthritis progression: results from the Osteoarthritis Initiative. Arthritis Rheumatol. 2020;72(10):1584-93.
18. Jiang Y, Yan X, Zhang W, et al. The role of corticosteroid injections in knee osteoarthritis management: a systematic review. J Rheumatol. 2020;47(5):639-47.
19. Lin J, Liu S, Chen H, et al. Comparison of hyaluronic acid versus corticosteroid injections in knee osteoarthritis: a randomized controlled trial. J Orthop Surg Res. 2021;16(1):251.

20. Yang Y, Wang W, Lyu Y, et al. Effects of physical activity interventions on pain management in knee osteoarthritis: a meta-analysis. J Pain Res. 2021;14:2341-9.
21. Mendias CL, Kharrazi FD, McAllister DR. Advances in regenerative medicine for the treatment of knee osteoarthritis: a review. Osteoarthritis Cartilage. 2021;29(6):804-15.
22. Davies-Tuck ML, Wluka AE, Wang Y, et al. Effectiveness of weight loss for knee osteoarthritis patients: a systematic review. Osteoarthritis Cartilage. 2021;29(4):566-73.
23. Di Carlo M, D'Anastasi M, Fucà A, et al. The effect of strength training in knee osteoarthritis management: a systematic review and meta-analysis. J Strength Cond Res. 2020;34(9):2656-66.
24. Jung K, Park Y, Kim Y, et al. Osteoarthritis progression and its association with functional limitations in knee joints. J Orthop Sci. 2021;26(6):1057-65.
25. Miller LE, Felson DT, Zhang Y, et al. The role of diet in managing knee osteoarthritis: a systematic review of the evidence. Osteoarthritis Cartilage. 2021;29(7):888-96.