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Study Of Prevalence Of Patellofemoral Pain Syndrome In Utensil Cleaning Females Of Catering Profession

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ABSTRACT

Background: PFPS is pain behind or around the patella that worsens with specific workouts or movements. Examples of these exercises are squatting, ascending stairs, jogging, running, jumping, extending the knee, getting up after prolonged sitting, and other weight-bearing exercises. The typical symptoms of PFPS are pain behind or around the patella, which affects 22.7% of the general population. The prevalence of "anterior knee pain" is considerable, occurring in 22 out of every 1,000 individuals annually.

Method: The study aimed to investigate the prevalence of patellofemoral pain syndrome in utensils cleaning females of catering profession in Kolhapur city.

Materials: Subjects were selected from catering centers and assessed using the Patellar tilt test and Kujala questionnaire. Inclusion exclusion criteria were considered, and subjects willing to participate were included after receiving an explanation of the study's nature.

Result: In this study, participants aged 25 to 40 had an average age of 32.19 ±5.39 years. The prevalence of Patellofemoral pain syndrome in utensils-cleaning females of the catering profession was 70.59%. The females experiencing anterior knee pain had an average working experience of 8.16±4.74 years and an average of 9.83±2.50 daily working hours. Previous studies showed varying levels of pain severity. In contrast, in this study, at rest, 32.35% had no pain, 61.76 % had mild pain, and 5.88% had moderate pain, while during movement, 39.22% had severe pain, 32.35% had moderate pain, and 28.43% had mild pain. The patellar tilt shows positive in 70.59% of the population, indicating PFP symptoms. The kujala/akps shows that out of the 102 participants, 65.69% had low scores, 15.69% had fair scores, 17.65% had good scores, and only 0.98% had excellent scores, indicating a high prevalence of PFPS in utensils cleaning females of catering profession.

Conclusion: This study highlights a high prevalence of the patellofemoral pain syndrome under study, with significant implications for the functional status and pain levels of individuals affected. The findings underscore the need for improved diagnostic and treatment strategies, particularly those aimed at alleviating pain during movement and enhancing knee function. Further research into the causes and effective management of this condition is essential for improving the health and quality of life of those affected.

Keywords: *Patellofemoral pain syndrome, Anterior knee pain, utensils cleaning females of catering profession, prevalence.*

1. INTRODUCTION

The Knee is a complex modified hinge joint that has two degrees of freedom: flexion extension and varus/valgus rotation in the sagittal and frontal planes. Also, it enables the lateral rotation at the knee terminal extension and the medial rotation at the knee flexion in a transverse plan. In a stressful situation, the knee maintains control and stability. The knee joint contains two bony articulations: first is femorotibial, which is the major one and supports the majority of the body weight, and second one is patellofemoral articulation, which helps in the transfer of stresses produced by the quadriceps femoris muscle contraction without creating friction across the knee joint. These two articulations form the femorotibial and patellofemoral

joints, which make the knees two major joints and permit knee movement in all three planes. There are mainly two stabilizers used to stabilize the knee firstly ligaments provide primary knee stabilization while muscles around the knee provide secondary purpose but both act in tandem to support the knees stable function.

PFPS is pain behind or around the patella that worsens with specific workouts or movements. Squatting, ascending stairs, jogging, running, jumping, extending the knee, getting up after prolonged sitting, and other weight-bearing exercises are examples of these exercises. [1],[2]

Pain in the anterior part of the knee (peripatellar or retropatellar; stabbing, non-irradiated, occasionally intermittent), increasing when squatting, climbing, and descending stairs, and after extended periods of sitting are the primary symptoms of Patellofemoral pain syndrome. [3] One of the most mystifying and clinically difficult chronic illnesses has been identified as PFPS. Diffuse discomfort from the anterior portion of the patella and frequently along the medial aspect of the knee are typical symptoms. [4] Other names for PFPS include anterior knee pain syndrome and runner's knee. [1] Patellofemoral pain syndrome causes anterior knee pain in people who do not have any pathological alterations in the patellofemoral joint's cartilage. [5] There is a difference between patellar chondromalacia and patellofemoral pain syndrome. Degeneration of the hyaline cartilage in the rear of the kneecap is a characteristic of the latter. (8) An underlying etiology for this clinical entity could be patellar maltracking brought on by dynamic valgus or a functional malalignment. Decreased hip abductor strength or pes pronatus valgus could be the cause of dynamic valgus. Tightness in the hamstrings, iliotibial tract, or quadriceps is linked to functional malalignment. [5] Physical traits including femoral anteversion, internal femur rotation, patellar malalignment, or patellar hypermobility are all associated with the development of PFPS. In addition, genu recurvatum, valgus knee, lateral tibial torsion, quadriceps weakness, and other dysfunctions can be correlated with patellofemoral pain syndrome.[6] Physical evaluation of PFPS frequently consists of patellar mobility testing, evaluation of specific exercises, special tests, and static evaluation components like Q-angle measurement, hip positioning, and foot biomechanics during gait.[7] The typical symptoms of PFPS, which affects 22.7% of the general population, include instability during loading activities and joint crepitus during flexion motions. About twice as many women as males suffer from patellofemoral discomfort, which affects 15% to 45% of people in their 20s to 40s. [8]

Because of their biomechanical traits, such as a larger Q angle, a wider pelvis, enlarged femoral anteversion, and enhanced valgus thrust, females are more likely to have PFPS. Hormonal imbalance and muscle weakness reduce cartilage formation, which alters how stress is distributed. [9] A common theory is that PFPS develops as a result of changes in patellofemoral joint pressure and load brought on by defects in proximal, regional, and distal factors. Long-term improvements are not seen by a significant portion of individuals with PFPS, which may be caused by additional problems that exercise cannot address. Problems with soft tissue and joint mobility may be a factor in the persistence or worsening of pain. Although patellar trauma may cause PFPS, overuse and overload of the patellofemur, anatomical and biomechanical anomalies, decreased muscle mass, imbalance, and dysfunction are most often the causes of this condition. These factors work together to increase the likelihood that PFPS may worsen and become more treatment-resistant. While there are several potential causes for patellofemoral syndrome, one that is not as well studied involves longer sitting with the knee flexed. [10] Long periods of sitting are known to exacerbate PFP; as a result, pain associated with sitting is commonly utilized as one of the inclusion criteria in PFP studies. Of the 458 PFP trial participants, 249 (54.4%) experienced long-term sitting issues, 121 (26.4%) reported post-exercise sitting pain, and 88 (19.2%) reported no sitting difficulties. [11] Uncertainty surrounds the processes behind pain after prolonged sitting in PFP subjects. Information about the reaction forces of the patellofemoral joint while sitting was not discovered. [12] The prevalence of "anterior knee pain" is considerable, occurring in 22 out of every 1,000 individuals annually. [5] Despite its paucity, the research indicates that those working in the catering industry are subject to several occupational risks related to their particular duties. These risks could encourage the development of symptoms that are primarily related to the musculoskeletal system and are more or less incapacitating [13] There are three categories of tasks for catering employees: national, traditional, and international. A catering worker held a distinct job title in each division. They all take place over about eight hours each day and include standing, sitting, and even squatting. Providing meals to clients at their homes, parties, meetings, canteens, and cafeterias is the core of the catering industry. In the catering industry, a chef oversees cooks, while other staff members assist with food preparation and making. There is a high prevalence of Musculoskeletal Disorders among chefs and catering staff, according to surveys from different populations. They have long-term MSD and receive therapy. [14] The prevalence of musculoskeletal disorders associated with lower limb work The knee accounted for 83.6% of patients with these lower extremities work-related musculoskeletal disorders, followed by the foot and ankles (24.5%) and the hip joint (20.9%). [15] There is a rise in WMSDs in the catering sector as well. The food-related businesses that make up the catering industry offer their services to a wide range of customers. There have been reports of WMSDs and ergonomic risks in the catering industry. [16] A comprehensive analysis examined the correlation between risk variables and the prevalence of musculoskeletal illnesses in the catering sector, emphasizing the need for additional epidemiological data. Physical labor demands, including work position, force applied, and repetitive movement, were the most significant risk variables. [13] The risk that employees face of getting PFPS as a result of or made worse by their work activities is not well understood. However, it is a reality that squatting and comparable movements are necessary for many occupational activities in daily life. [7] There have been reports of PFPS prevalence in an array of age categories. According to De Haven and Lindner (1986), one of the most prevalent issues among physically active people between the ages of 15

and 30 is patellofemoral pain syndrome (PFPS). Despite being quite prevalent, there is a dearth of current epidemiologic information on the condition's incidence and prevalence. [17]

2. METHODOLOGY

The Observational Study Cross-sectional Study **Study done for a duration** 1.5 years using **Sampling method**: Convenience sampling with a sample size 102.

MATERIALS Numerical pain relating scale, anterior knee pain scale / Kujala score, mat or couch subjects were selected fulfilling inclusion criteria and exclusion criteria.

Inclusion criteria Females of age between 25 to 40 years, females having chronic knee pain, females working for catering profession having at least 6 months as cleaning staff. **Exclusion criteria** Lower limb fracture, surgery, history of arthritic condition, traumatic history of knee injury, history of patellar dislocation.

3. RESULTS

Prevalence of Positive Cases The prevalence of positive cases for the condition under study was calculated to be **70.59%**.

Demographic and Clinical Characteristics

The following table provides the mean and standard deviation (S.D.) for key demographic and clinical variables:

TABLE:1 Mean and SD of age, working years, working hours and kujala score

SS	Mean	Standard Deviation (S.D.)
Age	32.19	5.39
Working Years	8.16	4.74
Working Hours	9.83	2.50
Kujala Score	54.28	20.57

Patellar Tilt Test

The results of the **Patellar Tilt Test** showed that **70.59%** of patients (72 out of 102) tested positive for the condition, while **29.41%** (30 patients) tested negative. These findings suggest a significant portion of the study population may be affected by the condition assessed by this test.

TABLE:2 Patellar tilt test interpretation

Test Result	No. of Patients (%)	Percentage (%)
Positive	72	70.59%
Negative	30	29.41%
Total	102	100%

NPRS (Numerical Pain Rating Scale)

The pain levels at rest and during movement were measured using the Numerical Pain Rating Scale (NPRS). The findings are as follows:

At Rest:

No Pain: 32.35% (33 patients)

Mild Pain: 61.76% (63 patients)

Moderate Pain: 5.88% (6 patients)

Severe Pain: 0.00% (0 patients)

At Moment (During Movement):

No Pain: 0.00% (0 patients)

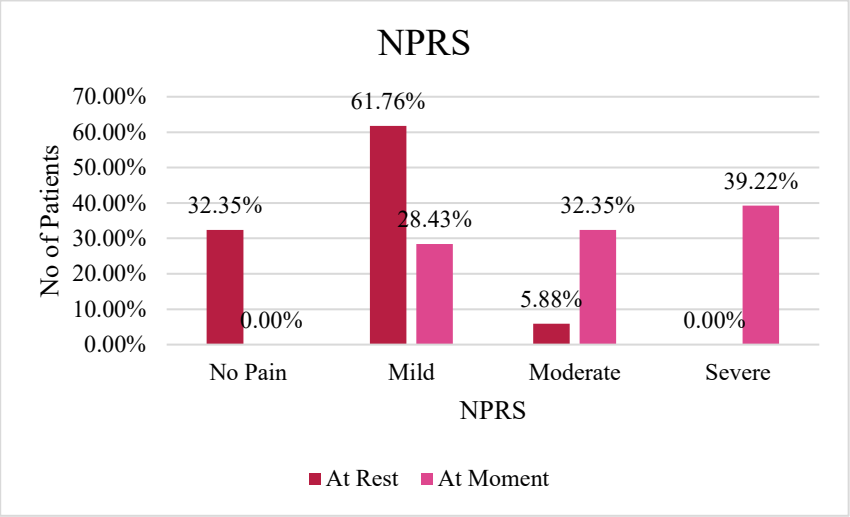
Mild Pain: 28.43% (29 patients)

Moderate Pain: 32.35% (33 patients)

Severe Pain: 39.22% (40 patients)

The results indicate that, at rest, the majority of patients experienced mild pain, with no patients reporting severe pain. However, during movement, there was a notable shift in the pain levels, with **39.22%** of patients reporting severe pain and **32.35%** reporting moderate pain.

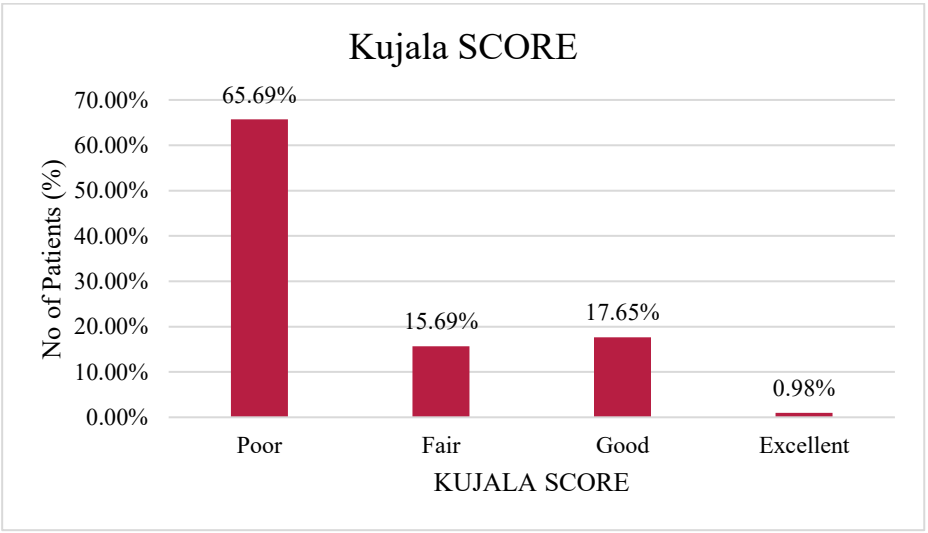
GRAPH :3 Bar Graph of NPRS



Kujala score

Out of the 102 participants, 65.69% had low scores, 15.69% had fair scores, 17.65% had good scores, and only 0.98% had exceptional scores according to the Kujala scoring method.

GRAPH:4 Bar Graph of KUJALA score



4. DISCUSSION

PFPS is pain behind or around the patella that worsens with specific workouts or movements [1],[42] Pain in the anterior part of the knee (peripatellar or retropatellar; stabbing, non-irradiated, occasionally intermittent), increasing when squatting, climbing, and descending stairs, and after extended periods of sitting are the primary symptoms of Patellofemoral pain syndrome.[7]

This study primarily focuses on utensil-cleaning females in the catering profession in Kolhapur city. It examined the prevalence of PFPS in female caterers who clean utensils; 102 participants were included in total.

Studies concluded that the pfps is common in the adult age group as 15% of males and 45% of females suffered from pfps in their age of 20s to 40s. [8]

The typical symptoms of PFPS, which affects 22.7% of the general population, include instability during loading activities and joint crepitus during flexion motions. About twice as many women as men suffer from patellofemoral discomfort. [8]

This study targeted females as participants and similar age groups, the 25 to 45 years old in the catering profession, to find out the prevalence of PFPS.

Squatting, ascending stairs, jogging, running, jumping, extending the knee, getting up after prolonged sitting, and other weight-bearing exercises are the common causes of PFPS. [1],[2]

Studies conclude that Musculoskeletal complaints among catering workers were high due to the activities that involved heavy lifting and performing work in a prolonged awkward posture. [16]

Long periods of sitting are known to exacerbate Patellofemoral pain; as a result, pain associated with sitting is commonly utilized as one of the inclusion criteria in Patellofemoral pain studies. Of the 458 PFP trial participants, 249 (54.4%) experienced long-term sitting issues, 121 (26.4%) reported post-exercise sitting pain, and 88 (19.2%) reported no sitting difficulties. [11]

This study especially focuses on utensil cleaning females, as they have to work in awkward positions, especially squatting positions for prolonged periods, which could affect their knees.

The females experiencing anterior knee pain had an average working experience of 8.16±4.74 years and an average of 9.83±2.50 daily working hours.

Musculoskeletal disorders affect a wide range of catering workers; Despite its paucity, the research indicates that those working in the catering industry are subject to several occupational risks related to their particular duties. These risks could encourage the development of symptoms that are primarily related to the musculoskeletal system and are more or less incapacitating [13]

Based on the results, the area of the knees (58.3%) was affected among catering workers. [16]

This study shows that 70.59% of prevalence of pfps among the utensils cleaning females of the catering profession.

The present research gives useful information about the degree of pain level and the functional disability seen in the participants. In a Numerical Pain Rating Scale (NPRS), patients are asked to circle the number between 0 and 10, 0 and 20, or 0 and 100 that best fits their pain intensity. Zero usually represents ‘no pain at all,’ whereas the upper limit represents ‘the worst pain ever possible. In the patients of the current study, the NPRS at rest was 32.35% had no pain, 61.76% had mild pain, and 5.88% had moderate pain, while on movement, 28.43% had mild pain,32.35% had moderate pain, and 39.22% had severe pain reported. Abdul Hannan et al. show the mean NPRS was 6.31 ± 1.56, which, according to the specified scale, can be considered as a moderate-severe amount of pain. [12]

The Kujala score or Anterior Knee pain scale (AKPS) is a 13 - item self – report questionnaire that assesses subjective reactions to particular activities and symptoms that are known to correlate with anterior knee pain syndrome. The kujala score is graded on a scale of 0 to 100, with 100 being the highest possible score.

Patients in this study had an average KUJALA score of 54.28 ± 20.57, suggesting significant impairment. But according to the study by Prieto et al., Kujala scores were higher, averaging about 52. The use of patients with fewer severe symptoms, a longer rehabilitation program, or different approaches to intervention could all be responsible for the greater functional outcomes observed in this study. These differences highlight the necessity of considering the methodology and setting of each study when comparing functional outcomes. [18]

This study reports that the Patellar tilt test show similar results; that is out of 102 participants, 72 (70.59%) tested positive while 30 (29.41%) tested negative. These results suggest that, even for those with good functional scores, the condition's impact on daily functioning and mobility remains significant. A focus on rehabilitation, strengthening exercises, and other interventions may be needed to improve knee function and reduce the long-term consequences of the condition.

5. CONCLUSION

According to this study, Patellofemoral pain syndrome is relatively prevalent and has considerable effects on the functional status and pain thresholds of people suffering from it. The findings underscore the necessity of improved diagnostic and treatment strategies, particularly those aimed at minimizing discomfort associated with mobility and enhancing knee function. Effective treatment and further research into the causes of this condition are necessary to improve the health and quality of life of those affected.

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