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## Prevalence of anterior knee pain in 20-40 years old adults attending ortho OPD in a tertiary care hospital in Tamil Nadu

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#### Abstract

**Objective:** To measure the prevalence of anterior knee pain among the adults between 20-40 years and study the gender differences, if any, on this condition.

**Methods:** The sample were taken from those who attended Ortho OPD for various musculoskeletal disorders. All the participants were asked to complete the Anterior Knee Pain Questionnaire (AKPQ), a functional outcome tool developed to document symptoms of AKP. Total subjects involved were N-968. Among them, the Males were 462 and the Females were 506.

**Results:** Twenty nine per cent (N -281) of the respondents reported positive for anterior knee pain. Of these, 30% (N-152) were females and 28% (N-129) were males. Majority took, on average, three months to seek medical advice. The prevalence of anterior knee pain was slightly higher amongst females (30%) compared the same age males (28%).

**Conclusion:** Anterior knee pain is common amongst active young adults of age between 20 and 40 years and it affects approximately one third of this active productive population group. Participation in certain work-related physical activity increases the likelihood of anterior knee pain, which in turn limits their physical activities and reduces the productivity.

**Keywords:** Anterior knee pain, Patellofemoral disorders, Patellar tendinopathy, Physical activity.

#### Introduction

Anterior knee pain (AKP) is a common orthopaedic problem seen in children, adolescents, adults and older age individuals. The pain disturbs not only the sports-related activities but also the activities of daily living and thereby restricts their physical activities of choice.

Various studies by various authors have reported the prevalence of AKP as between 15-45% of the population<sup>[1, 2]</sup> The prevalence of AKP varies among different population according to their age, sex, profession, lifestyle and physical activities<sup>[3]</sup>

One study estimated the prevalence of AKP in childhood and adolescence at 19%<sup>[4]</sup>, although prevalence estimates generally cited in the published literature vary widely from 3% to 40%<sup>[3]</sup>. Anterior Knee Pain affects both physically active as well as sedentary individuals, accounting for 11-17% of knee pain presentations to general practice<sup>[5, 6]</sup>

The purpose of this study is to measure the prevalence of AKP in the adults falling within 20 to 40 years of age who seek an orthopaedic consultations for various ailments.

The terminology "Anterior Knee Pain" denotes only a symptom, and it does not imply any specific diagnosis or disease condition<sup>[7]</sup> AKP is a symptomatic presentation characterized by pain in front of the knee, associated with activities such as sitting, squatting, ascending or descending stairs or other similar physical activities. Most of the time, the pain is non-harmful and self-limiting in nature, which usually takes up to 2 years to subside<sup>[8-10]</sup>

After analyzing seven articles (study period varied from 1939 to 2005), for Thomas *et al*, the possibility that AKP is a risk factor for incident Patellofemoral Osteoarthritis (PFOA) still warrants further attention. The authors concludes that 'it is possible that existing longitudinal studies with actual or potential AKP and PFOA data may be capable of addressing this question'<sup>[11]</sup>.

According to Urwin *et al*, after low back pain, the knee is the second most common site for

Musculoskeletal pain in adulthood in the United Kingdom [12]. As the burden of AKP in the society is enormous, we took up this study to measure its prevalence among the active adults to quantify the impact.

### Materials

All individuals who participated in this study were assessed by the Anterior Knee Pain Questionnaire (AKPQ). This is a 13-item questionnaire that asks the patient about their ability to perform a number of different activities, as well as a question about anterior knee pain. It is considered a reliable tool to evaluate patients presenting with knee pain. [13, 14]

The score has a range from 0 to 100, and higher scores indicate lower pain or disturbances.

Anterior Knee Pain Scale (AKPS), a self-report measure that was introduced by Kujala *et al* in 1993. [13]

### Methods

We included any individual of both sexes aged between 20 - 40 attending our orthopaedic OPD for knee or any other complaints. The study was conducted over a period of three months. Number of persons participated were 968. Males – 462 and females - 506.

The sample included a wide variety of participants from various socio economic background, from various physical activities and ailments.

We excluded persons less than 20 years and persons more than 45 years to avoid paediatric knee disorders and age-related degenerative joint diseases respectively.

Participants' age, height, and weight were measured and noted. The AKPQ was recorded pertaining to their current symptoms and functional disabilities. A cut-off of 83 on the AKPQ was chosen to identify those individuals with anterior knee pain, following the recommendations made in the study by Kujala *et*

*al.* [13]

The history taking included knee pain (severity, duration, relationship with activity), symptoms of knee instability or any previous similar episodes. Both knees were questioned and recorded. Whether the symptoms were positive for unilateral side or bilateral sides were not taken into account.

Those participants with AKPS score more than 83 did not undergo further evaluation. Conversely, all participants who indicated some degree of knee pain and had a corresponding positive AKPS score of less than 83 underwent further assessment.

The next phase of study focused on the local physical examination to find out exact cause for AKP.

The local examination was carried out by eliciting tenderness over the areas known to produce positive findings in certain expected conditions. They are the quadriceps tendon, medial patellofemoral ligament, under surface of patella, medial and lateral joint line, Gerdy tubercle, pes anserine bursa, poles of the patella, patellar tendon, tibial tubercle and Hoffa fat pad.

Special clinical tests such as anterior drawer test, Lachman test, posterior drawer test, varus and valgus stress tests, Mc Murray's test and Apley's test etc. were performed for completing the physical examination. The patellar instability was assessed by apprehension test and measurement of Quadriceps (Q) angle.

### Results

The results are shown in the Table 1 and depicted in Figure 1.

**Table 1:** Total number and the percentage of persons showed positive for AKP. (N =968)

	Male	Female	Total
Subjects	462	506	968
Positive for AKP	129	152	281
Percentage	28	30	29

**Table 2:** Differential diagnosis of the conditions that cause Anterior Knee Pain

Diagnosis	Distinguishing symptoms	Clinical findings
Patellar tendinopathy	Patellar tendon pain Exacerbated by squatting	Tenderness along the inferior pole of the patella. Pain aggravated by resisted quadriceps contraction
Quadriceps tendinopathy	Pain at the upper area of knee	Tenderness along the superior margin of the patella. Pain aggravated by resisted quadriceps contraction.
Patellofemoral syndrome (chondromalacia of patella)	Pain after prolonged sitting (Positive theatre sign) Pain on squatting / descending stairs	Tenderness at the undersurface of patella
Fat pad impingement (Hoffa's disease)	H/o hyperextension injury Sudden onset of pain.	Tenderness deep to the patellar tendon (in the fat pad region)
Patellar instability	H/o of recurrent buckling of knee	Increased Q angle Patella alta (High riding patella)
Synovial plica	C/o Sharp pain in any of the three compartments of knee Clicking associated with pain	Palpable and tender plica
Prepatellar bursitis	Swelling in front of patella h/o repeated kneeling activities	Cystic localized mobile swelling in front of patella
Infrapatellar bursitis	Pain and sometimes a swelling deep to the patellar tendon	Tenderness deep to the distal end of patellar ligament
Pes anserinus bursitis	Pain at the anteromedial part of knee.	Tenderness (and sometimes a diffuse swelling) at medial part of proximal tibia

Table 1 shows that about 29% (N=281) of the study population (N – 968) suffered anterior knee pain. Women more affected (30%) than corresponding men (28%), albeit marginally. According to the details obtained during the questionnaire, the average duration of symptoms experienced was about 4 months.

Majority did not seek medical consultation during the initial period of symptoms and attended hospital only when the symptoms disrupt their daily activities. Since this is an observational study, we did not record the effectiveness of various treatment methods.

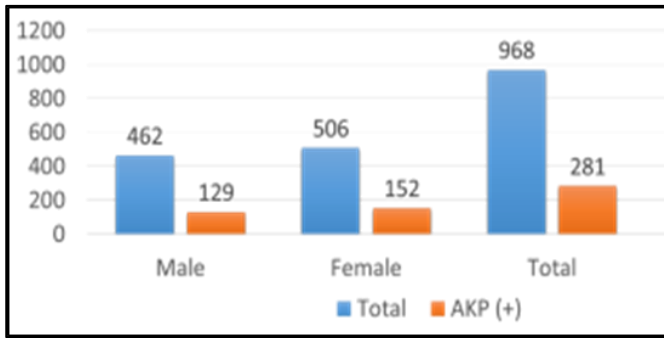


Fig 1.

### Discussion

The Anterior Knee Pain is common in adolescents and young adults, but its aetiology and management remain controversial. The patellofemoral joint is one of the most heavily loaded in the human skeleton [15]

Ruffin and Kinningham<sup>26</sup> reported that of 16 748 patients presenting to family doctors with musculoskeletal complaints as a result of a variety of sports participation, 11.3% had anterior knee pain [16]

The 29% incidence of anterior knee pain among the sample group (Table I) is comparable to the 20 - 40% reported in the literature for this age group [17-19].

There are several treatment modalities, conservative and otherwise, available and effective in the management of AKP; and that there are specific methods to address towards the particular causes of patellofemoral pain, [20].

Based on evidence published between January 2010 and June 2015, the consensus was arrived that states “exercise-therapy is recommended to reduce pain in the short, medium and long term, and improve function in the medium and long term.” [21]. We took AKPS as the screening tool because various authors reported validity and reliability of this questionnaire was found adequate [22, 23]

Majority of patients with aforementioned diagnoses (Table 2) require only symptomatic treatment with NSAIDs, rest and quadriceps strengthening and hamstring stretching exercises. Thus, a functional diagnosis as offered by the AKPQ would be sufficient than a definitive medical diagnosis when treating patients with AKP. Several authors have found no much validity for the common clinical tools used in the management of AKP. [24, 25]

Though the samples were recruited from a large pool of young active adults visiting our outpatient room, we find that this selection itself is a limitation of the study, as they do not represent the characteristics of general population. Further studies are required to quantify the impact of individual clinical conditions towards causing the AKP.

### Conclusion

We focused the age group between 20-40 as they represent a sizable amount of population; and they are the prime work force of any given society. Unfortunately, approximately one third of this active productive group suffer with AKP which is a really a cause for concern. Awareness towards the etiological factors and health education to prevent the occurrence of AKP will possibly limit the disability and increase the productivity. Hence, the healthcare professionals should assess the patients with AKP as it is potentially treatable without sophisticated resources.

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