

Proportion of Osteoarthritis Knee among Older Adults Presenting with Knee Complaints as Assessed Using American College of Rheumatology (ACR) Criteria at A Tertiary Care Hospital, Kollam

Indu D¹, Asha K P², Manoj Kumar S³, Anuja U⁴

¹Additional Professor, Community Medicine, Government Medical College Thiruvananthapuram, Kerala, India.

²Associate Professor, ⁴Professor, Community Medicine ³Professor, Orthopedics, Government Medical College, Kollam, Paripally, Kerala India.

Correspondence : Dr Indu D., Email: drindumanoj@gmail.com

Abstract:


Introduction: Osteoarthritis is one of the most prevalent musculoskeletal disorders seen as age increases. Among older individuals it leads to persistent complaints, disability and health care consultations. **Objective:** To estimate the proportion of osteoarthritis knee using American College Of Rheumatology (ACR) criteria among older individuals presenting with history of persistent knee complaints in a tertiary care setting. **Method:** A hospital based cross-sectional study was conducted to assess the proportion of osteoarthritis knee among older patients presenting with persistent knee complaints in orthopedic OP of Government Medical College Kollam. A semi-structured questionnaire was used to collect data regarding socio-demographic profile. Assessment of osteoarthritis knee was done Using American College Of Rheumatology (ACR) Criteria. **Results:** The proportion of osteoarthritis in any knee among older adults was found to be 72%, with bilateral osteoarthritis knee seen in 38.5%. Among those affected, 84% were women. Knee pain, presence of crepitus and bony tenderness were the most common findings among those with OA knee. **Conclusion:** The proportion of OA knee was found to be higher among the study population. Older age group and females were more prone to osteoarthritis of knee. An estimate of the burden of OA in older patients will help policy makers in planning public health programs to improve their health condition and quality of life.

Key words: American College of Rheumatology (ACR) Criteria, Knee joint, Osteoarthritis

Introduction:

Osteoarthritis is a chronic progressive musculoskeletal disorder affecting the joints. Worldwide 7% of the global population is affected by osteoarthritis.^[1] The Global Burden of Disease Study 2019 lists osteoarthritis as the 15th highest cause of years lived with disability (YLDs) worldwide.^[1] Osteoarthritis was responsible for 2.2% (1.3–4.1) of

total global YLDs, accounting for 18.9 million (95% UI 9.57–37.7) global YLDs in 2019. Among these OA knee, hip, hand, and other site contributed 60.9%, 5.5%, 23.5%, and 10.2% of OA YLDs, respectively.^[2] Among individuals aged 40 years and above, the global prevalence of OA knee was found to be 22.9% (95% CI, 19.8%–26.1%).^[3] There are an estimated 654.1 (95% CI, 565.6–745.6) million individuals aged 40 years and above with OA knee worldwide in

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2020.^[3] The prevalence of OA knee among individuals aged 40 years and above in India was estimated to be 28.7%.^[4] There was variation in the prevalence of OA knee among individual cities, with Agra (35.5%), Bangalore (26.6%), Kolkata (33.7%), Dehradun (27.2%), and Pune (21.7%).^[4] In Kerala the prevalence of knee osteoarthritis among women aged above 40 years was 41.6% (95% CI-41.6±1.25%), with 66.2% having bilateral osteoarthritis of the knee joint.^[5] The prevalence of osteoarthritis increases with age^[6] and with many Asian countries ageing rapidly its fast becoming a major problem. People above 60 years constitute 13% of Kerala's population as compared to the national figure of 8.2% (Census 2011). Osteoarthritis of knee is most often associated with knee pain^[7] which affects the quality of life as well as the economic productivity of affected individuals. Even though the cause of osteoarthritis is not fully understood, prevention and early diagnosis is the most effective strategy to prevent further deterioration of this condition. With changes in lifestyle, the prevalence of OA knee has increased considerably over the years. Even though the number of people affected by osteoarthritis has increased, it continues to be neglected among non-communicable diseases. The health concerns of those affected has often been downplayed and is often seen as an inevitable consequence of ageing. Filling the prevailing knowledge gaps in the burden of osteoarthritis, will help to bring about a shift in policy and health care delivery. This is much needed to highlight the importance of public health interventions and health care approaches needed to decrease burden associated with osteoarthritis. This study aims to estimate the burden of osteoarthritis knee among older patients presenting with persistent knee complaints in a tertiary care setting.

Method:

A hospital based cross sectional study was conducted in the department of Orthopaedics, Government Medical College Kollam, which is a tertiary care centre in Kollam district of Kerala. The out-patient wing of department of Orthopedics

caters to about 150 to 200 patients daily of which majority are female patients. Patients above 40 years attending the orthopedic outpatient of Government Medical College Kollam, with history of persistent knee complaints for the past 6 months were included in the study. Patients aged above 40 yrs were included as increase in age increases the risk of degenerative musculoskeletal changes.^[18] The Zoetermeer survey by Van Saase et al^[19] showed an increase in prevalence of OA knee with the onset of forties. Patients not giving consent and those with history of trauma, fracture or rheumatoid arthritis were excluded from the study. Based on a study by Chandra Prakash Pal et al^[8] the prevalence of OA knee was found to be 28.7%. Applying in $n = (Z_{1-\alpha/2})^2 PQ/d^2$ and considering an alpha error of 5%, absolute precision 7% and non-response rate of 10%, the sample size was fixed at 200. All consecutive patients who met the eligibility criteria and gave consent were included in the study till the required sample size was met. Details regarding their demographic profile like age, gender, education, occupation and presenting complaints were collected using a semi-structured interviewer administered questionnaire. American College of Rheumatology (ACR) criteria was used to diagnose OA knee.

American College of Rheumatology (ACR) criteria for diagnosing osteoarthritis of knee joint is presence of pain in knee joint and any three of 6 factors listed below.^[9]

1. Age more than 50 years
2. Presence of crepitus on active motion
3. Less than 30 min of morning stiffness
4. Bony tenderness
5. Bony overgrowth
6. No palpable warmth of synovium.

Data was analysed using Epi info(version 3.5.3), qualitative data was expressed in proportions and, quantitative data in mean± standard deviation. Associations were tested for significance using Chi-square test, and P value <0.05 was taken as significant. Study period was from 2018 to 2019 after

obtaining permission from Institutional Human Ethics Committee of Government Medical College Paripally Kollam.

Results:

In this hospital based study, majority of the study participants were aged above 50 years. Mean age was 56.88 years with a SD of 9.06 years. Women constituted 84.5% of the study population. (Table 1) Most of the study population had education up to middle or high school (45%), with 40% up to higher secondary school and 13.5% degree and above. Very few were illiterate or studied up to primary school. Majority of the study subjects (72%) were home makers or unskilled workers and 16% were semi-skilled and 9% professionals.

The proportion of osteoarthritis in any knee among patients aged above 40 years with persistent knee complaints as assessed using ACR Criteria was found to be 72 % (95% CI 65% to 78%). Among the study population, bilateral osteoarthritis knee was seen in 38.5% (95% CI 31% to 45%). (Table2) Among the study participants, 84% of those affected were women. Among women with OA knee, bilateral OA knee was seen in 87%. Among those with OA knee, it was seen that as compared to unilateral OA knee, there was a significant increase of bilateral OA knee with age (Chi square value-10.02 and p value <0.01). (Table 3) The most common symptom was pain, followed by crepitus and bony tenderness. (Table 4)

Discussion:

Osteoarthritis of the knee is a progressive, degenerative joint disease leading to functional impairment and disability. Even though multiple factors like genetics, obesity, trauma, metabolic imbalances etc are involved in the causation of osteoarthritis, it is seen that prevalence of OA knee increases with age.^[11] In this study proportion of osteoarthritis in any knee was found to be 72%, with 38.5% having bilateral OA knee. The high proportion of OA might be due to the fact that, only patients aged above 40 years with persistent knee complaints were included in this study. Age is one of the most common risk factor for most non communicable diseases.

Table 1: Socio-demographic characteristics of study participants (n=200)

Demographic variables		Number	Percentage
Age (years)	40 - 50	53	26.5 %
	51 - 60	70	35 %
	61 - 70	63	31.5 %
	>70	14	7 %
Gender	Male	31	15.5 %
	Female	169	84.5 %
Religion	Hindu	150	75 %
	Christian	12	6 %
	Muslim	38	19 %
Type of family	Joint	15	7.5 %
	Nuclear	176	88 %
	Extended	9	4.5 %

Table 2: Proportion of osteoarthritis knee among participants (n=200)

Variable	Number (%)		
Bilateral OA Knee	77 (38.5%)	Males	10 (13%)
		Females	67 (87%)
OA of any knee	144 (72%)	Males	23 (16%)
		Females	121 (84%)

Table 3: Age specific distribution of osteoarthritis knee

Age (years)	Unilateral OA knee (%) (n=67)	Bilateral OA knee (%) (n=77)	Total
40 - 50	14(21 %)	3(3.8 %)	17(12%)
51 - 60	23(34 %)	34(44.1%)	57(39%)
> 60	30(45 %)	40(51.9 %)	70(49%)
Total	67(100%)	77(100 %)	144(100%)

(Chi square value-10.02 and p value <0.01)

Table 4: Distribution of signs and symptoms among study subjects with OA Knee*

Symptoms	OA right knee (n= 112)		OA left knee (n= 110)	
	Number	%	Number	%
Pain	112	100 %	110	100 %
Morning stiffness	26	23.2 %	24	21.8 %
Crepitus	95	84.81 %	101	91.8 %
Bony tenderness	75	67 %	72	65.4 %
Bony overgrowth	13	11.6 %	19	17.3 %
No palpable warmth of synovium	102	91.1 %	98	89.1 %

*Multiple responses

With increasing age the risk of degenerative musculoskeletal changes also increases. Older age and history of persistent knee complaints increased the baseline risk of the study population to osteoarthritis. A study conducted in Uttar Pradesh by Sood et al^[10] showed a prevalence of 78.2% among patients complaining of knee pain. A study among elderly in urban slums of Delhi by Singh AK et al^[6] showed a prevalence of osteoarthritis knee to be 41.1%, with 37.7% having bilateral OA knee. A study by Sharma MK et al^[11] showed a prevalence of osteoarthritis among elderly to be 56.6%, and also a higher prevalence of 47.3% among females aged above 40 years.

In this study among those with osteoarthritis knee 84% were women, and among those with bilateral osteoarthritis knee, 87% were women. In a study by Iqbal MN et al^[12] the prevalence of osteoarthritis was observed to be 74% among women. A study by Salve et al^[13] found the prevalence of osteoarthritis knee among perimenopausal women to be 47.3%. Studies have shown that women are at increased risk of osteoarthritis as age advances due to lower estrogen at menopause and the role of estrogen in influencing chondrocyte function.^[14,15]

This study observed an increase in occurrence of osteoarthritis knee with age, with 48.6% among

those affected being above 60 years. The Framingham Osteoarthritis Study by Felson et al^[16] observed an increase in osteoarthritis associated with age. In this study, among those with bilateral OA knee, 51.9% were aged above 60yrs. Even though aging is strongly associated with development of osteoarthritis, the exact mechanism is still not fully understood. A meta-analysis by Blagojevic et al^[17], reported obesity, female gender, history of previous knee injury and age as risk factors of OA knee. The interaction of ageing in conjunction with other risk factors can determine the progression of osteoarthritis in an individual.

Among those with OA knee, the most common symptom was pain, followed by crepitus and bony tenderness. All patients diagnosed with OA knee reported pain at the knee joint. A similar finding was seen in the study by Singh AK et al.^[6] As osteoarthritis progresses, it leads to thinning and breakdown of cartilage. This results in sclerosis of the subchondral bone, formation of marginal osteophytes and inflammation of synovial membrane. This constant inflammation and stiffness results in pain and discomfort during movement. ACR criteria can be effectively used in early diagnosis OA knee among those with persistent knee complaints.

Conclusion:

The proportion of OA knee was found to be higher among those with persistent knee complaints and it is seen to increase with age. It was found to be higher among females as compared to males. There is an increase in occurrence of bilateral OA knee with age. The most common symptom was pain, followed by crepitus and bony tenderness. Knee pain associated with osteoarthritis is a key symptom and is often associated with seeking health care.

Recommendations:

Comprehensive knee examination and assessment using ACR criteria can be used for early diagnosis and thus help in preventing deterioration, and reducing suffering and disability. To improve functional outcomes, it is important to screen those presenting with knee complaints for osteoarthritis. An assessment of burden of osteoarthritis is necessary for the health system for proper planning and policy making and to bring to focus neglected non communicable diseases like osteoarthritis.

Declaration:

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Conflict of Interest: Nil

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