ORIGINAL ARTICLE

VARIABLES ASSOCIATED WITH KNEE OSTEOARTHRITIS IN A TERTIARY CARE HOSPITAL OF TAMILNADU, INDIA

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ABSTRACT

Introduction: Osteoarthritis (OA) is a chronic degenerative disorder of multifactorial etiology characterized by loss of articular cartilage, hypertrophy of bone at the margins, subchondral sclerosis and range of biochemical and morphological alterations of the synovial membrane and joint capsule. Osteoarthritis (OA) is the second most common rheumatological problem and is most frequent joint disease with prevalence of 22% to 39% in India.

Methodology: A cross sectional study, done in 3 private hospitals of Tamilnadu. Total 135 patients interviewed after taking informed written consent. Questions pertaining to their physical activities, symptoms experienced, postures etc. were asked.

Results: Maximum numbers of patients were from age group of 61 to 70 years (37.04%). It was followed by age group of 51 to 60 years (29.63%).There were 91 (67.41%) female patients in the study group. Only 12 (8.89%) patient were illiterate. Maximum numbers of patients have completed their secondary schooling. As there was female predominance, we found 52 (38.52%) patients were house wife. Where as 22 (16.30%) patients were laborer. BMI was an important correlates of OA as 79 (58.52%) patients were obese. It was observed that OA patients were using Squatting and Cross legged positions in day to day activities like Job work, Food Preparation, Sweeping and Moping.Most common symptom was Usage related pain (42.22%) and persistent pain (27.41%). Most common sign was crepitus and it was followed by bony enlargement.

Conclusion: Present study shows that age group of 61 to 70 years is the most common age group for OA of knee. Study also shows predominance of female gender. Overweight and Obesity are one of the most common risk factors. Patients using Indian style toilets, having squatting crossed leg position and bending position in day to day activities are more commonly affected. Most common symptom is Usage related pain followed by persistent pain. Most common sign is crepitus and it was followed by bony enlargement.

Keywords: Osteoarthritis, Knee, Squatting position, Crepitus

INTRODUCTION

Osteoarthritis (OA) is a chronic degenerative disorder of multifactorial etiology characterized by loss of articular cartilage, hypertrophy of bone at the margins, subchondral sclerosis and range of biochemical and morphological alterations of the synovial membrane and joint capsule.Pathological changes in the late stage of OA include softening, ulceration and focal are integration of the articular cartilage; synovial inflammation also may occur. Typical clinical symptoms are pain, particularly after prolonged activity and weight bearing; whereas stiffness is experienced after inactivity. It is probably not a single disease but represents the final end result of various disorders as joint failure. It is also known as degenerative arthritis, which commonly affects the hands, feet, spine, and large weightbearing joints, such as the hips and knees.Most cases of osteoarthritis have no known cause and are referred to as primary osteoarthritis. Primary osteoarthritis is mostly related to aging. It can present as localized, generalized or as erosive osteoarthritis. Secondary osteoarthritis is caused by another disease or condition.

Global statistics reveals over 100 million people worldwide suffer from OA, which is one of the most common causes of disability. [1,2]Globally, OA is the eighth leading cause of disability with the joint most frequently associated with disability being the knee.[3]

Epidemiological profile of this disease in India is not clear but it is estimated that osteoarthritis (OA) is the second most common rheumatological problem and is most frequent joint disease with prevalence of

22% to 39% in India.[4]Prevalence of OA in India is reported to be in the range of 17 to 60.6%.[5]The reported prevalence of OA from a study in rural India is 5.78%.[6]

The irreversible nature of disease and increasing prevalence of OA in developing countries is major concern. The longeitivity of population is increasing in India which is major concern for age related disability the difficulty in movements, pain, stiffness of joints are common symptoms of OA. Therefore it depends mainly on prevention of modifiable risk factors to preserve at ease movement in elderly population.

Therefore, for finding out the current burden of Osteoarthritis and its association with lifestyle related factors, it was essential to undertake such a study on Prevalence of Knee Osteoarthritis.

METHODOLOGY

The present study was a Cross sectional Study conducted in 3 private hospitals Tamilnadu. All patients attending Orthopedic OPD department forms the study population. All patients attending Orthopedic OPD from December 2014 to November 2015 anddiagnosed withPrimary Osteoarthritis of Knee were enrolled in the study. Informed written consent in local language was taken. Those who were not willing to give consent were excluded from the study without affecting their due course of treatment. All reportsand related medical records of all patients were obtained. A pre-tested semi structured questionnaire was administered to all patients.Questionnaire was divided broadly in to two parts.

The first part included socio-demographic details. The second part consisted of the possible risk factors for developing OA of the knee such as age, gender, occupation, family history of OA, physical activity, history of injury to the knee etc.

The questionnaire was validated by translation into the local language and reviewed by a group of experts. It was subsequently piloted among a small group of individuals to test their comprehension and suitable changes were made accordingly.

X-ray, Weight and Height measurement along with all necessary investigations according to standard protocol were done. Study was approved by Institutional Ethical Committee of the institute.

Confidentiality of data was maintained at all level of the project. The data was coded and entered into Microsoft Excel and analyzed using standard statistical software package Epi info v3.5.1 for proportions, frequencies, and associations.

RESULTS

There were total 158 patients diagnosed with Osteoarthritis (OA) of knee during study period. Out of these, 23 patients refuse to participate in the study. Thus, total 135 patients enrolled in the study.

Table 1 shows basic socio-demographic characteristics of patients. Maximum numbers of patients were from age group of 61 to 70 years (37.04%). It was followed by age group of 51 to 60 years (29.63%).

Table 1: Basic Profile of patients with Knee OA

Characteristics	Patients (N=135) (%)
Age	
<40	5 (3.70)
41-45	12 (8.89)
46-50	19 (14.07)
51-55	23 (17.04)
56-60	17 (12.59)
61-65	29 (21.48)
66-70	21 (15.56)
>70	9 (6.67)
Gender	
Male	44 (32.59)
Female	91 (67.41)
Educational Status	
Illiterate	12 (8.89)
Just Literate	9 (6.67)
Primary School	18 (13.33)
Secondary School	44 (32.59)
Higher Secondary School	15 (11.11)
Graduate	23 (17.04)
Post Graduate	14 (10.37)
Occupation	
Professional	16 (11.85)
Semi-professional	12 (8.89)
Shop/Farm Owner	8 (5.93)
Skilled worker	9 (6.67)
Semiskilled Worker	16 (11.85)
Labourer	22 (16.30)
Housewife	52 (38.52)
BMI	
Underweight	3 (2.22)
Normal	8 (5.93)
Overweight	45 (33.33)
Obese	79 (58.52)
Physical Activity	
Sedentary	46 (34.07)
Moderate	63 (46.67)
Strenuous	26 (19.26)
Type of Toilet	
Indian	105 (77.78)
Western	14 (10.37)
Both	16 (11.85)

Data shows predominance of female gender. There were 91 (67.41%) female patients in the study group. As our study was done in multispeciality hospital of Urban area, more educated people were found in the study. Only 12 (8.89%) patient were illiterate. Maximum numbers of patients have completed their secondary schooling.

Table 2: Relation of Posture during common day to day activity with OA

Type of Work	Posture during work No. (%)					
	Squatting	Cross legged	Kneeling	Bending	Prolonged Standing	Sitting on chair
Job Work	56 (41.48)	48 (35.56)	23 (17.04)	62 (45.93)	16 (11.85)	12 (8.89)
Food preparation	50 (37.04)	47 (34.81)	16 (11.85)	15 (11.11)	32 (23.70)	39 (28.89)
Sweeping	46 (34.07)	0	18 (13.33)	55 (40.74)	0	39 (28.89)
Moping	39 (28.89)	0	6 (4.44)	22 (16.30)	37 (27.41)	39 (28.89)

As there was female predominance, we found 52 (38.52%) patients were house wife. Where as, 22 (16.30%) patients were laborer. BMI was an important correlates of OA as 79 (58.52%) patients were obese. Overweight patients contribute 33.33% out of total 135 patients. Type of toilet was also correlates with OA of knee. Out of total 135 patients of Knee OA, 105 (77.78%) patients were using Indian toilet.

Table 2 shows different postures OA patients were using during day to day activities. It was observed that OA patients were using Squatting and Cross legged positions in day to day activities like Job work, Food Preparation, Sweeping and Moping.

Table 3: Common signs and symptoms of patients

Variables	No. (%)
Symptoms	
Persistent knee pain	37 (27.41)
Usage related pain	57 (42.22)
Feeling of giving away	14 (10.37)
Morning stiffness	15 (11.11)
Rest and night pain	4 (2.96)
Signs	
Crepitus	41 (30.37)
Bony enlargement	12 (8.89)
Warmness around knee	6 (4.44)
Redness around knee	7 (5.19)
Periarticular tenderness	12 (8.89)
Limited movement	8 (5.93)
Effusion	4 (2.96)

Table 3 shows common symptoms and signs of patients of OA of knee. Most common symptom was Usage related pain (42.22%) and persistent pain (27.41%). Most common sign was crepitus and it was followed by bony enlargement.

DISCUSSION

With the aim of finding factors associated with Osteoarthritis of knee, we had interviewed 135 OA knee patients.

In compliance with the previous studies, a higher prevalence of OA with increasing age has been noted.[7]We found that maximum number of patients were from age group of 61 to 70 years (37.04%). It was followed by age group of 51 to 60 years (29.63%). In a study done in Jammu and Kashmir, one third of the population above the age of 65 was found to have OA.[8]More than half of those with arthritis are under 65 years of age. Nearly 60% of Americans with arthritis are women. Indian data in this regard is lacking. It is difficult to estimate the prevalence of osteoarthritis because there are no universally applicable criteria for its diagnosis. Radiographic and symptomatic knee OA in adults 45 years or older was prevalent in 19% and 7% of Framingham subjects, respectively, and in 28% and 17% of Johnston county subjects, respectively.[9]

Many studies had also found that the overall number of US adults affected by OA in any joint clearly has increased during recent decades due to aging of the population and the increasing prevalence of obesity.[10]Thus, age is the most powerful risk-factor for OA. [11]The prevalence of knee OA increases with age [12]; therefore, the impact of this disease will become even more substantial with the aging of the population. Studies have shown that knee OA greatly diminishes health status in the elderly. [13]Studies shows that not only was there a marked increase in the occurrence of severe OA with advancing age, but that this age-related increase appeared to be exponential after 50 years of age.[14]A study on prescribing patterns in the management of arthritis in the department of orthopaedics, the study reveals that out of 75 osteoarthritis patients, about 60% are in the age group between 51-65 years. [15]

In our study, there were 91 (67.41%) female patients in the study group.The Framingham Knee Osteoarthritis study suggests that knee osteoarthritis increases in prevalence throughout the elderly years, more so in women than in men.[16]Females are found to have more severe OA, more number of joints are involved, and have more symptoms and increased hand and knee OA.[17]These observations and others reporting a painful form of hand osteoarthritis after the menopause suggest that loss of estrogen at the time of menopause increases a woman's risk of getting osteoarthritis,[18] Obesity preceeds rather than follow knee osteoarthritis and indeed weight loss prevents development of knee osteoarthritis.[19]

Various studies reveal that, being overweight is a clear risk factor for developing Osteoarthritis. Population-based studies have consistently shown a link between overweight or obesity and knee OA. Esti-

mating prevalence across populations is difficult since definitions for obesity and knee OA vary among investigators. Data from the first National Health and Nutrition Examination Survey (HANES I) indicated that obese women had nearly 4 times the risk of knee OA as compared with non-obese women; for obese men, the risk was nearly 5 times greater.[20]In lifestyle such as weight reduction and exercise. Weight reduction is quite effective and recommended for overweight or obese patients especially in symptomatic knee OA. It reduces the pain and improves physical function. It can be accomplished through an intensive low calorie diet programme. These lifestyle changes must be continued throughout life.[21]

The occupational physical activities which including monotonous motions and great forces such as kneeling, squatting on joints , climbing, and heavy lifting. [22]Clinically, the condition is characterized by joint pain, tenderness, limitation of movement, crepitus, occasional effusion, and variable degrees of local inflammation.[23]

Pain is the first and predominant symptom, causing loss of ability and often stiffness.Pain is generally described as a sharp ache, or a burning sensation in the associated muscles and tendons. The pain is intermittent and is worse with use and better with rest. The stiffness generally improves after 30 minutes of activity unlike the prolonged (usually > 30 min) stiffness caused by rheumatoid arthritis. OA of the knee can cause a crackling noise called crepitus, when the affected joint is moved or touched, and patients may experience muscle spasm and contractions in the tendons. We found in our study that most common symptom was Usage related pain (42.22%) and persistent pain (27.41%). Most common sign was crepitus and it was followed by bony enlargement.Occasionally, the patient presents with swelling or joint effusion sometimes calledwater in the knee in lay terms due to fluid within the joint.

CONCLUSION

Present study shows that age group of 61 to 70 years is the most common age group for OA of knee. Study also shows predominance of female gender. Overweight and Obesity are one of the most common risk factors. Patients using Indian style toilets, having squatting crossed leg position and bending position in day to day activities are more commonly affected. Most common symptom is Usage related pain followed by persistent pain. Most common sign is crepitus and it was followed by bony enlargement.

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