# **Original Research Article**

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# Study of association of age and BMI with knee osteoarthritis among females in age group of 40 to 60 years in urban population of Kadapa town

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#### **ABSTRACT**

**Background:** Knee osteoarthritis is a significant problem in ageing population as females are more prone for the disease compare to males. Increase in life expectancy has made ageing worldwide phenomenon including developing countries. Risk factors related to the knee osteoarthritis may be multiple but female sex, age and obesity are more common in any region of country and world. The aim and objective of the study was to estimate the prevalence of knee osteoarthritis among females in age group of 40 to 60 years and see the effect of age and weight of patient on knee osteoarthritis.

**Methods:** Cross sectional study was conducted at field practice area of Community Medicine Department in Kadapa town among females in age group of 40 to 60 years. Total 150 females participated in the study from the urban health training centre area in one month (November-December 2011) and study was conducted with personal interviews of participants in preformed questionnaire after obtaining the consent.

**Results:** 150 participants were enrolled in the study, in age group of 40 to 50 years 76 (50.67%) and 50 to 60 years 74 (49.33%). Total 63 (42%) participants were affected with knee osteoarthritis. Among them 25 (32.89%) participants were in the age group of 40-50 years and 38 (51.35%) in the age group of 50 to 60 years which is significantly more. As per BMI participant with BMI >25 were significantly more affected 29 (63.04%) compared with participants with normal BMI, 17 (33.33%).

**Conclusions:** Knee osteoarthritis is significantly associated with advanced age and obesity.

Keywords: Knee osteoarthritis, Females, Age, Obesity, BMI

# INTRODUCTION

Osteoarthritis (OA) is a chronic degenerative disorder of multi factorial etiology characterized by loss of articular cartilage, hypertrophy of bone at the margins and subchondral sclerosis of bone joints. It is also known as the degenerative disease affecting joints of extremities and spine particularly of weight bearing areas. Patient suffering from osteoarthritis usually complains of pain and stiffness after work or standing for long time. According to one study prevalence of osteoarthritis is

around 22 to 39% in India. Prevalence of the disease is more among the females compared to the males and as age increases prevalence also increases steadily. As per the study reports among Indian population almost 65% of cases of osteoarthritis came from the age group of 51-65 years. Female sex and age are the two most important factors for determining the onset of the osteoarthritis, study among perimenopausal women prevalence of osteoarthritis was found to be 47.3% and as age increases prevalence also was increased. As per the study among the Indian women average menopausal age was found to

be 46.82 years compare to their western counterparts among whom menopausal average age is 51 years. All over the world life expectancy has increased significantly compared with the last century and increase in life expectancy has brought more morbidity among the elderly. Ageing is the natural and irreversible process if early actions are not taken it will affect the health. It is proved that, due to increase in life expectancy all over the world osteoarthritis is going to become major health concern among the elderly population and areas where health care is not reached to the periphery. As ageing is irreversible process and osteoarthritis is one of the major problems with significant morbidity only prevention can reduce the burden of the disease.

Due to chronic nature of the disease significant morbidity is present among the patient and at the same time due to absence of the definitive treatment symptomatic management is the only option in majority of the cases. Many patients come with complaints about pain and stiffness which is affecting their daily routine work, particularly for the females which involves household activities. Gender and age are the major non modifiable risk factors, exercise, diet and trauma are the modifiable risk factors; as per the report of United Nations almost 130 million people by 2050 will have osteoarthritis worldwide and out of that 40 million will suffer from sever disease.<sup>5</sup> Knee is the most commonly affected joint in the osteoarthritis according to several studies conducted. Involvement of knee itself creates significant morbidity and disability among the patients. Study by Fransen et al it was found that prevalence of knee pain or symptomatic knee osteoarthritis is high among older people in Asian region in rural and urban areas.<sup>6</sup>

Present study was conducted in field practice area of the Urban Health Training Centre (UHTC), majority of the patients from the area attending health centre for medical care. Many patients attending centre were having complaint of joint pains over the time. Particularly females in the age group of 40 to 60 years were having complaint of knee pain. Many studies have suggested that gender also a significant factor in osteoarthritis and females are more prone than males and onset of the osteoarthritis earlier than male counterpart, which significantly increases the morbidity among females.

The objective of the study was to estimate the prevalence of knee osteoarthritis among females in age group of 40 to 60 years and to assess the association of age and weight of patient with knee osteoarthritis.

#### **METHODS**

This cross sectional study was conducted after obtaining approval from Institutional ethics committee at Field practice area of Urban Health Centre under Department of Community Medicine. Total 150 female participants in age group of 40 to 60 years and who were willing to participate were enrolled in study. Study duration was one month (November-December 2011).

The study method involved was personal interviews of participants in preformed structured questionnaire after receiving written consent form from the participants. Inclusion criteria were patients already diagnosed with knee osteoarthritis. Exclusion criteria were patients not willing to give consent.

Statistical analysis done with percentages and chi square test.

## **RESULTS**

Total 150 participants were enrolled in the study who were willing to give consent to participate in study. Those who were not willing to give consent were not included in to the study. In 150 participants 76 (50.67%) participants were in age group of 40 to 50 years and 74 (49.33%) were in age group of 50 to 60 years.

Table 1: Classification of participants as per age.

S. No.	Age Group	n (%)
1	40-50 Years	76 (50.67)
2	50-60 Years	74 (49.33)
	Total	150

Table 2 shows that 63 (42%) participants were affected by knee osteoarthritis. In first group out of 76 participants 25 (32.89%) and in the second group out of 74 participants 38 (51.35%) participants were affected with the knee osteoarthritis. It shows that in advanced age prevalence of knee osteoarthritis significantly increases.

Table 2: Prevalence of knee osteoarthritis among participants as per age.

S. No.	Age group	No. Participants affected n (%)	No. Participants not affected n (%)	Total	P value
1	40-50 Years	25 (32.89)	51 (67.11)	76	
2	50-60 Years	38 (51.35)	36 (48.65)	74	$\chi^2 = 5.243, df = 1,$
	Total	63 (42)	87(58)	150	P < 0.05; Significant

As per the BMI of participants in a group of BMI (18.5-24.99) out of 51, 17 (33.33%) participants were affected with knee arthritis as given in Table 2.

Participants with a BMI ( $\geq$  25) out of 46, 29 (63.04%) participants were affected by knee osteoarthritis which is significantly more.

Table 3. Prevalence of knee osteoarthritis among participants as per BMI (Body Mass Index).

S. No.	BMI	No. of participants affected n (%)	No. of participants not affected n (%)	Total N (%)	P value
1	≤ 18.5	17 (32.08)	36 (67.92)	53 (35.33)	2 12.070
2	18.5-24.99	17 (33.33)	34 (66.67)	51 (34)	$\chi^2 = 12.078,$ df = 2; P < 0.05
3	≥ 25	29 (63.04)	17 (36.96)	46 (30.67)	u1 = 2; $P < 0.03$
Total		63 (42)	87 (58)	150	

#### **DISCUSSION**

In present study it was found that females in the age group of 50-60 years of age were having significantly more prevalence 51.35% of knee osteoarthritis compared to 40-50 years age group where 32.89% participants were affected. As per the BMI (Body Mass Index) 29 (63.04%) participants who were having BMI ≥25, had more prevalence of knee osteoarthritis but in same group (BMI ≥25), only 17 (36.96%) participants were not affected. Out of 63 affected participants 29 were overweight and remaining participants were having normal or BMI less than ≤18.5. Being overweight is a significant risk factor for knee osteoarthritis. When compared with the other studies conducted in different parts of the country following observations were found, study conducted by Sharma et al in Chandigarh UT, prevalence was found to be 56.6%, and in urban area prevalence was 60.3% compared with rural area in which prevalence was found to be 32.6%. In the same study it was observed that increased BMI was significantly associated with the osteoarthritis.<sup>7</sup> Another study conducted by Radha et al in Mysore city prevalence among females was found to be 63.33%, same study has shown that overweight and obese patients were 37.33%, who were diagnosed with osteoarthritis.8 According to one study conducted in rural Maharashtra by Kamble et al, 24.1% participants in study reported knee osteoarthritis and among them 29% females were having knee osteoarthritis.9 Study conducted by Bhandarkar et al in community healthcare setup in Mumbai it was observed that age specific prevalence among females was 63% which was more compare to males 37%. <sup>10</sup> Another study by Ganvir et al, it was found that female sex and age are the risk factors for knee osteoarthritis along with obesity and physically demanding job.<sup>11</sup>

# **CONCLUSION**

In present study it was found that 42% participants were having knee osteoarthritis and females in higher age group 51.35% are significantly associated with knee osteoarthritis as compare to lower age group 32.89%. Obesity is also a risk factor as participants with BMI > 25 are significantly associated with knee osteoarthritis compared to less BMI. Due to increase in life expectancy in India osteoarthritis will become one of the commonest disease of elderly with large burden on public health services and lack of it will result in recurrent expenditure

by the suffering individual. In absence of definitive treatment and high cost of surgical interventions, it is necessary to promote the preventive measures to reduce the prevalence of disease.

#### Recommendations

Awareness among the community regarding onset of the osteoarthritis is necessary with screening of onset of disease in the elderly. To delay and halt the progression of the disease it is necessary to provide the specific information regarding regular exercise, weight control.

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Institutional Ethics Committee

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