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## RESEARCH ARTICLE

# PREVALENCE OF KNEE OSTEOARTHRITIS PATIENTS IN MYSORE CITY, KARNATAKA

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### ABSTRACT

Osteoarthritis (OA), also often called 'osteoarthrosis or 'degenerative joint disease,' is the most common form of arthritis. Prevalence of OA in India is reported to be in the range of 17-60.6%. Knee osteoarthritis (OA) is a common condition which represents a major contribution to the burden of physical disability. Prevalence increases with age, so that about 11% of all women over the age of 60 years have symptoms due to knee OA. The study is to measure the prevalence of knee osteoarthritis patients and identification of risk factors were involved among the age group of 40 to 65 years in Mysore city and compare BMI, ESR and WOMAC criteria. A cross-sectional study was conducted in Sri. Krishna Rajendra Hospital, Mysore from June 2013 to May 2014. A total of 150 interviewed subjects referred having knee pain and clinically diagnosed by orthopaedic doctor and radiographically confirmed as Knee Osteoarthritis patient. An interviewer-administered questionnaire was used to estimate the prevalence and associated risk factors of Knee osteoarthritis. The data was analysed using SPSS windows 16.0.

The age of the population was 40 to 65 years. About 46% of the patients having normal BMI and ESR were highest in the range of 50 and above mm/hr. The mean average of WOMAC score was highest in moderate while comparing to other scores. Knee Osteoarthritis is one of the most common rheumatologic problems. The risk factors of the disease are age, socio-economic status and regular activities etc. There is no clear published data available about the prevalence of knee osteoarthritis due to different types of defining of the disease.

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## INTRODUCTION

Osteoarthritis (OA), also often called 'osteoarthrosis or 'degenerative joint disease,' is the most common form of arthritis (Kelsey JL *et al* 1988). It is a leading cause of chronic disability between fourth and fifth decade of life (Lutzner J *et al* 2009). The name "osteoarthritis" arose from observation of the striking overgrowth of marginal and subchondral bone by the pathologists and radiologists. Global statistics reveals over 100 million people worldwide suffer from OA, which is one of the most common causes of disability (Hinman RS *et al* 2010; Heiden T *et al* 2009). Globally, OA is the eighth leading cause of disability (Mathers CD *et al* 2003) with the joint most frequently associated with disability being the knee (Felson DT *et al* 1987). In the Asia-Pacific region, the prevalence of Knee Osteoarthritis was 7.50% in China (Wigley RD *et al* 1994), 5.78% in rural India (Chopra A *et al* 1997), 22.00% to 28.00% in urban and 25.00% in the rural population of north Pakistan (Farooqi A *et al* 1998), and 10.20% in Bangladesh (Haq SA *et al* 2005).

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 (Chopra A *et al* 2001). Prevalence of OA in India is reported to be in the range of 17 to 60.6% (Sharma MK *et al* 2007). The reported prevalence of OA from a study in rural India is 5.78% (Lone AH *et al* 2011). Eleven COPCORD (Community Oriented Program for Control of Rheumatic Disorders) reports show knee OA data: there were 3328 knee OA patients out of a total surveyed pooled sample of 41 884. The pooled prevalence of knee OA thus becomes eight percentages. In the Bhigwan population in India, six percentages of the respondents had chronic knee pain without clinical evidence of OA (Syed A *et al*, 2011). Knee Osteoarthritis prevalence increases with age, so that about 11% of all women over the age of 60 years have symptoms due to knee OA. Most knee OA is managed by primary care physicians rather than rheumatologists (Creamer P *et al*, 2000). Planning Commission 2011, Osteoarthritis (OA) accounts for half of all chronic conditions in persons aged over 65 with about 25 % of people over the age of 60 have significant pain and disability from osteoarthritis. As per a recent report published by the (Times of India 2010) regarding OA, over 40% of the Indian population in the age group of 70 years or above suffer from OA. Nearly 2% of these undergo

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severe knee pain and disability. As per a recent statement quoted by Piramal Healthcare Limited in a nationwide campaign against chronic diseases, India is expected to be the chronic disease capital, with 60 million people with arthritis, by 2025. The government, private sector, the medical fraternity and NGOs should come together against the onslaught of chronic disease. Also majority of those suffering from OA are deprived of access to quality treatment.

### Age

Age is the most powerful risk-factor for OA (Cicutini FM *et al* 1997; Brown KS *et al* 1974). The prevalence of knee OA increases with age (Maurer K 1979); 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 (Dominick KL *et al* 2004; Fryback DG *et al* 1993). (Lawrence *et al* 1966) showed that not only was there a marked increase in the occurrence of severe OA (equivalent to Kellgren and Lawrence system - Kellgren JH *et al* 1963 grades 3 and 4) with advancing age, but that this age-related increase appeared to be exponential after 50 years of age. (Mohamed Ahmed *et al* 2012) 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. (Dinesh Bhatia *et al* 2013) the study reveals that the prevalence of osteoarthritis between the ages of 30 to 65 years. The prevalence of OA increases indefinitely with age, because the condition is not reversible. Men are affected more often than women among those aged <45 years, whereas women are affected more frequently among those aged >55 years. A community-based cross-sectional study was carried out by in an urban resettlement colony in South Delhi<sup>1</sup> to study the prevalence of knee osteoarthritis in women aged =40 years and treatment seeking behavior of women suffering from osteoarthritis found 47.3% of women (123/260) to be suffering from knee osteoarthritis.

## MATERIALS AND METHODS

The study was conducted in Sri. Krishna Rajendra Hospital, Mysore from June 2013 to May 2014 and it was an observational and pilot study as a part of PhD research. The patients were randomly selected from Out Patient department in the section of Orthopedic, K.R. Hospital. The interview was structured as a follows, data was recorded on a standardized predesigned and a pre -tested questionnaire. The questionnaire was targeted to Knee Osteoarthritis patients diagnosed by the orthopedic doctor and possible risk factors such as socio-demographic data, physical activity, BMI and ESR level. A total of 150 interviewed subjects referred having knee pain and clinically diagnosed as Knee Osteoarthritis patient, which were eligible, based on the inclusion criteria were enrolled in the trial after obtaining their informed consents. Patients enrolled into study were given the information sheet having details about the nature of the study. All the patients were assessed and diagnosed on the basis of history, symptoms (pain, stiffness, and functional limitations), and signs related to knee osteoarthritis and radiological examination of the affected joint.

Patients who underwent orthopedic examination also completed the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC). The WOMAC index produces scores for three subscales: pain, stiffness and physical function. The results were analyzed using SPSS software version 16. Out of 150 patients 95 were female and 55 were male.

### Inclusion criteria

- Age: between 40-65 both male and female.
- Patients diagnosed with primary osteoarthritis
- Orthopedic doctors diagnosed knee osteoarthritis patients (radiologically confirmed)
- Informed written consent of the patients

### Exclusion criteria

- Patients with any systemic illness, secondary diseases such as Diabetic, Blood Pressure etc
- Patients who have undergone total knee replacement in both the knees, patients with OA secondary diseases like rheumatoid arthritis and gout
- Patients with restricted mobility.

### Demographic profile

Many genetic, demographic and personal characteristics are involved in the risk of OA (Parka H *et al* 2011). Out of 150 knee osteoarthritis patients, 95 were female and 55 were male. The prevalence of knee osteoarthritis patients was highest in the age group of 60-65 and 40-45 and least is in the age group of 50-55. In case of social composition, out of 150 patients about 43% Other Backward Classes (OBC), 31.33% General category, 20% Scheduled Castes (SCs) and rest of it Scheduled Tribes (STs) i.e. 5.33% (Table 1).

Table1 Demographic profile

Sex	Male	55 (36.67%)
	Female	95 (63.33%)
Age	Age Group	
	40-45	35 (23.33%)
	45-50	29 (19.33%)
	50-55	24 (16.00%)
	55-60	25 (16.67%)
	60-65	37 (24.67%)
	<b>Total</b>	<b>150 (100.00%)</b>
	<b>Mean Average ± Standard Deviation</b>	<b>30± 5.83</b>
Social Composition	Social group	
	General	47 (31.33%)
	OBC	65 (43.33%)
	SCs	30 (20.00%)
	STs	8 (5.33%)
	<b>Total</b>	<b>150 (100.00%)</b>
	<b>Mean Average ± Standard Deviation</b>	<b>37.5± 24.31</b>

N.B.: Figures in parentheses are percentages to the column-wise totals

Source: Primary Survey

## RESULTS AND DISCUSSION

### Body Mass Index (BMI) and Erythrocyte Sedimentation Rate (ESR)

Based on the study outcomes, about 46% of the patients were having normal BMI, 23.33% overweight and least is the obese, the overall mean average is 30 (Table 2). The least obese

especially in knee osteoarthritis patients mainly due to samples were collected in the Government hospital and associated with socio-economic status. Meanwhile 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. Estimating 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 (Anderson J *et al* 1988). R.T. Keenan *et al.* 2008 the study found that ESR and CRP was more elevated in RA patients than osteoarthritis patients, the cut off values used for elevated levels for both ESR and CRP. Some consider ESR>30 mm/hr as a better number for inclusion, therefore excluding some outliers Wolfe F, 1997 and normal ESR also increases with age. The Erythrocyte Sedimentation Rate (ESR) has been shown to be useful for diagnosis of knee infection and an abnormal result of ESR indicates inflammation. The ESR in Knee Osteoarthritis patients, out of 150 subjects, about 24 (16%) subjects were having ESR level of 50 and above mm/hr and about 4 (2.67%) subjects were having 45-60 mm/hr. The mean average is 15 and standard deviation is 6.091, it indicates that ESR level is more and inflammation (Table 2).

**Table 2** Body Mass Index (BMI) and

Body Mass Index (BMI)	Marginally overweight	14 (9.33%)
Normal	69 (46.00%)	
Obese	21 (14.00%)	
Overweight	35 (23.33%)	
Underweight	11 (7.33%)	
<b>Total</b>	<b>150 (100.00%)</b>	
<b>Mean Average ± Standard Deviation</b>	<b>30 ± 23.685</b>	
<b>ESR levels range (mm/hr)</b>	<b>Number of Patients</b>	
<b>Erythrocyte Sedimentation Rate (ESR)</b>	5-10	19 (12.67%)
	10-15	14 (9.33%)
	15-20	21 (14.00%)
	20-25	19 (12.67%)
	25-30	14 (9.33%)
	30-35	16 (10.67%)
	35-40	9 (6.00%)
	40-45	10 (6.67%)
	45-50	4 (2.67%)
	50 & above	24 (16.00%)
<b>Total</b>	<b>150 (100.00%)</b>	
<b>Mean Average ± Standard Deviation</b>	<b>15 ± 6.091</b>	

N.B.: Figures in parentheses are percentages to the column-wise totals  
Source: Primary Survey

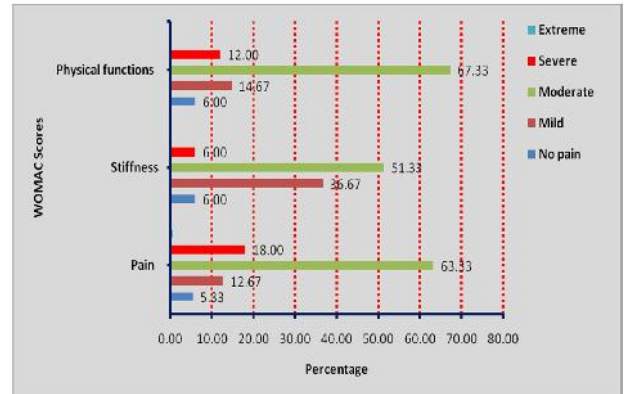
**Table 3** the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) Scores

WOMAC Scores	WOMAC Scores	No pain	Mild	Moderate	Severe	Extreme
Pain of Knee Osteoarthritis patients for different activities	Pain	8 (5.33%)	19 (12.67%)	95 (63.33%)	27 (18.00%)	1 (0.67%)
	Stiffness	9 (6.00%)	55 (36.67%)	77 (51.33%)	9 (6.00%)	0 (0.00%)
	Physical functions	9 (6.00%)	22 (14.67%)	101 (67.33%)	18 (12.00%)	0 (0.00%)
	Walking on a flat surface	11 (7.33%)	25 (16.67%)	80 (53.33%)	32 (21.33%)	2 (1.33%)
	Going up or down stairs	2 (1.33%)	11 (7.33%)	67 (44.67%)	66 (44.00%)	4 (2.67%)
	At night while in bed	19 (12.67%)	28 (18.67%)	81 (54.00%)	19 (12.67%)	3 (2.00%)
	Sitting or lying	3 (2.00%)	7 (4.67%)	53 (35.33%)	81 (54.00%)	6 (4.00%)
	Standing upright	21 (14.00%)	67 (44.67%)	54 (36.00%)	7 (4.67%)	1 (0.67%)

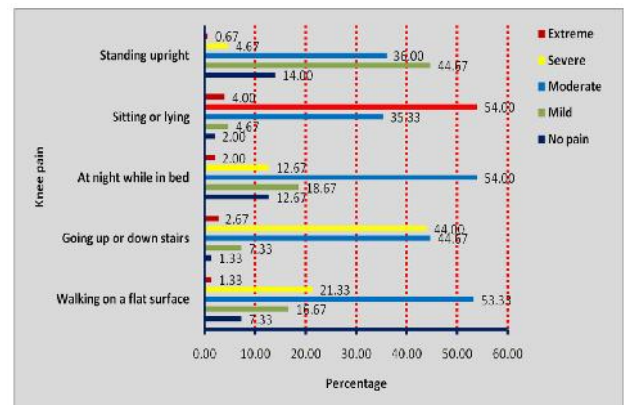
N.B.: Figures in parentheses are percentages to the row-wise totals  
Source: Primary Survey

**Womac Scores And Knee Pain For Different Activities**

Based on WOMAC scores out of 150 Knee Osteoarthritis patients, the mean average of 91 patients were having moderate in Pain, Stiffness and Physical functions, it constitute about 63.33%, 51.33% and 67.33% respectively, whereas one patients were extreme and rest of it severe, mild and no pain (Table 3 and Fig.1). Majority of the patients were having moderate Pain of knee osteoarthritis patients while doing different activities and the least is extreme (Table 3 and Fig. 2)



**Fig. 1** Percentage of Knee Osteoarthritis patients with WOMAC Scores



**Fig 2** Percentage Knee Osteoarthritis patients having pain while doing different activities

**CONCLUSION**

Knee osteoarthritis (OA) is a common condition which represents a major contribution to the burden of physical disability. It is incurable with currently available therapeutic options. The only way for reduction of the burden of the disorder is prevention.

There is need to take appropriate steps to increase awareness regarding knee osteoarthritis in the community regarding importance of daily exercise, proper position of the knee joint during daily activities and also to control the risk factor such as obesity. Adequate treatment and physiotherapy could make patients to manage the pain, maintain mobility and minimize disability.

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