ORIGINAL RESEARCH

Prevalence, associated risk factors and socio-demographic profile of knee osteoarthritis patients in Indian population

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ABSTRACT

Background: Osteoarthritis (OA) is one of the most common degenerative disorders among the elderly population; although aging is the most important cause, research has shown that it is a complex disease with many etiologies.

Objectives: The objective of this study was to assess the burden, socio-demographic features and risk factors of OA knee among the Indian population.

Methods:A hospital based cross-sectional study was conducted in the department of orthopedics in a tertiary care center, India. All suspected patients of ≥ 50 years of age were enrolled. Knee OA was diagnosed using the clinical criteria laid down by the American College of Rheumatology (ACR). Data were collected included Socio-demographic variables, detailed past and family history associated risk factors, clinical presentation, local examination of both the knee joint and radiological investigation was done.

Results: The prevalence of knee osteoarthritis was 25%. Higher in females: age more than 50 years. Obesity, family history of OA, physical inactivity and presence of comorbidity were found to be significantly associated with higher odds of OA knee (p<0.05). Pain in knee joint, bony tenderness, crepitus and morning stiffness were the common clinical presentation of knee OA.

Conclusion: Elderly suffering from knee OA had significantly lower perception of their quality of life most affected is the psychological and physical domains of quality of life.

Key words: Prevalence, risk factors, knee OA, ACR criteria, socio-demographic profile

INTRODUCTION

Osteoarthritis (OA) is one of the most prevalent conditions resulting to disability particularly in elderly population. OA is the most common articular disease of the developed world and a leading cause of chronic disability, mostly as a consequence of the knee OA and/or hip OA [1].Osteoarthritis is a second most common rheumatologic problem in India [2] OA is most frequently occurring joint disease with a prevalence ranging from 22% to 39% [3].Knee OA accounts for almost four fifths of the burden of OA worldwide and increases with obesity and age [4].Up to now, knee OA is incurable except knee arthroplasty which is considered as an effective treatment at an advanced stage of the disease, however, which is responsible for substantial health costs [5]. The economic costs of OA are high, including those related to treatment, for those individuals and their families who must adapt their lives and homes to the disease, and those due to lost work productivity [6].The incidence of OA increases with age, and women have higher rates than men, especially after age 50 [7].

Osteoarthritis is typically a progressive disease that may eventually lead to disability. Theintensity of the clinical symptoms may vary for each individual. However, they typically becomemore severe, more frequent, and more debilitating over time.The rate of progression also variesfor each individual. Common clinical symptoms include knee pain that is gradual in onset andworse with activity, knee stiffness and swelling, pain after prolonged sitting or resting, and painthat worsens over time. Treatment for knee osteoarthritis begins with conservative methods andprogresses to surgical treatment options when conservative treatment fails. While medicationscan help slow the progression of RA and other

inflammatory conditions, no proven disease-modifying agents for the treatment of knee osteoarthritis currently exist [8,9].

Many researchers have shifted their focus to the prevention and treatment in the early stage of the disease [10]. Accordingly, it is essential to understand the prevalence, incidence, and modifiable risk factors of knee OA for providing effectively preventive strategies.

The World Health Organization, the International League against Rheumatism, and global OA experts have made substantial efforts over the past few decades, many population-based epidemiological studies of knee OA have been conducted worldwide [11].

Aims &Objectives: This study determine the prevalence, risk factors, socio-demographic and clinical profile of knee osteoarthritis patients.

MATERIALSAND METHODS

This was a cross sectional study conducted in the department of orthopedics, in a tertiary care hospital, India. All patients suspected with the knee osteoarthritis attending orthopedics out patient's department during the study period were enrolled in this study. The subjects those who gave their verbal consent and found eligible for participation in the study were chosen.

KNEE OA: Knee OA was defined according to American College of Rheumatology (ACR) criteria [12] as knee pain plus at least three of the following: age >50 years, morning stiffness, crepitus in motion, bony tenderness, bony enlargementand absence of palpable warmth.

INCLUSION CRITERIA

- Patients ≥ 50 years of age with both gender.
- Patients who provide consent for the study.

EXCLUSION CRITERIA

- Subjects age < 50 years.
- Who not willing for the study.

Data were collected included Socio-demographic details such as age, sex, residential area, per capita income, physical activity, body mass index and socioeconomic status. Detailed history, clinical presentation and local examination of both the knee joint was done.

X-ray both the knee joint and relevant laboratory investigation (erythrocyte sedimentation rate, C-reactive protein, RA factor, anti-CCP and Complete blood count) was done.

STATISTICAL ANALYSIS: Data was entered in Microsoft Excel spreadsheet and analyzed using SSPS version 22. Relationship between OA and various variables was assessed by calculating the odds ratio with corresponding 95% confidence interval, and its statistical significance was assessed by using Chi-square test. A P value of < 0.05 was considered statistically significant.

RESULTS

A total of 400 participants with suspected of knee osteoarthritis were enrolled in this study. The prevalence of knee osteoarthritis was 25%.

Most of the OA patients (61%) were above 50 years of age. The majority of elderly was females (63%), belonged to the rural area (57%) and majority of them (84%) was literate. Majority of OA subjects (43%) were middle socioeconomic status. Most of the OA patients were obese, higher body mass index was significantly associated with the knee OA (p<0.05).

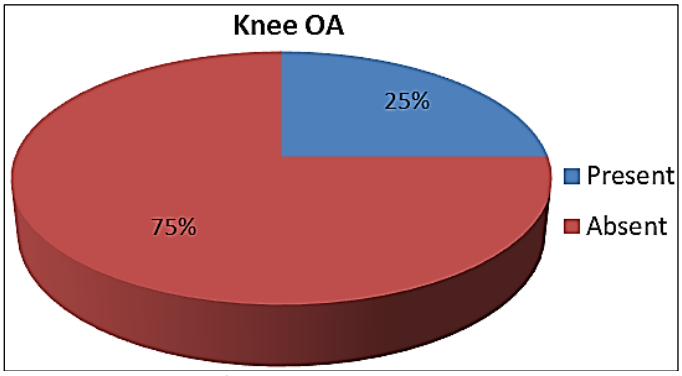

Fig 1: Prevalence of knee osteoarthritis among study subjects

Table 1: Association between socio-demographic variables and osteoarthritis knee joint

Socio demographic variables		OA Present (n=100)	OA Absent (n=300)	P value
Age group	< 50 year	39 (39%)	144 (48%)	0.487
	≥ 50 years	61 (61%)	156 (52%)	
Gender	Male	37 (37%)	135 (45%)	0.161
	Female	63 (63%)	165 (55%)	

BMI	Normal (18.5-24.9)	40 (40%)	156 (52%)	0.045
	Underweight (<18.5)	10 (10%)	36 (12%)	
	Obese (≥25)	50 (50%)	108 (36%)	
Residential status	Rural	57 (57%)	186 (62%)	0.375
	Urban	43 (43%)	114 (38%)	
Education status	Illiterate	16 (16%)	36 (12%)	0.302
	Literate	84 (84%)	264 (88%)	
Socio-economic status	Lower	35 (35%)	75 (25%)	0.104
	Middle	43 (43%)	135 (45%)	
	Upper	22 (22%)	90 (30%)	

Family history of OA knee, associated co-morbidities and physical inactivity are the common risk factors showed significantly higher chances of suffering from knee OA. But history of trauma, smoking and alcohol consumption were not significantly correlated with the knee OA.

Table 2: Risk factors associated with knee osteoarthritis patients

Risk factors		OA Present (n=100)	OA Absent (n=300)	P value
History of trauma	Present	25 (25%)	54 (18%)	0.127
	Absent	75 (75%)	246 (82%)	
Family history of OA knee	Present	42 (42%)	90 (30%)	0.027
	Absent	58 (58%)	210 (70%)	
Associated Co-morbidities	Present	65 (65%)	120 (40%)	0.001
	Absent	35 (35%)	180 (60%)	
Physical activity	No activity	30 (30%)	129 (43%)	0.043
	Light	44 (44%)	96 (32%)	
	Moderate	20 (20%)	54 (18%)	
	Vigorous	6 (6%)	21 (7%)	
Smoking	Never/Past	73 (77%))	240 (80%)	0.141
	Current smoker	27 (27%)	60 (20%)	
Alcohol	Never/Past	80 (%)	255 (85%)	0.240
	Current	20 (20%)	45 (15%)	

Pain in the knee was a universal symptom in all cases of osteoarthritis while a majority of positive cases also complained of bony tenderness, crepitus, and bony overgrowth.

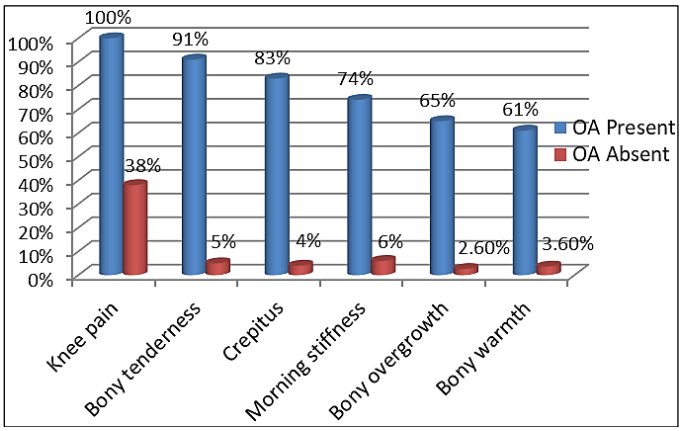

Fig 2: Clinical Profile of Study Participants with OA according toACR criteria

Discussion

There is strong evidence shows that age, ethnicity, BMI, the number of co-morbidities, MRI-detected infrapatellar synovitis, joint effusion, and both radiographic and the baseline of OA severity are predictive for clinical progression of knee osteoarthritis [13].

In the present study, the prevalence of knee OA is based on ACR clinical criteria was 25%, Similar finding also reported by Venkatachalam J,*et al.* [14] and Hakmaosa A, *et al.*[15], observed prevalence of knee OA were 27.1% and 23.3% respectively. Much higher prevalence of knee OA (64%) was reported by Salve H *et al.*[16], whereas lower prevalence of knee OA (12%) reported by Plotnikoff R, *et al.*[17].The above

difference in the prevalence of OA Knee might be different demographical region and also the former study was used ACR criteria; and later, the study was used old ACR criteria.

In our study, as the age increases the proportion of OA was of increasing trend (age >50 years 61%, <50 years 39%), in agreement with the Ajit *et al.*[18] and Haq SA, *et al.*[19].

Current study found the prevalence of knee OA was higher among females (63%) as compared to male (37%), our results comparable with the Moghimi N,*et al*.[20] and Bhaskar A, *et al*.[21].Female predominance can be due to hormonal changes after menopause lead to osteoporosis and osteoarthritis.

In our study burden of knee OA was more in rural population, concordance to the study conducted by Singh A K *et al.*[22].

Family history of OA and physical inactivity were the significant risk factors of knee OA in this study, consistent finding also reported by Yu, D, *et al*.[23] and Sasidharan M K *et al.*[24].

In our study current smoking and alcohol consumption were not significantly associated with the prevalence of knee OA, our results comparable with the Kaur R, *et al*.[25].

A study conducted by Coggon D, *et al.*[26], reported that diet and physical activity of an individual play an important role in bone health. Vegetarian diet and are more prone to micronutrient deficiencies, especially calcium, phosphorus, magnesium, iron, etc., due to ignorance, which contributes to bone and joint problems. Vegetarian diet and sedentary lifestyle associated with higher odds of getting knee OA.

Present study found significant association between the comorbidities and prevalence of knee OA, concordance to the Ettinger WH, *et al.*[27].

Joint pain, bony tenderness, crepitus and morning stiffness were the common clinical manifestation observed in knee OA patients of this study, our finding correlate with the Zhang W, *et al*.[28] and B Heidari, *et al.*[29].

There was a significant difference in quality of life of elderly suffering from knee OA than those who were not suffering from it.

CONCLUSION

We have concluded that the Burden of knee OA was increases with the age, women are more affected than men.Prevalence of knee OA was significantly higher among elderly, obese, family historyof knee pain, physically inactive and patients having associated comorbidities (p<0.05).The maximum effect of knee OA was on the physical and psychological domain of quality of life, though social and environmental domains were also significantly lower

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