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Research Article

Prevalence and Identification of Risk Factors for Knee Osteoarthritis among Elderly Men and Women

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Abstract: Incidence of knee OA is rising by increasing average age of general population. Osteoarthritis (OA) is a common disease of aged population. The aims of the present study were to examine the prevalence and risk factors for knee osteoarthritis in among elderly men and women. Age, weight, trauma to joint due to repetiting movements in particular squatting and kneeling are common risk factors of knee OA. In patients with knee pain attribution of pain to knee OA should be considered with caution. Since a proportion of knee OA are asymptomatic and in a number of patients identification of knee OA is not possible due to low sensitivity of radiographic examination. The study was conducted in Vikhe Hospital; Ahmednagar (M.S), from July 2011to June 2012 and it was an observational study, a pilot study as a part of Ph.D. Research. The patients were randomly selected from OPD and IPD of Vikhe Hospital. The interview was structured as follows. Data was recorded on a standardized predesigned and a pre-tested questionnaire. Questionnaire focused on Socio-demographic profile and assessment of possible risk factors (age, family history, obesity, physical activity, and occupational knee bending and knee injury). Measurements like height, weight and body mass index (BMI) were recorded. A complete interview was possible in 205 subjects (73% response rate). Participation was poorer among men and There was a slightly higher prevalence of radiographic changes of OA in women than in men however, there was a significantly higher proportion of women with symptomatic disease (11% of all women versus 7% of all men; P = 0.003). In our study we observed that there is relationship between age, sex and BMI with OA. The number of people with OA increased as the age increased; hence it is likely that if preventive measures can be taken in the earlier age groups OA can be prevented.
Keywords: Knee Osteoarthritis, obesity, BMI,physical activity, Prevalence

INTRODUCTION

The prevalence of osteoarthritis increases with age. Osteoarthritis (OA) is one of the most prevalent conditions resulting to disability particularly in elderly population. It a common disease of aged population and one of the leading causes of disability [1].

Osteoarthritis is a complex disease entity that is difficult to diagnose and define [2]. Incidence of knee OA is rising by increasing average age of general population [3]. Age, weight, trauma to joint due to repetiting movements in particular squatting and kneeling are common risk factors of knee OA. Clinically, the condition is characterized by joint pain, tenderness, limitation of movement, crepitus, occasional effusion, and variable degrees of local inflammation [4]. Since a proportion of knee OA are asymptomatic and in a number of patients identification of knee OA is not possible due to low sensitivity of radiographic examination. Osteoarthritis of the knee is a major cause of mobility impairment, particularly among females.

Old age, female gender, overweight and obesity, knee injury, repetitive use of joints, bone density, muscle weakness, and joint laxity all play roles in the development of joint OA [5]. Pain and other symptoms of OA may have a profound effect on quality of life affecting both physical function and psychological parameters [3]. Determination of risk factors particularly in the weight-bearing joints and their modification may reduce the risk of OA and prevent subsequent pain and disability, however, the association of these risk factors with the presence of symptomatic OA not only with radiographic OA, has been less studied [5].

The aims of the present study were to estimate the prevalence of radiographic and symptomatic knee osteoarthritis and risk factors for knee osteoarthritis in elderly men and women.

MATERIALS AND METHODOLOGY

The study was conducted in Vikhe Hospital; Ahmednagar (M.S), from July 2011to June 2012 and it was an observational study, a pilot study as a part of Ph.D. Research. The patients were randomly selected from OPD and IPD of Vikhe hospital. The interview was structured as follows, data was recorded on a standardized predesigned and a pre-tested questionnaire. Questionnaire focused on possible risk factors (age, family history, obesity, physical activity, and occupational knee bending and knee injury).

Measurements like height, weight and body mass index (BMI) were recorded [6]. The results were analyzed using SPSS software version 20 Chi square test. A total of 310 interviewed subjects referred having knee pain on prevalence day, 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 clinically assessed and diagnosed on the basis of thorough history, clinical and radiological examination of the affected joint. Of these, 205 were classified as knee pain suggesting OA after radiographs were obtained on 205. Out of 205 patients 145 were female and 60 were male. Their ages ranged from 60-79 years .Radiographs were read by a radiologist who specializes in bone and joint radiology, and were graded 0-4 according to the scale described by Kellgren and Lawrence. OA was defined as grade 2 changes (definite osteophytes), or higher, in either knee**.**

Inclusion criteria

Clinically and radiologically diagnosed patients of knee joint Outpatients of either sex, Patients in the age group 60-79 years and Patients who agreed to sign the informed consent form and full-filled (ACR) of the clinical criteria being classified as knee OA.

Exclusion criteria

Patients below the age of 60 years and above 79years, Patients with any systemic illness , Mentally retarded person, Patients who failed to give consent .

Case definition and variables

As per the definition of OA knee classified by American college of Rheumatology (ACR) for OA by Clinical Criteria [7, 8] which was used in our survey for the ascertainment of cases. A person was thus classified as having knee pain suggesting OA if he answered affirmatively to "Have you had pain on either knee for most of the time in the previous month?" and also Presented four or more of the following criteria: 1) age over 60, 2) morning stiffness shorter than 30 minutes, 3) knee crepitus on active joint motion, 4) pain when making pressure at bony margins of the joint, 5) bony joint enlargement, and 6) absence of clear signs of inflammation. These ACR clinical criteria have previously shown good operational properties, with a sensitivity of 84% and a specificity of 89% for identifying OA [9].

RESULTS

A complete interview was possible in 205 subjects (73% response rate). Participation was poorer among men and There was a slightly higher prevalence of radiographic changes of OA in women than in men however, there was a significantly higher proportion of women with symptomatic disease (11% of all women versus 7% of all men; P = 0.003). The age-associated increase in OA was almost entirely the result of the marked age-associated increase in the incidence of OA in the women studied. This study extends current knowledge about OA of the knee to include elderly subjects, and shows that the prevalence of knee OA increases with age throughout the elderly years.

Table: Distribution of Risk Factors vs. Sex of study subjects

Body Mass Index	**Sex**		**Total**
	Male (No %)	**Female (No %)**	
Underweight	0	0	0
Normal	06	12	18
Overweight	09	42	51
Obese	45	91	136
Physical Activity			
Sedentary	12	104	116
Moderate	33	41	74
Strenuous	0	0	0
Occupational Knee Bending			
Present	38	119	157
Absent	07	26	33
Knee Injury			
Present	05	04	09
Absent	40	141	181

Table 1: Absolute and relative frequency of knee pain suggesting osteoarthritis in the general adult population of Ahmednagar (M.S) by age and sex group

Age Interval	Men		Women		Total	
	n	% (95 % CI)	n	% (95 % CI)	n	
60-69	39	18.1 (7.6-18.7)	103	37.2 (27.6-46.8)	142	28.1 (19.2-37.1)
70-79	21	16.7 (7.0-25.9)	42	44.1 (35.9-52.3)	63	33.7 (27.2-40.3)
Total	60	5.8 (3.5-9.1)	145	14.0 (11.7-16.3)	205	10.2 (7.9-12.5)

Table 2: Prevalence of knee pain in the general population and prevalence among persons with knee pain, of individual criteria from the American College of Rheumatology Classification Criteria for Knee osteoarthritis

	n	Percentage and 95% confidence interval
Pain criteria*		
Knee pain (as of prevalence or in previous month)	310	14.1 (12.7-15.6)
Knee pain (prevalence day)	205	13.0 (10.3-15.6)
Rest of criteria†		
Age over 60	205	13.0 (10.3-15.6)
Morning stiffness less than 30 minutes	173	60.9 (55.2-66.6)
Crepitus on active joint motion	205	74.4 (65.1-75.8)
Bony tenderness	137	48.2 (42.4-54.1)
Bony joint enlargement	131	46.1 (40.3-51.9)
Absence of clear signs of inflammation	215	75.7 (70.7-80.7)

Table 3: Determinants of knee pain suggesting osteoarthritis with sex and the age of the subjects, as it was confirmed by the logistic regression analysis suggesting OA with obesity

Variable	OR (95%CI)
Female sex	2.64 (1.93-3.60)
Age over 60	18.95 (11.74-30.59)
Physically demanding jobs	3.18 (2.11-4.79)
Obesity	3.46 (2.59-4.62)

Prevalence estimates

A total of 310 interviewed Subjects referred having knee pain on prevalence day. Of these, 205 (66.1%) were classified as knee pain suggesting OA after applying the ACR clinical criteria. Table 2 gives the estimated prevalence of knee pain suggesting OA 10.2% (95% CI: 7.9-12.5). Table 3 &Table 4show the distribution of knee pain suggesting OA by sex and age group. As previously reported, knee pain suggesting OA is more frequent in women and older age groups ($p<0.001$), with a prevalence peak of 33.7% in the 70-79 age interval. OA determinants: Knee pain suggesting OA appears more frequently in women, in the elderly, in people with less than 8 years of formal education, in subjects from a low social class, in obese, and in those with physically demanding jobs

DISCUSSION

It was observed that the percentage of people with osteoarthritis increased as the age increases. OA was more in women compared to men in our study (65.7% vs. 34.3% respectively). This difference can be possibly due to the lack of physical activity, mobility, social issues especially in our region and higher prevalence of obesity among women in general.

A similar observation was also made in a study done by Sharma M.K *et al*. which was 70.1% vs 41.6%. In our study it was observed that men were less in number compared to women for any given age group [10].

CONCLUSION

The worldwide prevalence estimate for symptomatic OA is 9.6% among men and 18% among women. In our study we observed that there is relationship between age, sex and BMI with OA. The number of people with OA increased as the age increased; hence it is likely that if preventive measures can be taken in the earlier age groups OA can be prevented

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