Study on Prevalence and Risk Factors of Primary Osteoarthritis Knee in a Tertiary Care Hospital of North India
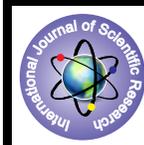
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ABSTRACT

Background: Because of its high prevalence and morbidity, osteoarthritis (OA) is a major cause of impairment and disability among the elderly and therefore a considerable burden both to the individual patient and to society Objectives: The aim of this study was to evaluate radiographic and clinical patterns of primary osteoarthritis knee in a hospital based population and determine its prevalence and risk factors associated with the disease. Material and Methods: A hospital based cross sectional study was carried out in a tertiary care hospital to study the prevalence and risk factors of primary Osteoarthritis of Knee among patients attending Orthopaedics OPD. All patients aged between 40 and 65 years were included in the study. A total of 100 patients for a period of three months were studied. Nearly half of our study subjects were women. Results: OA increased with age and BMI. Risk factors like family history, history of knee injury and occupational knee bending were seen in only few of our study subjects. Based on WOMAC scores out of 100 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. Conclusion: There is need to spread awareness among people to adopt preventive measures at an earlier age along with healthy lifestyle to reduce the body weight and hence the risk of OA.

Introduction:

Osteoarthritis (OA) is a chronic degenerative joint disease and is the commonest form of arthritis. It progresses slowly with usual signs and symptoms being pain, enlarged and deformed joints as well as limitation of the range of motion. It is also a leading cause of disability affecting 60-70% of the population older than 60 years. It usually affects the hand and large weight bearing joints, often the knee and the hip[1] . The worldwide prevalence estimate for symptomatic OA is 9.6% among men and 18% among women[2] . It is the fourth leading cause of year lived with disability (YLD). It accounts for the decrease in activities of daily living (ADL) in elderly dependent population in the community[3]. Indisputably the risk factors in high risk population include female gender, old age, overweight, history of previous injuries or surgeries on the knee[4,5,6]. Among females, the prevalence of OA is said to increase during menopausal age. Many studies have shown that loss of oestrogen at the time of menopause increases the women's risk of getting osteoarthritis[7]. Although OA occurs all over the world, the prevalence and the pattern of the disease vary depending on the geographical distribution which in turn can provide valuable clues about the potential etiological factors.

Aim and Objectives:

The study was carried out with a purpose to assess the prevalence and risk factors of primary OA knee among the study population.

Material and Methods:

A hospital based cross sectional study was carried out for a period of three months from July 2015 to September 2015 at Career Institute of Medical Sciences and Hospital, Lucknow. All patients in the age group of 40- 65 years and confirmed both clinically and radiologically for OA attending Orthopaedics OPD were included in the study. Patients below the age of 40 years and above the age of 65 years were not included in the study. Also the patients with recent trauma with considerable tissue damage, patients with terminal conditions, alcohol abuse, psychiatric disorder and previous/ planned arthroplasty were excluded from the study. After obtaining informed consent, study subjects were interviewed and data was recorded on a standardized predesigned and a pre-tested questionnaire. Questionnaire focussed on Socio-demographic profile and assessment of possible risk factors (age, family history, obesity, physical activity, occupational knee bending and knee injury). Measurements like height, weight and body mass index (BMI) were recorded. 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 analysed using SPSS software version 20. Chi square test, ratios and proportions were used.

Results:

A total of one hundred subjects were enrolled in the study of whom 46% were males and 54% were females. Table no. 1 shows that majority of them, 37% were in the age group of =>60 years. Only one third of study subjects 30% had positive family history of OA. Of these, men (45.45%) had higher percentage of family history compared to women (22.38%). This difference was not statistically significant ($\chi2 = 4.81$ at df=1 and p>0.05). Most of the women 55 (82.1%) were homemakers while majority of the men in the study 17 (48.6%) were unskilled workers.

Based on WOMAC scores out of 100 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.

Table 2 shows the distribution of risk factors among study subjects. It was observed that majority of the study subjects, 50% were obese. Obesity was more common amongst women 53.4% compared to men 45.23%, who were more overweight. This difference was statistically significant at p<0.01 ($\chi2 = 10.38$ at df=2). Table 2 also shows that 70% were involved in moderate level of physical activity. It was observed in the study that occupational knee bending was more commonly present in men. This difference was however not statistically significant. History of knee injury is another important risk factor that was studied. It was seen that most of our study subjects 84% had no history of knee injury. The history of knee injury was almost equally distributed among both the sexes.

Age in years	Sex		Total
	Male	Female	
	No (%)	No (%)	No (%)
40-44	01 (2.17)	01 (1.85)	02 (2)
45-49	03 (6.5)	05 (9.25)	08 (8)

50-54	12 (26)	13 (24)	25 (25)
55-59	13 (28.2)	15 (27.78)	28 (28)
≥60	17 (36.9)	20 (37)	37 (37)
Family History			
Present	15 (45.45)	15 (22.38)	30 (30)
Absent	18 (54.54)	52 (77.61)	70 (70)

Table 1: Socio demographic profile of study subjects

Body Mass Index	Sex Male	Female	Total
	No (%)	No (%)	No (%)
Underweight	00 (0)	01 (1.72)	01 (1)
Normal	12 (28.57)	08 (13.7)	20 (20)
Overweight	11 (26.19)	18 (31.03)	29 (29)
Obese	19 (45.23)	31 (53.44)	50 (50)
Physical Activity			
Sedentary	07 (16.67)	15 (25.8)	22 (22)
Moderate	30 (71.42)	40 (68.9)	70 (70)
Strenuous	05 (11.90)	03 (5.17)	08 (8)
Occupational Knee Bending			
Present	12 (35.29)	16 (24.24)	28 (28)
Absent	22 (64.7)	50 (75.75)	72 (72)
Knee injury			
Present	06 (15.38)	10 (16.39)	16 (16)
Absent	33 (84.61)	51 (83.6)	84 (84)

Table 2: Distribution of Risk factors in relation to sex of subjects

Discussion:

In our study it was observed that the percentage of people with osteoarthritis increased as the age

increases. This observation is similar to that in a study done in south Delhi[8] and at other places[9,10]. OA was more in women compared to men in our study (54% vs. 46% 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 study done by Iqbal MN et al also observed that OA was more in women (74%) compared to men (26%)[11]. A similar observation was also made in a study done by Sharma MK et al[10] 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. However this observation differs from that made in a study by Dr David T Felson et al. This study observed that before age of 50, men were affected more while after age of 50 years women were more affected[12]. Family history of OA was present in 30% of our study subjects. A study by Mangat G et al also reported presence of family history in only few of their patients 13.7%[13]. Majority of our study subjects 50% were obese. Mean BMI was 28.44± 8.68 kgm-2. Mean BMI was also found to be high 28.09 plus-minus 4.43 in a study done by Mangat G et al[13]. Also a study done by Iqbal MN et al observed that mean BMI was high 29.43 ±7.84 in OA cases[11].

In our study most men had more occupational knee bending compared to women (35.29% vs. 24.24%) This can be due to the fact that most of the women in our study were homemakers. A study done by Cooper C et al found that occupational knee bending is a positive risk factor for development of OA knee. The odds of getting OA with increased occupational knee bending were significantly more than for those who had no knee bending. The odds ratio varied from 1.2 to 6.9 for different types of knee bending[14]. In our study, history of knee injury preceding the OA was found in only 16% study subjects. This was in contrast to the observations made by Trivedi et al who observed that knee injury was present in 63.3% in patients with OA. Their study also found that the odds of getting OA after knee injury are 4.54 times than without any knee injury[15].

Limitations of study:

As it is a single centre study with a relatively small study population, results cannot be generalised to the entire population.

Conclusion:

OA is a major public health problem especially in people after the age of 50 years. In our study we observed that there is relationship between age, sex and BMI with OA. Family history, occupational knee bending and history of knee injury were less prevalent in our study. 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.

Acknowledgement:

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