Original Research Article

Risk Factors Of Osteoarthritis Knee-A Hospital Based Cross-Sectional Study

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Abstract

Introduction: Osteoarthritis (OA), commonly known as osteoarthrosis, is a long-term chronic disability disease characterized by the deterioration of the cartilage in joints which results in bones rubbing together and creating stiffness, pain, and impaired movement. About 100 million people suffer from OA, and it is ranked as the eighth leading cause of disability. Worldwide estimates are that 9.6% of men and 18.0% of women aged over 60 years have symptomatic osteoarthritis.**Materials and Methods:** A hospital-based cross-sectional study was carried out for a period of six months from January 2020 to June 2020.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 were recorded on a standardized predesigned and a pre-tested questionnaire.**Results:** A total of 204 subjects were enrolled in the study, of whom 70 (34.3%) were males, and 134 (65.7%) were females. Table no. 1 shows that the majority of them, 52 (25.5%), were in the age group of 55-59 years. Only a quarter of study subjects, 52 (25.5%), had a positive family history of OA. Of these, men (37.1%) had a higher percentage of family history compared to women (19.4%). This difference was not statistically significant (x^2=3.81 at df=1 and p>0.05). Most of the women, 110 (82.1%), were homemakers, while the majority of the men in study 34 (48.6%) were unskilled workers. Most of the study subjects, 192 (94.2%), belonged to the Hindu religion. 152 (74.5%) of the study subjects were literates. Most of them belonged to the nuclear type of family 130 (63.7%).**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 a 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.

Keywords: Osteoarthritis, BMI, arthroplasty

Introduction

Osteoarthritis (OA), commonly known as osteoarthrosis, is a long-term chronic disability disease characterized by the deterioration of the cartilage in joints which results in bones rubbing together and creating stiffness, pain, and impaired movement[1]. About 100 million people suffer from OA, and it is ranked as the eighth leading cause of disability. Worldwide estimates are that 9.6% of men and 18.0% of women aged over 60 years have symptomatic osteoarthritis[2]. About 80% of those with osteoarthritis will have limitations in movement, and 25% cannot perform their major daily activities of life. OA commonly affects middle-aged and elderly, but as a result of injury or overuse of joints, it may begin earlier[3]. The major risk factor of OA is age and is also associated with both modifiable and nonmodifiable factors like obesity, lack of exercise, genetic predisposition, occupational injury, trauma, and gender[4].Oxidative damage, thinning of cartilage, muscle weakening are the individual factors that show the relationship between age and OA. Also, with increasing age, the basic cellular mechanism maintaining the tissue homeostasis declines and leads to an inadequate response to stress or joint injury, and results in joint tissue destruction and loss[5]. The prevalence of OA is greater among women than men, and it dramatically increases around the time of menopause because of the decline in the level of estrogen at that time. One of the main mechanisms by which obesity causes knee or hip OA is the increased loading on the joints. Overloading could lead to cartilage breakdown and failure of ligamentous and other structural support. Jobs and occupational activities requiring continuous stair climbing, squatting, kneeling are associated with a high risk of developing OA[6].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. A hospital-based study was carried out with the purpose of assessing the sociodemographic and risk factors of OA among the study population.

Materials and methods

A hospital-based cross-sectional study was carried out for a period of six months from January 2020 to June 2020 . 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 were recorded on a standardized predesigned and a pre-tested questionnaire. The questionnaire focused on the Sociodemographic

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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. The results were analyzed using SPSS software version 20. Chi-square tests, ratios, and proportions were used.

Results

A total of 204 subjects were enrolled in the study, of whom 70 (34.3%) were males, and 134 (65.7%) were females. Table no. 1 shows that the majority of them, 52 (25.5%), were in the age group of 55-59 years. Only a quarter of study subjects, 52 (25.5%), had a positive family history of OA. Of these, men (37.1%) had a higher percentage of family history compared to women (19.4%). This difference was not statistically significant (x^2=3.81 at df=1 and p>0.05). Most of the women, 110 (82.1%), were homemakers, while the majority of the men in study 34 (48.6%) were unskilled workers. Most of the study subjects, 192 (94.2%), belonged to the Hindu religion. 152 (74.5%) of the study subjects were literates. Most of them belonged to the nuclear type of family 130 (63.7%).

Table 2 also shows that more than four-fifths of the study subjects, 164 (80.4%), were involved in a moderate level of physical activity. It was observed in the study that occupational knee bending was more commonly present in men. This risk factor was present in four out of every ten men while it was observed in less than a quarter of women. This difference was, however, not statistically significant.The history of knee injury is another important risk factor that was studied. It was seen that most of our study subjects, 170 (83.3%), had no history of a knee injury. The history of knee injury was almost equally distributed among both sexes.

Table 1: Sociodemographic profile of study subjects

Age (In years)	Sex		Total
	Male	Female	
	No (%)	No (%)	No (%)
40-44	2(2.9)	10 (7.5)	12 (5.9)
45-49	8 (11.4)	26 (19.4)	34 (16.7)
50-54	16 (22.9)	24 (17.9)	40 (19.6)
55-59	18 (25.7)	34 (25.4)	52 (25.5)
>/=60	26 (37.1)	40 (29.9)	66 (32.4)
Family History			
Present	26 (37.1)	26 (19.4)	52 (25.5)
Absent	44 (62.9)	108 (80.6)	152 (74.5)

Table 2: Distribution of Risk Factors vs. Sex of study subjects

Body Mass Index	Sex		Total
	Male	Female	
	No (%)	No (%)	No (%)
Underweight	2 (2.9)	0	2 (1.0)
Normal	8 (11.4)	16 (11.9)	24 (11.8)
Overweight	36 (51.4)	28 (20.9)	64 (31.4)
Obese	24 (34.3)	90 (67.2)	114 (55.9)
Physical Activity			
Sedentary	8 (11.5)	30 (22.3)	38 (18.6)
Moderate	32 (88.6)	102 (76.1)	164 (80.4)
Strenuous	0	2 (1.5)	2 (1.0)
Occupational Knee Bending			
Present	28 (40.0)	32 (23.9)	60 (29.4)
Absent	42 (60.0)	102 (76.1)	144 (70.6)
Knee Injury			
Present	10 (14.3)	24 (17.9)	34 (16.7)
Absent	60 (85.7)	110 (82.1)	170(83.3)

Discussion

In our study, it was observed that the percentage of people with osteoarthritis increased as they aged.Increases. This observation is similar to that in a study done in South Delhi and at other places. 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 the higher prevalence of obesity among women in general. A study was done by Iqbal MN et al. also observed that OA was more in women (74%) compared to men (26%) . A similar observation was also made in a study done by Sharma MK et al., which was 70.1% vs. 41.6%[7]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 the age of 50, men were affected more, while after the age of 50 years, women were more affected. Family history of OA was present in a few 26/102 (25.5%) of our study subjects. A study by Mangat G et al. also reported the presence of family history in only a few of their patients 41/300 (13.7%)[8]The majority of our study subjects 114/ 204 (55.9%) were obese. Mean BMI was 28.44± 8.68 km-2. Mean BMI was also found to be high 28.09 plus-minus 4.43 in a study done by Mangat G et al. Also, a study done by Iqbal MN et al. observed that mean BMI was high 29.43±7.84 in OA cases.In our study, most men had more occupational knee bending compared to women (40% vs. 23.9%). 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 the 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[9].The odds ratio varied from 1.2 to 6.9 for different types of knee bending. In our study, a history of knee injury preceding the OA was found in only 34/204 (16.7%) study subjects. This was in contrast to the observations made by Trivedi et al., who observed that knee injury was present in 63.3% of 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[10,11].

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 a 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.

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