Original Article

PREVALENCE AND PATTERN OF OSTEOARTHRITIS OF THE KNEE AT NATIONAL ORTHOPAEDIC HOSPITAL ENUGU.

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ABSTRACT

OBJECTIVES: To determine the prevalence of osteoarthritis of the knee and the risk factors associated with its development at National Orthopaedic Hospital Enugu.

DESIGN: Cross sectional descriptive study.

SETTING: A regional orthopeadic centre in Nigeria

SUBJECTS: Two thousand three hundred and ten adults aged 30 years and above.

RESULTS: One hundred and fifty one patients were diagnosed as having symptomatic osteoarthritis of the knee with a male to female ratio of 1:2.6. The prevalence of osteoarthritis increased with advancing age. It peaked at 70-79 years age group. The prevalence of osteoarthritis of the knee was noted to be higher in the female sex, house wives and farmers. The overall prevalence of knee osteoarthritis was 6.5%.

Multiple risk factors played roles in the aetiology of osteoarthritis of the knee. The majority of the patients were obese. Obesity was noted in 49.7% of the patients while 24.5% of the patients reported having previous knee injuries. A positive family history of osteoarthritis of the knee was noted in 17.2% of the patients while it was noted to be idiopathic in 4.6% of the patients.

CONCLUSION: The prevalence of osteoarthritis of the knee at National Orthopaedic Hospital Enugu is 6.5%. Prevalence was higher in the female sex, house wives and farmers. Obesity was the major risk factor while valgus knee was the commonest presentation.

KEYWORDS: Osteoarthritis of the knee, prevalence, risk factors, Enugu.

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INTRODUCTION

Osteoarthritis is the most common disease of joints in adults.[1] It is a common health problem in Nigeria and accounts for a good number of referrals to the outpatient clinic. It is an important cause of knee pain, stiffness and occasionally some adults are seen with neglected gross deformities of the knees.[2,3] Many patients with knee pain have limitations in function which compromise quality of living.[4]

The prevalence of osteoarthritis of the knee varies, depending on the characteristics of the population being studied and disease definition. The results of prevalence rates also vary depending on the method of evaluation. In a systematic review by Osteoarthritis Research Society International (OARSI), the prevalence of radiographic diseases ranged from 4.3% to 78.6% whereas rates were lower for symptomatic disease (3.2-13.5%).[5] In Nigeria, the prevalence of symptomatic osteoarthritis of the knee has been reported as 19.6%.[6] The etiology of osteoarthritis is multi-factorial and can be considered the product of an inter-play between systemic and local factors. Old age, female gender, obesity, previous knee injury, occupation, muscle weakness and joint laxity all play roles in the development of osteoarthritis especially in the weight bearing joints.[2,3,7]

We determined the prevalence and pattern of knee osteoarthritis among the different age groups that presented to our centre.

PATIENTS AND METHODS

This study was done at National Orthopaedic Hospital, Enugu. The official approval for this study was obtained from the Medical Research Ethics Committee of the hospital. Informed consent to research was obtained from the patient before data collection. All new patients aged 30 years and above presenting with

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symptomatic osteoarthritis of the knee and with radiographic evidence of osteoarthritis of the knee were included in the study. All other patients having arthritis other than osteoarthritis were excluded. Patients at presentation were asked if they had knee pain. Patients who reported having knee pain which has persisted for most days of the previous month were physically examined. The clinical criterion of the American College of Rheumatology was used for the diagnosis of knee osteoarthritis which included presence of knee pain and three other parameters.[8] The study population consisted of all new patients that presented at the out-patient department who had met the inclusion criteria. It was a prospective study over a period of eighteen months. At presentation, the age, occupation, sex of the patient was noted. History of knee pain, stiffness and functional limitation were obtained. The predisposing factors were determined where they existed. The height and weight of all patients were measured using Su RGZ-120 pointer height and weight scale (China). The knee examination included assessment of knee swelling, joint crepitus, angular deformities and range of motion of the knee. Radiological imaging of the knees included X-rays in the antero-posterior, lateral and skyline views. Radiological grading of the joints was based on the criteria of Kellgreen and Lawrence which included presence of osteophytes, joint space narrowing and bony end deformity.[9] A proforma was administered to the patients. The data collected included demographics, anthropometry and the likely risk factors. Also included were the characteristics of the symptoms at presentation and knee examination findings. Others were radiographic findings at presentation.

The results were presented in frequency tables, bar charts and pie charts as may be indicated. The data collected were analyzed using the statistical packaging for social sciences version 19 (SPSS Inc Chicago Illinos). Level of statistical significance was determined using the chi-square test and t-test with $P< 0.05$ considered as significant.

RESULTS

A total of 2310 new patients presented to the orthopaedic clinics between April 2013 and March 2014. One thousand, one hundred and seventy seven (51%) were males while 1133 (49%) were females. One hundred and fifty one patients were recruited in the study. The prevalence of symptomatic knee osteoarthritis over the 12 months period was 6.5% (Table 3).The prevalence of knee osteoarthritis increased considerably from 11.3% in age group 50-59 years to 14.8% in age group 70- 79 years (Table 3). It increased progressively with each decade up to the 7th decade. The Chi square test of independence showed that age is related to prevalence (p=0.000).

Table 3: Prevalence of knee osteoarthritis in different age groups

Age group	Number of patients surveyed	Number of patients with knee osteoarthritis	Prevalence of knee osteoarthritis within category (%)
- - -	958	10	1.0
40 – 49	420	25	6.0
50 – 59	452	51	11.3
60 – 69	300	41	13.7
70 – 79	135	20	14.8
80 – 89	45	4	8.9
Total	3210	151	6.5

X2 = 104.7, df= 5, p=0.000

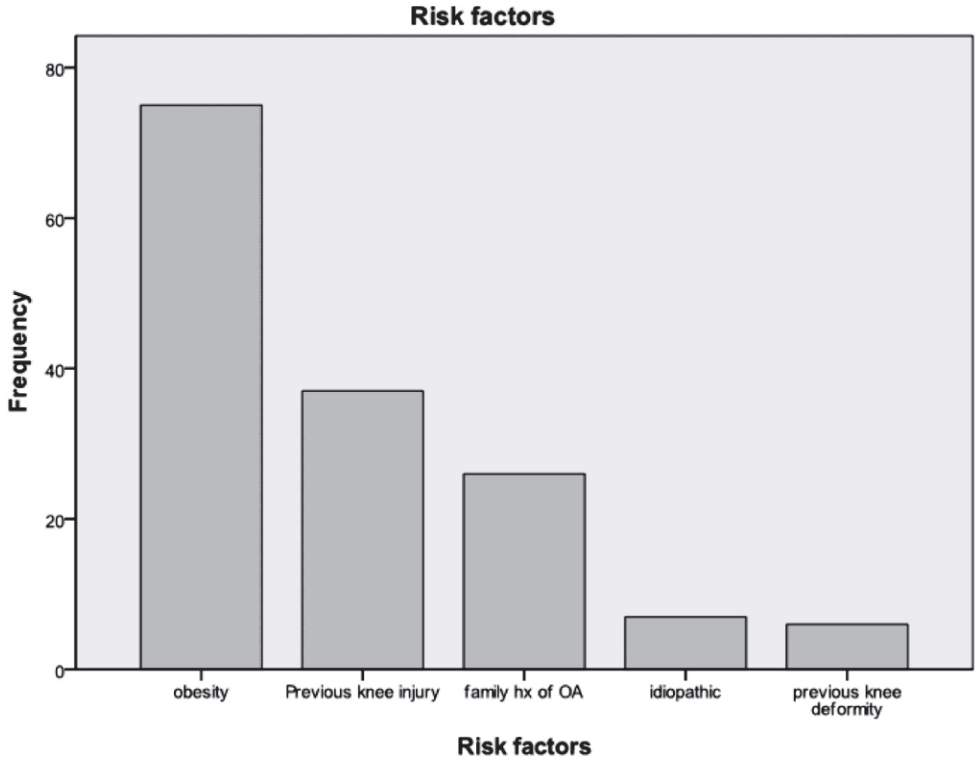
The prevalence was 3.5% for males and 9.6% for females (Table 4). The occupational category with the highest prevalence of knee osteoarthritis was the house wives(25.4%) and this was followed by the farmers (11.2%) (Table 4).The Chi square test of independence showed that occupation is related to prevalence (p=0.000).

Table 4: Prevalence of knee osteoarthritis by socio-demographic categories

Socio demographic variable	Number of patients surveyed	Number of patients with knee osteoarthritis	Prevalence of knee osteoarthritis within category (%)
Gender			
Male	1177	42	3.5
Female	1133	109	9.6
Occupation			
Student	348	5	1.4
Trading	842	52	6.2
House wife	122	31	25.4
Farming	143	16	11.2
Civil servant	647	39	6.0
Others	208	8	3.8

The risk factors were statistically significant (p=0.006) with obesity being the most significant factor. Obesity was noted in 75(49.7%) patients of the study population (Figure 1). Other risk factors identified included previous knee injury in 37 (24.5%) patients, family history of osteoarthritis in 26(17.2%) patients, previous knee deformities in 6(4.0%) patients. It was noted to be idiopathic in 7(4.6%) patients.

Figure 1: Risk factors in osteoarthritis of the knee



All the patients evaluated presented with knee pain(100%). Majority of the patients (78.8%) complained of crepitus in the knee. Other presentations were knee stiffness(55%), functional limitations (57%), restricted joint movement (45.7%), joint enlargement (35.1%). Angular deformity was seen in 95(62.9%) patients of the study population. This was in the form of genu valgus and varus deformities. Genu valgus deformity was noted in 57(60%) of the 95patients. The radiographs of the knees of the patients clinically diagnosed showed radiographic changes consistent with the disease. Radiographic changes in the tibiofemoral compartment occurred in all the radiographs and were of grade 3 in 51.7% of patients (Figure 3). Grades 2 and 4 were noted in 20.5% and 27.8% of the patients respectively.

DISCUSSION

Osteoarthritis of the knee is more common in the older age group. It affected mostly patients of aged 50-59 years. The prevalence of osteoarthritis increased with advancing age. This is similar to the findings in other studies.[6, 10,11,12] Most adults might have been exposed to one risk factor or the other during their lifetime.

The prevalence of knee osteoarthritis was also noted to be higher in the female sex. A male to female ratio of 1: 2.6 was similar to the findings from other investigations.[2,3,12,13,14,15] The reason for the increased prevalence in the females may be explained by the fact that women generally live longer in our environment. They also receive more attention from their children whenever they are sick. The prevalence of osteoarthritis was found to be more among house wives and farmers. This is similar to the findings in other studies.[3,6,13,16] These are people who engage in frequent knee bending activities. The bending, twisting and frequent awkward posture assumed by the housewives and subsistent farmers are important risk factors in knee osteoarthritis and may be responsible.

The overall prevalence of knee osteoarthritis in this study was at variance to a previous report which stated the prevalence of symptomatic knee osteoarthritis in a community based study in our environment at 19.6%.[6] The lower prevalence noted in this study might be explained by the fact that it was a hospital based study. Poverty, illiteracy and poor access to health care limit a greater number of patients having knee osteoarthritis from presenting to the hospital for care. They may seek alternative treatment to their problems and may also attribute osteoarthritis to old age. However, in a hospital based study in North Staffordshire that reviewed 146 cases and control, the prevalence of knee osteoarthritis in those registered with the practice was 5.5%.[17] The exact cause of knee osteoarthritis is not known. Multiple risk factors may play vital role in the occurrence of this disorder.[18] A higher percentage of the patients with knee osteoarthritis were obese. Obesity and excessive weight have long been recognized as potential risk factors for osteoarthritis of the knee.[15,16] Obesity causes increased joint loading. This increases the stress across the joint and could possibly hasten the breakdown of cartilage.[19]

The percentage of patients with previous knee injury was relatively higher than 13.9% reported by Gelber et al.[20] Akinpelu et al however reported previous knee injury in 42.8% of their patients.[12] Adolescents and young adults with traumatic knee injury are at increased risk for osteoarthritis in their later years.[20] Joint injury compromises the structural integrity of articular cartilage, subchondral bone and joint capsule. It can lead to cartilage breakdown and trabecular microfracture.

Knee pain has consistently been found in all patients studied with osteoarthritis of the knee.[2,3,12] All the patients in this study presented with knee pain. Pain is aggravated by activities involving increased stress at the knee joint and relieved with rest. In severe cases, pain was noted to occur at rest or at night. The percentage of patients with knee stiffness in this study is comparable to 50.6% reported by Ebong.[3] The stiffness was noted mostly in the morning. It usually resolved following physical activities but in some cases recurred in the day during periods of inactivity. Crepitus may be noted in knee osteoarthritis and the finding in this study is comparable to 72% reported by a study in Nigeria.6 Movement of a joint affected by osteoarthritis may cause a crackling or grating sensation. This sensation may occur because of roughening of the normally smooth surfaces inside the joint. Joint enlargement may be seen in patients with knee osteoarthritis and the report in this study is also comparable with 30% and 32.1% reported in other studies.[2,3] However, the percentage of patients with angular deformity of the knee was higher than 25.6% and 23.5% reported in other studies.[2,3] Genu valgus deformity was relatively higher. The reason for the increased percentage of genu valgus deformity could not be explained by this study. Ebong in a study at Ibadan also reported that valgus deformity was seen in 22 knees while genu varus was noted in 3 knees. He was not able to categorically state if valgus deformity was the cause or the result of the knee degeneration. The preponderance of genu valgus in our environment is in variance with reports in other parts of the world.[21,22] Shiozaki in Japan reported that almost all of the knees with radiographic osteoarthritis in an epidemiological study exhibited a varus deformity.[22]

CONCLUSION

The prevalence of osteoarthritis of the knee at National Orthopaedic Hospital Enugu is 6.5%. Prevalence was higher in the female sex, house wives and farmers. Obesity was the major risk factor while valgus knee was the commonest presentation.

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