



STUDY ON PREVALENCE OF OSTEOARTHRITIS IN OUR POPULATION

Orthopedics

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ABSTRACT

Introduction: Osteoarthritis (OA) is one of the most prevalent condition 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 because of the knee OA and/or hip OA. **Objectives of the study:** The aim and objectives of our study include, 1) To find out the prevalence of knee osteoarthritis and 2) to study pattern of presentation of symptoms in subjects with OA. **Materials and Methods:** A prospective cross-sectional study was conducted at our hospital OPD Orthopaedics from December 2019-June 2020 in those subjects aged more than 18 years who were attending the OPD and those willing to participate in the study. **Statistical Analysis:** A questionnaire was prepared containing sociodemographic profile, dietary habits, ACR criteria and possible risk factors. SE status was assessed using Udaï Pareek Scale. The questionnaire was validated by translating into local language. Statistical analysis was done using SPSS 16. **Results:** In our study, out of the 500 subjects 300 were willing to participate in the study. Out of 300 subjects 124 were females and 176 were males representing 41.3% and 58.6% respectively. Out of 300 subjects 164 subjects complained of knee pain representing 54.6%. Out of 164 subjects presenting with knee pain 96 of them fitted into ACR criteria of knee OA. This accounts for the overall prevalence of about 32% in our population. **Conclusion:** In this study, we found that the prevalence of knee OA was unexpectedly as high as 32%. Higher age, female sex and activities involving kneeling or squatting appear to be predictive of knee OA independently. Regular fruit and vegetable intake and farming as an occupation provide some protection against knee OA development.

KEYWORDS

Osteoarthritis, risk factors, prevalence, knee osteoarthritis.

INTRODUCTION

Osteoarthritis (OA) is one of the most prevalent condition 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 because of the knee OA and/or hip OA.¹ 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.²

Patients with OA are at a higher risk of death compared with the general population by OR of 1.54. History of diabetes, cancer, or cardiovascular disease and the presence of walking disability are major risk factors. Other risk factors include obesity, occupation, dietary factors and physical activity. Repetitive joint loading through kneeling and squatting have shown to be associated with increased risk of OA. Excess mortality is observed for all diseases with specific causes of death but is particularly pronounced for cardiovascular complications. Knee OA is more important not only for its high prevalence rate compared with other types of OA but also for its presentation at earlier age groups particularly in younger age groups of obese women.³⁻⁵

The incidence of knee OA increases by age and further increase with longer lifetime and higher average weight of the population. Pain and other symptoms of OA may have a profound effect on quality of life affecting both physical function and psychological parameters. Knee OA is not a localized disease of cartilage alone but is considered as a chronic disease of the whole joint, including articular cartilage, meniscus, ligament, and peri-articular muscle that may result from multiple pathophysiological mechanisms. It is painful and disabling disease that affects millions of patients.⁶

Evaluating the risk factors associated with osteoarthritis is important to understand the disease and its pattern so that the early diagnostic modalities and therapeutic interventions can be undertaken to minimize the morbidity among these subjects. Hence we have taken up this study to know prevalence and pattern of symptoms presentation in our population.

AIM AND OBJECTIVES OF THE STUDY:

The aim and objectives of our study include, 1) To find out the prevalence of knee osteoarthritis and 2) to study pattern of presentation of symptoms in subjects with OA.

MATERIALS AND METHODS:

A prospective cross-sectional study was conducted at our hospital OPD Orthopaedics from December 2019-June 2020 in those subjects

aged more than 18 years who were attending the OPD and those willing to participate in the study. Subjects with above knee amputation, paraplegia, hemiplegia or monoplegia were excluded from the study. ACR criteria using history and clinical examination was used to diagnose Knee Osteoarthritis. A questionnaire was prepared containing sociodemographic profile, dietary habits, ACR criteria and possible risk factors. SE status was assessed using Udaï Pareek Scale. The questionnaire was validated by translating into local language. Statistical analysis was done using SPSS 16. The results were expressed in mean and SD and frequency.

RESULTS:

In our study, out of the 500 subjects 300 were willing to participate in the study. Hence we included 300 subjects after taking their consent. Out of 300 subjects 124 were females and 176 were males representing 41.3% and 58.6% respectively. Out of 300 subjects 164 subjects complained of knee pain representing 54.6%. Out of 164 subjects presenting with knee pain 96 of them fitted into ACR criteria of knee OA. This accounts for the overall prevalence of about 32% in our population.

Table 1: Shows the symptom presentation of subjects with Knee OA as per ACR criteria

Symptoms	Percentage (total no 96/300)
Pain in knee	96 (100%)
Morning stiffness less than 30 minutes	76 (79.1%)
Crepitus on active movement	45 (46.8%)
Tenderness over knee	49 (51%)
Bony enlargement	08 (8.3%)
Palpable warmth over knee	06 (6.25%)

It is evident from the table 1 that all the subjects presented with knee pain, 79% had morning stiffness <30 minutes, 46.8% had crepitus on active movement, 51% had tenderness over knee, 8.35 had bony enlargement and 6.25% had palpable warmth over knee.

Our study showed lower socio-economic status, people with BMI > 27.5 kg/m², doing activity involving kneeling or squatting as part of their occupation, farmers being significantly associated with high prevalence of knee OA. The people who were taking fruits or vegetables at least three servings a day were associated with decreased risk of knee OA. No association was found between smoking, alcohol consumption and knee OA.

DISCUSSION AND CONCLUSION:

Knee osteoarthritis (OA) is a common progressive multifactorial joint disease and is characterized by chronic pain and functional disability.

Knee OA accounts for almost four fifths of the burden of OA worldwide and increases with obesity and age. 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. Many researchers have shifted their focus to the prevention and treatment in the early stage of the disease. Accordingly, it is essential to understand the prevalence, incidence, and modifiable risk factors of knee OA for providing effectively preventive strategies.⁷⁻¹⁰ The prevalence of OA is available for the USA and European populations, but there are scarce studies done in other regions. In 1990, it was the 10th leading cause of nonfatal diseases contributed 2.8% years of disability. An estimated prevalence of symptomatic OA is 18% in females and 9.6% in men. In global burden of diseases, in 2000, it was the 4th leading cause of years lived with disability (YLD) leading to 3% YLD.¹¹⁻¹³

Literature till now showed that gender plays a major role in osteoarthritis development. Women are mostly affected than men. Present study also showed the same result with a high prevalence among females and three times the propensity of having knee-OA as compared to males. This could be explained by its multifactorial association (hormonal factors, anatomical factors like narrow femur, thinner patella in female) as reported in other studies. Obesity is strongly associated with knee OA.

Many surveys had estimated it and several hypotheses behind this were also created. One hypothesis subjects that, "abdominal fat release some pro-inflammatory factors like interleukin-6 (IL-6), C-reactive protein (CRP) and plasminogen activator inhibitor type-1 (PAI-1), which adversely affect the joints and lead to OA. Current study also showed higher prevalence among population with high BMI (>27.5 kg/m²). But Several studies had shown strong relationship between occupation and knee OA. Occupational activities that demand physical load on joint like squatting, kneeling, weight lifting etc. are likely to contribute knee OA.¹⁴⁻¹⁵ In this study, we found that the prevalence of knee OA was unexpectedly as high as 32%. Higher age, female sex and activities involving kneeling or squatting appear to be predictive of knee OA independently. Regular fruit and vegetable intake and farming as an occupation provide some protection against knee OA development.

REFERENCES:

1. Grazio S, Balen D. Obesity: Risk factor and predictors of osteoarthritis. *Lijec Vjesn.* 2009;131:22-6.
2. Altman RD. Early management of osteoarthritis. *Am J Manag Care.* 2010;16 (Suppl Management): S41-7.
3. Bliddal H, Christensen R. The treatment and prevention of knee osteoarthritis: a tool for clinical decision-making. *Expert Opin Pharmacother.* 2009;10:1793-804.
4. Pal CP, Singh P, Chaturvedi S, Pruthi KK, Vij A. Epidemiology of knee osteoarthritis in India and related factors. *Indian journal of orthopaedics.* 2016 Sep;50(5):518.
5. Plotnikoff R, Karunamuni N, Lytyak E, Penfold C, Schopflocher D, Imayama I, Johnson ST, Raine K. Osteoarthritis prevalence and modifiable factors: a population study. *BMC Public Health*
6. Hayami T. Osteoarthritis of the knee joint as a cause of musculoskeletal ambulation disability symptom complex (MADS) *Clin Calcium.* 2008;18:1574-80.
7. HunterDJ, Bierma-Zeinstra S. Osteoarthritis. *Lancet* 2019;393(10182):1745-59.
8. Vos T, Allen C, Arora M, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 310 diseases and injuries, 1990-2015: a systematic analysis for the global burden of disease study 2015. *Lancet* 2016;388(10053):1545-602.
9. Bannuru RR, Osani MC, Vaysbrot EE, et al. OARSI guidelines for the non-surgical management of knee, hip, and polyarticular osteoarthritis. *Osteoarthritis Cartilage* 2019;27(11):1578-89.
10. Glyn-Jones S, Palmer AJ, Agricola R, et al. Osteoarthritis. *Lancet* 2015;386 (9991): 376-87.
11. Davis MA, Ettinger WH, Neuhaus JM, Hauck WW. Sex differences in osteoarthritis of the knee. The role of obesity. *Am J Epidemiol.* 1988;127:1019-30.
12. Felson DT. Epidemiology of hip and knee osteoarthritis. *Epidemiol Rev.* 1988;10:1-28.
13. Symmonds D, Mathers C, Pflieger B. Global Burden of Osteoarthritis in year 2000: Global burden of disease 2000 study. *World health report.* 2002;5
14. Sanghi D, Mishra A, Sharma AC, Raj S, Mishra R, Kumari R, Natu SM, Agarwal S, Srivastava RN. Elucidation of dietary risk factors in osteoarthritis knee—a case control study. *Journal of the American College of Nutrition.* 2015 Jan 2;34(1):15-20.
15. Zhang Y, Zeng C, Wei J, Li H, Yang T, Yang Y, Deng ZH, Ding X, Lei G. Associations of cigarette smoking, betel quid chewing and alcohol consumption with high-sensitivity C-reactive protein in early radiographic knee osteoarthritis: a cross-sectional study. *BMJ open.* 2016 Mar 1;6(3):e010763.