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An experimental study on knee osteoarthritis patients

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Abstract

The prevalence of knee osteoarthritis is much lower in Asians or in black people. Few population-based studies regarding the incidence of knee osteoarthritis were found, with the incidence of knee osteoarthritis being higher in different age group. However, strict comparisons among these studies are limited, because the definition of the incidence of knee osteoarthritis is not the same for each study. A few risk factors for knee osteoarthritis were established, such as female gender and obesity. Also several cross sectional studies have found that the presence of a previous knee injury is significantly associated with the incidence of knee osteoarthritis. One of the limitations in previous studies is the definition of knee osteoarthritis. The most popular grading system for knee osteoarthritis is Kellgren–Lawrence classification. The data for the study was undertaken to determine osteoarthritis among the population in Chennai, Tamil Nadu, India. Frequencies and percentages were calculated to find the prevalence of osteoarthritis. For the purpose of the study a total of 207 female subjects aged (30-80) were engaged. The present study reports that the knee osteoarthritis among the sedentary women of the subjects were found to have a significant level ($p < 0.05$) of osteopenia 2.92% and 2.36% of osteoporosis. Among the study participants 54.7% were certainly neither osteoporotic nor osteopenia. A total of 115 subjects low bone mineral density screened of which 12.17% of subjects were belonging to the age group of 30-40 years and 18.26% of subjects were falling under 40-50 years. The maximum number of subjects in the study population that is 29.57 was found to be between 50- 60 years. In the age group of 60-70 years, there are 26.09% subjects and 13.91% of subjects in 70-80.

Keywords: Knee osteoarthritis patients, osteopenia, age group

Introduction

Osteoarthritis (OA) is a type of joint disease that results from breakdown of joint cartilage and underlying bone (Hooper *et al.* 2014) [3]. It is generally defined as a slowly progressive monoarticular disorder of obscure aetiology (Porrino *et al.* 2017) [6]. Osteoarthritis (OA) is the most common musculoskeletal disorder affecting the synovial joints. Knee osteoarthritis: a condition in which the natural cushioning between joints (cartilage) wears away, resulting in pain, swelling, stiffness, reduction in range of movement and, sometimes, the formation of bone spurs. Progressively smaller joint space suggests worsening of Osteoarthritis. Radiographs showed increased joint space width and decreased subchondral sclerosis with joint distraction. (Fragomen *et al.* 2014) [2].

Factors that can increase the risk of osteoarthritis include

The risk of osteoarthritis increases with age. Women are more likely to develop osteoarthritis. Carrying extra body weight contributes to osteoarthritis in several ways, and the more weigh - greater the risk. Increased weight adds stress to weight-bearing joints, such as hips and knees. Also, fat tissue produces proteins that can cause harmful inflammation in and around the joints. Injuries occurred while playing sports or from an accident. Even injuries that occurred many years ago and seemingly healed can increase the risk of osteoarthritis. If the job or a sports that played makes repetitive stress on a joint. Some people may have paras and valgus bone deformities after osteoarthritis.

Reason for Osteoarthritis Increase

Osteoarthritis primarily affects the elderly population. It is a major cause of disability in older

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adults worldwide. According to World Health Organization (WHO) 9.6% of men and 18.0% of women aged over 60 years have symptomatic osteoarthritis worldwide. 80% of those with osteoarthritis have limitations in movement, and 25% cannot perform their major daily activities of life. (Woolf & Pfleger, 2003) [8]. Osteoarthritis is the second most common rheumatologic problem and it is the most frequent joint disease with a prevalence of 22% to 39% in India (Chitragar & Shaikh, 2016) [1]. Osteoarthritis is more common in women than men. Nearly, 45% of women over the age of 65 years have symptoms while 70% of those over 65 years show radiological evidence of OA (National Health Portal -INDIA). So the researcher has decided to undertake the project for proper guidance and suggestions to avoid the Total Knee replacement and to help the society. This kind of knowledge can be helpful to physiologist, physiotherapist and doctors.

Selection of Area and Subject

For the purpose of the study, female subjects were selected from Spot hospital, chennai to participate in this cross-sectional investigation and their age ranged between 30-80 years. Knee radiographies of patients were taken and classified according to Kellgren-Lawrence classification. For the purpose of the study, from the above, 207 subjects were randomly selected as subjects and their age ranged between 30-80 years.

Selection of Tools

Assessment of Osteoarthritis

Grading of joint osteoarthritis by Kellgren and Lawrence uses plain radiograph to assess the extent of degenerative disease. Originally, the authors assessed degenerative joint disease on a single x-ray view: AP for knees. (Schiphof D, Boers *et al.* 2008, Kellgren & Lawrence, 1957) [7, 4]. The data are presented using Frequencies and percentages

Result and Discussion

From the below table it is evident that 9.66% of subjects were belonging to the age group of 30- 40 years and 15.46% of subjects were falling under 40-50 years. The maximum number of subjects in the study population that is 42.51% was found to be between 50-60 years. In the age group of 60-70 years, there are 21.74% subjects and 10.63% of subjects in 70 – 80 years.

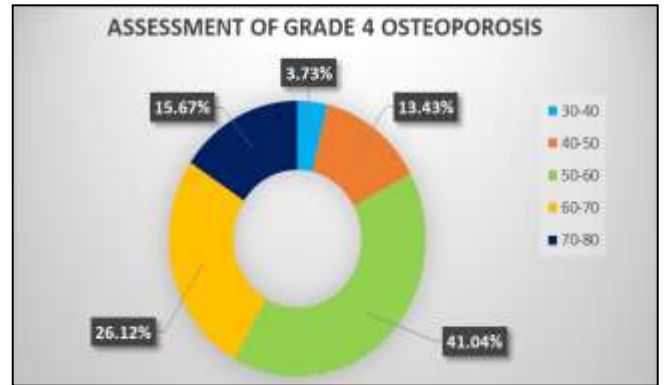
Table 1: Distribution of Age among the Selected Subjects

Age	Frequency	Percentage
30-40	20	9.66
40-50	32	15.46
50-60	88	42.51
60-70	45	21.74
70-80	22	10.63
Total	207	100.00

Table 2: Assessment of Grade 3 Osteoarthritis

Age	Grade 3	Percentage
30-40	5	3.73
40-50	18	13.43
50-60	55	41.04
60-70	35	26.12
70-80	21	15.67
Total	134	100.00

From the above table 2, it is sensibly understood that (n= 134) of the subjects were found with Grade 3 – Osteoarthritis. It shows that 3.73% of subjects were belonging to the age group of 30-40 years and 13.43% of subjects were falling under 40-50 years. The maximum number of subjects in the study population that is 41.04% was found to be between 50-60 years. In the age group of 60-70 years, there are 26.12% subjects and 15.67% of subjects in 70 -80 years.



Assessment of Grade 4 Osteoporosis

Conclusion

The study report shows that grade 3- moderate stages of Osteoarthritis and this can develop into grade 4 – severe arthritis unless prevention methods are put in place. According to the methodology of the WOMAC, pain domains estimate the severity of pain, indicating that joint space narrowing may be strongly associated with pain. In contrast, physical function domains assess difficulties in activity of daily living (ADL), indicating that osteophytosis may be mainly associated with ADL, particularly in women. In the future, to find new risk factors or markers for knee OA, joint space narrowing and osteophytosis should be assessed separately using a fully automatic system. The disease affects all age groups and both sexes. There was significant trend of decreasing activity with increasing age. The age processes increases the influence on the osteoarthritis.

Reference

1. Chitragar DD, Shaikh SI. Variables associated with knee osteoarthritis in a tertiary care hospital of Tamil Nadu, India. *Natl J Med Res.* 2016;6(2):119-123.
2. Fragomen AT, McCoy TH, Meyers KN, Rozbruch SR. Minimum distraction gap: how much ankle joint space is enough in ankle distraction arthroplasty?. *HSS Journal@.* 2014;10(1):6-12.
3. Hooper L, Bowen CJ, Gates L, Culliford D, Arden NK, Edwards CJ. Comparative Distribution of Ultrasound-Detectable Forefoot Bursae in Patients with Osteoarthritis and Rheumatoid Arthritis. *Arthritis Care & Research.* 2014;6(6):869-877.
4. Kellgren JH, Lawrence JS. Radiological assessment of osteo-arthrosis. *Ann. Rheum. Dis.* 1957, Dec;16(4):494-502.
5. Petersson I, Boegard T, Saxne T, Silman A, Svensson B. Radiographic osteoarthritis of the knee classified by the Ahlb?ck and Kellgren & Lawrence systems for the tibiofemoral joint in people aged 35-54 years with chronic knee pain. *Ann Rheum Dis.* 1997 Aug;56(8):493–6.
6. Porrino J, Carlson B, Kani KK, Mulcahy H, Wyatt A, Chew FS. Disappearing acts: the many causes of rapidly

destructive arthritis. *Current Problems in Diagnostic Radiology*. 2017;46(1):63-73.

7. Schiphof D, Boers M, Bierma-Zeinstra SMA. Differences in descriptions of Kellgren and Lawrence grades of knee osteoarthritis. *Ann. Rheum. Dis.* 2008 Jul;67(7):1034-1036.
8. Woolf AD, Pfleger B. Burden of major musculoskeletal conditions. *Bulletin of the world health organization*. 2003;81(9):646-656.