# Prevalence of osteoarthritis in urban population

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## Introduction

Osteoarthritis is a common chronic condition which is the most crippling disease considered in both developed and under-developed countries [1]. It is characterized by pain and disability which is the consequence of articular cartilage and surrounding tissue damage. Muscle weakness, synovial joint inflammation and articular cartilage damage causes pain which reduces the ability to perform functionally well. It has been estimated that around 2040 approximately 78 million US adults aged 18 or older would have diagnosed by arthritis [2]. Non-specific low back pain and osteoarthritis has considered the most common rheumatologic disorder in the Asia region. In Pakistan, there is 28% prevalence of osteoarthritis in urban areas whereas 25% in rural areas. Large weight bearing joints are mostly affected such as knee joints and hip joints. Of both knee arthritis is more prevalent than hip arthritis. The occurrence of osteoarthritis depends upon gender age sex and other risk factors. Many studies have found positive relation in higher BMI and knee arthritis. Out of all these obesity is still very important factor [3] [4] [5]. Obese females, older adults and people who had knee injury are at higher risk of developing knee arthritis symptoms. Apart from other symptoms one of the major contributing factor is pain which results in reduced physical activity which may also has negative impact on quality of life.

A study which was conducted by Sudo states that higher risk of radiographic knee arthritis is always linked with greater BMI, older age and obese females [6]. A study conducted in Germany of 1250 primary care patients has given the results that most disabling factors which are linked with knee OA were decrease physical functioning of lower limb, social network, BMI, and length of the disease [7]. Literature has reported that most common risk factors which are associated with the development of knee OA were obesity (42.4%), menopause in women (66.7%), history of OA (43.2%), and previous knee injury (19.5%) [8].

A study conducted in 2003 by Al Afraj stated that there is a positive relation between knee arthritis, generalized osteoarthritis and serum uric acid. But another study which was done by Sun et al suggested that there could be a reason of higher serum level of uric acid in the etiology of generalized OA [9] [10]. Whereas different studies have opposed this hypothesis and declared that serum uric acid levels do not fluctuate at different levels of knee OA [11].

The extensive literature search did not show any local study exploring frequency of factors associated with knee osteoarthritis. The results of this study would definitely make a foreground for future studies to be conducted on developing preventive strategies and ultimately reducing

the morbidities and mortalities associated with knee osteoarthritis.

**Methods**

It was a cross sectional study conducted in medicine department of _____and the data was from ____ to _____. The data was limited to the urban population. The margin of error was 5% with confidence interval 95%. The sample was conducted on the bases of inclusion criteria through consecutive sampling technique. The total sample size was 120.

The ethical approval was acquired from the ethical committee of Hospital. Similarly, informed consent was obtained from the participants or attendants before including patients in the current study project.

A written informed consent was given to the participant before recruiting them into the study, everything was explained into their first language. Participants who met the inclusion criteria was included into the study. The inclusion criteria was participants age >40 years, male and female, already diagnosed knee OA on knee x-ray. Patients who were having positive family history of knee oa, haemochromatosis, females with hormonal replacement therapy, hyperparathyroidism, mill workers, jack-hammer operators, Systemic Lupus Erythematosus (SLE) were excluded from the study.

Studies have reported that the factors such as smoking cigars, pipes, cigarillos did not have a positive relation with the association of OA as compared to age, gender, BMI, tobacco cigarettes. [12]

However for current study osteoarthritis factor was considered major for participant's inclusion. The diagnosis was purely based on the clinical and radiological findings reduce joint space, knee pain for most of the days, presence of osteophytes, crepitus on joint movement, morning stiffness for 30 minutes.

Osteoarthritis has defined into three grades on the basis of X-ray findings. In grade I there is uncertain joint space narrowing with viable outgrowing of the margins of the bone. Grade II contains osteophytes and absolute narrowing of the joint space. Whereas grade III moderate multiple osteophytes, definite narrowing of joint space, and some sclerosis and possible deformity of bone ends. Grade IV is having larger osteophytes, and distinct space reduction of the joint, worse sclerosis, and absolute deformity at the ends of bone.

The main variables of the current study were the factors associated with osteoarthritis that include obesity, age, gender, smoking and anemia.

BMI was classified according to WHO as

- Pre obesity---------------- 25-29.99
- Grade I Obesity---------- 30-34.99
- Grade II Obesity--------- 35-39.99
- Grade III Obesity-------- > 40

Smoking was defined as the active smoking of one or more manufactured or hand rolled tobacco cigarettes (or parts there-of) per day [13] [14] [15]. It does not include the smoking of tobacco in cigars, pipes and cigarillos. Anemia was explained as level of hemoglobin below 13 for male and below 12 for females.

All the qualified participants were interviewed by investigator. A questionnaire was given which contains variables such as age, gender, height, BMI, weight diabetes mellitus (DM), hypertension (HTN), dyslipidaemia, ischaemic heart disease (IHD), smoking, grades of osteoarthritis and anaemia.

Data was analyzed in SPSS version 21.

For continuous variables such as age, height, weight, BMI and anaemia was categorized in mean and standard deviations. Categorical variables like gender, obesity, diabetes mellitus (DM), hypertension (HTN), ischaemic

heart disease (IHD), dyslipidaemia and clinical and radiological criteria and severity of osteoarthritis were presented in percentages and proportions.

## Results

The mean age of the sample was $52.38 \pm 9.876$ years. The most persistent co-morbidities in the sample was 68% HTN, 39% DM, 30% dyslipidaemia, 30% IHD and 38% obese patients. A study conducted in 2005 has also shown some smilar results that co morbidities linked with knee arthritis were type II diabetes mellitus (15%), hypertension in (53%), obesity (22%), osteoporosis (21%) and obstructive pulmonary disease (13%) [16].

Obesity, gender, leisure time behaviour, genetic disposition, metabolic syndrome, smoking behaviour and regular practice of extreme sports were found to be associated with KOA. Other, studies have also shown that smoking seems to increase the risk of osteoarthritis. However, the mechanism remains unexplored. Similarly, current study has also revealed that obesity, gender, smoking and old age were associated with KOA [17].

Whereas the current study has shown that osteoarthritis is more prevalent in females out of 120 participants 90 (75%) were females whereas only 30 (25%) were males.

The remarkable difference could be due to limited physical activity, locomotion, social issues especially in our region and because of obese females are more prevalent in general, which is compatible from literature.The study by Abdurhuman S et al in Saudi Arabia found strong association between excess weight and knee Osteoarthritis in females (AOR 3.28, 95% CI 2.07-5.36) than the males (AOR 1.88, 95% CI, 1.24-2.92) [18][19] [20] The prevalence of osteoarthritis in current study was more common in the age group 45-59 years (28%) and then decreased. However, study in China has showed that KOA increases with age, from 1.3% in the 40-49-year-old age group to 13.2% in the 70 plus age

group. This difference may be due to socio demographic differences between the two settings [21] [22].

A study concluded by Umair Khalid in Bahawalpur Pakistan stated that a very significant factor of osteoarthritis in general population is obesity with the percentage of 93.3 who are having knee arthritis. Weight has direct relation on the development of knee arthritis whereas weight reduction is linked with better prognosis and good outcome of the treatment [23] [24].

The main limitation was the selected data from tertiary medical care centers. In the selected area there were only those patients who were in search of treatment of knee arthritis or were asking for follow up. Hence no mild case was reported. Secondly, Study type was not able to debate on credibility and temporal relation.

## Conclusions

The study conclude that females over age 45 years have regular visit to medical care centers because of knee arthritis. The main contributing factors are age, gender, obesity, BMI, and level of HB.

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