

## Preponderance of side of involvement in Osteoarthritis knee

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### Abstract

**Introduction:** Osteoarthritis (OA) is a chronic inflammatory condition affecting the joint. Knee is the most commonly involved joint of body in osteoarthritis. Osteoarthritis may occur primarily in knee joint or it may be due to some underlying condition of knee joint in which case it's called secondary osteoarthritis. We have conducted this study to know the mechanism causing osteoarthritis knee relying on preponderance of side of involvement.

**Materials and Methods:** This is a cross sectional study of 400 patients presented to OPD of Department of Orthopaedics, Civil Hospital Ahmedabad during 1<sup>st</sup> of May, 2016 to 31<sup>st</sup> of May, 2016. Only patients with primary osteoarthritis of knee were enrolled in our study.

**Results:** Out of 400 patients enrolled, 180 (45%) patients had involvement of left knee joint, 170(42%) patients had involvement of right knee joint whereas 50 (13%) patients had bilateral knee joint involvement. There is no preponderance noted for specific side of OA knee in our study. Furthermore there was no correlation found between occupation and development of OA knee in your study.

**Conclusion:** There is no preponderance for specific side for OA knee as per our study further strengthening the claim that OA knee is not due to the wear and tear mechanism as if it would have been so bilateral involvement would be more common and in unilateral involvement, dominant extremity would have been commonly involved which is not consistent with the findings of our study.

**Keywords:** Knee, Osteoarthritis, Side.

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### Introduction

Osteoarthritis (OA) is chronic inflammatory condition affecting the joint. Knee is the most commonly involved joint of body in osteoarthritis. Osteoarthritis may occur primarily in knee joint or it may be due to some underlying condition of knee joint in which case it's called secondary osteoarthritis. Patients with OA knee presents with the complaints of pain and swelling at the involved knee joint. In very severe cases, patients might present with deformity of the involved knee joint. There are many risk factors known and unknown for the development of OA knee<sup>(1)</sup>.

Common risk factors for OA knee as mentioned in various literature include:

- Increased age
- Obesity
- Gender
- Underlying condition affecting the joint like rheumatoid arthritis, metabolic disorders etc.
- Occupation

It is widely believed that OA knee occurs due to wear and tear mechanism. While it may hold true for secondary osteoarthritis, there are many conflicting opinions regarding causative mechanism for primary OA knee with new research emphasizing role of genetics in development of OA knee. We have, in our study, tried to reach to conclusion whether wear and tear mechanism of primary OA knee holds true or not depending on preponderance of side of involvement of OA knee.

### Materials and Methodology

This is a cross sectional study of 400 patients presented to OPD of Department of Orthopaedics, Civil Hospital Ahmedabad during 1<sup>st</sup> of May, 2016 to 31<sup>st</sup> of May, 2016. All the patients matching the below mentioned criteria were enrolled in our study.

- Inclusion Criteria
- Patients with primary OA knee
- Patients with clinical and radiographic evidence of OA knee
- Patients with involvement of knee joint only
- Exclusion criteria
- Patients with multiple joint involvement
- Secondary OA knee
- Operated cases of OA knee

Anteroposterior and lateral radiographs of the involved joint were obtained and all the patients were asked questions regarding the disease according to pre-decided pro-forma which included patient's occupation, age, and sex apart from side of involvement. WOMAC score was also obtained for all the patients enrolled in our study.

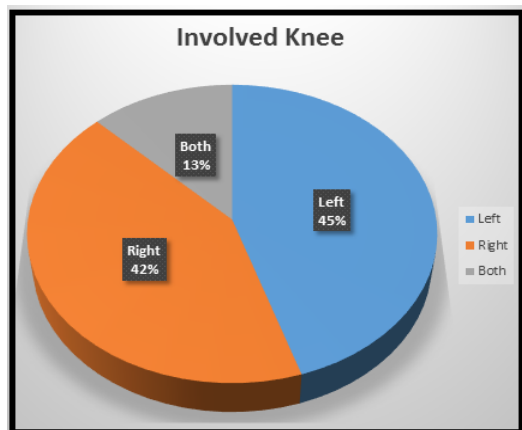
### Observation and Analysis

In our study, out of 400 patients 125 were males whereas 275 were females. Age of patients varied from 39 years to 69 years.

Out of 400 patients, 180 patients had involvement of left knee, 170 patients had involvement of right knee whereas 50 patients had involvement of bilateral knee joints.

**Table 1**

Involved Extremity	Number of Patients
Left	180
Right	170
Both	50

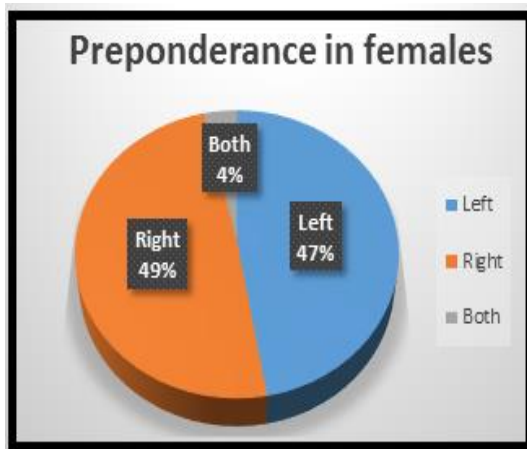


**Fig. 1**

Out of 275 females, 130 females had involvement of left knee whereas 135 females had involvement of right knee and 10 females had involvement of bilateral knee joints.

**Table 2**

Involved Extremity	Number of Females
Left	130
Right	135
Both	10



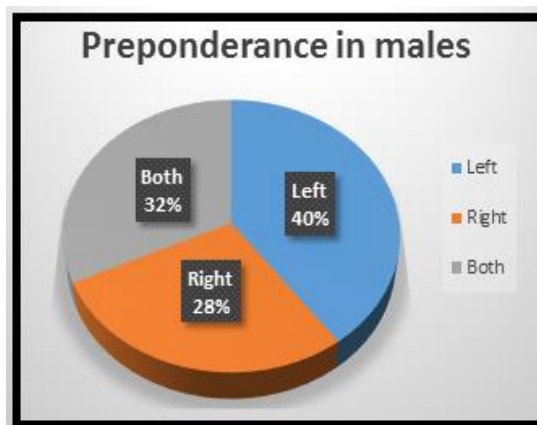
**Fig. 2**

Out of 125 males, 50 males had involvement of left knee, 35 males had involvement of right knee whereas 40 males had involvement of bilateral knee joints.

**Table 3**

Involved Extremity	Number of Males
Left	50
Right	35

Both	40
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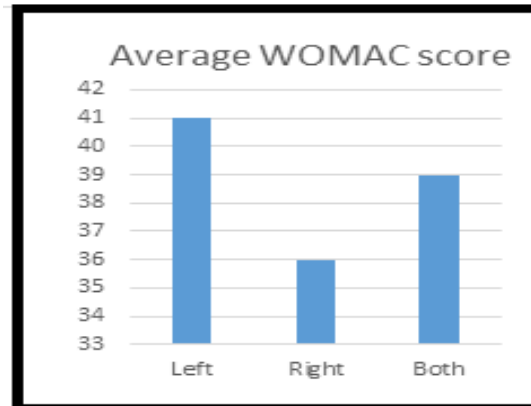


**Fig. 3**

Average WOMAC score observed in our study was 41 for left knee involvement, 36 for right knee involvement and 39 for bilateral knee involvement.

**Table 4**

Side Involved	Average WOMAC Score
Left	41
Right	36
Both	39



**Fig. 4**

**Discussion**

Osteoarthritis (OA) has long been considered a “wear and tear” disease leading to loss of cartilage. OA used to be considered the sole consequence of any process leading to increased pressure on one particular joint or fragility of cartilage matrix. Progress in molecular biology in the 1990s has profoundly modified this paradigm. The discovery that many soluble mediators such as cytokines or prostaglandins can increase the production of matrix metalloproteinases by chondrocytes led to the first steps of an “inflammatory” theory<sup>(2)</sup>. Recent experimental data have shown that subchondral bone may have a substantial role in the OA process, as a mechanical damper, as well as a source of inflammatory mediators implicated in the OA pain

process and in the degradation of the deep layer of cartilage. Thus, initially considered cartilage driven, OA is a much more complex disease with inflammatory mediators released by cartilage, bone and synovium.<sup>3</sup> Many researchers now have implicated role of genetics in development of OA knee.

This is a cross sectional study of 400 patients of OA knee presented to the OPD of Department of Orthopaedics during 1<sup>st</sup> May, 2016 to 31<sup>st</sup> May, 2016.

The patients enrolled in our study belonged to the age group of 39 years to 69 years, 55(14%) out of 400 patients were of age less than 45 years indicating that the osteoarthritis of knee can occur in young age while majority of the patients belonged to the elder age group consolidating the role the age plays in causation of OA knee.

Male to female ratio for OA knee in our study was 275/125 (2.2:1) indicating OA knee is almost twice more common in females.

Out of 400 patients enrolled, 180 (45%) patients had involvement of left knee joint, 170 (42%) patients had involvement of right knee joint whereas 50(13%) patients had bilateral knee joint involvement. There was no preponderance noted for specific side of OA knee in our study. Also there is no preponderance noted for sex or age specific preponderance of side of OA knee.

Average WOMAC score observed in our study was 41 for left knee involvement, 36 for right knee involvement and 39 for bilateral knee involvement

suggesting there is no preponderance of side of knee involved.

### Conclusion

OA knee is more common in females and it involves younger age groups as well indicating need to analyses in detail regarding the causative factors playing role in occurrence of OA knee. There is no preponderance for specific side for OA knee as per our study further strengthening the claim that primary OA knee is not due to the wear and tear mechanism as if it would have been so, either bilateral knee involvement would be more common or dominant extremity would have been commonly involved. Further there were no correlation observed in term of severity of the disease with the side involved. Also there was no correlation observed between occupation and development of OA knee. However larger database (including genetics) and long term follow-up studies are required to analyze root cause(s) of this very common ailment, specific etiology of which remains to be established yet.

### References

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