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Osteoarthritis prevalence and modifiable, non-modifiable risk factors: A survey report

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Abstract
Purpose: This study's objectives were to investigate the prevalence of self-reported osteoarthritis (OA) and to know the modifiable and the non-modifiable factors.
Subjects and Methods: In this study, 30 subjects are taken randomly. The study is conducted in Orthopaedic OPD of Kharagpur S.D Hospital, we takes the patient history and basically stress on Age, Sex, occupation, other modifiable & non modifiable factors, after that, analysed it properly regarding its prevalence.
Result: In this study, after analysing the patient it is found that 40-60 years age group is predominantly sufferes and the prevalence is more in female comparatively male and also found that, House-wife and workers are more Prevalence.
Conclusion: It's a survey report on prevalence and modifiable, non-modifiable factors of osteoarthritis which makes people awareness and future study is also necessary in large population.

Keywords: osteoarthritis, prevalence, risk factors

Introduction

Osteoarthritis (OA) is a chronic degenerative disorder of multifactorial etiology characterized by the loss of articular cartilage, hypertrophy of bone at the margins, sub-chondral sclerosis, and range of biochemical and morphological alterations of the synovial membrane and joint capsule [1].

Pathological changes in the late stage of OA include softening, ulceration, and focal disintegration of the articular cartilage. Synovial inflammation also may occur. Typical clinical symptoms are pain, particularly after prolonged activity and weight-bearing; whereas stiffness is experienced after inactivity. It is probably not a single disease but represents the final end result of various disorders leading to joint failure. It is also known as degenerative arthritis, which commonly affects the hands, feet, spine, and large weight-bearing joints, such as the hips and knees [1].

Most cases of OA have no known cause and are referred to as primary OA. Primary osteoarthritis is mostly related to aging. It can present as localized, generalized, or as erosive OA. Secondary osteoarthritis is caused by another disease or condition [1].

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 [1]. OA is more common in women than men, but the prevalence increases dramatically with age Nearly, 45% of women over the age of 65 years have symptoms while radiological evidence is found in 70% of those over 65 years. OA of the knee is a major cause of mobility impairment, particularly among females [2, 5]. OA was estimated to be the 10th leading cause of nonfatal burden [1].

On the basis of pathogenesis OA occurs two clinical forms: Primary OA: Occurs elderly, more common in female, another Secondary OA: Occurs any age due to any previous wear, injury [8].

Commonly affected joints include the cervical and lumbosacral spine, hip, knee and the first metatarsal joint. In the hands, the distal and proximal interphalangeal joints and the base of thumb are often affected. Osteoarthritis cab be diagnosed based on structural abnormalities or on the symptoms these abnormalities evoke. Many persons with x ray evidence of OA have no joint symptoms and, while the prevalence of structural abnormalities is of interest in understanding disease pathogenesis, what matter more from a clinical and public health perspective is the prevalence of symptomatic OA [2]. The knee and hip are the principle large joints affected and principle sites of significant disability. Knee OA is more prevalent than hip OA [3].

OA has a multifactorial etiology, with different set of factors with its incidence. While considering non-modifiable factors for OA are age and sex is the strongest predictors. For example, women is higher risk than male, above 40 years age group is vulnerable for OA. Considering modifiable risk factors are occupation, dietary factors, obesity and physical activity. OA is common in those who performing heavy physical work, especially if those involves knee bending, squatting or kneeling. Obesity is a strong modifiable risk factor. House wife, workers, those who work prolonged standing is the predominent risk group. Factors associated with OA could also interact in complex way. Considering the rising prevalence of OA in the population, identifying modifiable and non-modifiable risk factors which

helps to guide proper intervention.
Using randomly sample, the objectivs of the study were to-

1. Investigate the prevalence of OA.
2. To know the prevalence of OA in different age and sex (Non-modifiable factors)
3. To know the modifiable risk factors associated with occupation, obesity.

Literature Survey

A study was done in India 2016, sample size was 5000 and on this study they found that, OA of the knees was found to be more prevalent in females (31.6%) than in males (28.1%). This finding is statistically significant (P = 0.007). The study found that the prevalence of OA knees increased with increase in body mass index (BMI). Knee OA prevalence was significantly (P = 0.007) low in underweight people (28%) as compared to normal weight and obese participants (33%). Prevalence was found to be highest in people who are overweight and/or obese [1].
A Study was done in Canada 2015, sample size was 4733, Overall prevalence of self-reported OA in the total sample was 14.8 %, where 10.5 % of individuals reported having knee OA and 8.5 % reported having hip OA. Differences in prevalence were found for males and females across age categories for both knee and hip OA. The prevalence of knee and hip OA obtained in this study is comparable to other studies. Females have greater knee OA prevalence and a greater proportion of women have mobility limitations as well as hip and knee pain; it is important to target this sub-group [4].
Another survey shows that, total sample 8976, the prevalence of OA in males was 0.1%, 4.5%, and 5.6% in the hip, knee, and spine in the study population, respectively. Female groups showed respective prevalence of 0.2%, 19%, and 16% in the hip, knee, and spine, which were significantly greater than in males (chi-squared test, $P < 0.05$). Prevalence of male 33.5% and female 63.3% [5].
A Study which was held in rural area, total sample 342, the prevalence of 18-31 years is 30.7%, 31-45 years is 32.2%, 46-60 years is 21.3%, 61-74 years is 10.5%. Male is 47,9%, female is 52.1%. The prevalence of House wife or Homemakers is 93.3% [6].

Method and Procedure

The project and survey report was done during Internship period in Kharagpur Homoeopathic Medical college and Hospital. The data and subject was collected from Orthopaedic OPD of Kharagpur Sub-Divisional Hospital, Kharagpur, West Bengal. The survey time was 01/12/2018 to 25/01/2019, the subject was selected randomley first cum first basis and on the availability of the symptoms of OA. The diagnosis is strictly depends on the clinical prospective.

Inclusion criteria

1. Age above 18 years.
2. Both sex are included.

Exclusion criteria

1. Pregnant women.
2. Handicapped, persons in wheelchair are excluded in the selection.

In this study we strictly focus on availability of the symptoms and also diagnosed on the clinical basis.
Participants were asked some common question-

1. What is the problem?
2. When the problem is getting worse or relief?
3. How much day you suffers?
4. Is there any restriction of joint?
5. What are you doing (Occupation)?
6. Do you have any trauma or injury to the affected parts?

These common questions is asked to all the participants, but in survey project we stress on the age, sex, occupation and its prevalence. We also measure height, weight to know whether the patient is obese or not.
Physical examination is also done to find out any abnormality, like-

1. Bony deformity.
2. Swelling of the affected joints.
3. Heberden's or Bouchard's nodes is present or not.
4. Muscle wasting or weakness.
5. Crepitus is felt when joint is moved [7].

By these questions and finding we may conclude that it is a OA and procceds on the survey because diagnosis and assessment of OA are purely clinical.
A plain radiograph is the only useful but non-essential investigation. The main use of radiograph is to asses severity of structural change, an issue if surgery is being considered.[3] But our study is to know the prevalence of OA and to know the prevalence of modifiable and non-modifiable risk factor, so clinically we asses the condition and to continue our study.

Result

The subject is selceted randomly from the OPD.Total sample are 30.
The prevlence of OA by sex are displayed Table 1 and Figure 1. Here 30% is male and 70% is female.
The prevalence of OA by age group are displayed Table 2 and Figure 2. Here below 40 years is 16.66%, 41-60 years is 70%, above 60 years is 13.3%.
Now the prevalence on occupational factors are displayed Figure 3. Here those who do physical work specially worker and house wife are more prevalence is about 36.67%
Joint which was affected by sample group are displayed Table 3

Table 1: Sex Wise Distribution

Sex Distribution	Number (%)
1. Male	9 (30%)
2. Female	21 (70%)
Total	30 (100%)

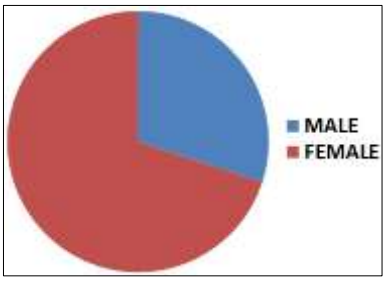

Fig 1: Prevalence of OA (According to Sex)

Table 2: Age Wise Distribution

Age Distribution	Number (%)
1. 0-20 yearr	00
2. 21-40 Years	05 (16.67%)
3.41-60 Years	21 (70%)
4.61-80 Years	04 (13.33%)
Total	30 (100%)

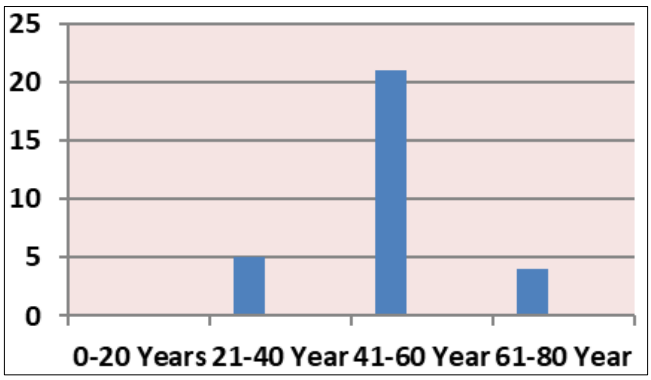

Fig 2: Prevalence of OA (According to Age group)

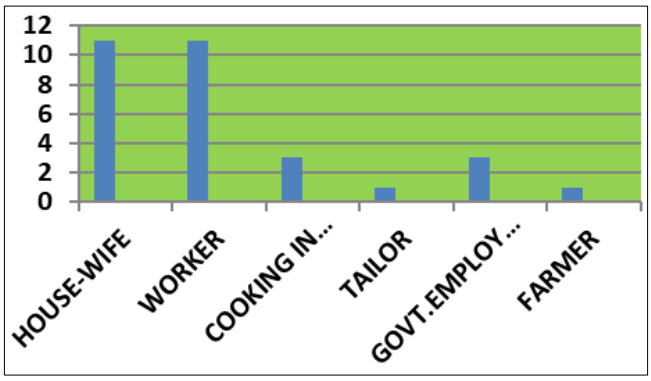

Fig 3: Prevalence of OA (According to Occupation)

Table 3: Joint wise Distribution

Joints Affected	Number of Patient (%)
1.Knee OA	14 (46.67)
2. Hip OA	08 (26.67)
3.Hand OA	06 (20)
4.Spine OA	02 (15)
Total	30 (100)

Discussion

The objective of the study were to investigate the prevalence of OA and to know the modifiable, non-modifiable risk factors of OA in the selected sample. Here we can also find that knee OA is more than Hip OA and these two OA is more predominent in the population. Study helps to know that Knee OA is 46.67%, where Hip OA is 26.67% on the selected 30 participants.

Our study found that more than 40 years age is the prevalence of OA for both males and females. But female is more prevalence than male. In our logistic regression analysis, for the overall sample in both male and female, those who have obese is more predominant risk factors of knee OA. Our study also showed that obesity also associated with other OA but knee OA is more in obese patient. Study also showed that those participants who works by using knee during household work specially women and daily worker those who do their work by weight lifting are more predominance of OA.

The strength of the study is that sample are randomly selected without any bias. The study also helps to know the prevalence of OA as well as it makes awareness to the people. The age group, sex who is more prevalence are required more focus on their life style because these are non-modifiable factors. But those factors which are modifiable like- occupation, obesity are makes a good awareness to that people.

After the proper review of different journal and survey report it is established that my survey study and other works is not differs. The prevalence is more in females than male and also obesity is the risk factors which was find out in my study as well as we can also asses the occupational factors mainly housewife is more prevalence which was also find out by others of their survey.

But the limitation is that to require more sample and population-based study which makes a good conclusive evidence. Use of some self-report measure also required. Large cross-sectional study is missing in this survey. Despite the limitation this study used to know the prevalence of OA which is correlate with other study and prevalence of modifiable and non-modifiable factors of OA. These results will help guide practice and future research.

For the prevention of different non-communicable disease like osteoarthritis requires intervention and Intervention is done with the help of knowledge of multifactorial causation & risk factors. The patients must follow the:

1. Avoid fatty food & replaced trans-fat to polyunsaturated fat
2. Promoting public awareness about diet & physical activity
3. Reduce intake of salt
4. Do not consume alcohol & tobacco

The Govt. Must enforce some prevention & control programme for osteoarthritis. Recently WHO has developed a survey methodology known as "The STEPS Non-communicable Disease Risk Factors Survey" to help countries establish Non-communicable disease surveillance system.[9] The survey report much helpful to know the prevalence & risk factors.

Conclusion

It's a survey report on prevalence and modifiable, non-modifiable factors of osteoarthritis which makes people

awareness and future study is also necessary in large population. OA was significantly related to several factors, including mental distress and quality of life. To prevent misdiagnosis and malpractice, physicians should be aware of the relationships and factors involved in multiple-joint disease, particularly in an elderly population. The influence of risk factors and other underlying cause has the prime of osteoarthritis, we must think much when treated them.

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