

Original research article

**INCIDENCE AND ETIOLOGY OF PRIMARY
OSTEOARTHRITIS KNEE BELOW 40 YEARS OF AGE IN
250 KNEE PAIN PATIENTS IN A TERTIARY CARE
HOSPITAL**

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Abstract

Background: In recent decades, knee osteoarthritis (OA) was mainly considered a condition affecting the elderly, leading to a scarcity of population-based studies on its prevalence and characteristics in those under 40. However, contemporary evidence highlights a significant increase in two key risk factors-traumatic knee injuries and obesity-especially among the younger demographic. Cutting-edge research reveals a concerning trend of decreased onset age for knee OA, challenging the traditional association with aging. Studies also indicate a rising incidence of knee OA in the younger population, emphasizing the need for further investigation.

The link between traumatic knee injuries and the development of knee OA has gained prominence. Data shows a notable increase in knee injuries among the youth, often tied to sports and accidents. These injuries, once viewed as isolated incidents, are now recognized as significant contributors to the growing prevalence of knee OA in this age group. Obesity, another pivotal risk factor, has surged among the younger population. Recent statistics underscore the urgency for comprehensive strategies addressing both the prevention and management of obesity to curb the increasing burden of knee OA in this demographic.

Given these insights, it is crucial for healthcare professionals, researchers, and policymakers to reassess their approach to knee OA. The evolving landscape of risk factors and shifting demographics underscore the need for ongoing research, targeted interventions, and public health initiatives. These endeavors aim to understand, prevent, and manage knee OA in individuals under 40, ensuring a proactive response to the changing dynamics of this prevalent musculoskeletal condition.

Aims and Objectives: To study the etiological factors and the burden (Incidence) of primary osteoarthritis in younger population (<40 years).

Materials and Methods: Patients, regardless of gender, presenting with a primary complaint of knee pain at the Orthopaedics Department's outpatient clinic were evaluated using a preformed and pretested questionnaire. A standing AP view of both knees was conducted for these individuals until a total of 250 cases with an age of ≤ 40 years were identified. The assessment involved categorizing the cases according to the Kellgren Lawrence grading system. Additionally, patients' height, weight, BMI, and other relevant parameters were also evaluated. Careful selection of cases was undertaken, adhering to the adopted exclusion criteria to ensure the robustness and reliability of the study.

Results: Following a survey of 250 patients below the age of 40 experiencing knee pain over a one-and-a-half-year period, the radiological incidence of primary osteoarthritis (OA) in the knee was determined to be 13.2%. The mean age of the subjects was 36.2 years, and a distinctive gender distribution was observed with a female-to-male ratio of 3:1 ($p=0.003$). 117 (80.1%) of the cases had BMI (kg/m^2) greater than 24.9, which was found to be a predictor of obesity; 28 (19.2%) cases had BMI between 18.9 and 24.9 kg/m^2 , and 1 (0.7%) case had BMI less than 18.9 kg/m^2 . 67.1% of households reported that their primary daily activities were sitting, squatting, or kneeling. These findings provide significant insights into the demographic and lifestyle factors associated with the incidence of knee osteoarthritis in individuals under the age of 40 years.

Conclusion: The rising incidence of knee osteoarthritis (OA) in the younger population underscores the importance of understanding the associated risk factors and disease prevalence in this age group. Acquiring this knowledge is crucial for enabling primary prevention strategies for OA to be implemented during young adulthood. By addressing these risk factors early on, it becomes possible to mitigate the emergence of radiographically-defined OA later in life, ultimately preventing disabilities and alleviating the significant economic burden that the disease imposes on the healthcare system. Taking proactive measures in young individuals can lead to improved long-term outcomes, both in terms of individual health and the broader societal impact of OA.

Keywords: Osteoarthritis knee, primary osteoarthritis, below 40 years, incidence, etiological factors

Introduction

A degenerative joint disease that affects millions of people worldwide is osteoarthritis (OA). It is a complicated illness whose pathophysiology alters the subchondral bone's and articular cartilage's tissue homeostasis, which determines the predominance of destructive processes. Cell/extracellular matrix (ECM) interactions are important in the pathophysiology of articular cartilage.

The first investigators, Radin and Paul, proposed the idea of increasing bone density and stiffening subchondral bone in OA in 1970.

The most common musculoskeletal condition in the world and the main cause of chronic pain and disability in adults is osteoarthritis (OA). More people than any other joint disease suffer from osteoarthritis (OA), also known as osteoarthrosis or degenerative joint disease. According to rankings, OA is the primary or secondary cause of disability in the elderly.

It is currently among the top 10 diseases that affect the world, according to the World Health Organization, with the knee being one of the most commonly impacted joints.

For many years, it was believed that knee OA primarily affected the elderly. As a result, very few population-based studies have looked at the prevalence and features of OA knee in people under 40.

Although there isn't much research on the topic, recent studies conducted internationally have revealed that, in the last 20 years, there has been a 16-year decline in the age at which cases of knee OA are diagnosed.

In this study, two distinct categories (the 1900s vs 2010s) of age-stratified 10 year incidence of symptomatic physician-diagnosed knee OA were assessed. It was found that the mean age of diagnosed knee OA onset fell from 72 ± 12 years (mean \pm standard deviation) to 56 ± 18 years over the period of two decades. Should the current trend of OA incidence persist, the study projects that approximately 6.5 million people between the ages of 35 and 84 will receive a diagnosis of symptomatic knee OA within the next ten years. There's growing evidence that younger people with OA are developing severe disease. According to the Canadian Joint replacement Registry's 2009 Annual report, between 1996-1997 and 2006-2007, the total number of knee replacement procedures performed on people aged 45-54 increased by three times, from 772 to 3172 procedures.

Moreover, people between the ages of 35 and 64 bear the bulk of the financial burden associated with OA, which is accounted for by long-term disability. There is a dearth of research on managing osteoarthritis in the early stages of life, despite the significant impact of the condition on individuals as young as the third or fourth decade of life. Instead, studies have concentrated on managing OA in senior citizens.

No study has offered a thorough summary of the burden of OA in India, despite research using the Burden of Diseases, Injuries, and Risk Factors Study 2019 (GBD 2019) to provide the burden of OA at the national and worldwide levels.

India is home to one-fifth of the world's population and is currently the second most populous country in the world, only to be surpassed by China in the near future.

It is impossible to overstate how little research has been done on the features of OA knees in younger people, both in India and around the world.

Primary osteoarthritis has a poorly understood etiology that includes both environmental and genetic factors. It has been determined that epigenetics plays a 30% to 65% role in the development of OA.

The greatest risk factor for osteoarthritis (OA) is age, which is associated with sarcopenia, increased bone turnover, and a joint's reduced ability to adapt to biomechanical injury. Due to differences in joint alignment, ligament strength, pregnancy, and bone density between the sexes, OA is more common in women. In particular, menopause is linked to a higher risk of osteoarthritis (OA), which implies that estrogen plays a role in the development of OA and pain sensitization.

Anatomical factors that can cause biomechanical injury and raise the risk of developing osteoarthritis (OA) include joint malalignment and congenital deformities. Environmental variables that can be changed have a significant impact on the emergence of OA.

This covers jobs involving a lot of repetitive motion as well as obesity, metabolic syndrome, smoking, low bone density, muscle weakness, and vitamin D deficiency.

OA Age systemic risk factors: The most significant contributing factor to the development of osteoarthritis is aging; as articular cartilage ages, its tensile properties diminish, causing glycation to accumulate and eventually leading to mechanical failure.

The gender: Compared to men, women experience more pain and disability.

Hormones inherited from genetics A classic study using identically gened monozygotic (MZ) twins aged 48 to 70 years revealed that genetic factors contributed 65% of the development of osteoarthritis.

Genetic factors account for between 39% and 65% of cases of osteoarthritis in the general population. Women who have gone through menopause are particularly vulnerable to knee arthritis due to rising levels of osteocalcin and bone resorption.

Women with osteoarthritis in their knees had decreased levels of osteocalcin, a marker of bone turnover.

Diet: The rate of chronic diseases like OA has increased due to rapid changes in diet and lifestyle brought on by the consumption of junk food and refined carbohydrates.

Additionally, because chondrocytes are potent producers of reactive oxygen species that can harm collagen in cartilage and hyaluronate in synovial fluid, a high dietary intake of these micronutrient antioxidants may help prevent osteoarthritis. Micronutrient antioxidants provide defense against tissue injury.

Regional risk variables

Trauma and Joint Injury: Articular cartilage can withstand the strain of regular physical activity; however, when joints are injured or traumatically damaged, the cartilage becomes less flexible, loses its cell population, and the loading on the subchondral bone is reduced.

Obesity: A positive correlation has been found between obesity and knee OA, which leads to significant overloading and damage to the knee joint in those with an elevated body mass index (BMI), a measure of relative weight for obesity.

Occupation: Farmers, fishermen, construction site workers, and general laborers were the most common workers who lifted heavy loads. General laborers were the ones who experienced walking up stairs the most; all of these stressful activities lead to the strong correlation between osteoarthritis and knee injury.

Physical activity/sports: Individuals who regularly practice martial arts or gymnastics are susceptible to knee injuries.

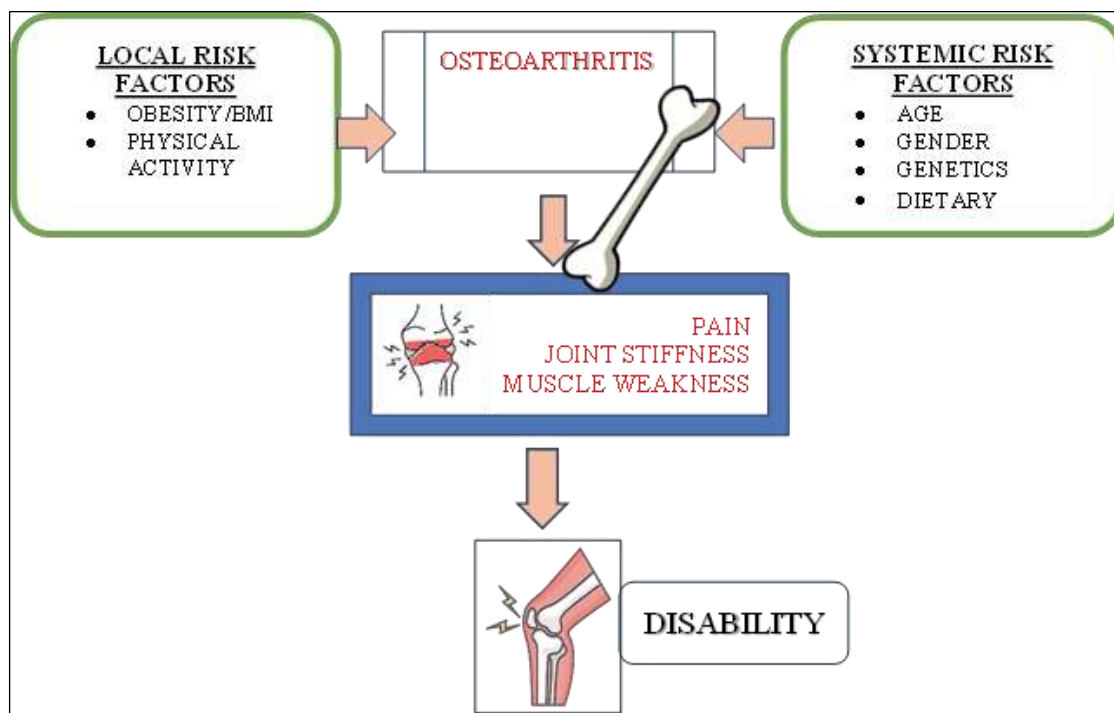


Fig 1: Pathogenesis of Osteoarthritis

India has gained more than ten years of life expectancy and witnessed significant improvements in health-related epidemiological and demographic indicators over the past three decades. The proportion of people 65 and older grew from 3.8% in 1990 to 6-4% in 2019, and the prevalence of obesity and overweight is rising faster than the global average.

Therefore, knowing the estimates of the burden of OA in India at the national and state levels is crucial for public health. We present the modelled national-and state-level prevalence, incidence, and disability-adjusted life years (DALYs) of OA based on data provided in the GBD 2019 Study, presenting counts and age-standardized rates and state-level burden estimates for OA from 1990 to 2019 by age and sex. These estimates are provided against the current backdrop of the dearth of data on OA burden in India.

The last two studies to report on the incidence of OA with symptoms in the United States were released in 1995, which was 17 years ago. In routine medical practice, the Kellgren-Lawrence (KL) classification is widely used to stage knee osteoarthritis (OA) on plain radiography. It is helpful in choosing the right treatment approach and timing treatment.

According to the KL classification, osteophyte formation, joint space narrowing, and subchondral osteosclerosis are the primary factors used to determine the OA stage. In epidemiological studies of osteoarthritis, the KL classification has been widely employed as a research tool. Notable publications from these studies include the Framingham Osteoarthritis Study by Felson *et al.* and the assessment of osteoarthritis in European populations by Bagge *et al.* The creation of atlases of radiographic characteristics associated with OA, such as the work done by Scott *et al.*, also made use of the KL classification.

Finding out when symptomatic knee OA first appears is crucial for understanding the impact on quality of life and how best to use health services.

Materials and Methods

This study was conducted at the Apollo Hospital in Jubilee Hills, Hyderabad, Telangana, in the Department of Orthopedics.

Following screening for the exclusion criteria, patients of any gender presenting to the department's outpatient clinic with the primary complaint of knee pain in one or both knees were designated as study participants.

The cases were evaluated using a pre-made questionnaire and then subjected to an AP view of both knees in the standing position until a total of 250 cases with an age of at least 40 years were divided. The cases were graded in accordance with Kellgren Lawrence's (KL) system. Informed consent was obtained and a structured questionnaire in the local language was used. It asked about age and sex, education, occupation, housing conditions (including stairs, even flooring, and ground), social habits, type of work (sedentary or mild to moderate heavy work), physical characteristics (height and weight), history of osteoarthritis knee in any first-degree relatives, and screening questions to exclude based on criteria.

Based on daily activity level, cases were categorized into three activity groups: high, medium, and low.

The majority of daily activities were observed to involve standing, sitting, squatting, and kneeling, or nothing specific. Patients with a history of significant medical conditions or surgeries that impair lower limb function, joint trauma or fractures in the spine or lower limbs, infection, inflammatory or rheumatoid arthritis, polyarthralgia, or gouty arthritis (serum uric acid >6.5 mg%) were excluded from consideration. Complete Hemogram, ESR, RA factor, serum uric acid, and CRP were among the blood tests performed.

A common projection used to evaluate the knee joint, distal femur, proximal tibia and fibula, and patella is the knee anteroposterior view.

The distal femur and proximal tibia/fibula are shown in this view in their normal anatomical positions, making it possible to assess suspected dislocations, fractures, localizing foreign bodies, and osteoarthritis.

Patient position: Patient is supine on the table with the knee and ankle joint in contact with the table

- Leg is extended.
- Ensure the knee is not rotated.

Technical assessment of the image: The lateral tibial condyle should be slightly above the head of the fibula, and the femoral and tibial condyles should be symmetrical. The distal femur is superimposed on the superior portion of the image where the patella is resting.

Useful information: One useful indicator of rotation is the fibula head. If the fibula head is completely superimposed, the image is not AP. To fix this, internally rotate the knee until it makes even contact with the image detector.

Technical parameters include the anteroposterior projection and the knee's centering point, which is 1.5 cm from the patellar apex. collimation: orientation: portrait; detector size: 24 cm x 30 cm; exposure: 60-70 kVp & 7-10 mAs; superior to include the distal femur; inferior to include the proximal tibia/fibula; lateral to include the skin margin;

and medial to include the medial skin margin. We used the Kellgren Lawrence Grading-Classification of Osteoarthritis knee in our study of bilateral standing AP knee X-rays.

Kellgren Lawrence Grading-Classification of Osteoarthritis Knee

Grade	Standing bilateral knee X-rays AP view
Grade 0	No findings
Grade 1	Doubtful: Minute osteophyte, doubtful significance.
Grade 2	Minimal: Definite osteophyte, unimpaired joint space.
Grade 3	Moderate: Moderate diminution of joint space.
Grade 4	Severe: Joint space greatly impaired, with subchondral bone sclerosis and possible deformity of bone ends.

Statistical Analysis

Numbers and percentages (%) were used to represent categorical variables, while mean ± SD and median were used to represent continuous variables. Since the data sets were not normally distributed, the Mann-Whitney Test was used to compare quantitative variables between the two groups.

The Chi-Square test was used to find correlations between qualitative variables. Significant variables for the presence of OA were evaluated using univariate logistic regression. P values less than 0.05 were regarded as statistically significant. Version 21.0 of the Statistical Package for Social Sciences (SPSS) was used to analyze the data.

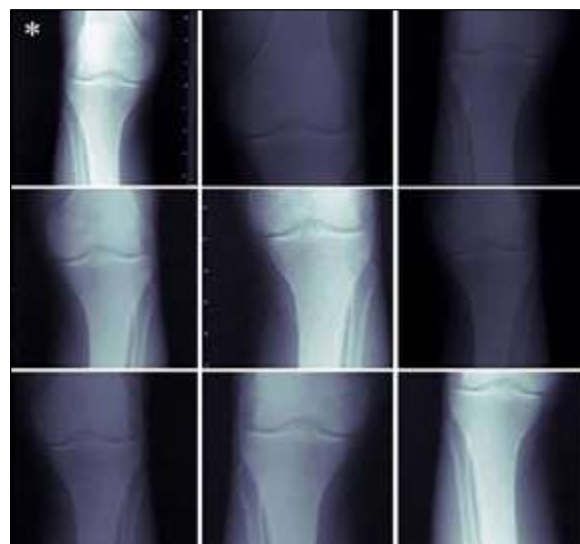


Fig 2: OA in female patients



Fig 3: OA in female patients KL Grade 2



Fig 4: Kellgren Lawrence (KL) grade 4 X rays showing Osteoarthritis in both knees



Fig 5: As per Kellgren Lawrence (KL) grading X rays showing Osteoarthritis

Results

Since this is still the most commonly used definition for tibiofemoral OA knee, only patients with KL Grading more than or equal to 2 (KL≥2) in both or either knee were considered significant and regarded as cases of OA.

After performing a standing AP view of both knees on the patients, 250 cases with an age of ≤40 years were found out of the approximately 2234 patients who initially presented in the OPD with knee pain. As part of the assessment, the cases were categorized using the Kellgren Lawrence grading scheme. In addition, the patients' BMI, height, weight, and other pertinent factors were assessed. Strict adherence to the established exclusion criteria was maintained during the case selection process to guarantee the study's robustness and dependability.

250 patients under the age of 40 were included in the 1108 patients with primary osteoarthritis out of 2234 patients with knee pain. Of the 250 cases under 40 years old, 146 (58.4%) had osteoarthritis that was confirmed by radiology, and the remaining 104 (41.6%) showed no X-ray evidence of the condition. Accordingly, it was discovered that 13.2% of patients under 40 years old who visited the OPD had primary osteoarthritis in their knee.

Twenty (13.7%) of the Kellgren Lawrence (KL) Grade 68 (46.6%) cases involved the left knee, while the majority of cases (68.6%) involved the right knee. 58 people (or 39.7%) had involvement in both knees.

Table 1: Classification of Patients in KL Grading

KL Grade	No.	%
Grade O	104	41.6%
Grade I	42	16.8%
Grade II	58	23.2%
Grade III	38	15.2%
Grade IV	8	3.2%
Total	250	100.0%

The KL grading for bilateral cases was similar on both sides. 42 (16.8%) had KL grade I, 58 (23.2%) had KL grade II, 38 (15.2%) had KL grade III, and 8 (3.2%) cases had KL grade IV in one or both knees out of the 250 cases that were surveyed. Of these, 104 (41.6%) had no radiological evidence of OA knee I, e grade 0 were only symptomatic. Together, grades II and III made up 96 cases, or 38.4% of the total.

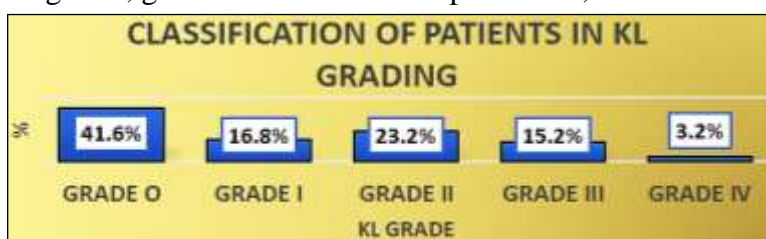


Fig 6: Classification of Patients in KL Grading

Table 2: Side of the Knee Joint Involved

Knee Side Involved	No.	%
Right	68	46.6%
Left	20	13.7%
Both	58	39.7%
Total	146	100.0%

Right side involvement is seen in 46.6% and left side involvement seen in 13.7 % cases and in both knees around 39 % cases.

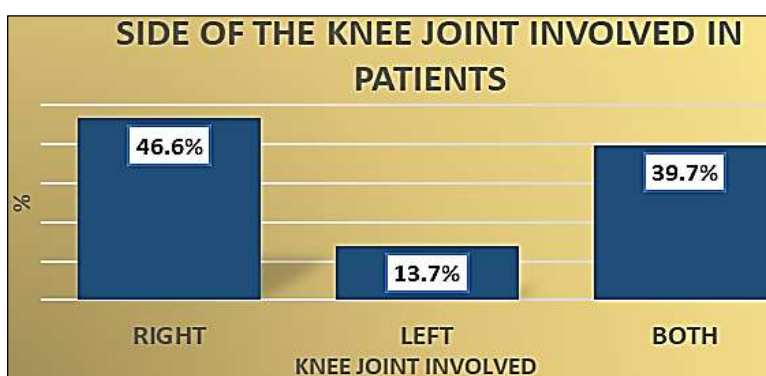


Fig 7: Side of the Knee Joint Involved

Etiological factors that were found in the study included the following:

Age Group

102 cases (69.9 %) were of 30-34 years age group, 32 cases (21.9 %) were of 35-40years group while 12 cases (8.2 %) were of 25-29 years age group.

Table 3: Age Distribution of Patients

Age Group	No.	%
25-29 Years	12	8.2%
30-34 YRS	102	69.9%
35-40 YRS	32	21.9%
Total	146	100.0%

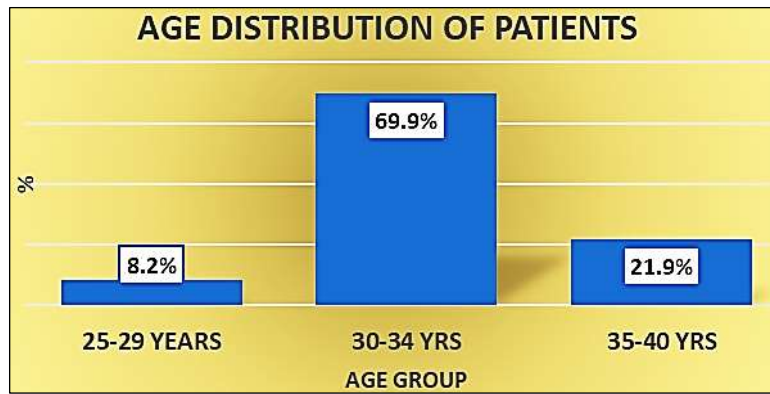


Fig 8: Age Distribution of Patients

Sex

112(76.7%) were females and 34(23.3%) were male.

Table 3: Gender Distribution of Patients

Gender	No.	%
Males	34	23.3%
Females	112	76.7%
Total	146	100.0%

Body Mass Index (BMI)

117 (80.1%) of the cases had BMI (kg/mt^2) greater than 24.9, which was found to be a predictor of obesity; 28 (19.2%) cases had BMI between 18.9 and 24.9% kg/mt^2 , and 1 (0.7%) case had BMI less than 18.9 kg/mt^2 .

Table 4: Body Mass Index (BMI) Distribution of Patients

Body Mass Index (BMI)	No.	%
<18.9	1	0.7%
18.9- 24.9	28	19.2%
>24.9	117	80.1%
TOTAL	146	100.0%

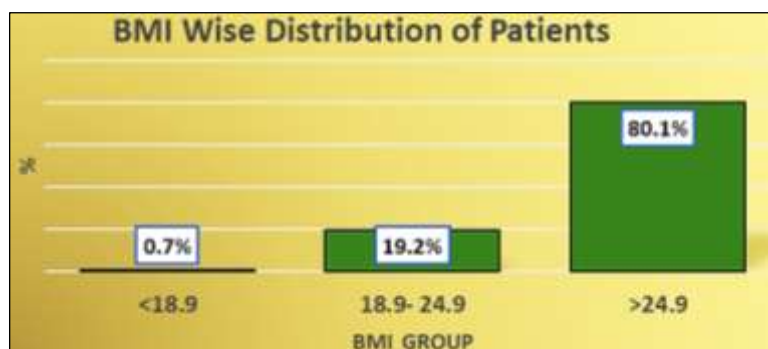


Fig 9: Body Mass Index (BMI) Distribution of Patients

Family History

Of the 146 cases of OA, 79 (54.1%) had first-degree relatives with a history of OA knees. However, in 67 cases (45.9%), there was no family history of OA knee.

Table 5: Family History of OA

Family History of OA	No.	%
Present	79	54.1%
Absent	67	45.9%
Total	146	100.0%

Household Habits

67.1% of households reported that their primary daily activities were sitting, squatting, or kneeling. In 48 cases (32.9%), standing was primarily a household habit.

Table 6: Household Activity of the Patients

Household Activity	No.	%
Sitting	62	42.5%
Squatting	22	15.1%
Kneeling	14	9.6%
Standing	48	32.9%

Occupation

In terms of the distribution of cases by occupation, housewives and housemaids accounted for the largest number, with 76 (52.1%) cases. Of the 146 OA cases in the study, the remaining cases included farmers, tailors, and skilled laborers.

Table 7: Occupation of the Patients

Occupation	No.	%
Housewife	58	39.7%
Maids	18	12.3%
Shopkeepers	11	7.5%
Tailors	6	4.1%
Teachers	9	6.2%
Skilled workers	18	12.3%
Labourers	14	9.6%
Farmers	12	8.2%
Total	146	100.0%

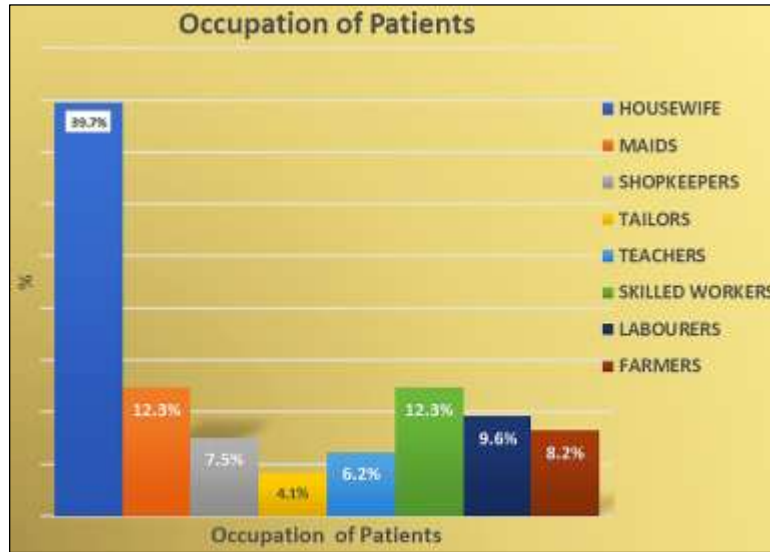


Fig 10: Occupation of the Patients

Activity Level

The cases were categorized into three activity group categories based on occupation. With 88 cases (60.3%), the group with mild activity had the most cases. There were 36 cases (24.7%) in the moderate activity group and 22 cases (15.1%) in the high activity group.

Table 8: Activity Level of the Patients

Activity Level	No.	%
Mild Activity	88	60.3%
Moderate Activity	36	24.7%
Heavy Work	22	15.1%
Total	146	100.0%

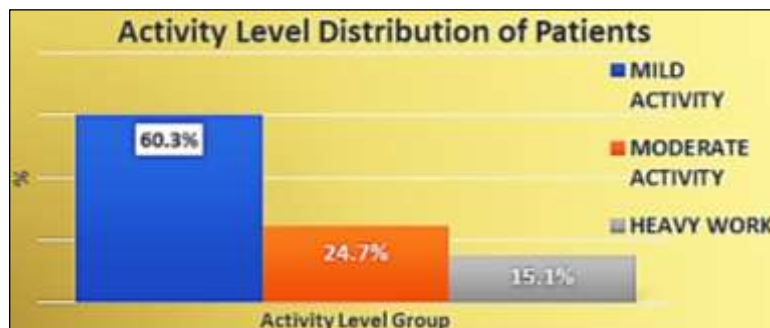


Fig 11: Activity Level of the Patients

To evaluate significant risk factors for the existence of OA, univariate logistic regression was used. With an odds ratio of 2.456, the risk of OA was significantly higher in females than in males. OA risk was significantly higher in patients with BMIs

>24.9 kg/mt², odds ratio = 2.365.

Table 9: Univariate logistic regression for presence of OA

	P value	Odds ratio	95% C.I. for Odds ratio	
			Lower	Upper
Age Grpup (years)	0.111	1.088	0.933	1.221
Sex	0.003	1		
Male		2.456	1.565	5.212
Female				
BMI (kg/mt²)	0.004	1		
18.9-24.9		2.365	1.221	5.001
>24.9				
Activity level		1		
Low	0.156	1.622	0.78	3.112
Medium	0.084	2.23	0.79	6.3
High	0.044	1.55	0.932	3.1
Family history				
Household activity		1		
Sitting/squatting/kneeling	0.078	0.5	0.33	1.045
Standing	0.432	0.5	0.121	2.33

Discussion

Relevant data on the cumulative incidence of developing OA are scarce. The majority of population-based studies on the incidence and prevalence of knee OA date back to the mid-1990s [12-14]. There are few studies, even in the international context, and there are no national data on the incidence of OA [15]. The characteristics and prevalence of osteoarthritis knee in young people are also poorly documented in the literature. Nonetheless, increasing data indicates that younger people have a high prevalence of post-traumatic knee OA [16]. In young adults, osteoarthritis is expected to become more common due to this trend and the rising incidence of obesity in children [17]. It is currently anticipated that a sizable percentage of middle-aged people have osteoarthritis in their knees. In our study, we calculated the incidence of osteoarthritis knee in people under 40 to be 6.54%. It offers some context and a baseline number that describes osteoarthritis in the knee in the younger age group. There hasn't been a study that specifically identifies the incidence of knee OA in people under 40.

The study found a number of risk factors, with female sex being the most strongly correlated and occurring in 77% of cases. It is well known that gender affects the development of osteoarthritis in the knee through a variety of mechanisms, such as hormonal differences in cartilage metabolism and variations in joint laxity [18] and strength related to bodyweight [19]. Women are more likely than men to develop osteoarthritis in the knees, according to several studies [20, 21]. In India, the situation is made worse for women due to customary social habits that involve kneeling or squatting, which adds stress to activities like worship, housecleaning and mopping.

In 80.1% of cases of OA, BMI >24.9 kg/m² (obesity) was detected. According to a study by Gelber *et al.* [22] body mass index is an independent predictor of osteoarthritis in the knee. Obesity is likely the primary cause of knee or hip OA, but it's not the only one. Increased loading on the joint is most likely the culprit. Excessive strain on the knee and hip joints may result in the degeneration of synovial joints and the breakdown of ligamentous and other structural support. Additionally, we found a strong link between OA knee and female sex with a high BMI.

According to data from the first National Health and Nutritional Examination Survey (NHANES I), the risk of knee OA was nearly four times higher in obese women than in non-obese women, and five times higher in obese men [23]. Likewise, obesity was found to be a significant risk factor by Fellon *et al.* [24], for osteoarthritis in the contralateral knee as well as for the progression of the affected knee. Obese women with osteoarthritis in their knees were found to have significantly lower function and quality of life scores than women of normal weight. The Framingham Study's findings showed that women who had shed roughly 5 kg had a 50% lower chance of developing knee OA symptoms [25].

In our study, routine household habits such as sitting, squatting, and kneeling were observed in 67.1% of cases of OA. Zhang *et al.*'s study on the effect of squatting on tibiofemoral knee osteoarthritis (OA) revealed that squatting at age 25 increased the risk of knee OA in older Chinese subjects living in Beijing. Compared to patellofemoral knee OA, its impact on tibiofemoral knee OA was significantly greater. There isn't a comparable study that demonstrates the relationship between OA knee and kneeling or squatting for the Indian context. Despite the Indian style toilet, squatting and kneeling while farming in the fields, cleaning the floor and washing utensils are common household tasks.

The frequency of OA knees has increased as a result of these activities. In a similar vein, Fellon *et al.* found that men whose jobs required them to carry and kneel or squat in their middle years had a risk of developing knee OA that was more than twice as high as that of men whose jobs did not require these physical activities [27].

54.1% of the OA cases in our study had first-degree relatives with a history of OA knees, indicating a heritable component to OA. The C allele of rs3815148 on chromosome 7q22 was linked to a 1.14-fold increased prevalence of knee and/or hand OA as well as a 30% increased risk of knee OA progression, according to research by Kerkhof *et al.* [28], supporting the association.

Conclusion

Since OA knee significantly contributes to pain and disability and has a negative economic impact, primary prevention of knee OA ought to be a top priority in the medical field. In contrast to previous beliefs, OA knee is no longer only seen in older adults. There is evidence that it is happening more frequently in younger people. There is a dearth of literature that describes it in younger age groups, so more research in this area is necessary to change the focus from managing OA knee in older adults to preventing it in younger adults and lowering the risk of the disease progressing to more advanced stages.

The study indicates that the primary risk factors for the disorder are female sex, obesity, occupation, kneeling/squatting in daily activities, and a family history of OA knee. A

clear understanding of these factors is necessary to design preventive strategies. Even though it is an observational study based on the outpatient department (OPD), it highlights the disease volume of osteoarthritis (OA) and provides a baseline estimate of the incidence of OA knees in younger age groups. The study is conducted at the OPD of a typical tertiary care hospital in our nation. It also identifies the etiological factors linked to the occurrence of knee OA in early life, particularly the modifiable ones. Under such circumstances, it is best to promote lifestyle changes right away, such as weight loss, knee physical therapy, and quadriceps and hamstring strengthening and stretching exercises. Minimizing the strain on the knee joint during daily activities by not squatting or kneeling too much. By identifying the risk factors, OA can be prevented early in life, preventing radiographically defined OA from developing in middle age. Furthermore, preventing disabilities and sparing the healthcare system from the enormous financial burden of the disease would be achieved by halting the progression of OA at an early age.

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