# A study to identify the risk factors and prevalence of osteoarthritis among female patient's attending OPD at SRM GH.

**Mrs. Vinitha. D[1], Mrs. Suganya.N[1], Dr. Helen Shaji J C[2], Mr. Salman Faris. K[3]**
**MS. Mahalakhmi. B[4], MS. Rakshana. M[5],**

[1]M.SC(N), SRM COLLEGE OF NURSING, Faculty of Medical and Health Science, SRM Institute of Science and Technology, SRM Nagar, Kattankulathur-603203, Chengalpattu District, Tamil Nadu, India
ORCID ID 0009-0007-9551-1143
vinithad1@srmist.edu.in

[1]M. Sc(N), SRM COLLEGE OF NURSING, Faculty of Medical and Health Science, SRM Institute of Science and Technology, SRM Nagar, Kattankulathur-603 203, Chengalpattu District, Tamil Nadu, India.
suganyan@srmist.edu.in

[2]M. A (Psy), M.SC.(N), PhD, FPC, DEAN, SRM COLLEGE OF NURSING, Faculty of Medical and Health Science, SRM Institute of Science and Technology, SRM Nagar, Kattankulathur-603 203, Chengalpattu District, Tamil Nadu, India.
dean.nursingktr@srmist.edu.in

[3]SRM COLLEGE OF NURSING, Faculty of Medical and Health Science, SRM Institute of Science and Technology, SRM Nagar, Kattankulathur-603 203, Chengalpattu District, Tamil Nadu, India.

[4]SRM COLLEGE OF NURSING, Faculty of Medical and Health Science, SRM Institute of Science and Technology, SRM Nagar, Kattankulathur-603 203, Chengalpattu District, Tamil Nadu, India.
[5]SRM COLLEGE OF NURSING, Faculty of Medical and Health Science, SRM Institute of Science and Technology, SRM Nagar, Kattankulathur-603 203, Chengalpattu District, Tamil Nadu, India.

**ABSTRACT**

The study aimed to identify the risk factors and prevalence of osteoarthritis among female patients attending the OPD at SRM GH. The objectives included assessing the prevalence and risk factors of osteoarthritis and examining their association with demographic variables. A quantitative research approach with a one-group pre-test design was used, involving 100 female patients selected through purposive sampling. Written consent was obtained from the participants. The results indicated that 60% of the patients had high severity, 39% had moderate severity, and only 1% had low severity of osteoarthritis. Additionally, 85% of the patients had a moderate risk, 11% had a high risk, and 4% had a low risk of developing osteoarthritis. The mean severity score was 21.32±3.92, while the mean risk score was 5.24±1.10. Among demographic variables, only age showed a significant association with osteoarthritis prevalence (P<0.019), while other factors were not significant. The study concluded that most female patients had a moderate risk of osteoarthritis and emphasized the need for interventional studies focused on its prevention among the adult population.

## INTRODUCTION

Osteoarthritis (OA) is the most common form of arthritis and a leading cause of disability worldwide. This degenerative joint disease is characterised by the deterioration of cartilage, the smooth material that coats the ends of bones in a joint. As the cartilage deteriorates, bones begin to rub against one another, resulting in pain, stiffness, oedema, and decreased joint motion. Osteoarthritis (OA), a chronic joint disease, is characterised by the ongoing degradation of articular cartilage, the material that covers the ends of bones in a joint and allows those bones to move smoothly against one another. As the cartilage deteriorates, the bones may start to rub against one another, resulting in pain, swelling, and a loss of joint function. This condition may eventually cause the joint to become stiff and painful, alter its natural shape, and develop osteophyte bone spurs.

## BACKGROUND OF THE STUDY

Millions of individuals across the world suffer with osteoarthritis (OA), the most prevalent kind of arthritis. The degeneration of cartilage, the protective substance at the ends of bones in joints, is a hallmark of this degenerative joint disease. Bones start to rub against one another as cartilage degrades, causing discomfort, stiffness, oedema and a reduction in movement. The burden of osteoarthritis is profound, with significant implications for public health, healthcare systems, and individuals' life quality. The financial strain of osteoarthritis is significant and includes immediate medical expenses like joint replacement surgeries and long term pharmacological treatment, and indirect costs, including lost productivity and disability. Osteoarthritis is the most prevalent form of arthritis, which is defined by the gradual deterioration of subchondral bone and articular cartilage remodeling and inflammation of the synovium. The disease process involves mechanical, biochemical and genetic factors that disrupt the homeostasis of joint tissues. Key contributors include oxidative stress, matrix -degrading enzymes and pro-inflammatory cytokines such as matrix metalloproteinases (MMPs).

Understanding the intricate mechanism of osteoarthritis can assist in the creation of focused treatment plans to slow disease progression.

Osteoarthritis is a largest cause of disability globally, impacting more than 300 million individuals. With age, obesity, and joint damage, its prevalence rises, disproportionately impacting women and those with physically demanding occupations. While knee and hip osteoarthritis are the most common types, the disease can affect any joint. Early diagnosis and management are critical to improving quality of life and reducing the economic burden associated with osteoarthritis. Osteoarthritis is characterized by joint pain, stiffness, swelling and reduced range of motion. Pain frequently gets better with rest and gets worse with action. Though advanced cases may cause persistent discomfort. Radiographic features include

joint subchondral sclerosis, osteophyte development and space constriction. These clinical and imaging results are essential for diagnosis and monitoring disease progression.

## METHODOLOGY

The study aimed to identify the risk factors and prevalence of osteoarthritis among female patients attending the OPD at SRM GH. A **quantitative research approach** was employed, utilizing a **descriptive research design** with a one-group pretest method. The research was conducted among female patients attending the OPD at SRM GH, specifically targeting those diagnosed with osteoarthritis. The **target population** included all female osteoarthritis patients at the OPD, while the **accessible population** consisted of those who met the inclusion criteria. A total of **100 female patients** were selected through a **purposive sampling technique**. The **dependent variable** of the study was osteoarthritis among women aged **40-80 years**, while the **demographic variables** included age, educational qualification, income, occupation, religion, locality, family type, and menopausal status. The **null hypotheses** (Ho1 and Ho2) stated that there would be no significant risk factors among female patients and no significant association between risk factors and their demographic variables. This study provides crucial insights into osteoarthritis prevalence and its associated risk factors, emphasizing the importance of preventive measures and early interventions for affected women.

## DATA ANALYSIS AND INTERPRETATION

1: Distribution of patient demographic characteristics by frequency and percentage attending female OPD.

This results shows that most of the patients attending female OPD, 46(46%) were aged between 40 – 50 years, 63(63%) belonged to nuclear family, 95(95%) were Hindus, 38(38%) had secondary education, 66(66%) were housewives, 45(45%) were living in rural area, 59(59%) attended menopause and attained menopause for 1 – 3 years.

2: Proportional distribution of severity of osteoarthritis among female patients attending OPD.

*N = 100*

| Level of Severity | Frequency | Percentage |
|---|---|---|
| Low severity (1 – 10) | 1 | 1.0 |
| Moderate severity (11 – 20) | 39 | 39.0 |
| High severity (21 – 30) | 60 | 60.0 |

3: Distribution of frequency and percentage of risk factors of osteoarthritis among patients attending female OPD.          **N = 100**

| Level of Risk | Frequency | Percentage |
|---|---|---|
| Low risk (1 – 3) | 4 | 4.0 |
| Moderate risk (4 – 6) | 85 | 85.0 |
| High risk (7 – 9) | 11 | 11.0 |

4: Assessment of the average and standard deviation of severity and risk scores for osteoarthritis among patients attending female OPD.                    *N = 100*

| Variables | Severity | Risk |
|---|---|---|
| Minimum score | 10.0 | 2.0 |
| Maximum score | 29.0 | 9.0 |
| Mean | 21.32 | 5.24 |
| S. D | 3.92 | 1.10 |
| Median | 22.0 | 5.0 |

5: Association of level of severity and risk for osteoarthritis among patients attending female OPD with their      selected demographic variables.                    *N = 100*

| Demographic Variables | Frequency | Chi-Square & p-value | |
|---|---|---|---|
| | | Severity | Risk |
| **Age in years** | | **$11.780^2$** | **$9.596^2$** |
| 40 – 50 years | 46 | **d.f=4 p=0.019** | |
| 51 – 60 years | 42 | **S*** | **d.f=4 p=0.048** |
| Above 60 years | 12 | | **S*** |
| **Family type** | | $6.505^2$ | $2.726^2$ |
| Joint family | 35 | d.f=4  p=0.164  N.S | d.f=4 p=0.605 N. S |
| Nuclear family | 63 | | |
| Extended family | 2 | | |
| **Religion** | | | $5.272^2$ |
| Hindu | 95 | $2.902^2$ | |
| Muslim | 4 | d.f=4  p=0.574  N.S | d.f=4 p=0.261 N. S |
| Christian | 1 | | |

| | | | |
|---|---|---|---|
| Others | - | | |
| **Education** | | 10.743$^2$ d.f=6 p=0.097 N. S | 5.225$^2$ d.f=6 p=0.515 N. S |
| No formal education | 18 | | |
| Primary education | 35 | | |
| Secondary education | 38 | | |
| Graduation | 9 | | |
| **Occupation** | | 4.684$^2$ d.f=4 p=0.321 N. S | 3.798$^2$ d.f=4 p=0.434 N. S |
| Housewife | 66 | | |
| Working in private sector | 27 | | |
| Working in government sector | 7 | | |
| **Living locality** | | 7.884$^2$ | |
| Rural | 45 | d.f=4 p=0.096 N. S | 0.791$^2$ d.f=4 p=0.940 N. S |
| Semi urban | 34 | | |
| Urban | 21 | | |
| **Did attended menopause** | | 4.601$^2$ d.f=2 p=0.100 N. S | 2.921$^2$ d.f=4 p=0.571 N. S |
| Yes | 59 | | |
| No | 41 | | |
| **Duration of attend menopause** | | 11.267$^2$ d.f=6 p=0.080 N. S | 4.766$^2$ d.f=6 p=0.574 N. S |
| <1 | 7 | | |
| 1 – 3 | 66 | | |
| 4 – 6 | 12 | | |
| >6 | 15 | | |
| **Presence of system illness** | | | |

| | | | |
|---|---|---|---|
| Diabetes mellitus | 40 | | |
| Hypertension | 39 | $2.923^2$ | $1.217^2$ |
| Thyroid disorder | 18 | d.f=6  p=0.818  N.S | |
| Other diseases | 3 | | d.f=6 p=0.976 N. S |

*p<0.05, S – Significant, N.S – Not Significant

## DISCUSSION

The primary objective of the study was to identify the prevalence of osteoarthritis among female patients attending the OPD at SRM GH. The findings revealed that **46% of the patients were aged between 40 and 50 years**, indicating that osteoarthritis is prevalent in this age group. Additionally, **63% of the participants belonged to a nuclear family**, while **95% followed the Hindu religion**. In terms of education, **38% had completed secondary education**, and a significant **66% were housewives**. The study also found that **45% of the patients resided in rural areas**, highlighting the need for increased awareness and healthcare accessibility in these regions. Furthermore, **59% of the participants had attended menopause**, with the majority experiencing it for **1 to 3 years**. These demographic findings provide crucial insights into the prevalence of osteoarthritis and emphasize the importance of targeted interventions for

women in this population.Supportive study- Study related to prevalence of osteoarthritis.

osteoarthritis (OA) is a degenerative disease of all the joints that lasts a long time and gets worse over time. It affects the articular cartilage, subchondral bone, ligaments, capsule, and synovium. Despite the persistent belief that OA is a mechanically driven illness, we now have a better understanding of the role of underlying coexisting inflammatory processes and mediators in its development and progression. Preclinical models frequently use posttraumatic osteoarthritis (PTOA), a subtype of OA that results from traumatic joint injuries, to better understand OA in general. The need for novel treatments is urgent because the burden is significant and growing worldwide. We highlight the most important and promising drugs based on their molecular effects in this review,

which focuses on the most recent pharmacological developments in the treatment of OA. They fall under the following general categories: anabolic, matrix metalloprotease activity regulation, anti-inflammatory, and unconventional pleiotropic drugs. We present a thorough examination of the pharmacological developments in each of these fields and point out potential avenues for further research in open access.

We conducted a comprehensive literature review using the PubMed/MIDLINE, Web of Science, and Google Scholar databases. We used the following search terms from the outset to June 2022. "Pathophysiology," "Epidemiology," "Inflammation," "Biomechanics," "Treatment," "Therapy," "Pharmacological," "Intervention," and "Osteoarthritis." We filtered the 560 articles by title and abstract to identify unique research and examine papers published in English within the previous ten years. The types of study designs were not limited. Included were only pertinent references, mostly pertaining to the pharmaceutical management of OA. Articles discussing alternative viewpoints on open access and entire texts that were not accessible were excluded. Additionally, we selected several references from the reference lists in the screened publications that were either known to the author or manually chosen and not found by the search parameters. The two authors then independently checked and finalized the chosen sources. Consequently, our study included 66 articles that satisfied the eligibility requirements. Furthermore, this narrative review was carried out in accordance with the A quality assessment instrument is the Scale for the Assessment of Narrative Review Articles (SANRA). GHALIB AHMED et al (2023)

The second objective of the study was to assess the risk factors of osteoarthritis among female patients attending the OPD at SRM GH. The findings indicated that the **average osteoarthritis severity score was 21.32±3.92**, with a **minimum score of 10.0** and a **maximum score of 29.0**, while the **median severity score was 22.0**. Additionally, the **mean risk score for osteoarthritis was 5.24±1.10**, with a **minimum score of 2.0** and a **maximum score of 9.0**, while the **median risk score was 9.0**. These results suggest varying levels of osteoarthritis severity and risk among the participants, emphasizing the need for preventive measures and early intervention to

reduce disease progression and improve patient outcomes.Supportive study -ADITYA PUNDKAR et al; (2024) The thorough analysis of PRP and BMAC in relation to osteoarthritis in the knee yields important results that have clinical practice ramifications and guide suggestions for further study. As regenerative medicines, PRP and BMAC show promise by using autologous components to treat symptoms and maybe alter the course of the disease. Clinicians can make well-informed decisions thanks to the comprehensive knowledge of their safety profiles, clinical effectiveness, and mechanisms of action decision-making inpatient treatment. The implications for clinical practice highlight the necessity of a customized strategy that considers variables like the severity of the disease and the unique characteristics of each patient. Healthcare professionals must work together as these medicines become more integrated into the changing landscape of managing osteoarthritis. Future studies should focus on long-term results evaluation, direct comparisons between PRP and BMAC, procedure standardization, biomarker identification, and cost-effectiveness analyses. By addressing these research areas, we can improve patient outcomes, refine therapeutic approaches, and develop a more

evidence-based strategy for the regenerative management of osteoarthritis in the knee.

The third objective of the study was to determine the association between risk factors and the prevalence of osteoarthritis with selected demographic variables. The findings revealed that **age of the patient ($\chi^2$=11.780, p=0.019) demonstrated a statistically significant correlation** with the severity of osteoarthritis among female patients attending the OPD. However, **other demographic variables did not show statistical significance at the p<0.05 level**. This indicates that age plays a crucial role in the severity of osteoarthritis, highlighting the need for targeted preventive strategies for older women. While other demographic factors did not show a significant association, further research may be required to explore their potential influence on osteoarthritis progression. Supportive study YOGANARASIMHA (2022) Osteoarthritis (OA) of the hips and knees is the most common chronic rheumatic disease and a major source of pain and disability in most of the world's nations. Osteoarthritis (OA) often affects women more frequently than males, and its frequency increases with age. Strong links exist between OA and ageing and physically demanding work, which is

necessary for many people to live in rural areas of developing nations. To develop future cost-effective preventive efforts and health care services, it will be crucial to ascertain the prevalence of OA, and its risk factor profiles by area. Materials and Methods: With 1.252 billion people living in India, the study was a community-based cross-sectional study to determine the prevalence of primary knee OA in that country. Five locations in India participated in the study. They further separated each location into town, village, small city, and big metropolis. Five thousand subjects made up the entire sample size. A systematic questionnaire and simple skiagrams for OA confirmation were the tools. We used the Kellgren and Lawrence osteoarthritis scale to make the diagnosis. Findings the overall frequency of knee OA was 28.7%. Obesity (P = 0.04), age (P = 0.001), sedentary work (P = 0.001), and female gender (prevalence of 31.6%) were considered the related factors. Conclusions: Research on India, a country with diverse socio-geographic backgrounds and communities, is scarce.

## CONCLUSION

The purpose of the study aims to investigate how the public views health and joint discomfort and how this affects seeking medical advice and exercises. The demographic variable age of the patient ($\chi^2$=11.780, p=0.019) had demonstrated a statistically meaningful correlation with significant association with age and level of risk for osteoarthritis between patients attending female OPD at the $p<0.05$ level and there was no statistically significant correlation between the other demographic factors and the degree of risk for osteoarthritis between patients attending female OPD at $p<0.05$ level.

## RECOMMENDATION

- The study's conclusions led to the following recommendations
- For greater generalization of findings, the research might be done in a new venue and with a bigger sample of participants.
- Research may be done on a few of the variables that contribute to adults.
- Similar studies can be conducted for greater population.
- Interventions can be implemented related to osteoarthritis.

### REFERENCES

1.Felson DT, Zhang Y. Osteoarthritis: Pathophysiology and Therapeutic Implications. Ann Intern Med. 1998

2. Yelin E, Weinstein S, King T. The Burden of Musculoskeletal Diseases in the United States. 4th ed. Rosemont, IL: United States Bone and Joint Initiative; 2018.

3. Dieppe P, Lohmander S. Osteoarthritis: Clinical and Pathological

Features. In: Moskowitz RW, Howell DS, Altman RD, Buckwalter JA, Goldberg VM, eds. Osteoarthritis: Diagnosis and Medical/Surgical Management. 4th ed.

4. The Arthritis Foundation provides a wide range of resources, including an overview of osteoarthritis, management strategies, and patient stories.

5. "Osteoarthritis" by Hunter DJ, Bierma-Zeinstra S

This review article discusses the epidemiology, clinical features, and current management strategies for osteoarthritis.

6. Hunter DJ, Bierma-Zeinstra S. "Osteoarthritis"

A comprehensive review of osteoarthritis, focusing on epidemiology, clinical features, and management strategies.

7. Dieppe P, Lohman Der S. Osteoarthritis: Clinical and Pathological

Features 2007.

8. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017.

9. E. Sebbag, R. Felten, F. Sagez, J. Sibilia, H. Devilliers, L. Arnaud

The world-wide burden of musculoskeletal diseases: a systematic analysis of the World Health Organization Burden of Diseases Database.

10. S. Kluzek, M.T. Sanchez, D. Hart, et al.

Painful knee but not hand osteoarthritis is an independent predictor of mortality over 23 years follow-up of a population-based cohort of middle-aged women

11. R.J. Cleveland, C. Alvarez et al. The impact of painful knee osteoarthritis on mortality: a community-based cohort study with over 24 years of follow-up.

12. M. Corsi, C. Alvarez, et al. Contributions of symptomatic osteoarthritis and physical function to incident cardiovascular disease.

13. A. Turkiewicz, A.A. Kiadaliri, M. Englund

Cause-specific mortality in osteoarthritis of peripheral joints.

14. G.A. Hawker, R. Croxford, et al.

All-cause mortality and serious cardiovascular events in people with hip and knee osteoarthritis: a population-based cohort study.

15. C. Fingleton, K. Smart, N. Moloney, B.M. Fullen, C. Doody

Pain sensitization in people with knee osteoarthritis: a systematic review and meta-analysis.