Original Research Article

Prevalence of Knee Osteoarthritis Among Post Menopausal Women Across Ahmedabad City

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ABSTRACT

BACKGROUND: One of the top five most incapacitating diseases that affects more than one-third of people over the age of 55, osteoarthritis is a degenerative joint disease that is characterized by joint inflammation and a reparative bone response. It typically affects the knee. Menopause marks the termination of a woman's menstrual cycles and involves a natural reduction in reproductive hormones. It is officially defined as occurring when 12 successive months have elapsed since the last menstrual period. After menopause cartilage showed progressive severe degeneration suggesting estrogen deficiency and it is a risk factor of cartilage degeneration of knee joint.

METHODOLOGY: An Observational study was undertaken among 150 Post Menopausal Women between age group 45-60 years. A self-administered questionnaire, the WOMAC Osteoarthritis Index has 24 items broken down into 3 subscales: pain, stiffness, and physical function.

RESULT: Out of 150 Post Menopausal Women, there was moderate risk of developing osteoarthritis in most of the women with Mean Prevalence of 59.35%. Out of which Pain subscale was 59.6%, Morning Stiffness was 58% and Functional limitation was 59.4%.

CONCLUSION: Prevalence rate of knee OA was estimated to be 59.35% among post menopausal women. The prevalence of knee OA increased with increasing age. Suitable steps should be taken to raise an awareness related to importance of daily exercise. Adequate treatment and physiotherapy should be given to manage pain, maintain mobility and minimize disability.

Keywords: Osteoarthritis, Womac, Postmenopausal women, Pain, Stiffness, Physical function

INTRODUCTION

Osteoarthritis (OA) is the most common musculoskeletal disorder in older individuals, and it is the leading cause of pain and physical disability. OA is mainly caused by degenerative changes in the joints due to aging, but various other factors such as sex, genes, and obesity also contribute to OA development. The prevalence of OA is higher in women than in men, and the incidence of OA is particularly elevated in menopause. It is suggested that hormonal changes in women, especially decreasing of Estrogen levels, lead to an increase in OA after menopause.[1] OA is characterized by focal cartilage loss, progressive cartilage destruction, and subchondral bone thickening with osteophyte formation.3 Other than age, the only generally accepted risk factor for OA is overweight.4 Articular cartilage, the central site of OA pathology, is hormonally sensitive and has estrogen receptors.[2]

One of the most prevalent musculoskeletal conditions, osteoarthritis is a debilitating illness that impairs a patient's quality of life

by causing excruciating pain, limited function and range of motion, lower income, and diminished social engagement. The knee is the most frequently affected joint among the body's major joints in terms of this condition. Damage to the knee's articular cartilage, increased activity of the bones beneath the cartilage, and the development of osteophytes on the side of the joint are the primary pathological symptoms of this issue. The extensive loss of cartilage at the articular surfaces of the femur and coarse bones, which causes wear and tear of the bones on top of each other, is the only condition that is referred to as osteoarthritis or osteoarthritis of the knee.[3]Osteoarthritis (OA) is a leading source of musculoskeletal discomfort, the only significant cause of arthritis-related impairment and handicap, and a significant contributor to the healthcare burden of the community in terms of missed work and early retirement. A prevalent location for osteoarthritis (OA) is the knee joint. Individuals suffering from knee OA typically display a distinctive pattern of functional impairments, primarily related to mobility, standing up from a seated or supine posture, and activities of daily living (ADLs) involving the lower limbs. Postmenopausal osteoarthritis (OA) is the most common joint disease in people at the age of over 45 years old, especially in the knee, and its disability rate is high, seriously affecting the patient's health and quality of life. In the premenopausal and early perimenopausal periods, circulating estradiol is the predominant estrogen, and it is decreased with menopause.[3]

Osteoarthritis (OA) is a disease of joints, involving both cartilage and bone in the disease process. With increasing disease severity, articular cartilage is reduced. Factors influencing the incidence of radiological OA have been identified through epidemiological studies. These factors include gender (women, especially after entering the menopause), obesity, inheritance, knee injury, bending, the presence of hand OA (Heberden's nodes), and quadriceps strength. The effect these factors have on articular cartilage is less well understood. A relationship between the hormonal changes of the menopause and OA has long been accepted A type of "menopausal arthritis" with a fast start of symptoms and numerous joint involvement (hands, spine, and knees) was initially identified by Kellgren and Moore in 1952 in a group of women with Heberden's nodes. They dubbed this condition "primary generalized osteoarthritis.". Although the existence of this syndrome remains controversial, there is no controversy related to the increased prevalence of OA in perimenopausal women, disproportionate to age.[4]

Women are affected by osteoarthritis (OA) more frequently than men. Following menopause, the condition becomes more common, severe, and involves several joints. Age has a similar influence on women's hip and knee OA risk, with the effects growing quickly between 50 and 75 years of age.[5]

Postmenopausal osteoarthritis is the most prevalent joint condition in adults over 50, primarily affecting the knee. It has a high disability rate that negatively impacts the patient's quality of life and overall health. Osteoarthritis becomes more common after menopause and may be linked to hormonal fluctuations in women. After menopause, the cartilage gradually deteriorated, indicating an estrogen deficit, which may be a risk factor for the deterioration of the knee joint's cartilage. According to a study of the literature, women's prevalence of osteoarthritis in the knee joint increases throughout the perimenopausal stage and keeps rising into menopause. Research indicates that women are more likely to develop osteoarthritis if their estrogen levels decline throughout menopause (Spector TD, Campion GD, 1989). The average menopausal age of Indian women is 46.3 years, compared to 51 years in Western countries. This means that Indian women are more likely than their Western counterparts to acquire osteoarthritis early in life.

MATERIALS & METHODS

Cross-sectional observational research with middle 150 postmenopausal women with knee osteoarthritis was conducted. women between the ages of 45 and 60 who were willing to participate in the study were recruited. 150 postmenopausal women completed the survey and were taken into account for the analysis. After explaining the study to each postmenopausal women, consent was obtained from those who were requested to complete the WOMAC osteoarthritis index.

In patients with osteoarthritis (OA) of the hip or knee, WOMAC is a self-administered health status measure that evaluates the dimensions of pain, stiffness, and function (either individually or as an overall index). It is available in three formats: 5-point Likert, 11-point numerical rating, and 100-mm visual analogue scale (VAS). There are several questions under each category that are intended to evaluate the disease's clinical severity (5 questions for pain, 2 questions for stiffness, and 17 questions for physical function). Pain experienced during five distinct activities is reflected in the five pain questions. These five scenarios include walking on a level surface, climbing or descending stairs, sleeping in bed at night, sitting or lying down, and standing straight up. A score is generated based on the patient's answers to each question.

Patients with osteoarthritis were identified using the 5-point Likert version of the WOMAC (Western Ontario and McMaster Universities) osteoarthritis index. The most popular and well-validated outcome metric for individuals with osteoarthritis in the knee is the WOMAC index.10, 11 The 24 items in the questionnaire are all about stiffness, discomfort, and functional limitations.12 Each item has five possible answers in the Likert format: "none" receives a score of 0, "mild" receives a score of 1, "moderate" receives a score of 2, "severe" receives a score of 3, and "extreme" receives a score of 4.[7]

The sum of the scores for each response to each item makes up the total score for each subscale, which can be computed manually or automatically by a computer. The following subscales have a range of possible Likert scores: physical function (17 items, 0–68), stiffness (2 items, 0–8), and pain (0–20; 5 items each scored 0–4). Worse pain, stiffness, or physical function are indicated by higher scores. The subjects could only receive a maximum score of 96. Patients were classified as low risk (score ≤ 60), moderate risk (scoring 60–80), and high risk (score ≥ 81) based on the WOMAC score that was acquired. WOMAC scores are divided into low risk ($\leq 70\%$) and high risk ($> 70\%$) categories and are also reported as percentages. The response is deemed invalid and the deficient subscale(s) is/are excluded from analysis if two or more pain items, both stiffness items, and four or more physical function items are absent. [8]

A validated tool for evaluating osteoarthritis is the Western Ontario and McMaster Universities (WOMAC) Osteoarthritis (OA) Index. The internal consistency of the three WOMAC subscales (pain, stiffness, and physical function) was demonstrated by their respective Cronbach's coefficient alpha values of 0.91, 0.81, and 0.84. Test-retest reliability was deemed satisfactory, with ICCs ranging from 0.86 to 0.89.[9]

INCLUSION CRITERIA:
Post Menopausal Women.
Age 45-60 years.
Women with knee pain.
Willing to participate in the study.

EXCLUSION CRITERIA:
Inflammatory Rhematic Disease.
Osteoporosis.
Heart Failure.
Malignancy.
Previous any Knee Surgery.
Women on NSAIDS or any other type of Pain Medication.
Fractures.
Inability or unwillingness to participate in the study.

RESULT

A statistical analysis was conducted with Microsoft Excel 2016. There were 150 postmenopausal women in the sample size. The research population's self-reported osteoarthritis prevalence was 59.35%.(Figure 1) Because the scale shows that the higher the score, the higher the amount of osteoarthritis, we divided the results into three categories: low risk, moderate risk, and high risk osteoarthritis. 53 postmenopausal women who scored less than 50 on the WOMAC osteoarthritis index. Moderate osteoarthritis was identified in 80 postmenopausal women with scores between 50 and 80, and high risk osteoarthritis was detected in 17 postmenopausal women with values between 80 and 100. (Figure 2)
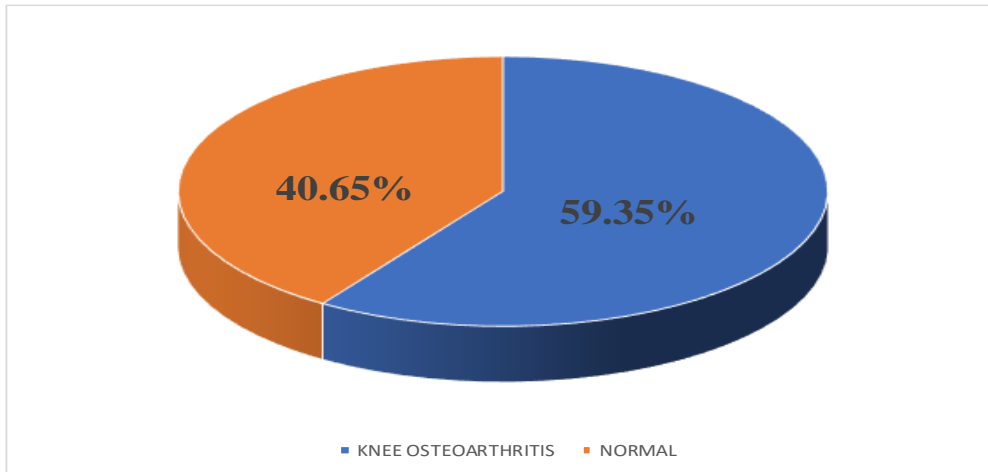

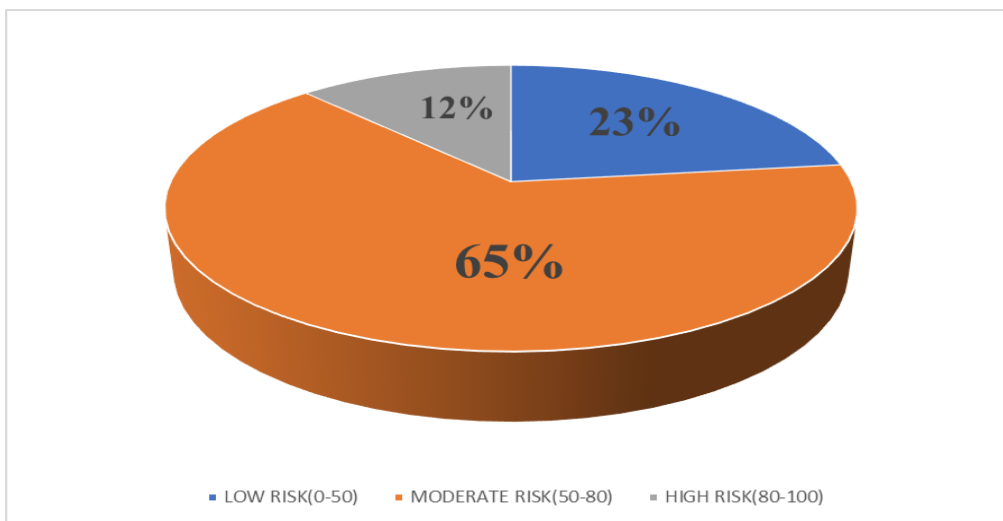**FIGURE 1: Percentage Prevalence of knee osteoarthritis amongst postmenopausal women.**

FIGURE 2: WOMAC Osteoarthritis Index scoring of postmenopausal women.

DISCUSSION

S. Sathiyanarayanan et al stated that subjects aged ≥60 years of age had high WOMAC score percentage (51.9%) compared to subjects less than 60 years (27.5%) with[OR 2.85; 95% CI 1.25-6.48). Many studies showed increasing age to be a risk factor for OA. Females had high WOMAC score percentage (48.3%) compared to males (28.9%) with [OR; 2.29; 95% CI 1.01-5.24). This was consistent with higher incidence rates of knee OA in women than men reported by many other studies.[8]

M. Koch et al concluded that the estimated prevalence of knee osteoarthritis among women aged 40-65 years was-28.3%. It is within the range of 17-60.6% reported globally. The prevalence was also reported to

be significantly associated with the sedentary lifestyle and greater BMI. In the present study, out of 113 women who fulfilled the diagnostic criteria for osteoarthritis of knee joint, 26 women were peri-menopausal (23%) and 87 women were post-menopausal (77%). The association between knee OA and menopause was found to be statistically significant (p=0.001) which is supported by a number of studies which have proven that declining levels of estrogen during the transition towards menopause increases women's risk of acquiring knee osteoarthritis.[6]

Masoomeh Dashtyan et al proved that especially in postmenopausal women, the risk of developing osteoarthritis is higher and this is associated with a decrease in estrogen at this time. Knee osteoarthritis is very common in old age, affecting 33.6% of adults over 65 years of age. Women are more likely than men to develop osteoarthritis of the knee and carry the burden of the disease. Studies have shown that osteoarthritis is different in women than in men and may affect certain parts of the knee disproportionately.[12]

Curry et al. came to the conclusion that menopause affects KOA in many ways, including as hormonal changes, alterations in pain perception, and loss of muscle mass, tendon strength, and bone mineral density. Here, we go over how a practitioner might evaluate the elements—such as functional muscle strength and postural (knee, pelvis, and spine) alignment—that are known to exacerbate KOA symptoms. At the heart of management is the creation of a successful fitness program. For this patient population, optimizing other lifestyle aspects like nutrition and sleep is also crucial. Vasomotor symptoms that interfere with sleep can also make knee pain more noticeable. For this reason, medication like duloxetine or gabapentin may be used. All things considered, these therapies have significant effects in reducing pain and improving function.[10]

Hame sl et al stated that Due to its widespread impact on millions of people's quality of life, knee osteoarthritis is a significant concern. The symptoms of osteoarthritis can vary, as can the effects they have on individuals. Compared to men, women usually arrive with more advanced phases and disabilities. The causes of this are complex, but they could include other gender and socioeconomic issues, overall variations in mechanical alignment, less cartilage volume and more cartilage wear. The management of osteoarthritis also varies. Women are more likely to look for and use solutions that combine the mind and body. Nevertheless, women gain just as much from total joint arthroplasty as do men, even if they have greater levels of pain and disability prior to surgery. The secret to resolving the problems of unequal care in the treatment of osteoarthritis in the knees in women is to educate doctors and patients on the advantages of various treatment choices, including arthroplasty.[11]

CONCLUSION

Evidence demonstrates that Prevalence rate of knee OA was 59.35% among postmenopausal women. The prevalence of knee OA increased with increasing age. Postmenopausal women, there was moderate risk of developing osteoarthritis in 98 women with mean prevalence of 59.35%. Out of which pain subscale was 59.6%, morning stiffness was 58% and functional limitation was 59.4%. As osteoarthritis is a wide-reaching public health issue that calls for targeted study and rapid development of viable interventions, physical therapists can assist in delivering positive change related to Osteoarthritis management. It is advisable to consider incorporating a regimen of regular physical exercises and control over modifiable risk factors into the treatment plan for osteoarthritis among post menopausal women. Further research with larger sample size with different years of clinical experience from different zones of Ahmedabad can be taken. Gender wise association can also be taken. Future research could explore the underlying factors affecting osteoarthritis which will be helpful

to determine their effectiveness in better ways.

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