Original Article

Frequency of Osteoarthritis in Post-Menopausal Women of Twin Cities

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ABSTRACT

Objective: to study the prevalence of lower limb osteoarthritis in post-menopausal females in twin cities

Methodology: The study was structured as an observational cross-sectional study, targeting postmenopausal women afflicted with osteoarthritis across various regions of twin cities. A written informed consent was taken from the participants in the language best understood by them. The duration of study was from July 2022 to January 2023. A total of 288 postmenopausal women meeting the study's inclusion and exclusion criteria were recruited. Participants underwent evaluation using the WOMAC questionnaire, a standardized tool for assessing pain, stiffness, and physical functionality in osteoarthritis patients. The data was collected and statistically analyzed. For data analysis, IBM SPSS 23 software was utilized. Quantitative analysis relied on standard deviation and mean, while qualitative analysis was based on frequency and proportion.

Results: A total of 288 participants enrolled in this study. The participants mean age was 60.11±10.27 years with age above than 45 years. The mean BMI of the participants was 26.50±16.22 kg/m2. The 288 participants were married housewives. Out of 288 participants 126 (43.8%) was rural, 162 (56.3%) was urban. The significant age of the menarche was 12.86±1.72 years. The menopausal mean age was 39.78±17.44. The mean comorbidity status was 0.98±1.06.

Conclusion: The findings of current study revealed that the recurrence of osteoarthritis in middle of postmenopausal ladies is by all accounts high and underline a significant wellbeing concern. Increased age, gender, hereditary and cultural ethnicity, as well as mechanical factors like joint structure/function positioning, trauma, physical activity, and working or financial status, were found to be associated with osteoarthritis.

Keywords: Osteoarthritis, Menopausal.

Introduction

The degenerative joint pathology osteoarthritis (OA) is described as damage to articular cartilage. In older individuals, osteoarthritis is the most prevalent chronic joint disease and is a significant supporter to functional impairment and fractional loss of autonomy.[1] Some of the symptoms of osteoarthritis include joint pain and swelling, difficulty moving, warmth, crepitus, persistent stiffness in the morning, muscle weakness, and balance issues. The pathology of the joints is changed and incorporates osteophytes (bone development at the joint edges), restricted articular ligament injury and misfortune, distorted subarticular bone rebuilding and steady loss, ligamentous laxity, periarticular strong shortcoming, and periodically synovial distension and inflammation.[2] Patients might communicate worries about locked or unsteady joints. These side effects force patients to confine their typical exercises because of agony and firmness, which brings about a deficiency of function.[3] The hip, knee, spine, and hand are the primary joints included. Osteoarthritis principally influences weight-bearing joints, like the hip and knee. The tibio-femoral joint and the femur-patella joint are the two joints that make up the knee, which associates the thigh to the leg (patellofemoral joint). Menopause is the irreversible cessation of menstruation caused by the absence of ovarian follicular activity. Natural menopause is considered to have occurred after 12 consecutive months of amenorrhea without any other obvious pathological or physiological causes. The last feminine time frame denotes the start of menopause; however, this isn't sure to have happened until a year or more afterward.[4] The body goes through huge hormonal

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changes during menopause, creating less chemicals in general, yet less estrogen and progesterone specifically. Estrogen and progesterone are created by the ovaries. At the point when the ovaries are done creating adequate estrogen and progesterone, chemical treatment can be controlled as a supplement.[5] The functional loss of ovarian follicular activity causes menopause, or the end of menstruation. Accordingly, estrogen lack causes osteoarthritis, which harms ligament and tendons as a result ligaments to extend and turn out to be horrendously solid in a joint, causes weakening of muscles and synovial joint inflammation.[6]

Methodology

The study was structured as an observational cross-sectional study, targeting postmenopausal women afflicted with osteoarthritis across various regions of twin cities. The duration of study was from July 2022 to January 2023. The study utilised a non-probability convenience sampling, due to its practicality. WHO sample size calculator was applied and using the formula n = Z^2 * P(1-P)/d^2, whereas n is sample size of 288 postmenopausal women with osteoarthritis was determined P is Population size. This calculation was based on a prevalence rate of 25% for osteoarthritis in postmenopausal women, a confidence level of 95%, and an absolute precision level of 5%. Out of the 288 participants, only women who self-identified as post-menopausal and underwent a BMI examination were selected. Inclusion criteria specified post-menopausal women aged 45 years and older, with a normal BMI and receiving Vitamin C supplementation. Exclusion criteria included women undergoing hormonal replacement therapy, diagnosed with malignant tumors, or taking heart-affecting medications.

Data collection commenced upon receiving approval from the Institutional Review Board (IRB) of Islamabad Medical and Dental College. A total of 288 postmenopausal women meeting the study's inclusion and exclusion criteria were recruited. Participants underwent evaluation using the WOMAC questionnaire, a standardized tool for assessing pain, stiffness, and physical functionality in osteoarthritis patients. This questionnaire encompasses various functional limitations, stiffness, and pain-related items. The WOMAC questionnaire includes evaluation of 17 functional limitations, two stiffness items with a scoring range of 0-8, and five pain-related items with a scoring range of 0–20, resulting in a total score range of 0–68.

Before data collection, participants were required to provide informed written consent, undergo verbal briefing regarding the study's purpose, and complete any necessary forms.

Variables such as age, age at menarche and menopause, BMI, and comorbidities like diabetes mellitus and hypertension were measured, along with lifestyle factors such as family income. BMI was calculated using precise height and weight measurements. Comorbidities were diagnosed through a systematic questionnaire. Participants were also advised to incorporate regular walking sessions of at least 30 minutes, five days a week, into their routine. Additionally, they were encouraged to include anaerobic exercises such as push-ups, sit-ups, dumbbell workouts, and barbell exercises at least once a week to facilitate muscle building.

For data analysis, IBM SPSS 23 software was utilized. Quantitative analysis relied on standard deviation and mean, while qualitative analysis was based on frequency and proportion.

Results

In a study of 288 post-menopausal women, the mean age was 60.11 ± 10.27 years, with a mean BMI of 26.50 ± 16.22 kg/m². Rural participants made up 43.8%, while 56.3% were urban. The mean age at menarche was 12.86 ± 1.72 years, and menopause occurred at 39.78 ± 17.44 years on average. Comorbidities had a mean score of 0.98 ± 1.06.

WOMAC scores were as follows: mean pain (6.04 ± 5.51), stiffness (2.31 ± 2.28), difficulty (19.42 ± 17.29), with an overall WOMAC score of 27.82 ± 24.18. All participants reported experiencing some level of pain, stiffness, and difficulty in physical function. (Table I)

Discussion

The primary ends drawn from this study demonstrate that postmenopausal women with osteoarthritis (OA) show an expanded predominance of declinatory and incendiary problems, particularly after the age of 45. In a recent study conducted by Sasaki et al. the prevalence of knee osteoarthritis (OA) was found to be as high as 12.0 % to 48.1% in premenopausal participants.[7] However past quantitative and

epidemiological investigations reliably demonstrate a higher risk of osteoarthritis development in females compared to males. In research conducted by Koch & Sharma, they documented that the estimated prevalence of knee joint osteoarthritis was 28.3%.[8] Additionally, it was observed that African Americans exhibited a higher likelihood of experiencing knee osteoarthritis compared to hand osteoarthritis.[9]

Table I: Frequency of osteoarthritis symptoms in postmenopausal women based on age, BMI, WOMAC scores for pain, stiffness, and difficulty, along with other study variables. (N=288)

Variables	Mean ± SD	Range	Proportion (%)
Age (years)	60.11 ± 10.27	Above 45	-
BMI (kg/m²)	26.50 ± 16.22	-	-
Marital Status (Housewives)	-	-	100%
Residence	-	-	
- Rural	-	-	43.8%
- Urban	-	-	56.3%
Age of Menarche (years)	12.86 ± 1.72	-	-
Menopausal Age (years)	39.78 ± 17.44	-	-
Comorbidity Status	0.98 ± 1.06	-	-
Suggested Exercise Level	0.09 ± 0.29	-	-
WOMAC Score	-		
- Pain (range 0–20)	6.04 ± 5.51	0-20	
- Stiffness (range 0–8)	2.31 ± 2.28	0-8	
- Difficulty (range 0–68)	19.42 ± 17.29	0-68	
- Overall WOMAC	27.82 ± 24.18	0-68	
Pain Levels			
- No pain	-	-	35.1%
- Mild pain	-	-	14.6%
- Moderate pain	-	-	25.3%
- Severe pain	-	-	20.1%
- Extreme pain	-	-	4.9%
Stiffness Levels			
- No stiffness	-	-	37.8%
- Mild stiffness	-	-	19.4%
- Moderate stiffness	-	-	22.9%
- Severe stiffness	-	-	15.6%
- Extreme stiffness	-	-	4.2%
Difficulty Levels			
- No difficulty	-	-	35.8%
- Mild difficulty	-	-	7.3%
- Moderate difficulty	-	-	35.1%
- Severe difficulty	-	-	18.8%
- Extreme difficulty	-	-	3.1%

As per the Framingham osteoarthritis research findings, individuals classified as obese with a BMI exceeding 30.0 kg/m² are four times more prone to developing knee osteoarthritis compared to those with a BMI of 25.0 kg/m². [10] Factors such as advancing age, being female, experiencing an early and prolonged cessation of menses, having a family history of osteoarthritis, and being overweight have all been linked to the development of osteoarthritis [11]. According to Lo K et al. the global occurrence of osteoarthritis is estimated to range from 5 to 25%, while a prevalence of 4% has been previously reported in rural South Africa. [12]

The Nadkar study found that 20% of males and 58% of females had knee osteoarthritis symptoms that began before the age of 50, with a statistically significant difference ($p < 0.05$) According to Lee S. et al.' estimation of the prevalence of knee osteoarthritis in the Korean population, women are more likely than men to have the condition, with rates of 43.8% and 21.1%, respectively [13].

The research found that in postmenopausal women, knee pain is a significant risk factor for the development and progression of knee osteoarthritis.[14] According to the authors, there is a 35% increased risk of knee osteoarthritis for every 5 kg/m^ increase in body mass index. [15] According to the results of our study, 34.7% of post-menopausal women do not have osteoarthritis, whereas 65.2% of them do. Furthermore, the distribution of those affected is as follows: 6.9% of those affected are slightly affected, 35.1% are moderately affected, 20.8% are severely affected, and 2.4% are extremely affected.

Conclusion

The findings of current study revealed that the recurrence of osteoarthritis in middle of postmenopausal ladies is by all accounts high and underline a significant wellbeing concern. Increased age, gender, hereditary and cultural ethnicity, as well as mechanical factors like joint structure/function positioning, trauma, physical activity, and working or financial status, were found to be associated with osteoarthritis. The significant risk factor for developing knee osteoarthritis is being overweight (BMI 25-30 kg/m2) or corpulent (BMI > 30 kg/m2).

The elements which were not important to our review were conjugal status, period of menarche, private status, practice level and word related status. Patients' circumstances, including torment, firmness, and joint capability, were assessed utilizing the WOMAC Survey, a generally utilized, exclusive assortment of organized polls utilized by a huge number to assess patients with osteoarthritis of the knee and hip. The discoveries likewise highlight the need of allotting extra assets or different assets to control the referred to causative factors and lower the commonness of osteoarthritis in postmenopausal ladies. To decrease the effect of such a huge wellbeing danger, extra review ought to focus on assessing the effect of different prudent steps.

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