ORIGINAL RESEARCH PAPER
Volume - 13 | Issue - 07 | July - 2024 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

VARUS ANGLE CORRELATION WITH KNEE PAIN IN INDIAN POST-MENOPAUSAL WOMEN

Orthopaedics

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ABSTRACT

Knee pain in postmenopausal women can be due to varying reasons. Knee osteoarthritis is one of the most common causes in women. There is expanding proof that estrogen impacts joint tissues' action through complex atomic way beams that demonstrate at different levels (3). Observational examinations demonstrate that the pervasiveness of O.A. is expanded tremendously in postmenopausal ladies (4). The study aims to find out the Clinical knee Varus angle correlation vs. knee pain in Indian post-menopausal women. **Results:** The average WOMAC score was 54.34 out of 96, indicating moderate knee pain and dysfunction. The varus angle in the standing position showed a positive correlation with the WOMAC score, suggesting a relationship between knee alignment and symptom severity. However, the varus angle in the supine position did not show a significant correlation. Physiotherapy sessions were negatively correlated with the WOMAC score, indicating that more sessions were associated with better outcomes. Age and time since menopause showed a weak negative correlation with the WOMAC score. Range of motion, medication duration, and muscle strength also showed correlations with the WOMAC score. **Conclusion-** Varus angle in standing position and not supine is an important screening and prognostic factor (but not the only) in osteoarthritis of the knees and can be used to screen patients in bulk in absence of imaging modalities. The number of physiotherapy sessions is important in better functions and WOMAC scores. The duration of menopause, other post-menopausal symptoms have no statistical significance in prognosticating knee osteoarthritis.

KEYWORDS

Varus angle, WOMAC score, Post-menopausal women

INTRODUCTION

Knee pain in postmenopausal women can be due to varying reasons. Knee osteoarthritis is one of the most common causes in women. The other causes can be other types of arthritis like rheumatoid, psoriatic arthritis, connective tissue disorders and secondary arthritis to hyperthyroidism, osteoporosis and joint dysplasias. Estrogen inadequacy increments the danger of Osteoarthritis (O.A.) (2). There is expanding proof that estrogen impacts joint tissues' action through complex atomic way beams that demonstrate at different levels (3). Observational examinations demonstrate that the pervasiveness of O.A. is expanded tremendously in postmenopausal ladies (4). The impact of estrogen on joint tissues has been concentrated in ovariectomized creature model. The effect of estrogen lack on ligament stays indistinct. However, there is critical proof of the unfavorable impact of estrogen misfortune in mature females (5).

The study aims to find out the clinical knee varus angle correlation vs. knee pain and function by means of a WOMAC score in Indian post-menopausal women as also the correlation of post-menopausal symptoms with the WOMAC score.

Figure 1: Standing Varus angle deformity

The Western Ontario and Mc Master Universities Osteoarthritis Index (WOMAC) is a widely used, proprietary set of standardized questionnaires used by health professionals to evaluate the condition of patients with osteoarthritis of the knee and hip, including pain, stiffness, and physical functioning of the joints. The WOMAC has also been used to assess back pain, rheumatoid arthritis, juvenile rheumatoid arthritis, systemic lupus erythematosus, and fibromyalgia. It can be self-administered and was developed at Western Ontario and McMaster Universities in 1982. (5)

Higher scores indicate worse pain, stiffness, and functional limitations. The WOMAC measures five items for pain (score range 0–20), two for stiffness (score range 0–8), and 17 for functional limitation (score range 0–68). (6) Physical functioning questions cover everyday activities such as stair use, standing up from a sitting or lying position, standing, bending, walking, getting in and out of a car, shopping, putting on or taking off socks, lying in bed, getting in or out of a bath, sitting, and heavy and light household duties. (7) The questions on the WOMAC are a subset of the questions of the Hip disability and osteoarthritis outcome score (HOOS). (8) Thus, a HOOS survey may also be used to determine a WOMAC score.

A WOMAC test takes about 12 minutes, but is also available in a short form, (although this has not been as extensively tested as the full version). Versions of the WOMAC have also been developed that can be used in telephone or online surveys. (7)

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted among 110 patients visiting the Orthopaedic outpatient department in Kamla Nehru hospital along with a questionnaire regarding knee pain and other post-menopausal problems like anxiety, depression, night sweats, hot flushes, sleep disturbances and other joint pains. We used the WOMAC

scales. This scale is pre-defined and pre validated by earlier studies. The inclusion criteria was post-menopausal women with knee pain. The exclusion criteria was patients with history of trauma or knee surgery.

Figure 2: Age distribution as per WOMAC score

RESULTS

The average WOMAC score was 54.34/96; the highest being 96 and the lowest being 12

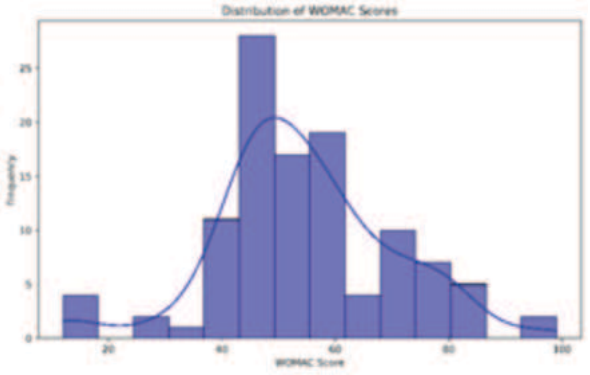

Figure 3: Frequency distribution of WOMAC score

The varus angle in the standing position shows a positive correlation with the WOMAC score, suggesting a potential relationship between the anatomical alignment of the knee and the severity of symptoms. The average varus angle in standing position was 8.7 degrees and the average varus angle in supine position was 7.8 degrees. However the varus angle in standing position showed a correlation of 0.15 vs. -0.05 in supine position which shows that varus is the only reliable way to measure a varus angle and not supine.

Figure 4: Comparison of Varus angle and WOMAC score

There is a significant negative correlation between the number of physiotherapy sessions taken and the WOMAC score. This suggests that patients who have undergone more physiotherapy sessions tend to have lower WOMAC scores, indicating better outcomes in terms of pain, stiffness, and physical function

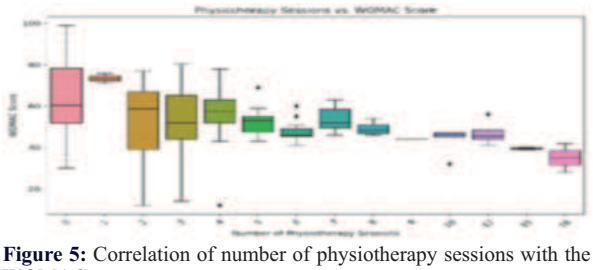

Figure 5: Correlation of number of physiotherapy sessions with the WOMAC score

Similarly, the duration of pain (in months) also shows a negative correlation with the WOMAC score indicating that longer durations of pain are associated with higher WOMAC scores, reflecting worse conditions.

Age and time since menopause show a slight negative correlation with the WOMAC score, suggesting that older age and longer duration since menopause might slightly contribute to better WOMAC scores, although the correlation is relatively weak.

The range of motion for both left and right knees shows a negative correlation with the WOMAC score, albeit weak. This indicates that better knee mobility is associated with lower WOMAC scores.

Interestingly, the duration for which medicines have been taken shows a very weak positive correlation with the WOMAC score, suggesting that longer medication use does not significantly impact the WOMAC score. The power (muscle strength) shows a strong positive correlation with the WOMAC score indicating that higher muscle strength is associated with better WOMAC scores.

The remaining post-menopausal symptoms do not show any statistically significant correlation with the WOMAC scores.

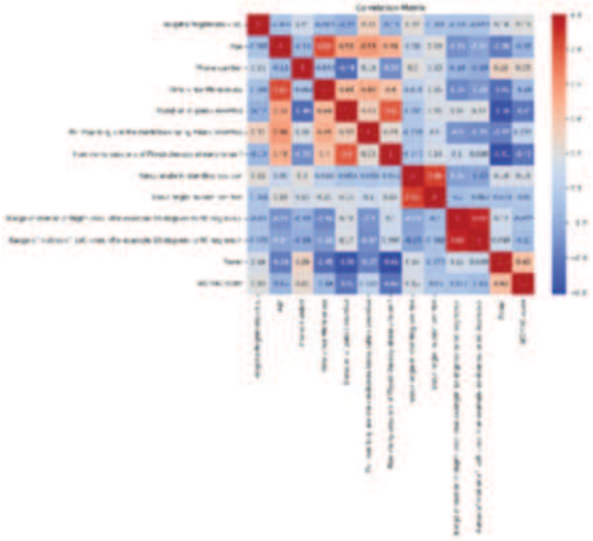

Figure 6: Correlation chart

Table: 1 Correlation Chart Of Important Variables

Variable	Correlation with W.O.M.A.C score
How many sessions of Physiotherapy already taken?	-0.42004662702746487
Duration of pain (months)	-0.4081733652778349
Age	-0.15287731607384686
Time since Menopause	-0.1367427490248837
Range of motion of Left knee. (For example 10 degrees to 90 degrees.)	-0.11206664082694665
Range of motion of Right knee. (For example 10 degrees to 90 degrees.)	-0.07210297458427312
Varus angle supine position	-0.05006365082647206
For how long are the medicines being taken (months)	0.032944826357576805
Varus angle in standing position	0.14863510323201837
Hospital Registration No.	0.19273169500734053
Phone number	0.2501158772377663
Power	0.416160837103907
WOMAC score	1.0

DISCUSSION

In Indian post-menopausal women, much importance has been given to knee osteoarthritis and it has been proven that the severity of knee osteoarthritis worsens with age. Ramash Anmool(1) et al in April 2023 proved that most women in post-menopausal age group with knee osteoarthritis experience moderate and severe knee pain in rest and

activity and have moderate and severe difficulty in activities of daily living, difficulty in sport and recreation function, and disturbance in their quality of life in knee osteoarthritis of postmenopausal women. Our study shows a positive correlation of varus angle in the standing position with WOMAC scores. Varus angle is supine position has no significant role as a prognosticating factor. Measurement of varus angle in standing position is thus a useful screening tool in underdeveloped nations where patients cannot afford imaging modalities repeatedly, thus appropriate treatment modalities can be started. A strong correlation is seen the amount of physiotherapy sessions and the WOMAC score signifying that the number of physiotherapy sessions is more important than the duration of sessions. Age and duration of menopause and other menopausal symptoms have weak correlation with the WOMAC score signifying that different patients react differently to menopause and it does have statistical significant outcome on the function. Interestingly, the duration for which medicines have been taken shows a very weak positive correlation with the WOMAC score, suggesting that longer medication use does not significantly impact the WOMAC score.

CONCLUSIONS

Varus angle in standing position and not supine is an important screening and prognostic factor (but not the only) in osteoarthritis of the knees and can be used to screen patients in bulk in absence of imaging modalities. The number of physiotherapy sessions is important in better functions and WOMAC scores. The duration of menopause, other post-menopausal symptoms have no statistical significance in prognosticating knee osteoarthritis.

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