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CORRELATION OF KNEE PAIN AND FUNCTION WITH SEVERITY OF SYMPTOMS IN MENOPAUSAL WOMEN FROM VILLAGES AROUND PARUL UNIVERSITY- A CROSS-SECTIONAL STUDY

SARDAR B[1*], PARMAR N[2] AND GADHAVI B[3]

1: MPT scholar, Parul Institute of Physiotherapy, Parul University, Post Limda, Waghodia, Vadodara, Gujarat 391760

2: Assistant professor, Parul Institute of Physiotherapy, Parul University, Post Limda, Waghodia, Vadodara, Gujarat 391760

3: Dean and Principal Parul Institute of Physiotherapy, Parul University, Post Limda, Waghodia, Vadodara, Gujarat 391760

*Corresponding Author: Dr. Bushra Sardar: E Mail: sardarbushra0@gmail.com

ABSTRACT

Aim: The aim of the study is to evaluate the correlation between knee pain and function with severity of symptoms in menopausal woman

Background: Musculoskeletal disorder is among the chronic disease and the main cause of long term physical disability. Osteoarthritis is one of the most common musculoskeletal disorder and devastating disease and is 4th leading cause of disability in the world that causes severe pain, decrease function, decreased social interaction and ultimately quality of life in patients.

Method: There were 117 participants age between 40 to 55years were taken. Each were assessed for knee pain, knee function, severity of menopausal symptom, Outcome measure taken were VAS, WOMAC and MRS scale.

Result: SPSS was used for analysis of data. Correlation between VAS and MRS (r= 0.066). Correlation between VAS and WOMAC (r = 0.033) and correlation between WOMAC and MRS (r= 0.081).

Conclusion: Concluded that severity of symptoms in menopausal women and knee pain and function have very weak correlation and found that there was no statistical significance but clinically significant relationship between the severity of symptoms in menopausal women and knee pain and function in women.

Keywords: Knee Pain, Menopausal Woman, Musculoskeletal disorder

INTRODUCTION

One of the most significant pathological changes associated with many common chronic diseases, including osteoarthritis (OA), rheumatoid arthritis, and osteochondritis dissecans, is the degeneration of the articular cartilage of the knee joint. Studies in the fields of clinical, pathology, and epidemiology have revealed that women are more likely to develop osteoarthritis (OA) after menopause than with a higher frequency in women over the age of fifty. Menopause begins at the same time as this [1].

One type of degenerative arthritis that arises from the deterioration of the underlying bone and cartilage is knee osteoarthritis (KOA). There has been widespread reporting of a high prevalence of clinical KOA, ranging from 5.6 to 28.9%, in various nations and areas. The most typical way that KOA manifests itself is as knee discomfort. Up to 10% of persons over 55 have a disability related to knee [2].

There is growing evidence that women are far more likely than men to have KOA. According to the findings of the Johnston County (North Carolina, USA) Osteoarthritis Project, the prevalence of symptomatic KOA was 14.5% for men and 17.6% for women. According to the China Health and Retirement Longitudinal Study, women were more likely than males to have symptomatic KOA (10.3% vs. 5.7%) [3].

As the population ages, knee osteoarthritis (OA) is becoming more common in middle-aged adults and the elderly. It is a debilitating ailment [4].

Even in the absence of a change in body weight, women who are aging and menopausal have changes in their body composition. As people age, their fat mass grows and their lean mass declines. There is reduction in Lean mass as a woman enters menopause. Women are more likely than men to develop osteoarthritis (OA), and after menopause, knee OA tends to become more severe [5].

A woman's transition from the reproductive to the nonreproductive phases of her life occurs during the natural or spontaneous menopause. It happens during the last menstrual cycle, which is known to happen after a 12-month amenorrhea phase for which there are no discernible physiological or pathological reasons. It causes the onset of noncommunicable diseases and prepares

the body for aging. Menopause typically occurs between the ages of 45 and 55 worldwide. The skeletal, cardiovascular, and psychological systems, in addition to the female genital tract, all exhibit menopausal symptoms **[6]**.

In order to assess the intensity of menopausal complaints and ascertain the pattern of menopause symptoms, women's healthcare need a legitimate and trustworthy approach. One of the most well-known techniques created in response to the lack of a standardized scale is the Menopause Rating Scale (MRS). The Menopause Symptom Rating (MRS), which is accessible in over ten languages, was created to compare menopausal symptoms with health-related quality of life (HRQOL) across cultural boundaries. Germany, Switzerland, Spain, France, Mexico/Argentina, Turkey, Brazil, Indonesia, China, and Sri Lanka are among the countries that have embraced it **[7]**.

 A variety of subjective tools based on patient history have been developed in recent decades to assess the health condition of patients with osteoarthritis in the knee. The most widely used clinical measure is the self-administered Western Ontario and McMaster Universities (WOMAC) index. The most widely used clinical instrument for assessing patients with knee OA is the self-administered Western Ontario and McMaster Universities (WOMAC) index. It

has been confirmed in a few different languages and nations since Bellamy *et al.*'s 1988 presentation, including Spain, Germany, China, Japan, Turkey, and Tunis.[8]

METHODOLOGY

- Source of data: Villages around Parul University

- Study design: A Cross sectional study

- Sampling method: Convenient sampling

- Sample size: 117

- Study population: Menopausal women of 40 to 55 years of age

- **Inclusion criteria:** Age group 40 to 55 years, 12 months absence of periods in females, Women who are not taking hormone therapy, Women having knee pain since 12 months, Subjects willing to participate in this study.

- **Exclusion criteria:** Women with induced menopause, simple hysterectomy, Cognitive impairment, orthopedic surgery of lower limbs, neurological disorder and visual impairment, Subjects should not have addiction of smoking and drinking, Any pelvic related diseases, Women taking any oral pills for menopausal symptoms, Any surgery done in lower limb.

- **Ethical clearance:** As the study includes human subjects' ethical clearance was obtained from Parul University Institutional Ethical Committee for Human Research (PU-IECHR).

Procedure

Study was conducted with providing the information about the study and by taking an informed and written consent from the subjects. Privacy and confidentiality of the subjects was maintained. Subjects were interviewed and clinical history of the participants was taken. 118 Subjects were taken on the basis of the inclusion and exclusion criteria. After that subject were assessed with MRS scale, VAS and WOMAC questionnaires.

Participant filling the questionnaire form

Outcome Measures:

1) The MRS scale is taking for features of symptoms of menopause such as:

Reliability=0.77 and validity=0.77

• Somatic—hot flushes, heart discomfort/palpitation, sleeping problems, and muscle and joint problems.

• Psychological—depressive mood irritability, anxiety, and physical and mental exhaustion. •

Urogenital—sexual problems, bladder problems, and dryness of the vagina.

Each of the 11 symptoms contain a scoring scale from 0 (no complaint) to 4 (very severe complaint)

2) WOMAC questionnaire

Reliability – 0.917**.**

It includes five questions about pain, two about stiffness, and 17 on degree of disability of activities of daily living

3) VAS

Reliability – 0.97

STATSTICAL ANALYSIS

Descriptive analysis of VAS, WOMAC and MRS interpreted by using statistical

software IBM SPSS- 27. The descriptive statistics including means and standard deviations were obtained. For the nonparametric correlation between variables spearman's test was applied.
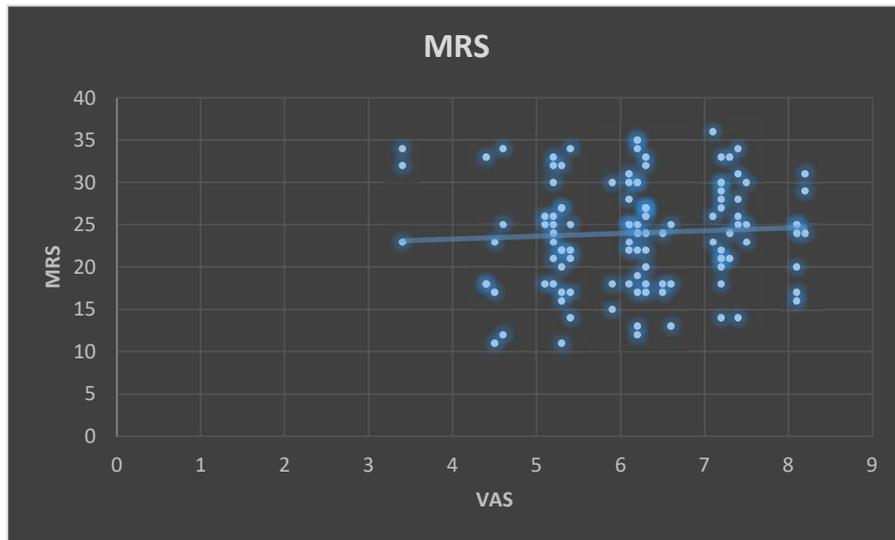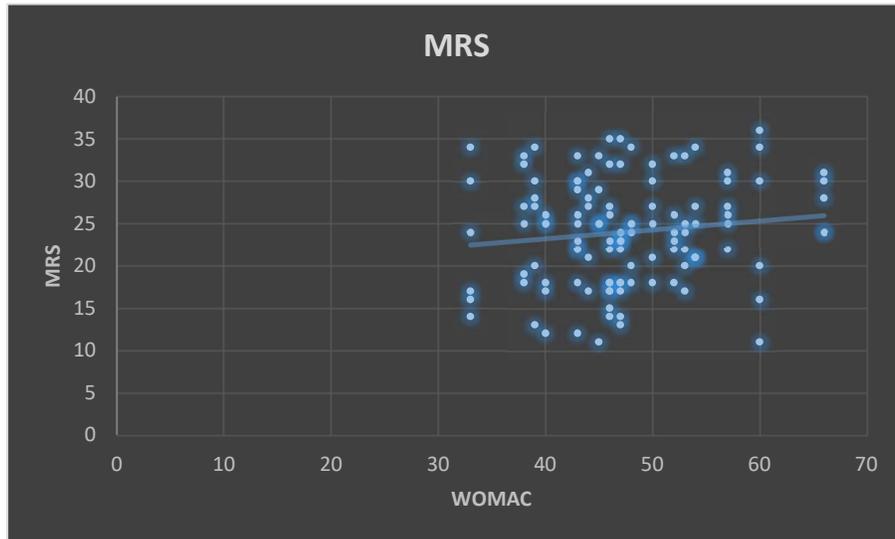
Table 1: Correlation between VAS and MRS				
	MEAN	**SD**	**r- value**	**p- value**
VAS	6.19	1.09	0.066	0.479
MRS	24.03	6.17		

Table 2: Correlation between VAS and WOMAC				
	MEAN	**SD**	**r- value**	**p- value**
VAS	6.19	1.09	-0.033	0.725
WOMAC	47.46	7.60		

Table 3: Correlation between WOMAC and MRS				
	MEAN	**SD**	**r- value**	**p- value**
WOMAC	47.46	7.60	0.081	0.383
MRS	24.03	6.17		
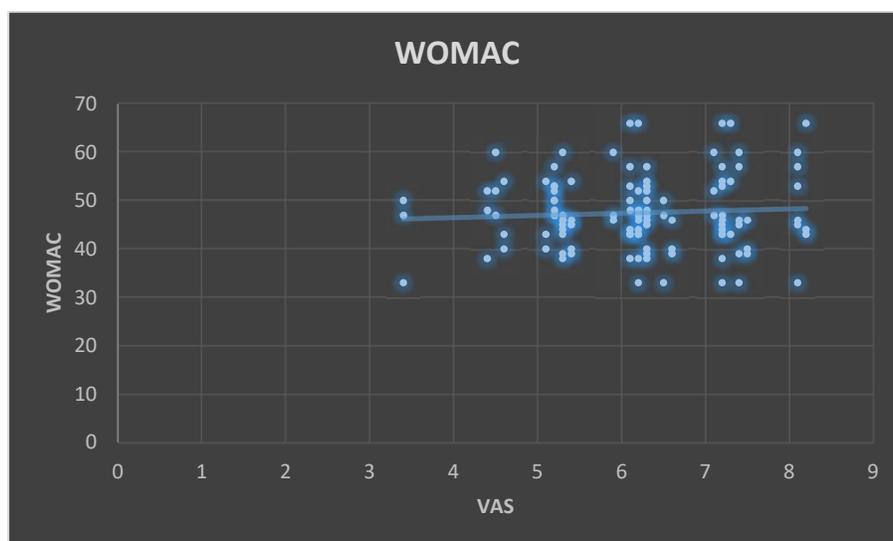
RESULTS

In this study 117 participants were selected. The IBM SPSS-27 was used for analysis of data and Microsoft Excel was used for descriptive analysis. In which the mean and SD of VAS, WOMAC and MRS were 6.19 and 1.09, 47.46 and 7.60, 24.03 and 6.17 respectively.

1. Correlation between VAS and MRS the value of correlation coefficient r is 0.066 which suggest very weak positive correlation.

2. Correlation between VAS and WOMAC the value of correlation coefficient r is -0.033 which suggest very weak negative correlation.

3. Correlation between WOMAC and MRS the value of correlation coefficient r is 0.081 which suggest very weak positive correlation.

DISCUSSION

Determining the precise cause of knee OA symptoms, such as pain, stiffness, or impairment, is a difficult undertaking. The number and grades of cartilaginous abnormalities did not appear to be related to the WOMAC clinical outcomes, according to a different study by Link *et al*. The WOMAC outcome score and the rates of knee joint cartilage degradation identified on MRI did not significantly correlate, according to Phan *et al*. A decrease in the patella's articular cartilage volume seen on MRI was found to be positively correlated with the WOMAC pain, function, and global scores by Hunter *et al*. [7]. Previous research has examined the relationship between menopausal stage and physical performance, but not enough has been done to examine the precise relationship between menopausal symptoms and physical performance. Menopausal symptoms and physical activity level were found to be correlated in a study involving 1,011 women

at various stages of the menopausal transition. The authors found that menopausal symptom scores were greater for women who were less physically active, both in terms of frequency and intensity. The fact that individuals with more severe symptoms tend to be less physically active could perhaps account for their worse physical performance, as a long-term study of young postmenopausal women found that physical activity was a predictor of power loss. Strength steadily declines as menopausal symptoms develop, indicating a negative correlation between menopausal symptoms and strength, as supported by a recent study in Rivea *et al.,* **[8]**. Moreover, muscle mass and strength losses that often occur after women's menopause may be linked to hormonal changes that accompany aging and the ensuing onset of symptoms. Consequently, these variables could account for the association seen in this investigation between increased menopausal symptom severity and decreased muscle strength. According to De Lorenzi *et al* . (2006), women with higher levels of education appeared to have less severe menopausal symptoms **[9]**. The current study's total 19.5% prevalence of knee osteoarthritis was between the reported range of 17 to 60.6% in the nation and other countries. Numerous studies have demonstrated that women are more likely to develop osteoarthritis when their estrogen levels are lower during

menopause. The current investigation discovered no correlation between prevalence and socioeconomic status. The results of this investigation differ from those of Dunlop *et al*. and Dalstra *et al.*, which demonstrate a rise in the incidence of KOA with poor circumstances. The intensity of aging symptoms and their effect on health-related quality of life, on the other hand, are measured using standardized measures by the MRS. The MRS is more relevant and user-friendly than the KI in European people, according to a number of studies, even though there is a strong correlation between these two scales in western nations. Nonetheless, compared to their western counterparts, Asian and Arab women have been found to experience fewer and milder menopausal symptoms. Our study found a strong correlation between subscores for the somatic and psychological domains, but a moderate correlation for urogenital symptoms. This is relevant considering that most women were in early menopause (1–2 years), during which vasomotor symptoms are the most common symptoms, while urinary genital symptoms usually appear during middle menopause (2–5 years) in the Chinese population **[10]**. In this study, the results were found to be Correlation between VAS and MRS the value of correlation coefficient r is 0.066 which suggest very weak positive correlation. Correlation between VAS and WOMAC the value of

correlation coefficient r is -0.033 which suggest very weak negative correlation. Correlation between WOMAC and MRS the value of correlation coefficient r is 0.081 which suggest very weak positive correlation.

CONCLUSION

A total 117 participants were selected for the study from villages around Parul university. By this study we concluded that severity of symptoms in menopausal women and knee pain and function have very weak correlation and found that there was no statistical significance but clinically significant relationship between the severity of symptoms in menopausal women and knee pain and function in women.

Limitations of study

1) Sample size was small.

2) The data was collected from only very few villages

Further Recommendations

1) A study can be done in different geographical area.

2) A study can be done on different age group.

3) A study can be done with large sample size.

4) Other factors can be taken.

SOURCE OF FUNDING: Self

CONFLICT OF INTEREST: None

ETHICAL CLEARENCE: Parul university institutional ethics committee for human research (PU-IECHR).

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