

Prevalence of Musculoskeletal Disorder among Postmenopausal Women: A Cross Sectional Study

Shweta Kulkarni¹, Shashank Adhikari², Sunil Kumar K. S.³, Prashant Mukkannavar⁴

¹Associate Professor, SDM College of Physiotherapy, Karnataka, Dharwad, India, ²Post graduate, SDM College of Physiotherapy, Karnataka, Dharwad, India, ³Professor, SDM College of Medical Sciences and Hospital, Dept. of Obstetrics and Gynecology, Dharwad, India, ⁴Professor, SDM College of Medical Sciences and Hospital, Dept. of Physiotherapy, Dharwad

Abstract

Background and objective: Postmenopausal women are subjected to various health issues amongst which the musculoskeletal conditions are most prevalent. Various studies have been done to find out the prevalence of numerous menopausal symptoms but, there are very few studies done especially in India to evaluate the burden of various musculoskeletal disorders using standardized questionnaire.

Objective: To find out the prevalence of musculoskeletal pain among postmenopausal women.

Methods: A total 351 postmenopausal women were screened as per inclusion and exclusion criteria from S.D.M College of medical sciences and hospital, Dharwad. Data was obtained on sociodemographic and region wise musculoskeletal pain using standardized Nordic questionnaire.

Results: The prevalence of musculoskeletal pain among postmenopausal women was found to be 56% with mean age of onset of menopause as 46 yrs. Region wise analysis of musculoskeletal pain among postmenopausal women showed back (57%) and knee (72%) pain to be most prevalent.

Conclusion: Prevalence of musculoskeletal pain in postmenopausal was considered to be higher in this part of India. Most of the postmenopausal women are affected with musculoskeletal pain mainly in the back and knee regions and the causes for the same are multifactorial among Indian population.

Keywords: *Musculoskeletal pain, postmenopausal women, Standardized Nordic questionnaire.*

Introduction

Musculoskeletal disorders are “diverse group of conditions with regards to their pathophysiology but are linked anatomically by pain and physical function”. Musculoskeletal pain arising from musculoskeletal conditions in general population is very common showing a prevalence of 74.5% lasting for past 12 months and 44.4% lasting for more than 3 months with 1 year prevalence of low back pain of (44%), neck pain (31%), shoulder pain (30%), wrist and elbow pain scoring (18%) each in general population.¹ According to standardized Nordic questionnaire the prevalence of many of these conditions increases with age and lifestyle factors such as obesity and lack of physical activity

adversely affect the severity and occurrence of such conditions. Musculoskeletal conditions caused 40% of all chronic conditions, 54% of all long term disabilities and 24% of all restricted activity days.²

Musculoskeletal pain has a higher prevalence in women, amongst which it is higher in postmenopausal women as compared to premenopausal women suggesting that the decline in the reproductive hormones is associated with increased pain perception.³ The prevalence of musculoskeletal disorder in postmenopausal women was 27.3% in Nepal⁴ and 53.3% in northern india.⁵ The most common disorders seen in postmenopausal women were osteoarthritis, osteoporosis along with associated bone fractures and

low back pain.⁶ The other symptoms associated with menopause are hot flushes, mood alterations, joints and muscle pain and sexual dysfunction.⁷⁻¹⁰

Postmenopausal musculoskeletal pain is generally associated with reduction of the ovarian function, where there is decline in the production of mainly estrogen hormone.⁵ Estrogen helps in maintaining the homeostasis of the joint and articular structure by regulating the molecular pathways. It also affects synovial lining, capsules, ligaments and muscles around the joint. Estrogen deficiency leads to increased cartilage wear and tear and joint surface erosion, reduction in bone mineral density, loss of muscle mass and strength, decrease in the collagen content of connective tissues which further leads to impairment in the muscle performance and functional capacity. All these changes lead to early degeneration in postmenopausal women.^{6, 11}

In Indian population, wide cultural diversity, inequality in socio-economic status and gender are some of the sensitive multi factorial determinants that influence the menopausal health.^{12,13} Postmenopausal symptoms are generally ignored in rural, suburban as well as urban India, even if they suffer from symptoms silently.^{14,15} There is under-reporting of symptoms due to sociocultural factors as well due to lack of awareness and knowledge about this conditions. Hence the aim of the study intends to find out the prevalence of musculoskeletal pain in postmenopausal women.

Materials and Method

In this cross sectional study, all the Postmenopausal women coming to SDM medical hospital, Dharwad were screened as per the inclusion and exclusion criteria. Subjects willing to participate in the study were briefed about the study and their written consent was taken. This study has been approved by institutional ethical committee, SDM College of Medical Sciences and Hospital, Dharwad, India. A total of 351 postmenopausal women (menopause for > 1 year) were included in the study. Sample size was calculated based on the prevalence of musculoskeletal pain among postmenopausal women which is taken as 53.3%.³

Inclusion Criteria:

1. All post-menopausal women (menopause for > 1 year)⁵
2. Women willing to participate in the study.

Exclusion Criteria:

1. Women not willing to participate due to personal reason.
2. Women who are unable to complete the questionnaire.
3. Women diagnosed with any medical condition of neurological, metabolic, musculoskeletal origin before menopause.
4. Women diagnosed with malignancy.

Demographic data of the subject was obtained by principle investigator in data collection sheet and Standardized Nordic Questionnaire was administered to the subjects by interview method. The data collection sheet included information regarding subject's socio demographic profile along with common postmenopausal symptoms. Standardized Nordic questionnaire was administered by collecting information on pain like site of pain, duration of pain and activity limitation due to pain in past 12 months and 7 days and painful regions were marked on the body chart.

Data Analysis: Statistical analysis was done by using SPSS (Statistical Package for the Social science) version 21.0 software. The descriptive analysis of gender, age, BMI, age of onset of menopause, occupation and socioeconomic status was done. Data was presented in percentage. Nordic scale was used for the analysis of musculoskeletal pain. From standardized Nordic questionnaire, column with pain during last 12 months and 7 days was used for data analysis.

Results

Table 1 shows the prevalence of musculoskeletal pain in postmenopausal women. The study population consists of 351 postmenopausal women, out of whom 198 women reported with postmenopausal musculoskeletal pain and 154 women with no pain.

Table 2 represents the socio demographic profile of the respondents. Maximum number of postmenopausal women, who were in the age group of 50-59 years, were affected with musculoskeletal pain 103(59%). The mean age of onset of menopause in our study was 46yrs. The region wise musculoskeletal pain(Figure 1), showed maximum number of postmenopausal women had pain in the low back (57%) and knee (72%) regions respectively in comparison with other regions.

Table 1: Prevalence of musculoskeletal pain among postmenopausal women

MSK Pain		NO MSK Pain		TOTAL	
n	%	n	%	n	%
198	56	153	44	351	100

Table 2: Socio demographic profile of the respondents

Variables	No MSK Pain		MSK Pain	
	n	%	n	%
Age				
39-49yrs	47	50	47	50
50-59yrs	71	41	103	59
60-69yrs	31	44	39	55
70-79yrs	4	31	9	69
BMI				
18-25	83	39	128	61
26-30	55	51	52	49
More than 31	15	48	18	52
Age of Onset of Menopause				
37-47yrs	97	44	123	56
48-58yrs	56	43	74	57
More than 58yr	0	0	1	100
Occupation				
Non-working	111	44	140	56
Working	42	42	58	58

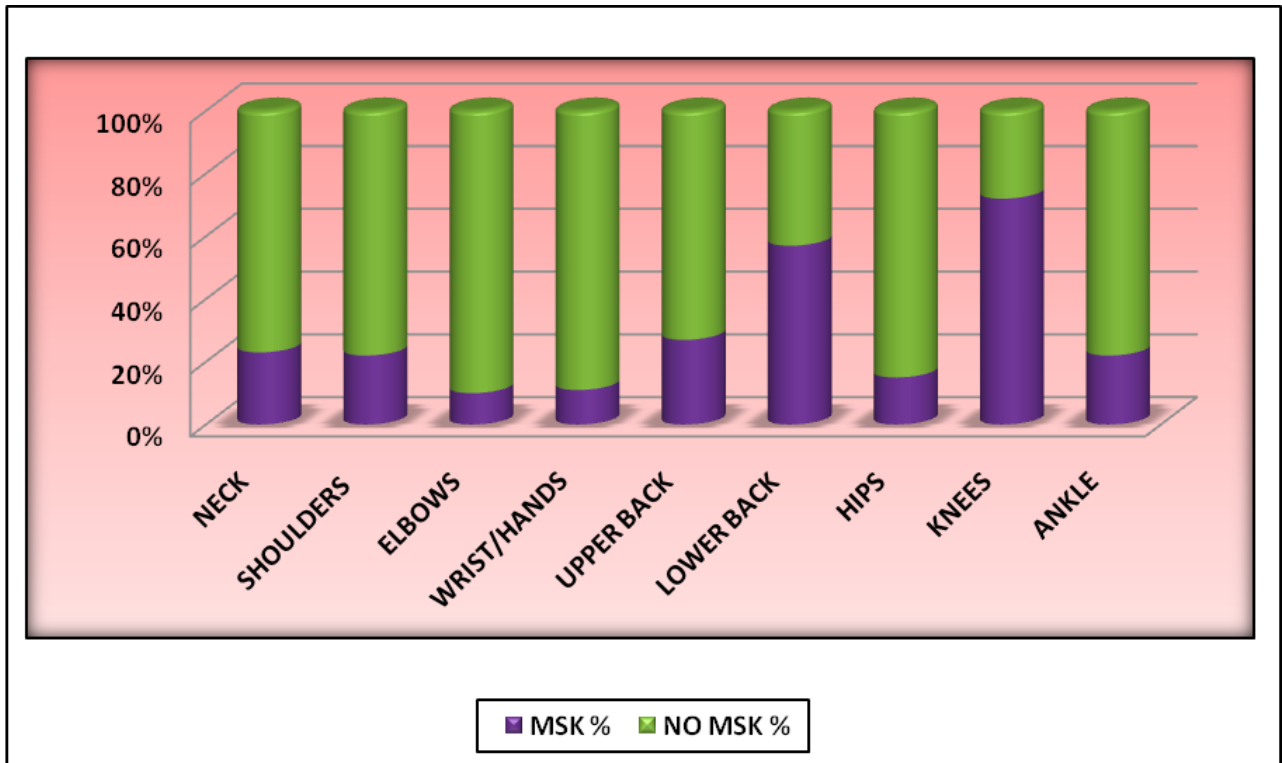


Figure 1: Region wise distribution of MSK pain in postmenopausal women

DISCUSSION

This research aimed to find out the prevalence of musculoskeletal pain in postmenopausal women in this part of Karnataka. The prevalence of musculoskeletal pain in postmenopausal women in India was 53.3%⁵ and Nigeria was 60.79%.¹⁶ Similarly your study has revealed similar prevalence of 56% (TABLE 1, FIGURE 1), which states that maximum postmenopausal women are affected with musculoskeletal pain in India and abroad population.

Women who belong to the age group of 50-59 years mainly were affected with musculoskeletal pain and their mean age was 54 yrs. This shows that as the age advances, the prevalence of musculoskeletal pain increases.

A study done by Kohlman also has found out the similar findings that prevalence of MSK pain in adult women population was age dependent and maximum prevalence was found in age group of 50-60 yrs.¹⁷ During postmenopausal period women is challenged to undergo various changes related to physical and psychological factors. Few of the factors are weakness in the muscle, reduction in the size of the muscle, osteoporosis etc. Most of these factors are associated with age advancement. As the age advances musculoskeletal complaints increases.¹⁸ Also there is reduction of estrogen hormone which has important role in maintenance of musculoskeletal system. Hence as age progresses, this hormone reduces which in turn affects the musculoskeletal system. Based on our results in comparison with previous literature it is proved that age is one of the important factors for musculoskeletal pain in women along with the postmenopausal symptoms.¹⁹

The mean age of onset of menopause in our study was 46 yrs which is similar to the studies done in northern India which was 46, in western and Arab countries it was 48 and 50 yrs respectively. When compared to India, western countries have shown higher mean age of onset of menopause. According to earlier studies this was the topic of debate and the reason for which is explained as lifestyle in Indian population, ethnicity and other socio-demographic factors.^{3,4,20}

The study justifies the previous literature done in Nigerian population which revealed the similar results when region wise musculoskeletal pain assessment was done. Osteoporosis can be one of the causes for women to have increased pain in back and lower

extremity during postmenopause period. There are lots of hormonal variations in postmenopausal women and due to this bone resorption rate increases which is the cause for osteoporosis. According to the literature osteoporosis is most commonly manifested in the low back and in the joints. Our study has similar findings of Scharla et al, as low back and joint pain were the regions to be mostly affected. The common condition in the back due to osteoporosis was spondylosis, fractures and osteoarthritis in knee.¹⁶ Another reason for the postmenopausal women to get affected with low back and knee pain may be attributed to degeneration. As the age progresses degeneration begins. Due to degeneration there may be various changes associated with muscle, ligaments, facets joints, intervertebral disc.^{21,22}

Along with this it is already proved that because of low Socioeconomic status, there is lack of intake of calcium, due to low education status there is lack of exercise and awareness regarding health. And the studies have also proved that osteoporosis increases with advancement of age.²³

Conclusion

The present study concludes that 56% of postmenopausal women have musculoskeletal pain, which signifies that there is high prevalence among this part of India. Region wise assessment has revealed that pain is mostly confined to back and knee regions.

Limitations of the Study: In this cross-sectional study sample size considered was small and subjects were recruited from only one hospital. Post menopause transition symptoms were not classified as early and late post menopause. Musculoskeletal disorder diagnosis was not done, only musculoskeletal pain was considered and severity of musculoskeletal pain was not assessed.

Future Scope of the Study: Future studies are recommended with larger sample size. A study can be done to assess the severity of musculoskeletal pain using visual or visual analogue scale (VAS), numeric pain rating scale (NPRS). A comparative study of musculoskeletal pain pre and post menopause can be conducted.

Acknowledgements: I would like to thank all the women who have given the consent to participate in the study.

Conflict of Interest: The authors declare that there was no conflict of interest.

Source of Funding: Self-funded research

References

1. Picavet HS, Schouten JS. Musculoskeletal pain in the Netherlands: prevalences, consequences and risk groups, the DMC3-study. *Pain*. 2003 Mar 1; 102(1-2):167-78.
2. Badley EM, Rasooly I, Webster GK. Relative importance of musculoskeletal disorders as a cause of chronic health problems, disability, and health care utilization: findings from the 1990 Ontario Health Survey. *The Journal of rheumatology*. 1994 Mar;21(3):505-14.
3. Dugan SA, Powell LH, Kravitz HM, Rose SA, Karavolos K, Luborsky J. Musculoskeletal pain and menopausal status. *The Clinical journal of pain*. 2006 May 1; 22(4):325-31.
4. Acharya D, Gautam S, Neupane N, Kaphle HP, Singh JK. Health problems of women above forty years of age in rupandehi district of Nepal. *Int J Health Sci Res*. 2013;3(3):29-36.
5. Borker SA, Venugopalan PP, Bhat SN. Study of menopausal symptoms, and perceptions about menopause among women at a rural community in Kerala. *Journal of mid-life health*. 2013 Jul;4(3):182.
6. Van Dijk GM, Kavousi M, Troup J, Franco OH. Health issues for menopausal women: the top 11 conditions have common solutions. *Maturitas*. 2015 Jan 1;80(1):24-30.
7. Resnick NM, Greenspan SL. Senile osteoporosis reconsidered. *Jama*. 1989 Feb 17;261(7):1025-9.
8. Praemer A, Furner S, Rice DP. Musculoskeletal conditions in the United States. *American Academy of Orthopaedic Surgeons*; 1999.
9. Andersson GB. Epidemiological features of chronic low-back pain. *The lancet*. 1999 Aug 14;354(9178):581-5.
10. Woolf AD, Akesson K. Understanding the burden of musculoskeletal conditions.
11. Dennerstein L, Dudley EC, Hopper JL, Guthrie JR, Burger HG. A prospective population-based study of menopausal symptoms. *Obstetrics & Gynecology*. 2000 Aug 23;96(3):351-8.
12. Lips P. Suboptimal vitamin D status: a risk factor for osteoporosis. In *Nutrition and Osteoporosis 1994* (pp. 151-166). Springer, Boston, MA.
13. Heath KM, Elovic EP. Vitamin D deficiency: implications in the rehabilitation setting. *American journal of physical medicine & rehabilitation*. 2006 Nov 1;85(11):916-23.
14. Bischoff HA, Brigham RB. The importance of maximizing vitamin D in the elderly diet with respect to function and falls. *Geriatrics and Aging*. 2003;6(7):41.
15. Allain TJ, Dhesi J. Hypovitaminosis D in older adults. *Gerontology*. 2003;49(5):273-8.
16. Ogwumike OO, Adeniyi AF, Orogbemi OO. Musculoskeletal pain among postmenopausal women in Nigeria: Association with overall and central obesity. *Hong Kong Physiotherapy Journal*. 2016 Jun 1;34:41-6. Kohlmann T. Musculoskeletal pain in the population. *Schmerz* 2003; 17: 405 11.
17. Sipila S, Poutamo J. Muscle performance, sex hormones and training in peri-menopausal and post-menopausal women. *Scandinavian journal of medicine & science in sports*. 2003 Feb; 13(1):19-25.
18. Bachmann GA, Leiblum SR. The impact of hormones on menopausal sexuality: a literature review. *Menopause*. 2004 Jan 1;11(1):120-30.
19. Diao E.E. Rizk, Abdulbari Bener b, Mutairu Ezimokhai a, Mohammed Y Hassan c, Rosetta Micallef, The age and symptomatology of natural menopause among United Arab Emirates women *Maturitas* 29:1998; 197–202.
20. Sowers M, Crutchfield M, Bandekar R, Randolph JF, Shapiro B, Schork MA, Jannausch M. Bone mineral density and its change in pre- and perimenopausal white women: the Michigan bone health study. *Journal of Bone and Mineral Research*. 1998 Jul; 13 (7):1134-40.
21. Praemer A, Furner S, Rice DP. Musculoskeletal conditions in the United States. *American Academy of Orthopaedic Surgeons*; 1999.
22. Lane NE. Epidemiology, etiology, and diagnosis of osteoporosis. *American journal of obstetrics and gynecology*. 2006 Feb 1; 194 (2):S3-11.
23. Kriplani A, Banerjee K. An overview of age of onset of menopause in northern India. *Maturitas*. 2005 Nov 1; 52(3-4):199-204.