

# A Cross Sectional Survey on Musculoskeletal Pain Among Postmenopausal Women with Overall and Central Obesity

QURBA KIRAN<sup>1</sup>, SAIMA RIAZ<sup>2</sup>, ZEEST HASHMI<sup>3</sup>, REHAN RAMZAN KHAN<sup>4</sup>, ZAIGHAM RASOOL ATHAR<sup>5</sup>, TAUSIF AAMIR<sup>6</sup>

<sup>1</sup>Senior Lecturer, Shalamar Institute of Health Sciences, Lahore, Pakistan

<sup>2</sup>Assistant Professor, Riphah College of Rehabilitation and Allied Health Sciences, Riphah International University, Lahore, Pakistan

<sup>3</sup>Senior Lecturer, Riphah College of Rehabilitation and Allied Health Sciences, Riphah International University, Lahore, Pakistan

<sup>4</sup>Assistant Professor, Multan College of Physiotherapy, Multan Medical & Dental College, Multan, Pakistan

<sup>5</sup>Senior Physiotherapist, Sindh Institute of Physical Medicine & Rehabilitation, Karachi, Pakistan

<sup>6</sup>Physiotherapist, Shifa International Hospital, Islamabad, Pakistan

Correspondence to: Dr. Qurba Kiran, Email: [qurbabut8@gmail.com](mailto:qurbabut8@gmail.com), Cell: 03200486838

## ABSTRACT

**Objective:** To find out the frequency of Musculoskeletal Pain among Postmenopausal women with Overall and Central Obesity.

**Methods:** A Cross-Sectional study was carried out at Jinnah Hospital, Lahore, for six months. A sample size of 250 patients with generalized obesity and central obesity was taken. Non-Probability, Convenience Sampling technique was used. The Nordic questionnaire was used as a data collection tool. Data was analyzed on SPSS version 21.

**Results:** Results showed that majority respondents were in the age group of 51-60 i.e. 43.6% (N=109), respondents with BMI >30 were 50.8% (N=127), waist/height ratio 99.2% (N=248) were > 0.5, waist/hip ratio 86.8% (N=217) were >0.85, 90% (N=225) were present with waist circumference >88cm.

**Conclusion:** This study concludes that musculoskeletal pain is high in postmenopausal women with overall obesity and has shown more pain in the neck, back, shoulder and lower extremities, while postmenopausal women with central obesity have suffered more with back pain.

**Keywords:** Body Mass Index, Obesity, Post menopause, Musculoskeletal pain.

## INTRODUCTION

Musculoskeletal disorders (MSDs) is a broad term used for the disorders that affect body parts like the neck, back, upper and lower limb and results in musculoskeletal pain and discomfort. The pain due to musculoskeletal disorders can be local or diffused. The literature on MSDs shows that musculoskeletal pain is also work-related<sup>(1,2)</sup>. The origin of musculoskeletal disorders or pain can be multifactorial. Ageing is the leading cause of these disorders. According to Felson<sup>(3)</sup>, MSDs are expected to become more common all over the world. The most common complaint among older people is Joint pain<sup>(4)</sup>. It badly affects our functional capacity, quality of life and ruins the socioeconomic status of society<sup>(5)</sup>.

Menopause is when a woman stops having her periods physiologically<sup>(6)</sup>. Between the ages of 40 and 58 years, most women experience menopause (the cessation of periods); the median of this range is 51 years<sup>(7)</sup>. At the time of menopause, sweats at night, hot flushes, vaginal dryness and sleep disturbance are common symptoms and last for 4-5 years<sup>(8)</sup>. After menopause, body collagen level decreases. Papillary capillaries are means of microcirculation that nourish skin, and these capillaries diminish with age<sup>(9)</sup>. Thus, it causes epithelial thinness, decreased dermal thickening and elastic strength and compressibility. Skin becomes looser due to the damaging of elastic network with an inability to return to its previous state after deformation<sup>(10)</sup>.

Conflicted findings regarding pain during menopausal changes are due to methodological issues. The pain in that kind of woman is a complex concept that cannot be revealed in a single term. These patient's findings are

different due to the difference in clinical symptoms or pain i.e., low back pain and headache are different in every patient. Important confounders may neglect the confined adjustment in different analyses. The foundation of the study group regarding culture and age is another consideration<sup>(11)</sup>. These changes comprise musculoskeletal changes such as bone weakness and muscular problems<sup>(12)</sup> and are linked with ageing<sup>(13)</sup>. The female sex hormone Estrogen maintains the musculoskeletal system's integrity in females; decreasing this hormone's level during menopausal transition is linked with impaired muscle functioning<sup>(13)</sup>, specifically in the postmenopausal years. Body mass index increases during menopause including changes in body composition like total fat mass<sup>(13,14)</sup>. Changes like a decrease in basal metabolic rate, physical energy usage, fat mass, or fat formation on the abdomen lead to overweight and obesity, all induced by the loss of ovarian function<sup>(13)</sup>. In the postmenopausal period, obesity in women and health-associated Quality of Life seem to be necessary<sup>(15)</sup>. According to a report, women tend to accumulate more body weight during the menopausal transition.

This study aims to find out the presence of musculoskeletal originating pain among postmenopausal women with general and truncal obesity across Lahore city. Furthermore, in the current study, researchers are interested in determining the overall obesity, central or localized obesity, i.e. waist to height ratio, waist circumference and waist to hip ratio. These are linked with pain originating in the muscles in those women who have crossed the menopausal stage.

**METHODS**

A Cross-Sectional Survey was conducted at Jinnah Hospital, Lahore, for six months from February 2020 to July 2020 after approval from the institutional review board of Riphah International University, Lahore. Non-Probability, Convenience Sampling technique was used. A sample of 250 postmenopausal women with central or overall obesity with musculoskeletal pain was recruited. The sample size was calculated using the expected population searching for the pain decrease in six months as 100 at 5% margin of error using the following formula  $n = N/1+Ne^2$ . Data regarding musculoskeletal disorders was collected using a Nordic musculoskeletal pain questionnaire. The data was analyzed by using SPSS version 21. Mean and standard deviation tables were used to present the socio-demographic data.

**RESULTS**

The participants were obese/overweight according to the body mass index criteria, waist circumference, waist/height ratio and waist/hip ratio as depicted in Table-I. It shows that the participant's body mass index was ranging from 25-29.99, while some participants were with BMI of more than 30 ( $\geq 30$ ). The participants were with waist/height ratio  $>0.5$ , waist circumference  $>88$  and waist/hip ratio  $>0.85$ . The participants had musculoskeletal pains in the previous 12 months and the recent seven days. Low back and knee pain was a common prevalent area of pain in postmenopausal women in recent seven days and the last 12 months, but shoulder and neck pain was in the last 12 months but not in the recent seven days (Fig.2). The participants experienced difficulties in carrying out everyday activities in the last 12 months due to pain. Knee and lower back was the most affected region of the body which hindered the activities of daily livings (Fig.3)

Table-I: BMI, Waist/Hip ratio and waist/height, a waist circumference of the participants

BMI (Kg/m2)	< 25	> 25
	49.2% (n=123)	50.8% (n=127)
Waist/Hip Ratio	< 0.85	> 0.85
	13.2% (n=33)	86.8% (n=217)
Waist/Height Ratio	< 0.5	> 0.5
	0.8% (n=2)	99.2% (n=248)
Waist Circumference	< 88	> 88
	10% (N=25)	90% (N=225)

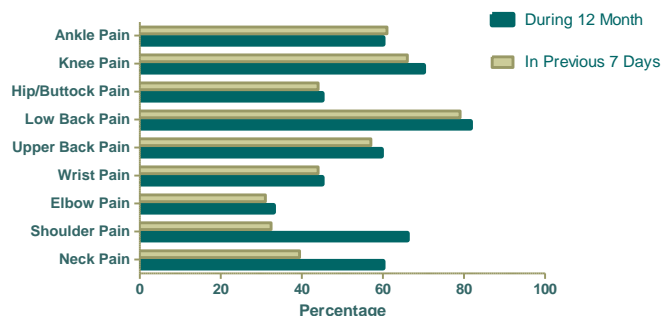


Figure-I: Musculoskeletal disorders in previous 12 months and in recent seven days in participants

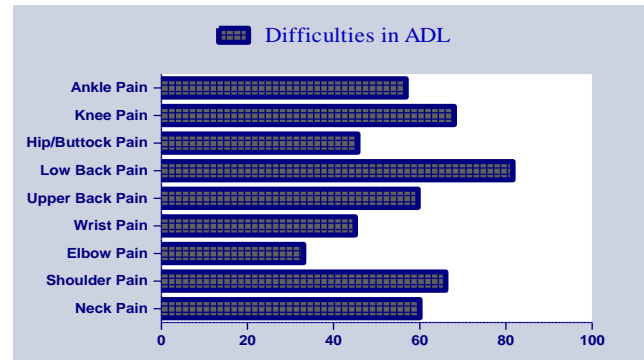


Figure-II: Participant's difficulties in performing ADL in last 12 months

**DISCUSSION**

This study showed that the muscles and joints pain occurs more according to body locations relating to the anatomy of the women who have crossed their menopausal stage. Many studies have been done in the past that have revealed that pre or peri-menopausal women have more muscle and bone pain complaints. As far as this study is concerned, it has been targeted to those women who have crossed their menopausal stage. It resulted in that the most affected sites in the body are the lower extremities and the back.

Greeves and associates observed a significant decline in muscle strength in early postmenopausal women, which resulted in decreased strength in isometrics and slow isokinetic movement. There is literature evidence that the induction of musculoskeletal pain is due to the modest increase in weight-bearing activities like walking in obese menopausal women<sup>(16)</sup>. Obesity is clinically associated with musculoskeletal disorders involving the back, hip, knee, ankle and foot in postmenopausal women<sup>(17,18)</sup>. Syed and Davis<sup>(19)</sup> proposed that the quadriceps muscles show decreased power of muscle, and it causes premature discomfort of the muscles in overweight women, specifically among postmenopausal women, which decreases the shock absorption of the joint and increases the loading of the knee during gait<sup>(20)</sup>.

Evidence from cross-sectional studies supports that vasomotor symptoms and menopausal symptoms are associated. Moreover, the relationship between menopause and fluctuating mood, thinking issues and skin disturbances are indecisive<sup>(21)</sup>. According to the review by the National Institutes of Health, the percentages of hot flushes and night sweat in premenopausal women are 14-51% and 30-80% in pre and postmenopausal women<sup>(22)</sup>. Sleep upsets are shared among all menopausal women. The flushes are very distressing in 10-20% of postmenopausal women. After natural menopause, these symptoms last for five years, and flushes lasting for up till 15 years in 20% or more of all women<sup>(23)</sup>. The frequently used therapy for hot flushes is Acupuncture in Norway. In Norway, 28% reported lifetime use, and 10.8% reported use within the previous year. In the United States, 4.1% reported lifetime use, and 1.1% reported use of acupuncture within the previous year<sup>(24)</sup>.

In early midlife, the women transitioning to menopause have aches in the body as one of many

common physical symptoms in different studies<sup>(12)</sup>. According to this study results, the postmenopausal period is more painful regarding musculoskeletal pains. This study has revealed that the women who have crossed the stage of menopause with overall obesity directed that the regions at significant risk of developing muscle and body pain are cervical, shoulder and lumbar. Postmenopausal women with central and overall obesity tend to develop muscle and body pain issues in the back, knee and shoulder.

## CONCLUSION

This study concludes that musculoskeletal pain is high in postmenopausal women with overall obesity and has shown more pain in the neck, back, shoulder and lower extremities, while postmenopausal women with central obesity have suffered more with back pain.

## REFERENCES

1. Meroni R, Scelsi M, Boria P, Sansone V. Shoulder disorders in female working-age population: a cross sectional study. *BMC musculoskeletal disorders*. 2014;15(1):118.
2. Oha K, Animägi L, Pääsuke M, Coggon D, Merisalu E. Individual and work-related risk factors for musculoskeletal pain: a cross-sectional study among Estonian computer users. *BMC musculoskeletal disorders*. 2014;15(1):181.
3. Gupta D, Batra R, Mahajan S, Bhaskar DJ, Jain A, Shiju M, et al. Comparative evaluation of the complementary and alternative medicine therapy and conventional therapy use for musculoskeletal disorders management and its association with job satisfaction among dentists of West India. *J Tradit Complement Med* Title(s). 2014;4(4):263-7.
4. Bayzid B. Prevalence and determinant factors OF musculoskeletal pain among female ready made garment workers residing IN northern Dhaka City: a cross-sectional study. *Int J Med Sci Public Health*. 2019;3(2).
5. Voigt LF, Koepsell TD, Nelson JL, Dugowson CE, Daling JR. Smoking, obesity, alcohol consumption, and the risk of rheumatoid arthritis. *Epidemiology*. 1994;5(5):525-32.
6. Friedlander AH. The physiology, medical management and oral implications of menopause. *J Am Dent Assoc*. 2002;133(1):73-81.
7. Dratva J, Real FG, Schindler C, Ackermann-Liebrich U, Gerbase MW, Probst-Hensch NM, et al. Is age at menopause increasing across Europe? Results on age at menopause and determinants from two population-based studies. *Menopause*. 2009;16(2):385-94.
8. Bindhu A, Bhaskar A, Joseph J. menopausal symptoms, prevalence, Hot Flushes, Night Sweats, Kerala. Prevalence Of Menopausal Symptoms Among Women (Menopausal For< 5 Years) In A Rural Area In Kottayam, Kerala, India. 2014(3945).
9. Raut SS. Evaluation of nutritional status of menopausal women, development of health food and nutrition education material for menopausal women: Vasantrao Naik Marathwada Krishi Vidyapeeth, Parbhani; 2014.
10. Griffiths C, Russman AN, Majmudar G, Singer RS, Hamilton TA, Voorhees JJ. Restoration of collagen formation in photodamaged human skin by tretinoin (retinoic acid). *N Engl J Med*. 1993;329(8):530-5.
11. Bachmann GA, Leiblum SR. The impact of hormones on menopausal sexuality: a literature review. *Menopause*. 2004;11(1):120-30.
12. Criswell LA, Merlino LA, Cerhan JR, Mikuls TR, Mudano AS, Burma M, et al. Cigarette smoking and the risk of rheumatoid arthritis among postmenopausal women:: Results from the Iowa Women's Health Study. *Am J Med*. 2002;112(6):465-71.
13. Poehlman ET, Tchernof A. Traversing the menopause: changes in energy expenditure and body composition. *Coronary artery disease*. 1998;9(12):799-804.
14. Poehlman E, Toth M, Gardner A. Changes in energy balance and body composition at menopause: a controlled longitudinal study (Retraction of vol 123, pg 673, 1995). *Ann Intern Med*. 2003;139(8):702-.
15. Crawford SL, Casey VA, Avis NE, McKinlay SM. A longitudinal study of weight and the menopause transition: results from the Massachusetts Women's Health Study. *Menopause*. 2000;7(2):96-104.
16. Mattsson E, Larsson UE, Rössner S. Is walking for exercise too exhausting for obese women? *Int J Obes Relat Metab Disord*. 1997;21(5).
17. Peltonen M, Lindroos AK, Torgerson JS. Musculoskeletal pain in the obese: a comparison with a general population and long-term changes after conventional and surgical obesity treatment. *Pain*. 2003;104(3):549-57.
18. Aoyagi K, Ross PD, Okano K, Hayashi T, Moji K, Kusano Y, et al. Association of body mass index with joint pain among community-dwelling women in Japan. *Aging clinical and experimental research*. 2002;14(5):378-81.
19. Syed I, Davis B. Obesity and osteoarthritis of the knee: hypotheses concerning the relationship between ground reaction forces and quadriceps fatigue in long-duration walking. *Medical hypotheses*. 2000;54(2):182-5.
20. Mikesky AE, Meyer A, Thompson KL. Relationship between quadriceps strength and rate of loading during gait in women. *J Orthop. Res*. 2000;18(2):171-5.
21. Nelson HD, Haney E, Humphrey L, Miller J, Nedrow A, Nicolaidis C, et al. Management of Menopause-Related Symptoms: Summary. 2005.
22. CARE MIP. Don't be a target for a malpractice suit. *Fam Pract Manag*. 2006;13(6):57-64.
23. Stearns V, Ullmer L, Lopez JF, Smith Y, Isaacs C, Hayes DF. Hot flushes. *The Lancet*. 2002;360(9348):1851-61.
24. Borud EK, Alraek T, White A, Fonnebo V, Eggen AE, Hammar M, et al. The acupuncture on hot flushes among menopausal women (ACUFLASH) study, a randomized controlled trial. *Menopause*. 2009;16(3):484-93.