JPSIM Journal of Pakistan Society of Internal Medicine

Original Article

Frequency Muscle and Joint Pains and Its Association with Insomnia and Hand Grip Strength Among Middle Aged Women

Arzoo Nawaz,[1] Sidra Anjum,[2] Faraz Ahmad[1]

[1]University of Lahore, [2]Riphah International Islamic University, Lahore

Abstract

Objective: In menopause transition the muscles and joint pains are commonly experienced by women of middle age however the mechanism behind this not accurately known. The aim of this study was to determine the frequency of muscle and joint pains and its association with insomnia and hand grip strength among middle aged women.

Methods: A cross sectional study design was conducted on 171 middle aged women who had complaint of muscle and joint pain. MenQol questionnaire was used. Characteristics regarding menopausal symptoms which include vasomotor, psychosocial, physical and sexual domains were assessed. Hand Grip Dynamometer was used to check the muscle strength. Data was analyzed using SPSS 21.0.

Results: The results showed a notable proportion of women that remained troubled by muscle and joint pains with 17% who are troubled by 1-2 times a week, 42.7% who had problem 3-4 times a week and 40.4% who had pain sensations almost every day. Hence a significant association was proved among muscle and joint aches with sleep difficulty (P-Value .001) and hand grip strength (P-Value .001).

Conclusion: There is a significant prevalence of muscle and joint aches among women of middle aged. Factors independently associated with these symptoms are insomnia and grip strength. In this population management of insomnia may lead to improvement in muscle and joint pains which in turn might help to restore had grip strength. On the other hand treatment of hand pain might decrease insomnia along with improvement in the grip strength.

Keywords: Middle aged, Arthralgia, Myalgia, Hand Grip Strength

How to cite this:

Nawaz A, Anjum S, Ahmad F. Frequency Muscle and Joint Pains and Its Association with Insomnia and Hand Grip Strength among Middle Aged Women. J Pak Soc Intern Med. 2021;2(4): 312-315

Corresponding Author: Arzoo Nawaz **Email:** 786.arzoo.nawaz@/gmail.com

Introduction

The menopause alteration is experienced by 1.5 million women per annum. The variations of menopause usually comprises of bothersome symptoms, such as vasomotor indicators, vaginal dryness, reduced sex desire, insomnia, lethargy, and joint discomfort. Moreover, depressive system and cognitive problems may also result in women during the menopausal years which may be related to hormones contradictorily and more delicately. Depression and cognitive damage can complex the load of medical diseases for the female population and can bring troublesome for them.[1]

The reliability of the musculoskeletal system is upheld by the female sexual hormone estrogen; therefore a reduction of this hormone may precede to compromised function of the muscles as related with the menopause transition chiefly in the most menopausal years.[2] Moreover, joint pain and muscle aches were most recurrent than another symptoms in all the countries evaluated.[3]

A more usual problem occurred is menopausal arthralgia. During the period of menopause, arthralgia is stated by more than half of the women. It may be difficult to establish the reason of joint pain in the post-menopausal women because of the correspondence of menopause with rising frequency of prolong rheumatic disorders like osteoarthritis.[4]

Insomnia can be described as the trouble in the commencement and preservations of sleep and insufficient or reduced quality of sleep despite of suitable conditions and occasions for sleep which marks in the daytime operational functions predicted to affect 6%-30% of the common population.[5] Sleep problems drastically

increase in middle aged women as compared to men with growing frequency of nearly 1% to 40% in women during the late 40's and early 59's, contrast with the characteristic age of the menopause alterations.

Increasing frequency of insomnia among the aged woman's in the alterations from pre to post menopause has been revealed by research to result in sleep problems. Explicitly, more than 50% of the women were stated to suffer from sleep difficulties and more than one third were highly depressed.[6] Precisely, depressive symptoms have been related with vasomotor symptoms (VSM). Along with social, psychological and behavioral elements (e.g. family support, absence of interest in sex, traumatic incidents) females shifting/ involving to menopausal symptoms may in general be mainly prone to mood disorders and in particular or precisely to depressive symptoms[(5)]. Middle aged women are affected by sleep difficulties as they advance and pass over menopause at increasing frequently than at almost any other stages of life.[7]

The long-standing health penalties (depression, hypertension) can be caused by its pathology. Moreover, it may be either a prime complaint or subordinate complaint, related with a somatic or intellectual illness.[8] Thus changing point for women's sleep is menopause. According to the SWAN study, insomnia was prevalent in 46–48% of women with menopause against 38% of pre-menopausal women.[9] Other vast study, suggested that sleep problems in women with menopause were commonly linked with hot flushes (HF) or temperament disarrays such as nervousness or sadness.[10,11]

In a study conducted by AC Llanas et. al it was concluded that the best non-pharmacological treatment option for post-menopausal women is use of regular exercise regime. Regular exercise reduces the latency of sleep and results in increase in total sleep time.[12]

Hand grip strength is essential to perform many everyday living activities. However, grip strength is a significant objective evaluation tool of function of the hand.[13] Variable researches state that hand clasp power may be a durable interpreter of both hand and upper extremity functions. Hand grip strength has been exhibited to compare with many anthropometric variables in the healthy general population. Through the age series and geographic populations, women are reported to have decreased grip strength as compared to man. Hand grip has been shown to be revealed to be correlate negatively with indicators of disease activity and associated/linked with growing disability.[14] Therefore, a significant alternations regarding measurements of muscle function as a marker of nutritional as well as functional states has been expanded in the last decades.[15] This study is to determine the frequency of muscle and joint pains and based upon assumption that an association exists between arthralgia and myalgia with insomnia and grip strength among middle aged women.

Methods

This cross-sectional study was conducted at the University of Lahore Teaching Hospital, Lahore from June to Oct 2019. The subjects were recruited using predefined inclusion and exclusion criteria. Demographic data such as age and sex of 171 subjects was assembled. Middle aged menopausal women of age 45-65 years who had any degree of muscle or joint pain were included in this study. Diagnosed with any metabolic and systemic diseases such as rheumatoid arthritis, cancer etc. we're not considered appropriate for inclusion. Women experiencing menstruation were excluded from the study too. Any type of neurological disorders was not considered significant.

Middle aged menopausal women (45-65 years) who reported muscle and joint pains were included in the research. For all individuals, the following outcomes were measured. MenQol consisted of 29 questions and was distributed into four areas: Vasomotor (three questions), psychological (seven questions), physical (sixteen questions) and sexual (three questions). Counting for all of the four MenQol areas was alike. Throughout the processing of MenQol, a Likert Scale was used (seven point). It was changed for counting and figures investigation. This Likert Scale (seven point) was changed into an eight point scale, extending from 1-8 for the entire 29 items.

The sternness of the menopausal signs related scoring method is as mentioned, score ranging 0-1 was considered absence of symptoms, score ranging 2-4 was considered mild, score ranging 5-6 was considered moderate and score ranging 7-8 was considered as severe signs.

Similarly, women reporting frequency of pain were evaluated as follows, 0-1 times a month (none), 1-2 times a week (mild), 3-4 times a week (moderate), almost every day (severe).

Every entry on the HADS was scored from 0-3 which implies that an individual may be able to score in the middle of 0-21 for either anxiety or depression. The scoring can be interpret by the following criteria, Normal Case ranging 0-7, Borderline Abnormal Case ranging 8-10, Abnormal Case ranging 11-21.

A hand grip dynamometer was specifically used to measure the hand grip power twice for the dominant hand. Both measurements were used to estimate the typical strength of the grip of hand. Momentarily, the patient grasped the dynamometer in the dominant hand to test it, with the arm at the right angles and elbow on

the side of the body. The base of the dynamometer lied on the first metacarpal, while the handle rested on the middle of the patient's fingers. When prepared, the patient clutched the dynamometer with full isometric strength, maintaining the position and holding it for about 5 seconds. No other accessory movement of body was permissible. The strength was measured in kilograms, comparing to normal norms, strength was evaluated of each patient whether it was normal, strong or weak.

The Menopause-specific Quality of Life (MENQOL) Questionnaire was used to assess the frequency of pain and menopausal related symptoms. Hospital Anxiety and Depression Scale (HADS) was used to interpret the severity of anxiety and depression in subjects and Hand Grip Dynamometer to measure the hand grip strength of the dominant hand in the patients.

All data analysis was performed using SPSS Statistics 21. P values < 0.05 were considered statistically significant. For quantitative variables, mean and standard deviation was calculated. For qualitative variables, frequency and percentage was calculated. Chi- Square Test was used after checking the normality of data.

Results

Total number of subjects were 171 with mean age of the women was 52.44+6.081 with a minimum age of 45 years and a maximum age of 65 years. Distributions of patients according to age was shown in Fig 1.

Table 1: *Frequency of Muscle and Joint Pains (n=171)*

Women with muscle and joint pains	Frequency	Percentage
One to two times a week (mild)	29	17.0
Three to four times a week(moderate)	73	42.7
Almost every day (severe)	69	40.4

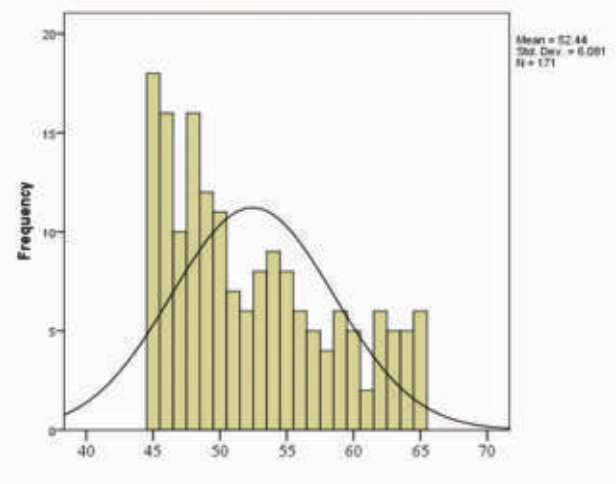

Fig 1. *Above mentioned figure illustrates the descriptive statistics of age (n=171)*

Discussion

According to a cross sectional study held in Japan, muscle and joint pains were extremely predominant among the middle aged menopausal women. However, low grip strength and insomnia were not associated with muscle or joint aches.[3] In contrast to this, present study concluded that middle aged women had difficulty while sleeping due to pain in their muscles and joints (P-value 0.000)

This study was performed to determine the frequency of muscle and joint pain and its association with insomnia and hand grip strength in middle aged women in a sample obtained from different hospitals of Lahore. The exhibited frequency of aching in muscles and joints in women was 29 (17.0%) who reported Mild, 73 (42.7%) who reported Moderate and 69(40.4%) who reported Severe. In this study 17% of women were troubled by muscle and joint pains one to two times a week, 42.7% were disturbed by the pain three to four

Table 2: *Association between Muscle and Joint Pains and Insomnia (n=167).*

		Difficulty in sleeping				Total	Chi-Square	P value
		Absent	Mild	Moderate	Severe			
Aching in muscles and joints	Mild	5	9	9	6	29		
	Moderate	2	21	38	12	73	24.711	.001
	Severe	4	11	23	31	69		
Total		11	41	70	49	171		

Table 3: *Association between Muscle and Pains and Hand Grip Strength (n=171).*

		Hand Grip Strength			Total	Chi Square	P value
		Normal	Weak	Strong			
Aching in muscles and joints	Mild	6	22	1	29		
	Moderate	8	55	10	73		
	Severe	3	66	0	69	18.450[a]	.001
Total		17	143	11	171		

times a week, 40.4% were interrupted by the pain practically daily.

Moreover, in the current study, a direct association was also proved between muscle and joint aches and hand grip strength conversely to the study held in Japan with a P-value of 0.001.The subjects were also assessed in the present study for anxiety and depression which is cause of insomnia directly 18 (10.5%) women reported Normal, 81(47.4%) reported Borderline Abnormal and 72(42.1%) reported Abnormal to Anxiety Score. Similarly to Depression Score 27 (15.8%) women reported Normal, 65 (38.0%) reported Borderline Abnormal and 79(46.2%) reported Abnormal.

However, there are some limitations of this study which need to be addressed; the data was gathered from one hospital of Lahore only. It is problematic to induce our outcomes towards a broader populace. The structural locations of muscle and joint pains were also not precisely classified in the MenQol survey.

Conclusion

Muscle and joint pains are public health problem which further lead to future health hazards. A significant association is present between muscle and joint pain with insomnia. An association also exists between muscle and joint pains with hand grip strength. According to this study finding of association between muscle and joint is somewhat comprehensible that arthralgia and myalgia are associated with low grip strength which can results in muscle weakness. The participants may also find it difficult to perform hand grip test if they pain in wrists or hands.

Conflict of Interest: None

Funding Source: None

Acknowledgments

Special thanks to Dr. Ashfaq Ahmad for guiding me through out every stage of my research and for illuminating me with his knowledge.

References

1. Santoro N, Epperson CN, Mathews SB. Menopausal symptoms and their management. Endocrinol Metabol Clin. 2015;44(3):497-515.
2. Ogwumike OO, Adeniyi AF, Orogbemi OO. Musculoskeletal pain among postmenopausal women in Nigeria: Association with overall and central obesity. Hong Kong Physiother J. 2016;34(1):41-6.
3. Terauchi M, Hirose A, Akiyoshi M, Kato K, Miyasaka N. Muscle and joint pains in middle-aged women are associated with insomnia and low grip strength. Maturitas. 2017;100(1):136.
4. Magliano M. Menopausal arthralgia: Fact or fiction. Maturitas. 2010;67(1):29-33.
5. Terauchi M, Hiramitsu S, Akiyoshi M, Owa Y, Kato K, Obayashi S, et al. Associations between anxiety, depression and insomnia in peri-and post-menopausal women. Maturitas. 2012;72(1):61-5.
6. Terauchi M, Obayashi S, Akiyoshi M, Kato K, Matsushima E, Kubota T. Insomnia in Japanese peri-and postmenopausal women. Climacteric. 2010; 13(5): 479-86.
7. Lampio L, Saaresranta T, Engblom J, Polo O, Polo-Kantola P. Predictors of sleep disturbance in menopausal transition. Maturitas. 2016;94(2):137-42.
8. Kirk V, Baughn J, D'Andrea L, Friedman N, Galion A, Garetz S, et al. American Academy of Sleep Medicine position paper for the use of a home sleep apnea test for the diagnosis of OSA in children. Journal of Clinical Sleep Medicine. 2017;13(10):1199-203.
9. Ruan X, Cui Y, Du J, Jin F, Mueck AO. Prevalence of climacteric symptoms comparing perimenopausal and postmenopausal Chinese women. J Psychosoma Obstet Gynecol. 2017;38(3):161-9.
10. Blümel JE, Cano A, Mezones-Holguín E, Barón G, Bencosme A, Benítez Z, et al. A multinational study of sleep disorders during female mid-life. Maturitas. 2012;72(4):359-66.
11. Bruyneel M. Sleep disturbances in menopausal women: Aetiology and practical aspects. Maturitas. 2015; 81(3): 406-9.
12. Llanas AC, Hachul H, Bittencourt LR, Tufik S. Physical therapy reduces insomnia symptoms in postmenopausal women. Maturitas. 2008;61(3):281-4.
13. Mathieux R, Marotte H, Battistini L, Sarrazin A, Berthier M, Miossec P. Early occupational therapy programme increases hand grip strength at 3 months: results from a randomised, blind, controlled study in early rheumatoid arthritis. Annals Rheuma Dis. 2009; 68(3): 400-3.
14. Sheehy C, Gaffney K, Mukhtyar C. Standardized grip strength as an outcome measure in early rheumatoid arthritis. Scandin J Rheumatol. 2013;42(4):289-93.
15. Norman K, Stobäus N, Gonzalez MC, Schulzke J-D, Pirlich M. Hand grip strength: outcome predictor and marker of nutritional status. Clin Nutr. 2011;30(2): 135-42.