

Assessment of Level of Physical Activity and Depression in Postmenopausal Women: A Cross-Sectional Study

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ABSTRACT

Background: Menopause is associated with significant changes in the physical and mental health of women. Physical activity has been proposed as a mitigating factor for mental health issues like depression during this phase.

Objectives: To assess the levels of physical activity and depression among postmenopausal women and examine the correlation between these two variables.

Methods: This cross-sectional study included 120 postmenopausal women aged 40 years and above from various societies in Surat. Participants completed the International Physical Activity Questionnaire (IPAQ) and Beck Depression Inventory (BDI). Statistical analysis was performed using SPSS 20.0, employing descriptive statistics and Spearman's rank correlation.

Results: Most participants exhibited moderate physical activity levels (50.83%). Regarding depression, 65% displayed normal mood variations, 25% had mild mood disturbances, 5% had borderline clinical depression, and another 5% had moderate depression. No severe depression was observed. A weak negative correlation was found between physical activity levels and depression scores ($r = -0.027$, $p = 0.768$).

Conclusion: The majority of postmenopausal women engaged in moderate physical activity and exhibited normal or mildly disturbed moods.

Keywords: Postmenopausal women, International Physical Activity Questionnaire, Beck Depression Inventory.

INTRODUCTION

Menopause, defined by the World Health Organization (WHO) as the last menstrual period in a woman's life, is associated with the permanent cessation of ovarian follicle activity. This transition is marked by three distinct stages: premenopause, perimenopause, and postmenopause. Premenopause is characterized by irregular menstruation, typically occurring between the ages of 45–49. Perimenopause includes

the years immediately before and after menopause when hormonal fluctuations become pronounced. Postmenopause refers to the time following the final menstrual period, regardless of whether menopause is natural or induced.^{1,2,3}

During menopause, hormonal changes, including a sharp decline in estrogen and progesterone, have profound effects on physical and mental health. These alterations contribute to symptoms such as

hot flashes, irritability, sleep disturbances, and anxiety, significantly affecting quality of life.^{4,5,6} Depression, one of the most common psychological challenges during menopause, is linked to these hormonal fluctuations. Research suggests that women without prior depressive episodes may have a heightened risk of depression during menopause.^{7,8,9}

Physical activity (PA) has been shown to mitigate many menopausal symptoms, improving both physical and psychological well-being. Defined as any movement requiring energy expenditure, PA encompasses structured exercise and everyday tasks like housekeeping and active commuting. Studies reveal that moderate to vigorous physical activity (MVPA) improves mood, reduces oxidative stress, and enhances overall quality of life.^{10,11,12}

The role of physiotherapy is crucial in managing menopausal symptoms. Non-hormonal and non-pharmacological physiotherapy interventions, including exercise regimens, have shown efficacy in reducing depression and improving sleep. These interventions are associated with increased levels of serotonin and brain-derived neurotrophic factor (BDNF), offering a safe and effective approach to menopausal care.^{13,14,15}

This study investigates the interplay between physical activity levels and depression in postmenopausal women, aiming to provide evidence for physiotherapy and lifestyle interventions in this population.

Add appropriate original references to the sentences/paragraphs taken from other media/sources.

MATERIALS & METHODS

Study Design and Population:

This cross-sectional study was conducted over six months, targeting postmenopausal women aged 40 years and above from various societies in Surat city. Participants with natural menopause who voluntarily consented to participate were included. Women with hysterectomies, psychological

disturbances, or menopausal duration less than six months or greater than ten years were excluded.

Sample Size and Sampling: A total of 120 participants were recruited using random sampling.

Data Collection Tools:

- **International Physical Activity Questionnaire (IPAQ - Long Form):** Used to assess physical activity levels across domains such as work, transportation, housework, and leisure. Activity was categorized as low (<600 MET min/week), moderate (600–1500 MET min/week), or high (>1500 MET min/week) based on MET scores.¹⁰
- **Beck Depression Inventory (BDI):** A standardized tool for evaluating depressive symptoms, categorizing severity into six levels ranging from normal mood variations to extreme depression.¹⁶

PROCEDURE

Participants were briefed about the study, and informed consent was obtained. Following initial screening, eligible participants completed the IPAQ and BDI questionnaires. The data were collected and analyzed to determine physical activity levels and depression scores.

STATISTICAL ANALYSIS

The collected data was analyzed using SPSS 20.0 software for Windows. Normality of the data was checked using the Shapiro Wilk test. As the data followed a normal distribution, descriptive statistics were expressed as mean \pm standard deviation. The level of physical activity and depression were expressed as percentages. Correlation between the level of physical activity and depression was measured by using Spearman's rank correlation test.

RESULT

Table 1: Descriptive Details of Age, IPAQ and BDI Score

	N	MEAN	MEDIAN	SD	MINIMUM	MAXIMUM
AGE	120	51.9	52	4.86	41	65
IPAQ SCORE	120	2877.9	2168.5	2755.0	200	13839
BDI SCORE	120	9.69	9.00	4.73	1	26

Table 2: Level of Physical Activity

Physical Activity	N	Percentage (%)
Low (<600 MET min/week)	21	17.5
Moderate(600-1500METmin/week)	61	50.83333
High (>1500MET min/week)	38	31.66667
Total	120	-

Above table suggests that 50.83% of women has moderate physical activity, 31.66% has high physical activity, 17.5% has low physical activity.

Table 3: Level of Depression

Level of Depression	N	Percentage (%)
These ups and downs are considered normal	78	65
Mild mood disturbance	30	25
Borderline clinical depression	06	5
Moderate depression	06	5
Severe depression	00	0
Extreme depression	00	0

Table 4: Table showing correlation between IPAQ and BDI

		BDI Score
IPAQ Score	Spearman's rho	-0.027
	df	118
	p-value	0.768

Above table suggests that IPAQ and BDI scores are not statistically correlated with each other ($r = -0.027$)

DISCUSSION

This study assessed physical activity levels and depression in postmenopausal women using the International Physical Activity Questionnaire (IPAQ) and Beck Depression Inventory (BDI). The findings revealed that the majority of participants had moderate levels of physical activity, followed by high and low levels, indicating an overall active lifestyle. Most women exhibited normal mood variations or mild mood disturbances, with very few showing borderline or moderate depression, and none experiencing severe depression.

Physical activity is known to promote hormonal balance, improve physical fitness, and enhance overall quality of life in menopausal women. Previous studies have demonstrated its role in reducing anxiety, depression, and stress while improving

mental well-being and quality of life.^{12,14} Research also shows that highly physically active women have fewer depressive symptoms compared to their less active counterparts, highlighting the protective role of physical activity.^{17,6}

Interestingly, physical activity may elevate brain-derived neurotrophic factor (BDNF) levels, which are associated with reduced depression and improved cognitive function, particularly in older adult.^{9,18} Even low-intensity physical activity has been shown to contribute to better mental health outcomes and positive attitudes toward menopause.¹⁹

While this study's findings align with existing literature, it found no statistically significant correlation between physical activity levels and depression. This may be due to the relatively low prevalence of depression among the sample population,

which was predominantly physically active. Other contributing factors such as marital status, mental health history, and comorbidities may also influence depressive symptoms in postmenopausal women.^{8,20}

LIMITATIONS

The study's small sample size and broad menopausal duration (6 months to 10 years) limit generalizability. The use of self-reported questionnaires may have led to under- or over-estimation of physical activity levels. Future studies with larger sample sizes and narrower menopausal durations are recommended.

CONCLUSION

The study concluded that most of the menopausal women had moderate level of physical activity in their day to day life. Also most of the women had slight up and down in their mood which was considered to be normal and none of the women had severe mood disturbances or depression. Also there was no correlation between level of physical activity and level of depression.

Declaration by Authors

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REFERENCES

1. WHO. Technical Report Series. 1996; 866:1–107.
2. McKinlay SM, Brambilla DJ, Posner JG. The normal menopause transition. *Maturitas*. 1992;14(2):103–15.
3. Sherman BM, West JH, Korenman SG. The menopausal transition: analysis of LH, FSH, estradiol, and progesterone concentrations during menstrual cycles of older women. *J Clin Endocrinol Metab*. 1976;42(4):629–36.
4. Santoro N, Roeca C, Peters BA, Neal-Perry G. The menopause transition: Signs, symptoms, and management options. *J Clin Endocrinol Metab*. 2021;106(1):1–15.
5. Peterson JA, Ward-Smith P. Choose to Move for Positive Living: physical activity program for obese women. *Holist Nurs Pract*. 2012;26(3):120–8.
6. Takahashi M, Lim PJ, Tsubosaka M, Kim HK, Miyashita M, Suzuki K, et al. Effects of increased daily physical activity on mental health and depression biomarkers in postmenopausal women. *J Phys Ther Sci*. 2019;31(4):408–13.
7. Soares CN. Depression in peri- and postmenopausal women: prevalence, pathophysiology, and pharmacological management. *Drugs Aging*. 2013;30(9):677–85.
8. Bromberger JT, Kravitz HM, Chang YF, Cyranowski JM, Brown C, Matthews KA. Major depression during and after the menopausal transition: Study of Women's Health Across the Nation (SWAN). *Psychol Med*. 2011;41(9):1879–88.
9. Ahokas A, Kaukoranta J, Wahlbeck K, Aito M. Estrogen deficiency in severe postpartum depression: successful treatment with sublingual physiologic 17 β -estradiol: a preliminary study. *J Clin Psychiatry*. 2001; 62:332–6.
10. Craig CL, Marshall AL, Sjöström M, Bauman AE, Booth ML, Ainsworth BE, et al. International physical activity questionnaire: 12-country reliability and validity. *Med Sci Sports Exerc*. 2003;35(8):1381–95.
11. Fatouros IG, Jamurtas AZ, Villiotou V, Pouliopoulou S, Fotinakis P, Taxildaris K, et al. Oxidative stress responses in older men during endurance training and detraining. *Med Sci Sports Exerc*. 2004;36(11):2065–72.
12. Elavsky S, McAuley E. Physical activity, symptoms, esteem, and life satisfaction during menopause. *Maturitas*. 2005; 52:374–85.
13. Dąbrowska J, Dąbrowska-Galas M, Rutkowska M, Michalski BA. Twelve-week exercise training and the quality of life in menopausal women – clinical trial. *Przegląd Menopauzalny*. 2016;15(1):20–5.
14. Erickson KI, Miller DL, Roecklein KA. The aging hippocampus: interactions between exercise, depression, and BDNF. *Neuroscientist*. 2012; 18:82–97.
15. Stuenkel CA, Davis SR, Gompel A, Lumsden MA, Murad MH, Pinkerton JV, et al. Treatment of symptoms of the menopause: An endocrine society clinical

- practice guideline. *J Clin Endocrinol Metab.* 2015;100(11):3975–4011.
16. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. *Arch Gen Psychiatry.* 1961; 4(6):561–71.
 17. Nelson DB, Sammel MD, Freeman EW, Lin H, Gracia CR, Schmitz KH. Effect of physical activity on menopausal symptoms among urban women. *Med Sci Sports Exerc.* 2008; 40:50–8.
 18. Van Gool CH, Kempen GI, Penninx BW, Deeg DJ, Beekman AT, van Eijk JT. Relationship between changes in depressive symptoms and unhealthy lifestyles in late middle-aged and older persons: results from the Longitudinal Aging Study Amsterdam. *Age Ageing.* 2003; 32:81–7.
 19. Tairova SO, Lorenzi RSD. Influência do exercício físico na qualidade de vida de mulheres na pós-menopausa: um estudo caso-controle. *Rev Bras Geriatr Gerontol.* 2011;14(1):135–45.
 20. Mirzaiinj Mabadi K, Anderson D, Barnes M. The relationship between exercise, body mass index, and menopausal symptoms in midlife Australian women. *Int J Nurs Pract.* 2006; 12:28–34.
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