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A NOVEL LIFESTYLE-BASED PHYSICAL ACTIVITY INTERVENTION TO ALLEVIATE MENOPAUSAL SYMPTOMS AND ENHANCE QUALITY OF LIFE AMONG MIDLIFE WOMEN

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Abstract
Introduction: Menopause is a significant physiological transition in a woman's life that is commonly associated with vasomotor, psychological, physical, and social symptoms affecting overall quality of life. Midlife women frequently experience hot flashes, sleep disturbances, anxiety, depression, fatigue, mood instability, and musculoskeletal discomfort, which may negatively influence daily functioning and well-being. Increasing evidence highlights the importance of non-pharmacological and lifestyle-oriented interventions in managing menopausal symptoms. Physical activity promotion has emerged as a safe, cost-effective, and sustainable strategy for enhancing menopausal health outcomes. This study aligns with the United Nations Sustainable Development Goals, specifically Sustainable Development Goal 3 and Sustainable Development Goal 5, by promoting healthy aging, women's empowerment, and improved quality of life among midlife women.
Methods: A quantitative interventional research design was adopted among midlife women experiencing menopausal symptoms. Participants were selected using an appropriate sampling technique and underwent baseline assessment using standardized menopausal symptom and quality-of-life assessment tools. The novel lifestyle-based physical activity intervention included brisk walking exercises, deep breathing exercise and kegel exercise conducted over a specified duration. Post-intervention assessment was carried out using the same standardized tools to evaluate changes in menopausal symptoms and quality of life. Data were analyzed using descriptive and inferential statistics.
Results: The intervention demonstrated a significant reduction in menopausal symptom severity, particularly in physical discomfort, vasomotor symptoms, psychological distress, and sleep-related disturbances. Participants showed notable improvement in physical functioning, emotional well-being, stress management, and overall quality of life following the intervention. Increased adherence to healthy lifestyle behaviors and regular physical activity practices was also observed among the participants. The findings indicate that lifestyle-based physical activity interventions can positively influence menopausal health outcomes and support healthy aging among women.

KEYWORDS: Menopause, Midlife Women, Physical Activity, Menopausal Symptoms, Quality of Life, SDG and Women's Health

INTRODUCTION

Menopause is one of the most significant biological transitions in a woman's life, marking the permanent cessation of menstruation and the end of reproductive capability. Globally, natural menopause commonly occurs between the ages of 45 and 55 years[1]. With increasing life expectancy, women now spend nearly one-third of their lifespan in the postmenopausal period, making menopausal health an important public health concern. Over the past few decades, the health and well-being of menopausal women have gained considerable attention among healthcare professionals and researchers worldwide[2].Natural menopause is clinically defined as the absence of menstruation for twelve consecutive months without any pathological or physiological cause or medical intervention[3]. The hormonal alterations associated with menopause, particularly the decline in estrogen levels, contribute to several physiological and psychological changes that may adversely affect women's health and quality of life[4]. These changes often manifest as vasomotor disturbances, osteoporosis due to reduced bone mineral density, vaginal dryness leading to dyspareunia, sleep disturbances, mood disorders, anxiety, depression, and other psychosocial complications[5].

In developing countries such as India, limited attention has been directed toward the specific healthcare needs of postmenopausal women, especially those residing in rural communities where access to healthcare services and awareness regarding menopausal health remain inadequate. Existing geriatric healthcare services predominantly focus on general age-related health issues, while specialized care for women in the post-reproductive stage continues to be

insufficient[6].According to demographic estimates, the global population of postmenopausal women was approximately 467 million in 1990 and is projected to increase to nearly 1.2 billion by 2030, with around 76% residing in developing nations. The increase in female life expectancy has further emphasized the need to address menopausal health as a major component of women's healthcare. Women are therefore required to adapt to prolonged postmenopausal life, making symptom management and quality-of-life enhancement essential aspects of healthcare delivery[7].
Postmenopausal women are particularly vulnerable to the effects of hormonal fluctuations and physiological aging. Scientific evidence suggests that declining estrogen levels during menopause are strongly associated with the development of physical, emotional, and psychological symptoms that substantially influence daily functioning and overall well-being. However, many women remain unaware of the causes, management strategies, and long-term implications of menopausal symptoms[8].Therefore, there is a growing need to explore the menopausal experiences of women, identify the prevalence and severity of menopausal symptoms, and examine their impact on quality of life. Understanding these factors will contribute to the development of effective health promotion strategies and supportive interventions aimed at improving the physical, psychological, and social well-being of menopausal and postmenopausal women[9].

MATERIALS & METHODS

A pilot study was conducted in rural area among menopausal-transition women. The study was conducted after obtaining ethical clearance from the Institutional Human Ethics Committee. The study was incorporated all perimenopausal women between 40 to 60 years of age who had lived in the selected rural area for more than a year. Women, who had undergone hysterectomy, received hormonal therapy, were seriously ill, physically and mentally challenged, women who were not in their house for three following visits were excluded from this study. The Stages of Reproductive Aging Workshop (STRAW) staging system for reproductive ageing in women (2012) was used to classify the women [8]. Oral consent was received from all samples before starting the study. Complete details of perimenopausal and early postmenopausal women were done by house-to-house survey using a semi-structured interview questionnaire, which was in the local Tamil language.
The questionnaires consist of two sections. Section I consist of socio-demographic data such as age, religion, parity, marital status, occupational status, type of family, and socio-economic status. Section II includes questionnaire on menopausal symptoms. The menopausal symptom questionnaire consists of four domains (vasomotor, psychosocial, physical, and sexual) as per the menopause quality of life questionnaire [9].
All the information was entered in a Microsoft Excel sheet and SPSS software for analysis. Prevalence of menopausal symptoms was expressed as the frequency with percentage. The impact of menopausal symptoms represented in bar diagrams.

RESULTS

This study was conducted at selected villages, with an aim to evaluate A Novel Lifestyle-Based Physical Activity Intervention to Alleviate Menopausal Symptoms and Enhance Quality of Life among Midlife Women. The houses were visited, total of 12 women (6 in experimental group and 6 in control group) who were fulfilling the study criteria were interviewed.

Table 1: Frequency and percentage distribution of samples according to the demographic variables (n=12)

S.NO	DEMOGRAPHIC VARIABLES	C (n=6) f %	E (n=6) f %
1	**Age**		
	41-45 yrs	1 (17)	2 (33)
	46-50 yrs	2 (33)	2 (33)
	51-55 yrs	2 (33)	1 (17)
	56-60 yrs	1 (17)	1 (17)
2	**Age at Menarche**		
	Early	1 (17)	1 (17)
	Ideal	3 (50)	2 (33)
	Late	2 (33)	3 (50)
3	**Socio-Economic Status**		
	Upper Class	1 (17)	0 (0)
	Middle Class	2 (33)	2 (33)
	Lower Class	3 (50)	4 (67)
4	**Menstrual Cycle**		
	Regular	5 (83)	5 (83)
	Irregular	1 (17)	1 (17)
5	**Marital Status**		
	Unmarried	1 (17)	0 (0)
	Married	3 (50)	2 (33)
	Widow	2 (33)	4 (67)
6	**Parity**		
	Nulliparous	1 (17)	1 (17)
	Primi Para	1 (17)	2 (33)

	Multi Para Grand Multi Para	2 (33) 2 (33)	2 (33) 1 (17)
7	**Abortion** Yes No	 1 (17) 5 (83)	 0 (0) 6 (100)

Table 1 represents frequency and percentage distribution of samples according to the demographic variables. From this most of them belongs to the age group of 46-50 yrs 2 (33%) in control group and experimental group. Majority of them attained menarche during ideal age 3 (50%) in control group and late age 3 (50%) in experimental group . Most of them belong to lower socioeconomic status in both groups. Majority of them had regular menstrual cycle 5 (50%). Most of them married 3 (50%) in control group. Majority of them belongs to Multi-Para 2 (33%) in control group and experimental group. 1 (17%) had the history of abortion in control group and 6 (100%) don't have the history of abortion.

Incidence of Physical Menopausal symptoms among Menopause Transitional Woman

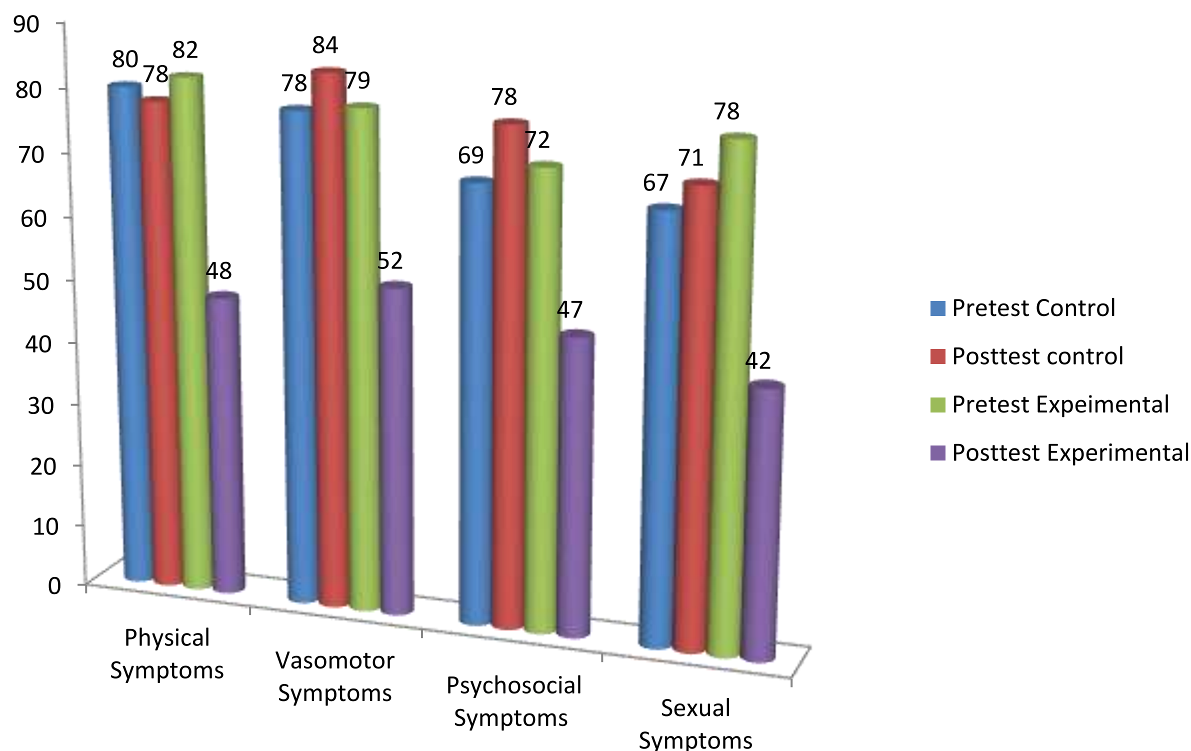

Fig.1 represents distribution of Pretest and posttest level of menopausal symptoms and quality of lifesymptoms among Menopause Transitional Womenin control group and experimental group

SECTION-3: This section deals with comparison of mean scores between pretest and posttest scores

Table-2: Comparison of mean scores between pretest and posttest scores

Group	Pretest		Posttest		Mean difference	Paired 't'test
	Mean	SD	Mean	SD		
Control group	7.67	3.19	8.00	2.77	0.33	0.990
Experimental group	8.33	2.72	16.03	3.68	7.7	10.656**

** at $p < 0.01$ level

The inferences made are

The mean posttest knowledge (16.03) was higher than the mean pretest knowledge (8.33) with SD = 3.68 and obtained 't' value (t=10.656) was significant at $p <0.01$ level. Hence, the 1st hypothesis was accepted.

DISCUSSION

In this study, the mean age of attaining menopause was 47.6 ± 3.5 years, which was closer to the age of menopause given by the Indian Menopause Society (47.9 years) [11]. In the existing study, married women were 79%, widows were 16%,

and a 6% of woman was single. A related distribution was seen in a study conducted in Vadodara district with 147 peri-menopausal women, of which 80.3% were married and 18.4% were unmarried [4].
Tom et al. conducted a cross-sectional study in the United States among 2397 peri-menopausal women and showed that the mean age of menopause was 49 years [12]. Dratva et al. said that data from a European cohort study showing that the mean age of menopause was 54 years [13]. Thus a wide range of difference in the mean menopausal age was perceived, which seems to be due to different nation, race, ethnicity, and environmental factors.
In this present study, most of the perimenopausal woman had hot flashes 212 (72%) in vasomotor symptoms. Majority of the perimenopausal woman felt anxious 216 (73%) in psychosocial symptoms. Most of the perimenopausal woman felt anxious 247 (84%) and joint pain 207 (70%) in physical symptoms. Most of the perimenopausal woman had reduce sexual desire 112 (49%) in physical symptoms [14]. In the present study, muscles and joint pain (49% to 70%) were the common menopausal symptoms experienced by the study subjects, which were similar to the symptoms experienced by peri-menopausal women. A similar study finding was seen in a cross-sectional study conducted by Amrita et al. and Poomalar et al., where muscles and joint pain preponderated but the percentage was less than 60% [15,16]. Sagdeo et al., in their study among rural women in Nagpur, showed muscle and joint pain had a higher prevalence [17]. Same findings were also observed in a study conducted in Pondicherry by Poomalar et al. but the percentage was less than 40% [16].
The bar diagram illustrates the comparison of pretest and posttest menopausal symptom scores between the control group and the experimental group in four domains: physical symptoms, vasomotor symptoms, psychosocial symptoms, and sexual symptoms [18]. The findings reveal that, during the pretest, both the control and experimental groups had relatively high symptom scores in all domains, indicating the presence of moderate to severe menopausal symptoms among the participants. In the control group, the posttest scores showed either a slight increase or minimal reduction in symptoms. Physical symptoms changed from 80 to 78, vasomotor symptoms increased from 76 to 84, psychosocial symptoms increased from 69 to 78, and sexual symptoms increased from 67 to 71. This indicates that there was no significant improvement in menopausal symptoms among women who did not receive the intervention. In contrast, the experimental group demonstrated a marked reduction in symptom scores after the intervention. Physical symptoms decreased from 82 to 48, vasomotor symptoms reduced from 79 to 52, psychosocial symptoms decreased from 72 to 47, and sexual symptoms reduced from 78 to 42. These findings suggest that the lifestyle-based physical activity intervention was highly effective in alleviating menopausal symptoms among midlife women.Overall, the graph indicates that the intervention significantly improved the physical, psychological, vasomotor, and sexual well-being of women in the experimental group compared to the control group.
Nayak et al., in their study conducted in a coastal area among 209 peri-menopausal women, found significant differences in all the symptoms, except for sexual symptoms among the perimenopausal and postmenopausal women [19,20]. Punyahotra et al. also showed that a significant association was found effect of physical exercises among menopause transitional women [21].

CONCLUSION

The present study concluded that the novel lifestyle-based physical activity intervention was highly effective in reducing menopausal symptoms and improving the quality of life among midlife women[22,23,24]. Significant improvements were observed in physical, vasomotor, psychosocial, and sexual health domains among participants in the experimental group when compared to the control group[25,26]. The intervention promoted healthier lifestyle behaviors, enhanced emotional well-being, and encouraged active participation in self-care practices during the menopausal transition[27,28,29]. The study highlights the importance of non-pharmacological and sustainable interventions in menopause management and emphasizes the vital role of nurses and healthcare professionals in promoting women’s health through education, motivation, and lifestyle modification strategies [30,31].
Furthermore, the findings strongly support the global vision of the United Nations Sustainable Development Goals, particularly Sustainable Development Goal 3 by promoting healthy aging, physical well-being, and mental health among women[32, 33,34]. The study also contributes to Sustainable Development Goal 5 by empowering women to actively manage their health, improve their quality of life, and achieve greater health autonomy during midlife[35,36]. Overall, the intervention can be considered an innovative, cost-effective, and community-based strategy for improving menopausal health outcomes and fostering holistic well-being among midlife women [37].

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