

# Health-Promoting Behaviors and Menopausal Symptoms: An Interventional Study in Rural India

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## ABSTRACT

**Background:** Menopausal transition initiates with menstrual cycle length variety and finishes when last menstrual period happens. As life expectancy has increased, a menopausal woman has to spend one-third of her life span with estrogen deprivation stage that leads to major long-term symptomatic and metabolic complications.

**Methods:** This was a quasi-experimental study conducted on 103 menopausal women between 40 and 60 years of age residing in Ambala district, Haryana. In the experimental group, women received lifestyle modification program that includes six domains, i.e., health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management. Intervention was divided into two sessions of total 2-h duration on 2 consecutive days. Sociodemographic pro forma, Menopausal Rating Scale, and Health Promoting Lifestyle Profile II were used to collect data from women through face-to-face interview. **Results:** There was a significant difference ( $P < 0.05$ ) in mean menopausal symptom score and mean health-promoting behavior score in the experimental group after the intervention, but there was no significant difference in the comparison group ( $P > 0.05$ ). It was revealed that there was no significant difference between the groups with regard to mean menopausal symptom score and mean health-promoting behavior score before intervention ( $P < 0.05$ ). The mean posttest menopausal symptom score ( $t = -8.99, P = 0.01^{**}$ ) was significantly low and the mean health-promoting behavior score ( $t = 8.7, P = 0.01^{**}$ ) was significantly high in the experimental group. **Conclusion:** Based on the finding of the study, it can be concluded that Lifestyle modification program was significantly effective in reducing menopausal symptoms and improving health-promoting behaviors among women.

**KEYWORDS:** *Health-promoting behaviors, lifestyle modification program, menopausal symptoms, menopausal women, rural community*

## INTRODUCTION

Menopause can be defined as the cessation of menstrual period for a year in succession (when there are no other reasons, such as pregnancy or illness, are responsible for this change).<sup>[1]</sup> In India, the normal age of menopause is 47.5 years of age, yet it can begin any time between 39 and 51 years of age and can last in the vicinity of 2 and 8 years (normal being 5).<sup>[2]</sup> Menopause is a natural process; other factors that predispose women to menopause in early age are radiations, removal of the uterus and ovaries, chemotherapy, poor health, and gland disorder.<sup>[3]</sup>

In females, as they progress toward menopausal stage, there is shortening of menstrual cycle as follicular phase starts decreasing. Insufficient follicular development results in inadequate estrogen production that results in variability in menstrual cycle and finally amenorrhea.<sup>[4]</sup> Irregularity in menstrual periods is the first sign of menopause.<sup>[5]</sup> The early symptoms of menopause due to continuous diminution of hormones

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and ovarian estrogen deficiency include sweating, hot flashes, sleep disorders, menstrual disorders, and mental changes.<sup>[6]</sup> Late consequences of menopause are cardiovascular diseases, urogenital atrophic changes and related sexual dysfunctions, musculoskeletal complaints, and osteoporosis. Results of one Indian study showed that 81% of women in perimenopause and postmenopause have low bone mass density.<sup>[7]</sup> Women in perimenopause also address a variety of emotional and thinking (cognitive) symptoms, including memory problems, fatigue, rapid changes in mood, and irritability.<sup>[8]</sup>

There are several therapies available for the management of conditions associated with menopause. Hormone replacement therapy has been utilized to lessen the manifestations of menopause. However, longitudinal studies have found that these women had an expanded hazard for heart attack, stroke, and breast malignancy.<sup>[9]</sup>

Many studies have reported that menopausal women can handle sweating and hot flashes by avoiding wearing layered clothing, refined sugar, spicy foods, caffeine, exposure to hot climate and alcohol, and by increasing their water intake. Regular exercise and diet helps in tapering down the incidence of cardiac diseases.<sup>[5]</sup> A study identified the need of combined program to improve the health of middle-aged women as 64.7% are living sedentary lifestyle.<sup>[10]</sup>

Thus, total health-care approach is helpful including a low fat, exercise, healthy practices, and normal calcemic diet which are imperative to overcome the menopausal problems.<sup>[11]</sup> For the management of menopause, a panel of experts strongly advocated and prescribed on lifestyle changes as a prime methodology of care including calcium, diet rich in fiber, phytoestrogens, and low in fat, particularly saturated fats, and adequate exercise. It is also submitted that usage of meditation and yoga is helpful. Therefore, it should be kept in mind that these recommendations can be used by every single Indian woman to enhance their overall health.<sup>[5]</sup>

With this background, this study was carried out to assess the effectiveness of lifestyle modification program on menopausal symptoms and health-promoting behaviors among menopausal women.

## METHODS

The present study was a quasi-experimental study conducted on 120 menopausal women between 40 and 60 years of age residing in Ambala district, Haryana, from February 2017 to November 2017. Based on the previous similar study by Nazari *et al.*<sup>[12]</sup> and based on some indicators ( $\alpha/2 = 1.96$ ,  $1 - \beta = 0.84$ ,  $\mu_1 = 116.67$ ,  $\mu_2 = 109.87$ ,  $\sigma = 12.93$ ,  $r = 1$ ), considering alpha = 0.05

and power = 80%, and using the mean comparison formula, a 114 sample size was determined for the study with 57 women in each group. Yet, considering the probability of lost to follow-up, the sample size was increased to 120 [Figure 1].

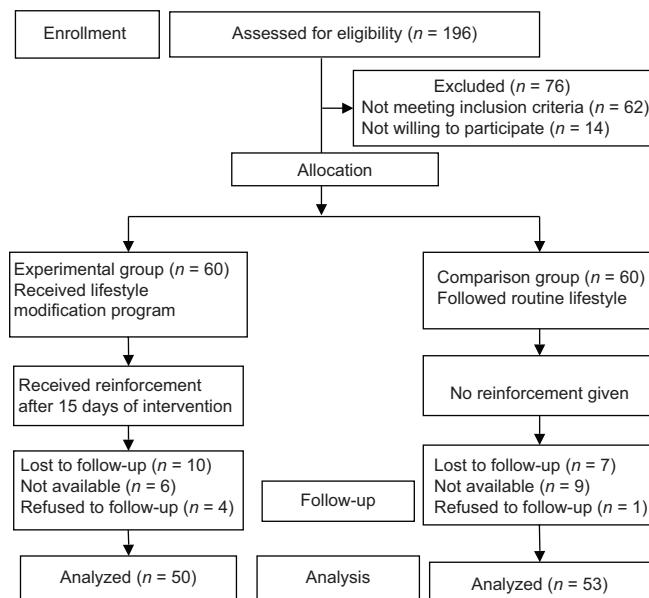
The ethical approval was obtained from the Institutional Ethical Committee. Permission was obtained from the appropriate authorities of Simbla and Mullana villages to conduct the study. The women were explained about the nature of study, and informed consent was obtained from each woman regarding her willingness to participate in the study. The study included those women who were undergoing menopausal symptoms and who can understand and respond in Hindi. Women with a known history of chronic illness, HIV, malignancy, and hormone replacement therapy within the past 6 months and undergone radiant therapy were excluded from the study.

Purposive sampling technique was used to recruit the women from Mullana and Simbla villages at Ambala district, and lottery method was used to randomly allocate the settings to experimental and comparison groups. In the experimental group, women received lifestyle modification program that was developed by the researcher with the help of literature available at Indian Menopausal Society official website<sup>[13]</sup> and Pender's Health Promotion Model (2006).<sup>[14]</sup> It includes six domains, i.e., health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management. Intervention was divided into two sessions of total 2-h duration on 2 consecutive days. The first session on day 1 included stress management, spiritual growth and physical activity for 1-h duration, and the second session on day 2 included nutrition, health responsibility, and interpersonal relationship for 1-h duration. Intervention was given in groups comprising 4–6 women each. Selection of the group and their need assessment were done 1 day prior and their availability was ensured on the day of intervention. Various educational methods were used to administer the intervention. Interactive lectures, group discussion, and flex were used for nutrition, health responsibility, and interpersonal relationship, whereas additional media such as videos, demonstration, redemonstrations along with interactive lectures, group discussion, and flex chart were used for stress management, spiritual growth, and physical activity to enhance the participants' learning and participation. Feedback was obtained during and after the intervention, and women were motivated to implement the intervention. Reinforcement was done on day 15 regarding implementation of lifestyle modification program in the experimental group. Post test was conducted on day 30.

Data were collected through face-to-face interview by using three tools. Selected variable pro forma that was prepared by the researcher consisted of age, religion, marital status, number of children, socioeconomic class (according to Kuppuswamy scale),<sup>[15]</sup> and gynecological problems, and menopausal staging was done according to Reproductive Aging Workshop Stages classification.<sup>[3]</sup>

Menopausal Rating Scale was used to assess the frequency and severity of the menopausal symptoms. It is a self-reported standardized Likert scale that comprises a total of 11 items (symptoms or complaints) that are further categorized into the following three subscales: somato-vegetative subscale, psychological subscale, and urogenital subscale. Each item in the scale is scored on a 5-point scale starting from 0 (indicates no symptoms) to 4 (indicates very severe symptoms). Total scoring is obtained by adding all the points of each item and ranges between 0, which means asymptomatic, and 44, which indicates the highest degree of complaints.<sup>[16]</sup> Item-Content Validity Index (ICVI) and Scale-Content Validity Index (SCVI) of the tool were 1, and reliability (0.87) was calculated by using test-retest method.

Health Promoting Lifestyle Profile II is a standardized tool that is used to monitor health-promoting behaviors of women. It consists of 52 items which are further classified into six domains, i.e., health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, and stress management. Scoring of items is done on a 4-point Likert scale.<sup>[17]</sup> ICVI of the tool was 0.90–1 and SCVI was 0.90. Calculated Cronbach's alpha value was 0.87. English version of the tools was translated into Hindi, and then back into English for validation.



**Figure 1:** Flowchart of the study population

## Statistical analysis

Data were analyzed using the SPSS (Armonk, NY: IBM Corp) version 20. Kolmogorov-Smirnov test was applied to check normality of the data. Data analysis was done by using descriptive statistics, i.e., mean and standard deviation, and inferential statistics such as Chi-square test, paired and independent *t*-test ANOVA, *post hoc* using Tukey's test, and step-wise regression. Pearson's correlation coefficient was used to check the relationship between the variables. Level of significance for the present study was  $P \leq 0.05$ .

## RESULTS

A total of 103 women completed the study. Computed Chi-square value ( $P > 0.05$ ) showed no significant difference between the groups regarding age, number of children, marital status, socioeconomic class, gynecological history, and menopausal stage. It was observed that majority of the women in the experimental group (88.0%) and comparison group (86.8%) were married. More than one-third of the women in the experimental group (44.0%) belong to upper-lower socioeconomic class, whereas more than one-third of the women in the comparison group (43.4%) belong to middle lower socioeconomic class. Majority of the women in the experimental group (84.0%) and comparison group (81.1%) had no gynecological history. More than half of the women in the experimental group (52.0%) and comparison group (56.6%) were in postmenopause stage.

Result of paired *t*-test showed significant difference ( $P < 0.05$ ) in mean menopausal symptom score and mean health-promoting behavior score in the experimental group after the intervention, but there was no significant difference in the comparison group ( $P > 0.05$ ) [Table 1].

Result of independent *t*-test revealed no significant difference between the groups with regard to mean menopausal symptom score and mean health-promoting behavior score before intervention ( $P < 0.05$ ). The mean posttest menopausal symptom score ( $t = -8.99, P = 0.01^{**}$ ) was significantly low and mean health-promoting behavior score ( $t = 8.7, P = 0.01^{**}$ ) was significantly high in the experimental group as compared to the comparison group at 0.05 level of significance [Table 1].

In the experimental group, the most prominent symptoms in pretest were joint and muscular discomfort (98%), physical and mental exhaustion (94%), sexual problems (86%), hot flushes (84%), and the least prominent symptoms were bladder problems (54%) and dryness of vagina (50%), whereas in posttest, the most prominent

symptoms were physical and mental exhaustion (86%), joint and muscular discomfort (70%), sexual problems (62%), and the least prominent symptoms were dryness of vagina (36%), depressive mood (34%), sleep problems (22%), and bladder problems (14%) [Table 2].

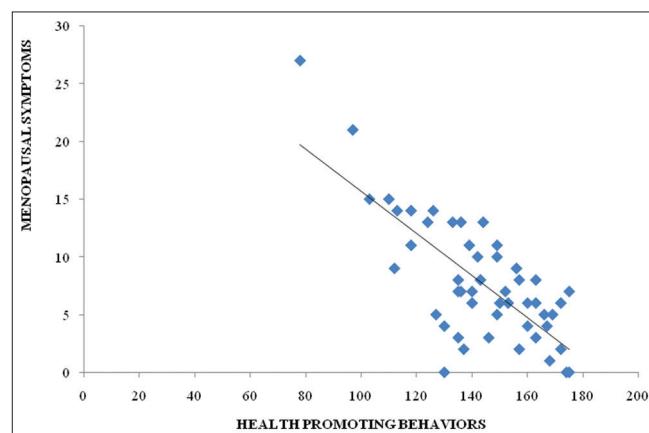
There was highly negative significant relationship found between posttest menopausal symptoms and posttest health-promoting behaviors among women ( $r = -0.74$ ,  $P = 0.01^{**}$ ) in experimental group. Thus, it can be inferred that menopausal symptoms and health-promoting behaviors are inversely related with each other, if health-promoting behaviors will increase menopausal symptoms will decrease [Figure 2].

The results of the step-wise multiple regression show the predictability of gynecological problems on menopausal symptoms among women in the experimental group. There was predictability of  $R = 31\%$  (0.31) with variability of  $R^2 = 10\%$  (0.10) in the posttest on dependent variable. Hence, coefficient of regression of the selected variable gynecological problems confirmed that prediction is in positive direction. It means, if

gynecological problems increase by 1 point, then menopausal symptoms will increase by 4.60 points [Table 3].

## DISCUSSION

The current study reported that mean menopausal symptom score after the administration of lifestyle



**Figure 2:** Scatter plot diagram showing the relationship between posttest menopausal symptoms and health-promoting behavior score in the experimental group

**Table 1: *t*-test shows difference in pre- and post-test Menopausal Rating Scale and Health Promoting Lifestyle II (n=103)**

Time of assessment	Experimental group (n=50)	Comparison group (n=53)	<i>t</i> <sup>§</sup>	<i>P</i>
Menopausal symptoms				
Before intervention	18.64±6.30	16.62±5.84	1.68	0.09
After intervention	7.88±5.36	17.28±5.24	8.99	0.01**
<i>t</i> <sup>†</sup>	13.47	3.16		
<i>P</i>	0.01**	0.03		
Health-promoting behaviors				
Before intervention	114.2±12.66	113.9±9.50	0.10	0.92
After intervention	142.9±21.95	114.2±9.07	8.7	0.01**
<i>t</i> <sup>†</sup>	12.83	0.31		
<i>P</i>	0.01**	0.75		

Values are presented as mean±SD. \*\*Significant ( $P \leq 0.05$ ), <sup>†</sup>Paired *t*-test, <sup>§</sup>Independent *t*-test. SD: Standard deviation

**Table 2: Menopausal Symptoms According to Menopausal Rating Scale (n = 103)**

Menopausal symptoms	n (%)			
	Experimental group (n=50)		Comparison group (n=53)	
	Pretest	Posttest	Pretest	Posttest
Hot flushes, sweating	42 (84)	20 (40)	45 (84.9)	47 (88.6)
Heart discomfort	33 (66)	22 (44)	28 (52.8)	31 (58.4)
Sleep problems	26 (52)	11 (22)	26 (49.0)	25 (47.1)
Joint and muscular discomfort	49 (98)	35 (70)	52 (98.1)	49 (92.4)
Depressive mood	34 (68)	17 (34)	41 (77.3)	40 (75.4)
Irritability	41 (82)	23 (46)	37 (69.8)	36 (67.9)
Anxiety	38 (76)	24 (48)	31 (58.4)	33 (62.2)
Physical and mental exhaustion	47 (94)	43 (86)	46 (86.7)	48 (90.5)
Sexual problems	43 (86)	31 (62)	37 (69.8)	40 (75.4)
Bladder problems	27 (54)	7 (14)	26 (49.0)	23 (43.3)
Dryness of vagina	25 (50)	18 (36)	21 (39.6)	27 (50.9)

**Table 3: Step-wise multiple regression showing the predictability of gynecological problems on menopausal symptoms among women in the experimental group (multiple correlation coefficient) (n=50)**

Experimental Group	Models	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	SE of estimate	df	F	P
Post Test	Gynecological problems	0.31	0.10	0.08	5.13	1/48	5.40	0.02*
		Unstandardized Coefficients		Standardized coefficients(β)	t			
		B	SE					
	Constant	7.14	0.79	-			9.01	0.00*
	Gynecological problems	4.60	1.98	0.31			2.32	0.02*

\*Significant ( $P \leq 0.05$ ). SE: Standard error

modification program in the experimental group was significantly ( $P < 0.05$ ) lower than that in the comparison group. The mean health-promoting behavior score after the administration of lifestyle modification program in the experimental group was significantly ( $P < 0.05$ ) higher than that in the comparison group.

The findings are consistent with those of the study conducted by Nazari *et al.*<sup>[12]</sup> to determine the effectiveness of lifestyle educational program in health-promoting behaviors and menopause symptoms among 200 postmenopausal women aged between 45 and 60 years. The authors stated that the results of *t*-test showed a significant difference in the mean scores of health-promoting lifestyle and menopausal symptoms in the experimental group ( $P < 0.05$ ), but not in the control group ( $P > 0.05$ ).

The study results are similar with those of the study conducted by Kaur *et al.* to evaluate the effectiveness of soya powder on menopausal problems among sixty perimenopausal women who stated that there was a significant difference between the pretest and posttest scores of menopausal symptoms in the experimental group and control group ( $P < 0.05$ ). This study concluded that there was a significant reduction in menopausal symptoms after consumption of soya powder.<sup>[18]</sup>

The study findings are supported by those of another study conducted by Kavitha *et al.* to evaluate the effectiveness of relaxation, exercise, and diet intervention on symptoms among sixty postmenopausal women. The menopausal symptoms in the experimental group were significantly ( $P < 0.05$ ) lower than that of the control group with a mean difference of 9.40.<sup>[19]</sup> According to a survey, postmenopausal women who practiced light physical activities had normal BMI as compared to women who live a sedentary lifestyle.<sup>[20]</sup> The earliest study on the effect of yoga on midlife obese persons demonstrated statistically significant ( $P < 0.05$ ) reduction in weight, and it is believed that long-term practice of these activities results in sleep improvement and relief from stress.<sup>[21]</sup> Another study conducted by Jayabharathi and Judie to evaluate the effectiveness of yoga on the quality of life of menopausal women also supports the results.<sup>[22]</sup>

Similar results were reported by Shafaie Sehhatie *et al.* who conducted a study to investigate the effect of education through support group on the early symptoms of menopause and number of hot flashes on 124 postmenopausal women. The mean score of the Greene scale in the support group was statistically ( $P < 0.001$ ) less than that of the control group 4 weeks after intervention. The number of hot flashes in the support group was significantly ( $P < 0.001$ ) lower than that of the control group.<sup>[23]</sup> Supplementation of soya isoflavones significantly ( $P < 0.001$ ) reduced the menopausal symptoms among postmenopausal women. The study also proposed soy supplementation as an elective treatment to hormone replacement therapy.<sup>[24]</sup>

Another study conducted by Heidari *et al.* also supports the results where the effect of performing a supportive health promotion program on lifestyle of the premenopause teachers was assessed. There was a significant difference in the mean score of health-promoting behaviors in the case group before and after the intervention ( $P = 0.001$ ).<sup>[25]</sup>

Our study results are contradictory with the findings of the study conducted by Enjezab *et al.* which assessed the effect of educational intervention on health-promoting lifestyle of 88 middle-aged women where no statistically significant ( $P = 0.113$ ) difference was observed in nutrition domain after administration of intervention. However, the mean score of physical activity, mental health, and interpersonal relationship significantly increased after intervention in the intervention group,  $P < 0.001$ .<sup>[26]</sup>

The most prevalent menopausal symptom reported by the participants was joint and muscular discomfort in 49 (98.0%) women. This was followed by physical and mental exhaustion in 94.0%, sexual problems in 86.0%, and hot flushes in 84.0% of the women. In contrast to that, loss of libido (92.5%) was found to be the most common symptom by Dienye *et al.* among Nigerian women,<sup>[27]</sup> whereas in contrast to these findings, the study conducted by Avanie *et al.* to find out menopausal symptoms in perimenopause and postmenopause women reported physical and mental exhaustion (86.60%) as

the most prevalent symptom.<sup>[28]</sup> Thus, it can be stated that observed menopausal symptoms are similar to the findings of studies conducted in different parts of the world, but their prevalence and severity differ. These contradictory results could be explained by sociocultural, economic, genetic, racial, physical, and environmental differences in the different study locations.

In the current study, menopausal symptoms were dependent on gynecological problems, i.e., women in menopausal stage were having higher menopausal symptom score who were having gynecological problems along with it. These findings were supported by the findings of Paudel *et al.* in Nepal which assessed gynecological problems among postmenopausal women.<sup>[29]</sup>

## CONCLUSION

Based on the findings of the study, it can be concluded that lifestyle modification program was significantly effective in reducing menopausal symptoms and improving health-promoting behaviors among women.

The main limitations of the study were women were not asked for using any alternative therapy to treat the menopausal symptoms; reinforcement was given on day 16 also for the women who were not available on day 15; and only verbal responses were obtained and expressed behavior was not observed. The author recommends that a qualitative study can be conducted to assess the experiences of menopausal women regarding their experiences and quality of life. Simplified self-reading materials can be provided to women regarding nonpharmacological strategies to improve the health status of women. To achieve Sustainable Developmental Goal 3, health systems are required to become fully responsive to the need of women and effective utilization of Information, Communication, and Education strategy can be used as a medium to deliver the information regarding menopause.

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## Conflicts of interest

There are no conflicts of interest.

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