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Original Article

# Healthy Lifestyle Behaviors and Menopausal Symptoms in Postmenopausal Women: A Cross-sectional Study

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## Abstract

**Background:** One of the factors influencing the modification of menopausal symptoms is health-promoting behaviors (HPBs). Nevertheless, women do not have sufficient knowledge about HPBs and do not earn the required information and training in this field. The current study was thus performed to study the relationship between HPBs and menopausal symptoms (MSs) among Iranian postmenopausal women (PMW).

**Methods:** Using stratified random sampling, this current cross-sectional study was carried out on 300 PMW covered by Neyshabur healthcare centers in 2022. Data gathering was conducted using three questionnaires: demographic characteristics, health-promoting lifestyle profile-II (HPLP- II), and menopause rating scale (MRS). Pearson correlation test and stepwise regression analysis were used for analyzing data by SPSS v. 22, and the significance level was less than 0.05.

**Results:** The mean age and menopausal age of participants were 56.4 (4.1) and 49.4 (3.3), respectively. There was a significant negative statistical relationship between the total score of HPBs and its subscales and MSs ($P < .05$). Physical activity, spiritual growth, and having chronic diseases were found to be independent predictors of MSs.

**Conclusion:** Based on the findings, there was an adverse correlation between HPBs and MSs in the women who participated in the study. Executing educational programs focusing on maintaining and promoting a healthy lifestyle can reduce MSs; as a result, increasing overall women's quality of life.

**Keywords:** Health-promoting behaviors, Healthy lifestyle, Menopausal symptoms, Post menopause, Women

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## Introduction

Menopause is an inherent physiological phenomenon that takes place in women as they grow older, denoting the cessation of menstruation and the ability to reproduce. This phase is typified by a change in the production of ovarian hormones, comprising a decline in es trogen levels and a rise in follicle-stimulating hormone levels (1). Menopause normally occurs around 50 years, with the majority of women experiencing menopause between the ages of 45 and 55 (2). Postmenopausal women (PMW) experience vasomotor, physical, physiological, and sexual symptoms (3). Hot flashes, sleep disturbance, psychological problems, sexual disorders, overweight, and cognitive decline are some symptoms that menopausal women suffer from (4). In addition, vaginal dryness, burning sensation, dyspareunia, and urinary incontinence are other symptoms that women experience due to estrogen deficiency (5). As menopausal status advances, sexual function tends to decrease, with commonly reported symptoms, including low sexual desire, inadequate lubrication, and dyspareunia (6). These symptoms can adversely affect women's daily life and quality of life (7-9). Many women are looking for different and numerous methods to alleviate menopause symptoms (5,10); however, a large number of women do not manage their problematic symptoms due to the lack of awareness or embarrassment related to sexual issues (5).

Menopause considerably enhances the risk of metabolic disorders and cardiovascular diseases such as overweight and obesity, liver-related disease, fatty liver disease, type 2 diabetes, and other metabolic disorders. One of the influential agents affecting the modification of menopause symptoms and health status is health-promoting behaviors (HPBs). Changing and modifying lifestyles such as a healthy diet and appropriate physical activity are essential for the control and prevention of metabolic diseases

during menopause (11).

However, women do not have sufficient knowledge about HPBs and do not receive the required information and training in this field (12). In addition, a majority of women do not receive any health education on menopause and are not familiar with the skills of the management of menopause symptoms (13,14).

HPBs refer to actions and beliefs that individuals adopt to maintain and improve their health. These behaviors extend beyond mere disease prevention and, instead, strive towards achieving holistic well-being, self-realization, and the attainment of personal satisfaction. According to Pender's theory, HPBs include six dimensions of nutrition, stress management (SM), interpersonal relationships (IR), health responsibility (HR), physical activity (PA), and spiritual growth (SG) (15).

HPBs such as a healthy diet, appropriate physical activity, and proper weight control can help alleviate some MSs (1,14,16). In a survey by Sehhatie et al on Iranian PMW, the HPBs in PMW were moderate (12). The lifestyle modification program can lead to a reduction in menopausal symptoms) MSs( (17). In another study, women who were active in terms of physical activity had a higher quality of life compared to other women (18). Awareness and information related to menopause event and its symptoms, as well as their modification methods, can be effective in reducing women's problems during this period (19).

Middle-aged women are a significant part of the population, and their contribution to the dynamics of economic and social aspects of society is crucial (20). As PMW are among the vulnerable groups in society, it is imperative to find a solution to enhance their health. Therefore, it is crucial to identify and implement effective measures that can optimize their overall well-being (21). Given the significance of HPBs in PMWs, this study was carried out to investigate the correlation between HPBs and MSs in Iranian PMW.

## Materials and Methods

### *Study Design and Participants*

This cross-sectional investigation was conducted on 300 Iranian PMW sampled from Neyshabur County, Razavi Khorasan Province, Iran, in 2022.

Eligibility criteria included aged between 45-60 years old, having experience of menopause after 45 years of age, having no abnormal menopause (hysterectomy surgery and chemotherapy), having no hormone therapy in the last 6 months, and minimum of 12 months have passed since their last menstrual cycle. Exclusion criteria included having a physical or mental disability, experiencing unfortunate events and incidents in the last 6 months, and not using tobacco and alcoholic beverages.

The sampling frame consisted of the general population residing in urban areas who were recipients of healthcare services provided by regional healthcare centers. In terms of determining the sample size, a stratified sampling approach was employed to select the participating women. To this end, the researcher initially ascertained the overall count of women availing of healthcare services at these centers. Consequently, the healthcare centers with a higher number of female beneficiaries were allocated a larger sample size, commensurate with their respective proportions.

To determine the sample size, the primary information was obtained from a previous study (13). We determined sample size using the formula, where $\alpha = 0.05$, $B = 10\%$, and $R = -0.404$. Considering about 20% attrition, the sample size was enhanced to 300.

$$n = \frac{\left(Z1-\frac{a}{2}+Z1-\beta\right)^2}{(\omega)^2}$$

$$\omega = \frac{1}{2} log \frac{1+r}{1-r}$$

All participating women completed the informed consent form before entering the study after providing them with detailed information.

The collection of data was done using a survey instrument. Trained interviewers were responsible for gathering the data from the respondents, offering assistance to illiterate women in filling out the questionnaire. Moreover, participants were given the freedom to either withdraw or continue their participation in the study during the data collection phase.

### *Instruments*

The questionnaire employed in this investigation comprised three distinct sections:

### *Socio-Demographic Variables*

This includes the spouse's educational status, family income status, age, menopausal age, occupation, educational status, number of children, family structure, history of chronic disease, and marital status.

### *Health-Promoting Lifestyle Profile-II*

Health-promoting lifestyle profile- II (HPLP- II) was developed by Walker et al in 1987 to measure HPBs (15). We used the validated Persian version of HPLP-II (22). In this study, Cronbach's Alpha was used to evaluate internal consistency (0.78). This scale included 52 questions that were graded on a four-point Likert scale (1 = never, 2 = frequently, 3 = almost, and 4 = always). The HPLP-II includes six subscales: nutrition (nine items), IR (nine items), HR (nine items), PA (nine items), SG (nine items), and SM (eight items). The lowest score and the highest score obtained for this scale were 52 and 208, respectively, and the highest score in each subscale indicates healthier behaviors.

### *Menopause Rating Scale*

Menopause rating scale (MRS) was designed by Heinemann et al in 2003 to measure the MSs (23). The

validated Persian version of MRS was used in this study (24), and Cronbach's Alpha was employed to evaluate internal consistency (0.88). This scale included 11 questions that were graded on a five-point Likert scale (1 = not at all, 2 = minor, 3 = mediate, 4 = severe, and 4 = very severe). The MRS includes three subscales: somatic symptoms (four items), psychological symptoms (four items), and urogenital symptoms (three items). The lowest score and the highest score obtained for this scale were 11 and 55, respectively, and the highest score in each subscale indicates more severe MSs.

### *Statistical Analysis*

The data were analyzed using SPSS 22 (SPSS Inc, Chicago, IL, USA) and were reported by mean (SD) and frequency (percent). To analyze the relationship between HPBs and MSs, the Pearson correlation test was used. Then, to adjust confounding variables and assess the impact of independent variables (HPBs) on dependent variables (MSs), stepwise regression analysis (forward strategy) was used. A significance level of less than 0.05 was considered.

## Results

A total of 300 menopausal women were surveyed. The average age of menopause (SD) was 49.4 (3.3), and the mean age (SD) of them was 56.4 (4.1). Most of the participants were married (75%) and housewives (88%), had 3 or more children (80%), and suffered from at least one chronic disease (65.7%). In addition, the economic status of 67.3% of individuals was moderate. The demographic characteristics of the participants are shown in Table 1.

There was a negative significant correlation between HPB total score and MS total scores and its two subscales of urogenital symptoms and psychological symptoms ($P < .05$). On the other hand, no correlation was found between total HPB scores and somatic symptoms subscale of MRS ($P > 0.05$). Regarding correlation between HPB dimensions and MS subscales, a significant negative correlation was detected between SG and SM dimensions and MS total scores and its subscale scores ($P < 0.05$). PA was negatively correlated with MS total scores and its two subscales of psychological symptoms and urogenital symptoms ($P < 0.05$) but not correlated with somatic symptom subscale. Likewise, HR and IR were negatively correlated with urogenital symptom and psychological symptom subscales, respectively ($P < 0.05$). Furthermore, nutrition was negatively correlated with somatic symptoms and psychological symptoms, as well as MS total scores ($P < 0.05$) but not correlated with urogenital symptom (Table 2).

The results of multivariate regression analyses indicated that after adjusting for confounding variables, PA, SG, and chronic diseases had a significant correlation with MSs ($P < 0.05$). On this basis, by increasing one unit in the average score of PA, the mean score for MSs decreased by 0.149. In addition, a one-unit increase in the average score of SG resulted in a 0.19 decrease in the MS adoption among the women. Therefore, the average score of MSs for those without chronic disease was 0.186 lower than that for those with chronic disease (Table 3).

**Table 1.** Demographic and Underlying Characteristics of the Postmenopausal Women (N = 300)

| Variables | No. (%) |
|---|---|
| Age | |
| 45-50 | 39 (13) |
| 51-55 | 73 (24.3) |
| 56+ | 188 (62.7) |
| Employment status | |
| Housewife | 264 (88) |
| Employed | 36 (12) |
| Educational status | |
| Illiterate | 56 (18.7) |
| Elementary school | 15 (50.2) |
| Guidance school | 44 (14.7) |
| Diploma and university | 49 (16.4) |
| Marital status | |
| Divorced/widow/Single | 75 (25) |
| Married | 225 (75) |
| No. of children | |
| 0 | 9 (3) |
| 1 | 14 (4.7) |
| 2 | 37 (12.3) |
| 3+ | 240 (80) |
| Menopause age | |
| 45-50 | 217 (72.3) |
| 51-55 | 71 (23.7) |
| 56+ | 12 (4) |
| Family structure | |
| Living alone | 45 (15) |
| Living with husband | 103 (34.3) |
| Living with husband and children | 122 (40.7) |
| Living with children | 30 (10) |
| Economic status | |
| Weak | 53 (17.7) |
| Moderate | 202 (67.3) |
| Good | 45 (15) |
| Spouse's educational status | |
| Illiterate | 51 (17) |
| Elementary school | 113 (37.7) |
| Guidance school | 43 (14.3) |
| Diploma and university | 93 (31) |
| Having chronic diseases | |
| Yes | 203 (65.7) |
| No | 97 (32.3) |

## Discussion

The current study was performed to investigate the

**Table 2.** Correlation Between HPBs and Its Domains and MSs Among PMW (N = 300)

| HPBs | MSs | | | |
|---|---|---|---|---|
| | Somatic Symptoms | Psychological Symptoms | Urogenital Symptoms | Total MS Scores |
| Health responsibility | R = 0.08<br>*P* = 0.165 | R = -0.01<br>*P* = 0.065 | R = -0.119<br>*P* = 0.039* | R = -0.057<br>*P* = 0.329 |
| Physical activity | R = -0.1<br>*P* = 0.059 | R = -0.262<br>*P* = 0.001* | R = -0.189<br>*P* = 0.001* | R = -0.241<br>*P* = 0.001* |
| Nutrition | R = -0.144<br>*P* = 0.01* | R = -0.167<br>*P* = 0.004* | R = -0.058<br>*P* = 0.319 | R = -0.165<br>P = 0.004* |
| Spiritual growth | R = -0. 136<br>*P* = 0.018* | R = -0.307<br>*P* = 0.001* | R = -0.136<br>*P* = 0.01* | R = -0.256<br>*P* = 0.001* |
| Interpersonal relations | R = -0.01<br>*P* = 0.778 | R = -0.142<br>*P* = 0.001* | R = -0.086<br>*P* = 0.138 | R = -0.1<br>*P* = 0.168 |
| Stress management | R = -0.135<br>*P* = 0.02* | R = -0.227<br>*P* = 0.001* | R = -0.125<br>*P* = 0.031* | R = -0.213<br>*P* = 0.001* |
| Total HPB scores | R = -0.096<br>*P* = 0.097 | R = -0.278<br>*P* = 0.001* | R = -0.169<br>*P* = 0.003* | R = -0.235<br>*P* = 0.001* |

*Note.* HPB: Health-promoting behavior; MS: Menopausal symptom; PMW: Postmenopausal women.

relationship between HPBs and MSs in 300 PMW. Findings revealed a significant negative correlation between the total HPB score with psychological and urogenital symptoms and the total MS score. To further confirm the results of the present study, educational interventions showed that one of the strategies to moderate MSs is adopting a healthy lifestyle (16,17,25).

The present study also indicated a negative significant relationship between PA and psychological symptoms, urogenital symptoms, and the total MS score. Furthermore, PA was an independent predictor of MSs. In a study, consistent with our results, a statistically significant correlation was found between PA and MSs (10). In another study, women who had moderate PA exhibited significantly fewer psychosocial and physical symptoms than women who had low PA, but no relationship was observed between PA and vasomotor and sexual symptoms (26). Moreover, according to a survey performed by Polat and Aylaz (27) containing a sample size of 156 women, a group of women underwent an exercise program with 30 minutes of exercise daily for 12 weeks. The findings showed a significant reduction in MSs among women who received the program compared with the women in the control group. Similarly, the survey conducted by Soori et al (28) revealed that women who engage in regular or irregular exercise experience less severe symptoms than those who do not exercise at all. Therefore, it is required to educate women about the benefits of exercise and PA for improving MSs. Adequate facilities and resources should also be provided for women to engage in PA.

According to the study's findings, a significant negative relationship was found between the mean score of nutrition and somatic and psychological symptoms, as well as the total MS score. A survey conducted by Ross (29) found that dietary modifications and the use of supplements can lead to swift improvement and elimination of MSs. In a study carried out by Barnard et al (30), the aim was to evaluate the influence of a blend of a diet rich in plant-based low-fat foods and soybeans on the modulation of menopausal hot flashes. The results of the intervention demonstrated a significant decrease in the occurrence and intensity of hot flashes and a reduction in vasomotor, psychosocial, physical, and sexual symptoms among the participants in the intervention group compared to the control group. Furthermore, a majority of the individuals in the intervention group experienced relief from moderate to severe hot flashes. Research has suggested that nutritional interventions hold promise in effectively managing mood/anxiety (31) and vasomotor symptoms (32) in women during the menopausal transition and postmenopausal period. Therefore, based on the findings of the current investigation and preceding research, augmenting women's consciousness about nutrition and nutritional interventions can serve to alleviate and improve MSs.

Based on the findings, there was a significant negative relationship between SG and somatic, psychological, and urogenital symptoms, as well as the total MS score. Moreover, SG was an independent predictor of MSs. Additionally, Arab and colleagues' study (33) indicated that gratitude meditation in the experimental group leads to a significant reduction in vasomotor symptoms. Furthermore, a study aimed at investigating the correlations between perceived stress and depression with spiritual health showed a significant negative correlation between them. PMW with better spiritual health had lower levels of stress and depression (34). According to this finding, the need to pay attention and provide strategies to improve the spiritual health of PMW will be a useful and effective solution to reduce the MSs in these women.

The study's findings also demonstrated a negative correlation between HR and urogenital symptoms of menopause. Research has suggested that women tend to perform less treatment-seeking and self-care behaviors in the field of diseases related to the urogenital system. Women may feel ashamed or afraid of being alone and lacking support when facing these problems, which makes them pay less attention to such problems (35-37). The severity of urinary infections can affect the severity of urinary incontinence, and since urinary infections are induced by a lack of hygiene and attention to health, it can be inferred that HR may lead to a decline in urogenital symptoms (38). Consistent with our finding, a significant negative correlation was revealed between HR and MSs in other studies (39,40). Given the significance of HR in mitigating MSs and the importance of addressing urinary-genital symptoms, it would be beneficial to provide women with the necessary training in this area. This can aid in reducing some of the SMs among PMW.

Likewise, our findings revealed a negative correlation between IR and menopausal psychological symptoms. Additionally, Naworska and colleagues' study (41) conducted on both peri- and PMW found that participating in social groups can reduce the severity of psychological symptoms and depression. Perceived social

**Table 3.** Multivariate Results for Factors Associated with Total Menopause Rating Scale Score

| Variable | Step1 | | | Step 2 | | |
|---|---|---|---|---|---|---|
| | B | t | *P* Value | B | t | *P* Value |
| **Step1** | | | | | | |
| Health responsibility | 0.057 | 0.875 | 0.382 | 0.023 | 0.337 | 0.726 |
| Physical activity | -0.155 | -0.944 | 0.017* | -0.149 | -2.16 | 0.031* |
| Nutrition | -0.072 | -2.097 | 0. 37 | -0.024 | -0.338 | 0.736 |
| Spiritual growth | -0.178 | -1.09 | 0.021* | -0.19 | -2.344 | 0.02* |
| Interpersonal relations | 0.091 | 1.21 | 0.221 | 0.084 | 1.1 | 0.27 |
| Stress management | -0.115 | -1.5 | 0.319 | -0.063 | -0.809 | 0.419 |
| **Step2** | | | | | | |
| Age | | | | 0.037 | 0.523 | 0.602 |
| Employment status | | | | | | |
| Employed | | | | -0.103 | -0.103 | 0.193 |
| Housewife | | | | | | |
| Educational status | | | | | | |
| Illiterate | | | | -0.237 | -0.623 | 0.534 |
| Elementary school | | | | -0.287 | -0.659 | 0.51 |
| Guidance school | | | | -0.061 | -0.723 | 0.47 |
| Diploma and university | | | | | | |
| Marital status | | | | | | |
| Divorced/widow/Single | | | | 0.204 | 1.1 | 0.269 |
| No. of children | | | | 0.028 | 0.403 | 0.687 |
| Menopause age | | | | -0.02 | -0.324 | 0.74 |
| Family structure | | | | | | |
| Living alone | | | | 0.127 | 0.84 | 0.40 |
| Living with husband | | | | 0.047 | 0.681 | 0.49 |
| Living with children | | | | 0.153 | 1.1 | 0.27 |
| Living with husband and children | | | | | | |
| Economic status | | | | | | |
| Weak | | | | 0.031 | 0.346 | 0.73 |
| Moderate | | | | 0.046 | 0.544 | 0.58 |
| Good | | | | | | |
| Spouse's educational status | | | | | | |
| Illiterate | | | | 0.056 | 0.65 | 0.51 |
| Elementary school | | | | 0.062 | 0.733 | 0.46 |
| Guidance school | | | | 0.065 | 0.95 | 0.34 |
| Diploma and university | | | | | | |
| Having chronic diseases | | | | | | |
| Yes | | | | -0.186 | -3.1 | 0.002* |
| No | | | | | | |
| $R^2$ | | 9.8% | | | 16.8% | |

support, especially from important individuals such as spouses, has a positive effect on menopausal experiences and contributes to the reduction of mental, physical, and emotional complications (42). Based on these results, increasing the awareness of the family and people surrounding menopausal and middle-aged women who are approaching menopause regarding the importance of improving interpersonal relationships and supporting women, as well as encouraging women's participation in social activities can aid in reducing MSs in women.

The findings also showed a significant negative relationship between SM and physical, psychological, and urogenital symptoms, as well as the total MS score. Other studies have also reported that higher stress can influence MS experience (43,44). However, in the survey performed by Bahri et al (45), no significant correlation

was found between the intensity of MSs and depression and anxiety among menopausal women. This result is not congruent with the current study's findings. In a survey conducted on 160 women between the ages of 45-55, it was discovered that high levels of stress, anxiety, and depression, low social support in terms of both quantity and quality, and not having a positive attitude towards menopause are all related to the severity of MSs (46). As mentioned, women must receive adequate training on MSs beforehand to reduce their stress and anxiety levels. Moreover, educational programs are required to educate women on stress reduction methods and ways to adapt to their changing conditions.

In the current study, MSs were significantly higher among women with chronic diseases, which is consistent with those reported in the previous studies (47-49). MSs, including somatic, psychological, and urogenital symptoms may interact with chronic disease symptoms. Therefore, more studies are required to investigate the impacts of chronic diseases on MSs. In addition, women with chronic diseases need to adopt a healthier lifestyle than other women.

The current study faced several limitations. First, the study's cross-sectional design cannot establish causation or comprehend the evolution of the relationship between HPBs and MSs among PMW. Therefore, future studies can be conducted to discover and confirm the association between HPBs and different factors, and it is imperative to exercise prudence when making broad assertions about the findings. Additionally, since the entirety of the data gathered in this investigation relies solely on self-reported accounts, there exists the potential for socially desirable response bias to influence the provided answers.

## Conclusion

We found a significant correlation between HPBs and their dimensions with MSs. Additionally, a significant relationship was observed between chronic diseases and MSs. The study concludes that paying attention to HPBs is crucial during menopause, and women should familiarize themselves with the dimensions of a healthy lifestyle and be informed about applying HPB strategies to control symptoms and complications of menopause. Furthermore, more research is needed regarding the interaction between chronic diseases and MSs. Health education intervention strategies represent a set of alternative approaches aimed at enhancing women's attitudes and managing the symptoms related to menopause.

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### Authors' Contribution

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### Competing Interests

Authors declare that they have no conflict of interests.

### Ethical Approval

This study was accepted by the Ethics Committee of Neyshabur University of Medical Sciences (Ethics Code: IR.NUMS.REC.1401.005).

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