



Health Promoting Behaviors and Their Determinants in Iranian Postmenopausal Women; a Cross-Sectional Study

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ABSTRACT

Aims Health-promoting behaviors are the main way to have a healthy lifestyle. women's unhealthy lifestyle during postmenopausal is the origin of very serious complications of this period. This study aimed to assess the status of health-promoting behaviors and their determinants among postmenopausal women.

Instrument & Methods This cross-sectional study was performed on 300 postmenopausal women referred to Neyshabur health centers in 2022 using stratified random sampling. Data collection was carried out using demographic characteristics and health-promoting behaviors questionnaires. A multivariate regression test was employed in SPSS 22 software.

Findings The mean of the health-promoting behaviors whole score was 151.5±18.6, and its dimensions were interpersonal relationships (31.9±4.4), nutrition (28.3±3.9), spiritual growth (25.6±3.9), health responsibility (25.0±5.0), stress management (23.9±3.7), and physical activity (16.8±4.9). There were significant differences in the whole score of HPBs by level of education ($p=0.002$), economic status ($p<0.001$), and spouse's education level ($p=0.002$).

Conclusion Postmenopausal women's health-promoting behaviors status in Neyshabur City is moderate. It is necessary to promote health-promoting behaviors, with a particular focus on physical activity.

Keywords Healthy Lifestyle; Women; Menopause

CITATION LINKS

[1] Factors affecting human health in the ... [2] The health-promoting lifestyle profile: development ... [3] Behavior change or empowerment: On the ethics ... [4] Prevention of diseases ... [5] Hormonal changes during ... [6] Menopause-associated lipid metabolic disorders and foods ... [7] Menopause transition and cardiovascular disease ... [8] Yoga for menopausal symptoms-A systematic ... [9] Relationship between health-promoting behaviors and quality ... [10] Health promoting behaviors among postmenopausal women ... [11] Health promoting lifestyle behaviors in menopausal ... [12] Impact of health-promoting lifestyle education intervention ... [13] Health-promoting behaviors and menopausal symptoms ... [14] The effectiveness of lifestyle educational program in health ... [15] Prevalence of menopause symptoms and their association ... [16] Menopausal symptoms and health-promoting ... [17] Reliability and validity of Persian version of the ... [18] The relationship between health-promoting ... [19] Mediating effect of a health-promoting lifestyle in the ... [20] Decreasing menopausal symptoms in women ... [21] Effect of education through support group on early ... [22] Healthy life style behaviors and quality of life ... [23] Evaluation of the relationship between lifestyle and ... [24] Factors affecting on health promoting behaviors among ... [25] Menopause symptoms and perceived cognitive decline in ... [26] Quality of the relationship and menopausal symptoms of ... [27] The relationship between health status ... [28] The relationship between menopausal symptoms and ... [29] Health promoting behaviors in a population-based sample ... [30] Association between physical activity and menopausal ... [31] High physical activity level may reduce ... [32] Metabolic disorders in ... [33] Assessing the efficacy of a structured stress ... [34] Mindfulness-based stress reduction (MBSR) or psychoeducation ... [35] Socioeconomic disparities in health ... [36] The survey of relationship between health promotion behaviors and ... [37] Working women work-life ... [38] Effects of socioeconomic status on physical and ... [39] Facilitators and barriers to facility-based delivery in low-and ... [40] Perceived barriers to mammography ... [41] Family spirituality and family health ...

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Introduction

In today's world, as a modern life period, having a healthy lifestyle is one of the basic needs in human societies, and the way to achieve it is through health-promoting behaviors (HPBs) [1].

HPBs encompass all dimensions of health, including healthy eating, regular exercise, avoiding harmful behaviors and substance abuse, protection against events and incidents, early diagnosis of diseases, emotional and mental control, coping with stress and psychological problems, compatibility and modification of interpersonal relationships. According to Pender's theory, health-promoting behaviors include any measures to increase or maintain an individual's or group's health and self-actualization. These behaviors include six dimensions of spiritual growth (SG), health responsibility (HR), physical activity (PA), nutrition (Nut), interpersonal relationships (IR), and stress management (SM) [2].

One of the health promotion goals is to empower individuals and groups so that they can have control over the determinants of their quality of life and choose healthy lifestyles. Given the selectivity of behavior in lifestyle, it is essential to consider the empowerment of individuals [3]. This necessity is particularly important in relation to gender-related issues and diseases [4]. Women of all age groups make up a significant portion of the population, and due to natural changes in their physiological state, they face certain issues and crises. Menopause is one of the most important reproductive health issues of women. Because of rising life expectancy, women may expect to spend more than a third of their lives after menopause. Aging and changes caused by menopause, such as hormonal changes, can increase the risk of developing chronic diseases [4, 5]. The disorders of metabolic syndromes, encompassing cardiovascular diseases and type 2 diabetes, may arise from a myriad of lipid metabolic disorders brought about by hormonal fluctuations, namely, diminished levels of estrogens and augmented levels of circulating androgens [6]. Cardiovascular disease is the leading cause of death in women, who have a significant increase in the risk for this disease after menopause [7]. Most menopausal women experience menopausal vasomotor symptoms, often described as hot flushes or night sweats, chills, sleep disruption, and palpitations. They also experience psychological symptoms such as mood changes, anxiety, and depression [8]. Other conditions occur after menopause, including decreased bone density, energy changes, decreased sexual function, vaginal dryness/dyspareunia, obesity, and more. All of these conditions can affect the quality of life of postmenopausal women. Therefore, it is necessary to use strategies and planning to improve the quality of life during menopause [4, 5]. A healthy lifestyle is an important factor in postmenopausal women's health,

and various studies have shown a relationship between HPBs and menopausal symptoms and women's health [9-11].

Studies have shown the effect of lifestyle modification programs in reducing menopausal symptoms [12-14].

A study conducted among Finnish middle-aged women, athletes, and nonalcoholic women experienced fewer menopause symptoms than nonathletic and alcoholic postmenopausal women [15].

Since women have basic roles in family and society, coping with these roles and duties requires physical and mental health. Therefore, it is necessary and beneficial that postmenopausal women be familiar with HPBs and be informed of their roles in health promotion and controlling of menopause symptoms. An unhealthy lifestyle in the long term will be a serious threat to postmenopausal women, and they will face health problems in old age. Therefore, because of its importance, this study was conducted to determine HPBs and their individual-social factors in postmenopausal women living in Neyshabur City, Iran.

Instrument and Methods

This cross-sectional study was conducted among Iranian postmenopausal women sampled from Neyshabur County, Razavi Khorasan Province, Iran, in 2022. The general population, which was covered by the regional healthcare centers in urban areas, was the sampling frame. To determine the sample size, the primary information was obtained from a previous study [16]. We estimated sample size using the formula, where $\alpha=0.05$, $B=90\%$, $R=-0.404$. Considering about 20% attrition, the sample size was increased to 300.

According to this, 300 women from 45 to 60 years old experience menopause after 45 years of age, not having abnormal menopause (hysterectomy surgery, chemotherapy and ...), no hormone therapy in the last 6 months, at least 12 months have passed since the last menstrual period were selected for the study. Individuals with a physical or mental disability, experienced unfortunate events and incidents in the last 6 months, and using tobacco and alcoholic beverages were not selected. Regarding the sample size, the stratified sampling method was used to select the participants. To this end, the researcher first identified the total number of women covered in healthcare centers. Then the healthcare centers with more women had a larger sample size proportionate to its size.

A self-administered questionnaire was used for data collection. It consists of two sections:

Socio-demographic Variables: This includes age, employment status, educational status, marital status, number of children, menopausal age, family structure, economic status, spouse's educational status, and having a chronic disease.

Health-Promoting Lifestyle Profile-II (HPLP-II):

This scale was designed by Walker *et al.* in 1987 to measure health-promoting behaviors [2]. The Persian version of HPLP-II, validated by Mohammadi Zeidi *et al.*, was used [17]. Fifty-two health-promoting lifestyle behaviors are measured on a four-point Likert scale (1=never, 2=frequently, 3=almost, and 4=always). The HPLP-II includes six subscales: health responsibility (9 items), physical activity (8 items), nutrition (9 items), spiritual growth (9 items), interpersonal relationships (9 items), and stress management (8 items). The overall score of the instrument ranges from 52 to 208, where each domain has its separate score, and higher scores indicate a better adherence to health-promoting behavior. In this way, scores 52-145 mean a low level of adherence to these behaviors, and scores 146-160 and above 160 imply a moderate and high level, respectively.

Informed consent was obtained verbally from all study participants before completing the survey instrument. A survey questionnaire was used for data collection. Trained interviewers collected the data from the respondents, and those women who were illiterate were assisted in completing the questionnaire. Additionally, participants were free to

withdraw or remain in the study during data collection.

We performed all the analyses using SPSS 22 software. The statistical description of the sociodemographic variables was performed by applying frequencies, means, and standard deviations (SDs). We used a T-test and one-way analysis of variance to analyze the differences between HPBs by sociodemographic characteristics. To determine the effect size, the effect size values greater than 0.45 have high effect size, values between 0.25-0.1 are medium effect size, and values less than 0.1 are weak effect size. Multivariate linear regression was used to determine the independent predictor variables of HPB. The level of significance was set to be <0.05.

Findings

The mean age and menopausal age were 56.4±4.1 and 49.4±3.3 years, respectively. The majority of the menopausal women were married (75%) and housewives (88%), had three or more children (80%) and suffered from at least one chronic disease (65.7%). Also, the economic status of 67.3% of individuals was moderate.

Table 1. Relationships between demographic characteristics with HPBs and their diminution score in postmenopausal women

Parameter	No. (%)	Nutrition	Physical Activity	Interpersonal Relationship	Spiritual Growth	Health Responsibility	Stress Management	HPBs
Age								
45-50	39 (13)	28.50±4.14	17.50±5.41	31.71±5.11	25.51±4.20	23.28±4.83	24.00±3.86	150.5±22.5
51-55	73 (24.3)	28.30±3.63	16.87±4.58	31.43±4.08	25.39±4.02	24.89±5.38	23.87±3.90	150.8±18.2
56+	188 (62.7)	28.28±4.04	16.60±4.90	32.19±4.37	25.61±3.89	25.40±5.10	23.77±3.60	151.8±18.0
p Value		0.92	0.567	0.493	0.921	0.062	0.932	0.879
Employment status								
Housewife	264 (88)	30.00±3.28	19.63±4.36	33.91±3.21	27.47±3.15	25.3±4.07	25.75±3.09	151.9±19.0
Employed	36 (12)	28.11±3.98	16.40±4.85	31.67±4.47	25.28±3.98	24.96±5.3	23.53±3.70	151.3±18.5
p Value		0.006	<0.001	0.004	0.002	0.715	0.001	0.773
Educational Status								
Illiterate	56 (18.7)	26.75±4.46	15.16±4.90	31.21±4.09	23.83±4.48	25.01±4.95	23.00±3.70	144.4±18.3
Elementary school	15 (50.2)	28.59±3.70	16.17±4.47	31.70±4.77	25.50±3.78	25.06±5.63	23.50±3.71	150.5±18.5
Guidance school	44 (14.7)	29.00±3.63	18.07±5.04	32.90±3.09	26.20±3.95	25.20±4.06	24.70±2.96	157.0±15.5
Diploma and more	49 (16.4)	28.39±4.12	18.23±4.91	32.76±4.32	27.15±2.96	24.31±5.10	24.47±4.18	156.5±19.4
p Value		0.01	<0.001	0.223	0.001	0.906	0.018	0.002
Marital status								
Single	75 (25)	28.29±4.14	16.40±5.20	32.10±4.58	25.55±4.27	25.40±5.80	24.08±3.99	151.9±19.0
Married	225 (75)	28.36±3.88	16.90±4.70	31.90±4.35	25.53±3.85	24.86±4.90	23.70±3.60	151.3±18.5
p Value		0.893	0.535	0.119	0.966	0.007	0.015	0.81
Number of children								
0	9 (3)	30.55±2.18	15.11±4.64	30.50±5.07	26.11±3.05	22.66±8.38	23.55±5.50	148.5±21.3
1	14 (4.7)	27.35±5.30	16.35±5.10	30.70±4.08	25.21±4.50	22.28±4.32	24.21±3.94	146.1±20.4
2	37 (12.3)	28.70±4.50	17.67±5.40	32.10±4.71	25.94±3.90	25.10±5.20	24.35±4.01	153.9±20.3
3+	240 (80)	28.26±3.79	16.70±4.80	32.04±4.36	25.48±3.97	25.23±5.01	23.73±3.50	151.5±18.2
p Value		0.252	0.496	0.542	0.872	0.1	0.77	0.574
Menopause age								
45-50	217 (72.3)	28.35±3.81	16.90±4.80	31.95±4.38	25.62±3.95	25.04±5.33	23.92±3.80	151.8±18.3
50-55	71 (23.7)	28.42±4.30	16.50±5.19	31.80±4.50	25.60±3.90	24.87±4.80	23.64±3.49	150.9±19.5
+56	12 (4)	27.66±4.39	16.08±4.92	32.40±4.50	23.5±4.12	25.25±4.30	23.16±3.01	148.1±18.5
p Value		0.826	0.738	0.911	0.214	0.959	0.709	0.574
Family structure								
Living alone	45 (15)	28.84±3.88	16.90±5.09	32.11±4.44	25.88±3.5	25.80±5.70	24.06±4.23	153.6±16.9
With husband	103 (34.3)	27.95±4.00	16.24±4.80	31.70±4.20	24.9±3.80	25.20±5.20	23.09±3.70	149.1±18.4
With husband and children	122 (40.7)	28.76±3.70	17.50±4.69	32.10±4.50	26.19±3.70	24.60±4.60	24.30±3.39	147.6±22.1
With children	30 (10)	27.20±4.50	15.50±5.43	31.50±4.75	24.60±5.24	24.70±6.23	23.90±3.60	153.5±18.2
p Value		0.148	0.123	0.82	0.045	0.55	0.091	0.165
Economic status								

Continue of Table 1 from the last page.

Weak	53 (17.7)	28.84±3.88	16.9±5.09	32.11±4.40	25.80±3.60	25.80±5.70	24.06±4.23	142.1±20.2
Moderate	202 (67.3)	27.95±4.00	16.24±4.8	31.70±4.28	24.90±3.80	25.20±5.20	23.00±3.70	152.0±17.8
Good	45 (15)	28.70±3.80	17.5±4.69	32.10±4.50	26.10±3.70	24.60±4.60	24.30±3.39	159.8±15.8
p Value		0.001	<0.001	0.004	<0.001	0.232	0.01	<0.001
Spouse's educational status								
Illiterate	51 (17)	28.70±4.70	15.20±5.49	30.40±4.22	23.80±4.50	25.25±5.20	22.80±4.17	145.5±20.4
Elementary school	113 (37.7)	27.87±3.59	15.67±4.00	32.10±4.30	25.60±3.40	25.30±5.00	23.30±3.60	150.4±16.1
Guidance school	43 (14.3)	28.10±4.30	16.80±5.50	31.60±4.90	25.30±5.00	24.00±0.68	23.80±3.40	150.4±22.7
Diploma and more	93 (31)	29.50±3.23	18.27±4.16	33.10±3.70	26.00±3.34	25.00±5.15	24.90±3.40	157.1±17.1
p Value		0.066	<0.001	0.026	0.002	0.71	0.006	0.002
Having chronic diseases								
Yes	203 (65.7)	28.00±3.98	17.14±4.84	31.70±4.16	25.40±3.79	25.10±4.67	23.70±3.60	151.3±17.7
No	97 (32.3)	28.92±3.80	16.00±4.90	32.20±4.80	25.70±4.20	24.60±6.08	23.90±3.90	151.7±20.4
p Value		0.078	0.067	0.354	0.481	0.432	0.599	0.882

The mean of HPBs in postmenopausal women was 151.5±18.6, and the highest score of HPB was related to interpersonal relationships (31.9±4.4), and the lowest score was related to physical activity (16.8±4.9). There were significant statistical relationships ($p<0.05$) between educational level, economic status, spouse's education level, and HPBs (Table 1).

The multivariate linear regression test results showed that employment and economic status were significantly independent predictors for HPBs (≤ 0.001 ; Table 2).

Table 2. The relationship between demographic characteristics and HPBs in postmenopausal women based on a multivariate linear regression test (Adjusted $R^2=0.095$)

Variables	B	t	p Value
Employment status			
Employed	9.9	2.45	0.015
Housewife	ref		
Economic status			
Weak	-12.03	-2.91	0.004
Moderate	-3.87	-1.2	0.231
Good	ref		

Discussion

This study aimed to explore HPBs and their related factors among postmenopausal women in Neyshabur City, Iran. Our results provide an insight into the lifestyle of Iranian postmenopausal women.

The overall mean score for HPBs among postmenopausal women was moderate, consistent with the findings of other studies [10, 16, 18, 19]. This finding highlights the importance of health promotion planning, emphasizing empowerment to develop a healthy lifestyle among postmenopausal women. Previous studies also demonstrate the positive impact of HPBs on menopausal symptoms. So, after implementing the educational intervention, menopausal symptoms have decreased in postmenopausal women [14, 20, 21].

Regarding HPBs subscales, postmenopausal women obtained the highest mean score in interpersonal relations, consistent with some studies conducted among menopausal women [22, 23]. However, other studies have shown results that differ from ours [10, 11, 16, 24, 25]. Interpersonal relationships play a significant role in health behaviors and adapting to the changes in psychosomatic functioning during

menopause. Rejection, loneliness, and lack of intimacy in relationships can deepen and prolong menopausal symptoms, while feeling loved, important, understood, and cared for can contribute to well-being and more effective coping [26]. Interpersonal connections and social capital have been found to positively correlate with increased physical activity and decreased depressive symptoms [27, 28].

In our study, the majority of participants had high interpersonal relations. Therefore, it can be said that they have the capacity to seek support and participate in support activities. This potential can be utilized to promote healthy behaviors such as physical activity, stress management, and health responsibility, provided healthcare providers design and implement health promotion programs targeting postmenopausal women.

In this study, postmenopausal women obtained the lowest mean score in physical activity, which is similar to other previous studies conducted in Iranian [10, 14, 23, 29], Korean [24, 25], Turkish [22], and Egyptian postmenopausal women [16]. However, numerous studies have shown that physical activity improves the symptoms of menopause and increases the quality of life. So, Women with high and moderate physical activity levels had less severe menopausal symptoms than inactive women [30, 31]. Our findings are alarming and show that postmenopausal women have a sedentary lifestyle. Some reasons may be noted for such a low level of physical activity, including lack of exercise facilities in the community, lack of social support and a PA partner, lack of time and knowledge, insufficient safe outdoor playgrounds, low self-efficacy on exercise, and lack of walking tracks in most of the cities, particularly, for females—another reason for the low level of physical. Thus, community and cultural-based health promotion planning is necessary to motivate postmenopausal women to engage in regular physical activity to promote health and prevent diseases.

In this study, 65.7% of women had chronic diseases, but there was no significant correlation between HPBs and a history of chronic disease. This suggests that postmenopausal women in this study are not sensitive to their health, even with a chronic disease.

Menopause is a critical period for women's health, as it marks the onset of several chronic diseases that can significantly impact their quality and quantity of life [4, 32]. Therefore, prevention strategies at menopause should include screening and assessment for risk factors, lifestyle management, a healthy diet, moderate exercise, and mentally stimulating activities.

According to our study, stress management was the second-lowest mean score of the HPB dimensions. Postmenopausal women in this study did not use stress management techniques or find enough time to relax. Stress management can offer an alternative approach to managing menopausal symptoms. Studies have shown that the stress reduction program and structured education program incorporating deep breathing, progressive muscle relaxation, and guided visualization could effectively manage menopausal symptoms [33, 34]. Therefore, educating and providing opportunities to apply stress management techniques, such as getting enough sleep, relaxing, and focusing on pleasant thoughts, may be helpful for postmenopausal women. In this study, economic status was one of the effective factors in health-promoting behaviors; women with favorable economic status had higher mean scores in whole HPBs, NUT, PA, IR, SG, and SM. The empirical evidence has amply demonstrated the inverse associations between socioeconomic status and unhealthy lifestyle practices [16, 35, 36]. Class distinction and social motives may influence the adoption of certain health behaviors. Comparisons of the determinants of behaviors may offer new insights into pursuing a healthy lifestyle. There is a need for multilevel interventions to enhance the health of all individuals, particularly disadvantaged groups, to reduce and eliminate health inequities [35].

According to this study, housewives had significantly higher mean scores in NUT, PA, SG, IR, and SM, which is different from the results of studies conducted by Enjezab [29], Abo-Ali [16], and Sehhatie [10]. The household responsibilities and workplace environment strongly correlate to women's work-life conflict [37]. Therefore, employed women should be aware of the potential health risks of unhealthy lifestyles and take steps to manage their work-life balance effectively. Policymakers can use these findings to inform regulations and policies related to maintaining and improving the health of employed women, ensuring that they prioritize employee health and safety. In addition, it is essential to provide programs that target employed women, such as periodic assessments of mental and physical health, providing PA services and facilities in the workplace, and allocating leave for medical checkups.

Also, it was found that there is a significant relationship between educational levels and whole HPBs, Nut, PA, SG, and SM dimensions; in other words, menopausal women with a low education level had a lower mean score of the mentioned

variables, which was in accordance with other studies [16, 38]. Our finding can be considered as an additional document that training and awareness of menopausal women regarding HPBs should be considered a universal issue, and education and counseling regarding HPBs are recommended for them by HCPs.

In the present study, the married women scored significantly higher on NUT, while the single/divorced/widowed women scored significantly higher on HR and SM. In a study by Abo Ali, married PMW had a better HPB score compared to divorced and widowed [16]. However, in studies by Sehhatie [10], Enjezab [29], and Kim JH [25], there was no significant relationship between marital status and HPBs.

This could be explained by the fact that married women have various routine responsibilities, such as taking care of children, cleaning the house, cooking, etc., which makes women prioritize everything else first, often at the expense of their self-care. Additionally, as married women have different responsibilities and are the foundation of family care, they must be familiar with stress management techniques.

Based on the results, a higher level of education of women's husbands was accompanied by higher mean scores in whole HPBs, PA, SG, IR, and SM dimensions. In a study by Shabani Asrami *et al.*, the results showed a positive significant relationship between women's health-promoting lifestyle behaviors and their spouse's level of education [11]. The findings regarding these relationships may be considered a noteworthy issue in this study. Especially in low- and middle-income settings, men could be decision-makers in issues related to women's health [39, 40], and their role must be kept in mind in policies related to the health promotion of their wives. Less educated men appear to require more careful training and planning.

Additionally, it was found that women who lived with their children and husbands had a significantly higher score of SG. Although our finding does not follow studies conducted among PMWs [11, 16], Family spirituality can strengthen family health by fostering family commitment, improving emotional well-being, developing new healthy behaviors, and providing healing experiences [41]. It can be considered as additional evidence that a cohesive family can promote spirituality among family members and improve women's health.

The current study faced several limitations. Firstly, the cross-sectional design of this study does not establish causation and changes over time in HPBs among postmenopausal women. Therefore, the generalization of the findings should be done with caution. Future studies can be conducted to discover and confirm the association between HPBs and different factors. Secondly, as all information collected in this study was based on self-reporting, it

is possible that the answers have a socially desirable response bias. Thirdly, this study was conducted on women admitted to healthcare centers, and its results are, therefore, only applicable to this group of women. Future studies should be conducted through population-based design research to visit postmenopausal women in their residences.

Conclusion

Postmenopausal women's HPB status in Neyshabur City is moderate. It is necessary to promote HPBs, with a particular focus on physical activity.

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