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# The role of perceived barrier in the postpartum women's health promoting lifestyle: A partial mediator between self-efficacy and health promoting lifestyle

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## Abstract:

**INTRODUCTION:** In recent decades, the focuses of health studies were mostly in middle-aged women, and few studies have investigated the lifestyle of women after delivery. The aim of this study was to determine the effects of both self-efficacy and perceived barriers on Iranian women health-promoting lifestyle (HPL) in the first 1 year after childbirth.

**MATERIALS AND METHODS:** Using a cross-sectional design, 310 women at first-year postpartum were surveyed in Zanjan (Iran) in 2016. The proportionate stratified random sampling method was carried out to select a participant. HPL has assessed with HPL profile II questionnaire. Self-efficacy was assessed using self-rated abilities for health practices scale. Perceived barriers were assessed by Barriers to Health-promoting Activities for Disabled Person scale. A mediational model was used to examine whether perceived barriers mediates between perceived self-efficacy and HPL.

**RESULTS:** The participants mean age was 29.82 (5.1) years, 53.9% were primiparous, and most of them were homemakers (82.9%). The mean total score of HPL was 2.50 (0.29). The relationship between HPL and self-efficacy was mediated by perceived barriers partially.

**DISCUSSION:** Self-efficacy, not only promotes women's HPL but also indirectly affect the women's lifestyle by reducing perceived barriers.

## Keywords:

Health promotion, lifestyle, postpartum period, self-efficacy

## Introduction

Health-promoting lifestyle (HPL) is one of the factors affecting public health and leads to decrease the risk of diseases.<sup>[1]</sup> In fact, it is a positive approach to life, and it could increase people's health and well-being.<sup>[2]</sup> In this regard, HPL had a potential role in reducing chronic diseases as well as their risk factors and improve people's quality of life.<sup>[3]</sup> The postpartum period is one of the most important periods in women's

lives. This period is referred to as the time frame from delivery to 12–18 months after the birth of a child in many clinical trials and public health reports.<sup>[4]</sup> Women after delivery involved with body weight and lifestyle changes.<sup>[6]</sup> Physiological changes of delivery and sedentary lifestyle related to parenting contribute to postpartum weight retention and weight gain as well.<sup>[4,5]</sup> Hence, pregnancy and postpartum is one of the main causes of obesity in women.<sup>[6]</sup> According to the WHO, the prevalence of overweight and obesity in Iranian women

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were 65.1% and 32%, respectively, in 2014.<sup>[7]</sup> Nowadays, obesity is an important risk factor for chronic disease that its prevalence is one of the main concerns.<sup>[8]</sup> However, healthy lifestyle provides a powerful strategy for improving women's health and also reducing postpartum obesity.<sup>[9]</sup> Mothers in the postpartum period are faced with some barriers such as lack of social support, energy and motivation and procrastination, and financial constraints to carry out a healthy lifestyle. In addition, fatigue, headache, nausea, back pain, and urinary or bowel problems can inhibit their healthy diet and exercise plan.<sup>[10]</sup> Each woman has multiple responsibilities to her family and those around her.<sup>[11]</sup> Although women after childbirth assess their health as good, they experience more pain, discomfort, and physical limitations, and less vitality comparing to other women.<sup>[12]</sup> These changes and the new tasks of childcare lead to a reduction in maternal self-care capabilities.<sup>[9]</sup> On the other hand, women after delivery are engaging taking care of the baby. They put their own health as secondary importance. Moreover, the health-care providers pay attention to the child care more than the mother's mental and physical health.<sup>[13]</sup> However, high self-efficacy is associated with protective behaviors for promoting healthy behaviors such as regular physical activity, healthy nutrition, and weight control.<sup>[14,15]</sup> For example, studies have shown that physical activity after childbirth is associated with high self-efficacy and social support.<sup>[16,17]</sup> In recent decades, the focuses of studies have been on the middle-aged women's health<sup>[9]</sup> and few studies have addressed women's lifestyle after childbirth and its effective factors. Therefore, we investigated that how self-efficacy and perceived barriers are associated with women's lifestyle in the 1<sup>st</sup> year after childbirth based on social cognitive theory (SCT). SCT emphasizes the fact that each person's behaviors depends on the interaction of three factors (personal, socioenvironmental, and behavior).<sup>[18]</sup> We hypothesized that perceived barriers (socioenvironmental factor) would mediate the association between self-efficacy (personal factor) and HPL (behavior). Hence, this study aimed to determine the effects of both self-efficacy and perceived barriers on Iranian women HPL in the first-year postpartum.

## Materials and Methods

A cross-sectional study was conducted on 310 women (18–45 years) who receive care in health centers of Zanjan, Iran, from October 2015 to March 2016. Inclusion criteria are included having a healthy and 1-year-old child; mothers excluded if they did have a twin child in recent year, they have a medical problems (chronic disease of the heart, liver, or kidney problems, moderate or severe depression), and they were pregnant. Proportionate stratified random sampling was used to recruit participants from all governmental health centers

in Zanjan (14 health center). The number of samples of each center was determined based on the number of pregnant women who referred to the health centers. Then, the list of women who had given birth last year was extracted and samples were selected randomly. Women's health records have reviewed and those women who met the inclusion criteria were invited to the study. The consent form was obtained from the participants before completing the questionnaires.

The sample size was calculated to be 274 using the mean (standard deviation) 2.83 (1.35) health-promoting behaviors.<sup>[19]</sup>

## Measurements

Self-efficacy was assessed with the self-rated abilities for health practices questionnaire. This tool measures nutrition, exercise, psychological well-being, and responsible health practices self-efficacy (internal consistency of the instrument 0.92).<sup>[20]</sup> This scale consists of 28 items, and its items are scored on a 5-point Likert (0 = not at all to 4 = completely). Participants were asked to determine the extent of health practices that they are able to do it in four dimensions. Total scores range were from 0 to 112. Higher scores indicate greater self-efficacy. Cronbach's alpha for this scale in our study was 0.83.

The perceived barriers was a mediator variable (MV) in this study. It was measured by scale of Barriers to Health-promoting Activities for Disabled Persons scale (Cronbach's  $\alpha = 0.82$ ).<sup>[21]</sup> This scale had 18 questions. Respondents were reporting their barriers (interpersonal, intrapersonal, and environmental barriers) about doing health-promoting behaviors. The frequency of behavior is measured with a multiple-choice Likert range from 1 "never" to 4 "always." Total scores range from 18 to 72. A higher score indicates more barriers to HPL. Cronbach's alpha for this scale in our study was 0.66.

HPL was the dependent variable (DV) in this study. This variable was measured by a valid Persian version of HPL profile II (Cronbach's  $\alpha = 0.82$ ). This scale consists of 52 items, which measures the HPL in six dimensions: Physical Activity, Health Responsibility, Nutrition, Stress Management, Spiritual Growth, and Interpersonal Relations. The items are scored on a 4-point Likert scale (never to always).<sup>[22]</sup> Higher scores indicate better HPL.

## Statistical analysis

The strength of the correlation between variables among HPL, self-efficacy, and perceived barriers was examined using the Pearson's correlation coefficient. Mediation analysis was used to determine the mediation variable role.<sup>[23]</sup> Mediation models could provide a way to better

understanding of behavior pathways. In fact, the MV, as the third variable, has an effect on the relationship between dependent and independent variables. To examine whether perceived barrier mediates between the self-efficacy and HPL, Baron and Kenny's 3-step single mediator framework was used.<sup>[24]</sup> In the first step, the correlation between self-efficacy and barrier score was examined by single regression analysis. In the second step, the correlation between self-efficacy and HPL was examined by single regression analysis. In the third step, whether the perceived barrier score mediates the relationship between self-efficacy and HPL was examined by multiple regression analysis. After adding the MV, the relationship between the IV and DV variable must become nonsignificant (full mediation) or significant but relatively weak (partial mediation).<sup>[24]</sup> Figure 1 shows a mediator model.

Sobel test was also used to examine the mediation effect. SPSS Version 22.0 (IBM Corp., Armonk, NY, USA) was used for all analyses.

**Ethical considerations**

Study's protocol was explained to the participants. Participants were recruited voluntarily, and their informed consent was obtained. The study has been approved by ethics committee Vice Chancellor for Research, Tehran University of Medical Sciences (ID code: 9121108013).

**Results**

The participant's sociodemographic background is shown in Table 1.

The mean total score of HPL was 2.50 (0.29). Women had the highest and lowest mean score in dimensions of Spiritual Growth and physical activity, respectively. Mean self-efficacy and perceived barriers were 76.48 (8.2) and 35.04 (4.8), respectively. Women had the lowest self-efficacy score in physical activity domain [Table 2].

Table 3 shows the results of correlation analysis between each of two variables among HPL, self-efficacy, and perceived barriers. The strongest correction was observed between the perceived barriers and HPL ( $r = -0.64, P < 0.01$ ).

Regression analysis in the first step showed that perceived self-efficacy was significantly related to the perceived barrier score (MV) (regression coefficient =  $-0.33; P < 0.001$ ). Regression analysis in the second step indicated that self-efficacy was significantly related to HPL (DV) (regression coefficient =  $0.024; P < 0.001$ ). Multiple linear regression analysis in the third step demonstrated a significant relationship between self-efficacy and HPL (regression coefficient =  $0.016;$

**Table 1: Sociodemographic background data of the analyzed participants**

Variables	Mean (SD)
Age (years)	29.82±5.1
Education	n (%)
Middle school	40 (12.9)
High school	23 (4.7)
Diploma	122 (39.4)
Associated degree	30 (9.7)
Bachelor's degree or higher	95 (30.6)
Occupation	n (%)
Homemaker	257 (82.9)
Employed	53 (17.1)
Children	n (%)
1	167 (53.9)
2	112 (36.1)
3	27 (8.7)
4	4 (10.3)

SD=Standard deviation

**Table 2: Mean and standard deviation of health-promoting lifestyle, perceived self-efficacy, and perceived barrier**

Variables	Mean±SD
Health-promoting lifestyle	
Spiritual growth	2.84±0.49
Interpersonal relations	2.81±0.44
Health responsibility	2.73±0.49
Nutrition	2.65±0.34
Stress management	2.14±0.46
Physical activity	1.83±0.42
Total	2.50±0.29
Self-efficacy	
Nutrition	21.59±2.4
Responsible health practices	21.98±3.22
Psychological well-being	17.64±2.4
Physical activity	15.06±3.1
Total	76.27±7.79
Perceived barrier	
Interpersonal	19.06±3.04
Intrapersonal	6.03±1.4
Environmental	9.93±1.9
Total	35.04±4.8

SD=Standard deviation

**Table 3: Correlations between perceived barrier, self-efficacy, and health-promoting lifestyle score**

Variable	Self-efficacy	Health-promoting lifestyle
Perceived barrier	-0.53**	-0.64**
Self-efficacy	-	0.64**

\*\*P<0.01

$P < 0.001$ ). It also represented that the perceived barrier score was significantly related to HPL ( $r = -0.026; P < 0.001$ ). These analyses are summarized in Table 4.

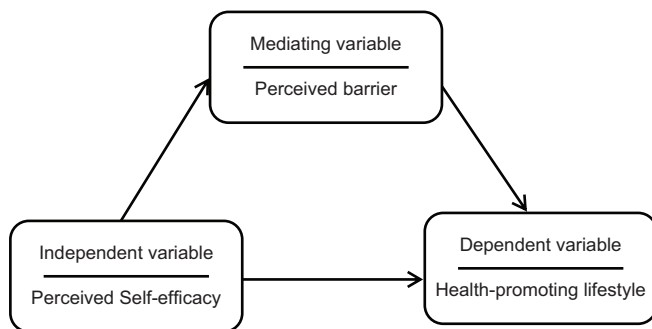
Sobel test confirmed that indirect effects were significant for HPL ( $Z = -6.8, P < .001$ ).

These finding indicated that perceived barrier partially mediated the relationships between self-efficacy and HPL [Figure 1].

### Discussion

There have been a few studies in Iran about the role of effective MVs on HPL. In this study, we used the SCT to investigate the MV role in the prediction of women's HPL. Several studies have examined the role of SCT such as perceived self-efficacy structure in predicting health-promoting behaviors such as physical activity, healthy nutrition, and psychological well-being. These studies have demonstrated that self-efficacy as predictors of physical activity and also have been mediation variable role in physical activity interventions.<sup>[25,26]</sup> In healthy nutrition studies, a significant relationship was seen between self-efficacy and perceived barriers, especially in the consumption of fruits and vegetables.<sup>[27,28]</sup> Self-efficacy, also, mediates the relationship between psychological well-being and general health.<sup>[29]</sup> Our results represented that self-efficacy affects not only directly but also indirectly on women's HPL through the perceived barriers. In other words, the relationship between HPL and self-efficacy was mediated by perceived barriers partially. In partial mediation, an

independent variable has both direct and indirect effects on a DV. The direct effect is not mediated; while, the indirect effect is transmitted through one or more MVs. This finding shows that if we improve women's self-efficacy, they would be able to overcome barriers more easily than someone with low self-efficacy. This, in turn, would lead to higher degrees of participation in an HPL program. These findings are similar with Bruening *et al.* study. They showed that perceived barriers mediate the association between fruit/vegetable consumption among Students and self-efficacy.<sup>[30]</sup> Dijkstra *et al.* stated that perceived barriers mediate the association between income and adherence to the fruit and fish consumption.<sup>[31]</sup> In this study, the prevalence of intrapersonal, interpersonal, and environmental barriers for HPL was investigated. We found out a significant indirect relationship between perceived barriers and HPL ( $r = -0.64, P < 0.001$ ) which suggests that women who have more barriers are less likely to participate in health promotion programs. Postpartum women's confronted with some barriers; for example, low self-efficacy, especially self-efficacy of physical activity, postpartum depression, deprivation of life, lack of social support, breastfeeding, and baby care.<sup>[32,33]</sup> These barriers are effective in maintaining women's general and psychological health, also, health-promoting behaviors such as physical activity and diet.<sup>[34,35]</sup>



**Figure 1:** Mediation model (Independent variable: Perceived self-efficacy; mediator variable: Perceived barrier; dependent variable: health-promoting lifestyle). In this model, "a" is a raw regression coefficient for the association between Perceived self-efficacy and barrier; "SE<sub>a</sub>" is standard error of "a;" "b" is a raw coefficient for the association between Perceived barrier and health-promoting lifestyle; and "SE<sub>b</sub>" is standard error of b; P value of Sobel test

Our results showed the mean score of HPL ( $2.50 \pm 0.29$ ) at first-year postpartum. This result is consistent with other studies in postpartum women.<sup>[19,19]</sup> We found women had earned the lowest score in both physical activity and physical activity's self-efficacy, which are consistent with Hinton and Olson study. They showed that higher physical activity's self-efficacy is associated with high levels of physical activity during the 1<sup>st</sup> year after childbirth.<sup>[36]</sup> Our finding displayed that self-efficacy plays a key role in women's HPL. Women with higher self-efficacy had also a better HPL could be able to overcome barriers. Then, self-efficacy promotes the lifestyle indirectly. This result is consistent with SCT, which suggests that self-efficacy

**Table 4: Meditational model for perceived barrier, self-efficacy, and health-promoting lifestyle**

Regression analysis steps	Item	r <sup>2</sup>	Unstandardized coefficients		P
			B	SE	
Step 1					
Mediating variable	Perceived barrier				
Independent variable	Self-efficacy	0.28	-0.33	0.03	<0.001
Step 2					
Dependent variable	Health-promoting lifestyle				
Independent variable	Self-efficacy	0.41	0.024	0.002	<0.001
Step 3					
Dependent variable	Health-promoting lifestyle				
Independent variable	Self-efficacy		0.016	0.002	<0.001
Mediating variable	Perceived barrier	0.53	-0.026	0.003	<0.001



is a central structure in the SCT. Self-efficacy directly affects behavior through the belief of the individual in his/her ability to do skills effectively in hard situations. Furthermore, it has indirectly affects through the influence of goals, outcome expectancies, facilitators, and barriers. With increasing self-efficacy, individual expect positive outcome, overcome barriers, and show commitment and motivation to achieve their purpose.<sup>[18]</sup> Therefore, based on these results, health-care providers should pay attention to health interventions including not only to the role of self-efficacy but also to the role of perceived barriers and solve them in women after childbirth. Ristovski-Slijepcevic *et al.* have recommended that to achieve optimal health in low-income women additional programs and services to deal with the barriers during the postpartum period should be implemented.<sup>[37]</sup>

This study had some strengths as well as limitations. To the best our knowledge, this is the first study which has examined the role of perceived barriers (MV) in the relationship between HPL and self-efficacy among women after childbirth. In this study, reliable scales have been used to investigate the variables. However, the self-reported nature of scales may have led to a misrepresentation of behaviors in findings. However, the participants were selected randomly from all health centers. Thus, our findings can be extrapolated to other women's in this city. As a cross-sectional study, the findings described are primary and cannot discuss causality.

However, the mediation analysis did provide the expected result, which supports further testing of the hypothesis in longitudinal and intervention studies.

According to the findings, health-care providers it is better to pay attention to the women's health after delivery just like pregnancy and to teach them the ways of overcoming barriers. This could improve women's self-efficacy. Further study is needed in postpartum women to improve our understanding of the healthy behaviors and to help guide interventions that aim to meet the needs of these women.

## Conclusion

The results showed that preserved barrier was a partial mediator between self-efficacy and HPL. With partial mediation, social support, as an independent variable, has both direct and indirect effects on HPL as a DV. The direct effect is not mediated; whereas, the indirect effect is transmitted through perceived barriers as an MV. Maybe with enhancing the women's self-efficacy and removing their barriers, women's HPL would be promoted.

## Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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## Conflicts of interest

There are no conflicts of interest.

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