

Original Article



Determinants of Weight Loss and Obesity Control Behaviors Among Women Based on the Pender's Health Promotion Model

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Abstract

Background: Lifestyle changes, advertising, and access to high-calorie, low-value foods have led to an increase in the prevalence of obesity and overweight, and women are at greater risk in this regard. The aim of the present study was to identify the determinants of weight loss and obesity control behaviors based on Pender's health promotion model (HPM) among women referring to the healthcare centers of Shahrekord, Iran.

Methods: This descriptive-analytical study was performed on 500 women aged 18-49 years with a body mass index (BMI) ≥ 25 in 2019. The cluster sampling method was performed on the healthcare centers, and women were selected using simple random sampling. The data collection instrument included a researcher-made questionnaire, the reliability and validity of which were approved, and finally, data were analyzed using analytical tests in SPSS 22 and Stata14.

Results: The mean (\pm standard deviation) of the women's age was 34.33 ± 8.2 years. A total of 57.8% of women had no history of weight loss and obesity control behaviors. Variables such as age, education level, and marital status were statistically significantly related to weight loss and obesity control behaviors ($P \leq 0.05$). Moreover, the constructs of prior related behaviors, interpersonal influences, and commitment to a plan of action were among the predictors of weight loss and obesity control behaviors and predicted 6.6% of behavioral changes ($R^2: 6.6, P < 0.05$).

Conclusion: Overall, prior related behaviors, interpersonal influences, and commitment to a plan of action are predictors of weight loss and obesity control behaviors, and thus it is suggested to place more on these constructs while designing relevant health-promotion interventions.

Keywords: Health promotion, Women, Overweight and obesity

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Introduction

Health is one of the basic human needs and the basis of the successful functioning of individuals and societies. Health-promotion activities and a healthy lifestyle are among the main strategies for maintaining health. Health promotion behaviors are known to be one of the most important factors in preventing many diseases (1). Women's health has a broad meaning and is affected by various biological, social, political, economic, and environmental factors. Further, it is the foundation of community health, and women play an important role in shaping culture and education, along with maintaining and promoting family and community health (2). Overweight and obesity are defined as abnormal or excessive fat accumulations that pose a health risk (3). According to the World Health

Organization (WHO), the global obesity rate has tripled from 1975 to 2016. According to reports, more than 1.9 billion adults aged 18 years and older were overweight in 2016, of which more than 650 million were obese (4). One in seven people is obese in the United States, and the overall obesity prevalence is 35% (5). Studies have shown that the prevalence of overweight and obesity among Iranian adults is 36.5% and 33.3%, respectively (6). The global obesity prevalence follows a gender-specific pattern with a higher prevalence among women than men (7). One of the most important causes of overweight and obesity is energy imbalance so that extra calories are eaten (8). According to one study performed on Europeans, mild obesity was associated with loss of one in ten potential disease-free years and severe obesity with loss of one in



four potential disease-free years during middle and later adulthood (9). Women make up half of the country's population, managers, family educators, and community activists (10). Therefore, disregarding women's health can lead to permanent problems in the lifestyle and health of future generations (11). Therefore, this group is a suitable target group for studying the determinants of weight loss and obesity control behaviors. Theories explain why people do or do not do certain behaviors (12). Pender's health promotion model (HPM) provides a framework for explaining and predicting certain health behaviors (13). Pender designed HPM at the University of Michigan in 1982, and the model was revised in 1996. This model emphasizes health promotion through training individuals to manage their health and explains the interactions between individuals and their interpersonal and physical environment (14). The HPM was the theoretical framework used in the present study to determine the determinants of weight loss and obesity control behaviors among overweight and obese women. HPM components include prior related behaviors, perceived benefits, perceived barriers, perceived self-efficacy, positive and negative behavior-related affect, interpersonal influences, situational influences, competing demands and preferences, and commitment to a plan of action (14). The present study aimed to identify the determinants of weight loss and obesity control behaviors among overweight and obese women who referred to healthcare centers in Shahrekord. The results of the current study can be applied in designing educational interventions in this field.

Materials and Methods

This descriptive-analytical cross-sectional study was performed on 500 women, aged 18-49 years with a BMI of ≥ 25 , who referred to Shahrekord healthcare centers in 2019. The total number of overweight and obese women referring to Shahrekord health centers was about 19 000. The sample size was calculated 500 people with a 95% confidence interval and error coefficient of 0.05 using Cochran's formula and a design effect of 1.3

The inclusion criteria included being female, not being pregnant and on lactation, being 18-49 years old, having a BMI of ≥ 25 , and obtaining written consent from the individuals before filling out the questionnaire. Participants were selected using the multi-stage sampling method. First, 4 healthcare centers were selected by cluster sampling from 11 centers of Shahrekord until covering 500 samples. Then, among women referring to the healthcare centers of Shahrekord, obese and overweight cases aged 18-49 years were selected using simple random sampling. On the other hand, samples that did not want to complete the questionnaire were excluded from the study. The data collection instrument included a researcher-made questionnaire containing two groups of questions on demographic characteristics and 83 questions on model constructs. The questionnaire was designed after reviewing various texts and other related questionnaires (12,14), and

its validity and reliability were approved accordingly.

The content validity of the questionnaire was confirmed by holding a 13-member panel of health education and nutrition experts. At this stage, 19 questions were removed, and the content validity ratio and content validity index were obtained as >0.54 and >0.79 . The face validity of the questionnaire was assessed by completing the questionnaire by 11 experts. The importance of each question was evaluated based on a five-point Likert-type scale, and the impact score of each question was obtained >1.5 for all questions. To assess the construct validity, confirmatory factor analysis was performed through SPSS (version 22) and Stata (version 14, StataCorp. 2015. Stata Statistical Software: Release 14. College Station, TX: StataCorp LP). For this purpose, apart from the studied samples, questionnaire questions and different items were examined in a random sample of 150 people. A total of 23 questions were omitted, and the construct validity of 41 questions related to the constructs of HPM was confirmed as well. To evaluate the internal consistency of the constructs, the questionnaire was completed by 42 non-participants. Cronbach's alpha coefficients for prior related behavior, perceived benefits, perceived barriers, perceived self-efficacy, positive behavior-related affect, negative behavior-related affect, interpersonal influences, situational influences, competing preferences and demands, and commitment to a plan of action were 0.727, 0.979, 0.704, 0.743, 0.746, 0.724, 0.710, 0.848, 0.71, and 0.701, respectively.

Finally, there was a demographic form with 9 questions and a questionnaire that included one question about the BMI value, one behavioral two-choice question (Have you ever had weight loss and obesity control behaviors?), and 41 questions about the constructs of HPM. In general, 3, 3, and 7 questions were related to prior related behaviors (Past weight loss activities), perceived benefits (benefits of controlling obesity and overweight), and perceived barriers (barriers and problems related to overweight and obesity control), respectively. In addition, 8, 3, and 5 questions belonged to perceived self-efficacy (in terms of a person's confidence in his/her ability to lose weight and control obesity despite barriers), positive behavior-related affect (pleasant feelings related to weight loss behavior), and negative behavior-related affect (unpleasant feelings related to weight loss behavior), respectively. Furthermore, 2 and 3 items were associated with interpersonal influences (regarding the expectations of relatives in terms of weight loss) and situational influences (regarding situations and areas that facilitate or prevent weight control behaviors) respectively. Finally, 4 and 3 questions were about preferences and competing demands (on alternative priorities and preferences for weight loss behavior) and commitment to an action plan (regarding the degree of commitment to planning for weight loss and obesity control behaviors), respectively. A five-point Likert-type scale was used for answering questions about the HPM ranging from 1 (Strongly disagree) to 5 (Strongly agree).

After coordinating and obtaining the approval of the Vice-chancellor for the Research of Shahrekord University of Medical Sciences, the researcher attended healthcare centers, handed the questionnaire to eligible women, and provided them with necessary explanations on how to respond to the questionnaire. The questionnaires were then completed and delivered to the researcher.

The obtained data were analyzed by SPSS (version 22) and Stata (version 14). Descriptive analysis was conducted using descriptive indices, including central tendency and dispersion. The chi-square test was used to determine the relationship between weight loss and obesity control behaviors with HPM constructs, and then regression analysis was employed to predict changes in weight loss and obesity control behaviors based on variables having a significant correlation with such behaviors. In the present study, $P \leq 0.05$ was considered as the significant level.

Results

This study was conducted on 500 women aged 18-49 years with a BMI of ≥ 25 referring to Shahrekord healthcare centers. The means (standard deviation) of the women's age were $34.33 (\pm 8.2)$ years. The mean (standard deviation) of the women's weight, height, and BMI was 74 ± 6.72 kg, 162.42 ± 5.74 cm, and 28.2 ± 1.89 kg/m², respectively. Overall, 42.2% of the women were in the 30-39-year age group. Additionally, 49.4% of the subjects held associate and bachelor degrees, and 48.2% of women had two children or more. Most subjects (74.4%) were married, and the majority of women (59%) were housewives. The income level of most subjects (54%) was within 20 000 000 and 49 990 000 rials. Moreover, 51.6% were overweight or obese for 72 months or longer period of time (Table 1). The results showed that most studied women (57.8%) had no history of weight loss and obesity control behaviors.

Table 1. Frequency Distribution of Demographic Variables and Their Relationship With Weight Loss and Obesity Control Behavior

Variable	Variable Levels	Total Number	Total Percentage	Having Weight Loss and Obesity Control Behaviors		Lack of Weight Loss and Obesity Control Behaviors		P value (Chi-square)
				No.	%	No.	%	
BMI	Over weight $25 \leq \text{BMI} < 29.9$	419	83.8	171	40.8	248	59.2	0.172
	Obesity $\text{BMI} \geq 30$	81	16.2	40	49.4	41	50.6	
Age	18-29	153	30.6	51	33.3	102	66.7	0.028
	30-39	211	42.2	98	46.4	113	53.6	
	40-49	136	27.2	62	45.6	74	54.4	
Number of children	No children	152	30.4	55	36.2	97	63.8	0.198
	One	107	21.4	48	44.9	59	55.1	
	Two and more	241	48.2	108	44.8	133	55.2	
Duration of obesity and over weight	Below 12 months	44	8.8	14	31.8	30	68.2	0.057
	12-24 months	41	8.2	16	39	25	61	
	24-48 months	54	10.8	18	33.3	36	66.7	
	48-72 months	103	20.6	38	36.9	65	63.1	
Marital status	72 months and more	258	51.6	125	48.4	133	51.6	0.051
	Single	107	21.4	36	33.6	71	66.4	
	Married	372	74.4	163	43.8	209	56.2	
	Divorced	15	3.0	10	66.7	5	33.3	
Level of education	Widow	6	1.2	2	33.3	4	66.7	0.052
	Illiterate	8	1.6	4	50	4	50	
	Elementary and middle school	22	4.4	10	45.5	12	54.5	
	Middle school and diploma	172	34.4	64	37.2	108	62.8	
	Associate degree and bachelor's degree	247	49.4	102	41.3	145	58.7	
Job	Higher than a bachelor's degree	51	10.2	31	60.8	20	39.2	0.581
	Housewife	295	59.0	115	39	180	61	
	Employee	147	29.4	69	46.9	78	53.1	
	Manual worker	27	5.4	11	40.7	16	59.3	
	Nurse / Midwife	17	3.4	9	52.9	8	47.1	
	Health worker	8	1.6	4	50	4	50	
Income	Physician	6	1.2	3	50	3	50	0.384
	Below 20 000 000 rials	127	25.4	49	38.6	78	61.4	
	2 100 000-4900 000 rials	270	54.0	113	41.9	157	58.1	
	More than 5 000 000 rials	103	20.6	49	47.6	54	52.4	

Note. No.: Number; BMI: Body mass index; SD: Standard deviation; HPM: Health promotion model; Significance level at $P \leq 0.05$.

There was a significant relationship between weight loss and obesity control behaviors with factors such as age, marital status, and level of education, but not with BMI, employment, income, number of children, and duration of obesity and overweight (Table 1). Further, all HPM constructs had moderate mean scores (Table 2).

The relationship between weight loss and obesity control behaviors with HPM constructs was investigated using chi-square. The results demonstrated a significant relationship between prior related behaviors, perceived benefits, perceived self-efficacy, negative behavior-related affect, interpersonal influences, and commitment to a plan of action with weight loss and obesity control behaviors (Table 3). However, no significant relationship was found between perceived barriers, positive behavior-related affect, situational influences, and competing demands and preferences with weight loss and obesity control behaviors ($P > 0.05$).

In the next step, variables having a significant correlation with weight loss and obesity control behaviors were entered into the regression model. According to the results of the logistic regression analysis, among HPM constructs related to weight loss and obesity control behaviors, prior related behaviors, interpersonal influences, and commitment to a plan of action were predictors of weight loss and obesity control behaviors. These variables also predicted 6.6% of changes in weight loss and obesity control behaviors (Table 4).

Discussion

The results of the present study revealed that most women did not practice weight loss and obesity control behaviors. In addition, they were overweight and obese women aged 18-49. Based on the findings, a significant correlation was observed between age, level of education, and marital status with weight loss and obesity control behavior. The results further indicated a significant relationship between age with weight loss and obesity control behaviors so that weight loss and obesity control behaviors were more frequent in 30-39 and 40-49-year age groups, which can be due to the longer duration of obesity and overweight in

older people. Studies represented no significant increase in the prevalence of overweight and obesity at older ages, highlighting the importance of preventive intervention at older ages (15), which is consistent with the results of the present study, but inconsistent with those of a study by Mataji Amirrood et al, emphasizing the predictive role of age on obesity-related eating behaviors and the greater prevalence of obesity-related eating behaviors in older age groups (16). This difference could be related to different samples and times. The results demonstrated a significant relationship between weight loss and obesity control behaviors with the education level so that weight loss and obesity control behaviors occurred more frequently among people with university degrees higher than a bachelor's degree. Higher education may be better in relation to higher incomes and lifestyle, which corroborates with the results of Aliabadi et al (17). Similarly, Khodaveisi et al found a significant correlation between healthy nutritional behaviors with the education level among obese and overweight women, but no significant relationship with income (18). Based on the results of the current study, a significant relationship was observed between weight loss and obesity control behaviors with marital status. Likewise, Tajfard et al reported a significant relationship between proper nutritional behavior with the level of education and marital status in women, but no significant relationship with the number of children, which is in line with the findings of the present study. Tajfard et al also represented a significant relationship between weight loss and obesity control behavior with income (19), which contradicts the results of the present study. This difference could be related to different samples and times.

The results of the chi-square test indicated a significant relationship between prior related behaviors, perceived benefits, perceived self-efficacy, negative behavior-related affect, interpersonal influences, and commitment to a plan of action with weight loss and obesity control behavior. Furthermore, according to the results of logistic regression analysis, prior related behaviors, interpersonal influences, and commitment to a plan of action were predictors of weight loss and obesity control behaviors. According to this finding, increasing prior related behaviors, interpersonal influences, and commitment to a plan of action can help increase the frequency of weight loss and obesity control behaviors.

The results of the present study showed a significant relationship between prior related behaviors and weight loss and obesity control behavior. Based on the results, prior efforts for reduce overweight and control obesity were an important predictor of weight loss and obesity control behavior. In line with these findings, Shaahmadi et al examined factors affecting health-promotion behaviors among women of childbearing age based on the Pender's model (20). Lim et al also demonstrated that the most important predictor of health-promotion behaviors in adults in urban communities is the prior related behaviors (21), which is consistent with the results of the present

Table 2. Mean and SD of the Constructs of HPM Among the Studied Women

HPM Constructs	Mean ± SD	Accountable Range
Prior related behaviors	8.48 ± 2.62	3-15
Perceived benefits	10.92 ± 3.38	3-15
Perceived barriers	20.74 ± 5.21	7-35
Perceived self-efficacy	24.29 ± 6.14	8-40
Positive behavior-related affect	12.36 ± 2.83	3-15
Negative behavior-related affect	14.17 ± 3.97	5-25
Interpersonal influences	5.04 ± 2.57	2-10
Situational influences	9.29 ± 3.16	3-15
Competitive preferences and demands	10.73 ± 3.2	4-20
Commitment to a plan of action	9.65 ± 2.27	3-15

Note. SD: Standard deviation; HPM: Health promotion model.

Table 3. Frequency Distribution of HPM Constructs and Their Relationship With Weight Loss and Obesity Control Behavior

Variable	Variable Levels	Total Number	Total Percentage	Having Weight Loss and Obesity Control Behaviors (500)		Lack of Weight Loss and Obesity Control Behaviors (500)		P value (Chi-square)
				%	No.	No.	%	
Prior related behaviors	Good Mean ≥11.08	55	11	65.5	36	19	34.5	0.0001
	Moderate 5.86 < Mean < 11.08	366	73.2	41	150	216	59	
	Weak Mean ≤ 5.86	79	15.8	31.6	25	54	68.4	
Perceived benefits	Good Mean ≥ 14.29	128	25.6	47.7	61	67	52.3	0.005
	Moderate 7.55 < Mean < 14.29	289	57.8	44.3	128	161	55.7	
	Weak Mean ≤ 7.55	83	16.6	26.5	22	61	73.5	
Perceived barriers	Good Mean ≥ 26.47	81	16.2	36	44.4	45	55.6	0.232
	Moderate 16.05 < Mean < 26.47	330	66	131	39.7	199	60.3	
	Weak Mean ≤ 16.05	89	17.8	44	49.4	45	50.6	
Perceived self-efficacy	Good Mean ≥ 30.39	69	13.8	30	43.5	39	56.5	0.041
	Moderate 18.2 < Mean < 30.39	347	69.4	156	45	191	55	
	Weak Mean ≤ 18.2	84	16.8	25	29.8	59	70.2	
Positive behavior-related affect	Good Mean ≥ 15.2	0	0	0	0	0		0.070
	Moderate 9.53 < Mean < 15.2	423	84.6	186	44	237	56	
	Weak Mean ≤ 9.53	77	15.4	25	32.5	52	67.5	
Negative behavior-related affect	Good Mean ≥ 19.85	90	18	48	53.3	42	46.7	0.040
	Moderate 11.85 < Mean < 19.85	350	70	136	38.9	214	61.1	
	Weak Mean ≤ 11.85	60	12	27	45	33	55	
Interpersonal influences	Good Mean ≥ 7.56	107	21.4	61	57	46	43	0.0001
	Moderate 2.44 < Mean < 7.56	271	54.2	114	42.1	157	57.9	
	Weak Mean ≤ 2.44	122	24.4	36	29.5	86	70.5	
Situational influences	Good Mean ≥ 11.86	100	20	40	40	60	60	0.771
	Moderate 5.54 < Mean < 11.86	325	65	137	42.2	188	57.8	
	Weak Mean ≤ 5.54	75	15	34	45.3	41	54.7	
Preferences and competing demands	Good Mean ≥ 16.47	80	16	41	51.2	39	48.8	0.191
	Moderate 10.07 < Mean < 16.47	320	64	131	40.9	189	59.1	
	Weak Mean ≤ 10.07	100	20	39	39	61	61	
Commitment to a plan of action	Good Mean ≥ 12.36	73	14.6	39	53.4	34	46.6	0.001
	Moderate 6.96 < Mean < 12.36	363	72.6	158	43.5	205	56.5	
	Weak Mean ≤ 6.96	64	12.8	14	21.9	50	78.1	

Note. No.: Number; HPM: Health promotion model; Significance level at $P \leq 0.05$.

Table 4. Results of Logistic Regression Analysis Between Weight Loss and Obesity Control Behaviors With HPM Constructs

	HPM Construct	B	SE	Wald	df	P Value	Exp (B)	R Square
Step 1	Prior related behaviors	- 0.156	0.036	18.371	1	0.0001	0.855	
	Constant	1.651	0.328	25.354	1	0.0001	5.210	
Step 2	Prior related behaviors	- 0.14	0.037	14.266	1	0.0001	0.869	6.6
	Interpersonal influences	- 0.114	0.037	9.655	1	0.002	0.892	
	Constant	2.099	0.366	32.834	1	0.0001	8.156	
Step 3	Prior related behaviors	- 0.122	0.038	10.061	1	0.002	0.885	
	Interpersonal influences	- 0.106	0.037	8.104	1	0.004	0.899	
	Commitment to the action plan	- 0.082	0.037	4.863	1	0.027	0.922	
	Constant	2.69	0.464	33.644	1	0.0001	14.736	

Note. HPM: Health promotion model; S.E.: Standard error; df: Degree of freedom; Sig.: Level of significance; Exp (B): Exponentiation of the B coefficient (Odds ratio); R square: Coefficient of determination; B: Unstandardized regression weight; Significance level at $P < 0.05$.

study). However, Halali et al found that people attempting to lose weight during their lifetime, especially for 3 times or more, had cognitive limitations, uncontrolled eating, and more emotional eating, as well as a higher BMI value (22), which contradicts the results of the present study. This difference could be related to different samples and times. Pender stated that prior related behaviors have a direct and indirect effect on the existing health-promotion behaviors, as they can lead to changes in current health-related behaviors and induce normal participation in health-promoting behaviors even regardless of individual behaviors (14).

The findings of the current study represented a significant relationship between perceived benefits and weight loss and obesity control behavior. Likewise, Shin et al demonstrated a significant relationship between perceived benefits with health-promotion behaviors among women (23), which is in line with the results of the present study. Conversely, this finding contradicts the results of Khodaveisi et al (18). This difference could be associated with different samples and times.

Based on the results, a significant relationship was observed between perceived self-efficacy and weight loss and obesity control behavior. Similarly, Voskuil et al reported a significant relationship between perceived self-efficacy with physical activity behavior among girls; the model predicted 10.1% of variance of physical activity behavior, of which 6.9% was related to the perceived self-efficacy construct (24). However, Jalili Bahabadi et al found no significant relationship between perceived self-efficacy and health-promotion behaviors among pregnant women (25), which does not match with the results of the current study. This difference could be attributed to the variety of samples and times.

The results of the present study represented a significant correlation between the negative behavior-related affect and weight loss and obesity control behaviors. Women with lower perceived negative emotions performed weight loss and obesity control behaviors more frequently. In a study, Goudarzi et al demonstrated that behavior-related affect was one of the strongest predictors of drug adherence among hypertensive patients using Pender's model of health promotion (26). Mirkarimi et al referred to the behavior-related affect as the strongest predictor of commitment to the implementation of the nutritional program (27).

Interpersonal influences also had a significant relationship with weight loss and obesity control behaviors and could predict these behaviors. In their study, Kulik et al emphasized the role of support from family and friends in strengthening weight loss programs among adolescent girls (28). Similarly, Ohashi et al highlighted the important role of husbands in encouraging Egyptian women to maintain their health (29). Chen et al concluded that interpersonal influences are not directly related to physical activity behaviors, but indirectly affect them by affecting self-efficacy and sense of pleasure (30), which contradicts

the findings of the present study. This difference could be attributed to the wide range of samples and times. Brown also found that interpersonal influences such as family and friends affect commitment to physical activity plans among African American women (31). Close family relationships have a special place in the Iranian culture, and if family members accompany overweight and obese people during training sessions and become familiar and aware of their issues, they will play an important role in increasing cooperation and support to control and reduce weight in these people.

Based on the findings of the current study, a significant relationship was observed between a commitment to a plan of action and weight loss and obesity control behaviors. Additionally, another predictor of weight loss and obesity control behaviors in the present study was a commitment to a plan of action. In a study on the effectiveness of Pender's model of health promotion in predicting the lifestyle of patients with heart surgery, Mohsenipoua et al showed that commitment to a plan of action is one of the determinants of physical activity and nutrition in these people (32). Commitment to a plan of action includes cognitive and behavioral processes that increase the readiness to participate in a health-promotion behavior. The degree of commitment to a plan of action is determined by the individual's beliefs about the benefits of the action, the barriers to action, self-efficacy, interpersonal and situational influences, as well as activity-related effects (33).

HPM variables playing a significant role in predicting health-promotion behaviors in more than 60% of previous studies include perceived self-efficacy (86%), perceived barriers (79%), prior behaviors (75%), and perceived benefits (61%) (34). To the best of our knowledge, there has been no study on the use of this model to determine the determinants of weight loss and obesity control behaviors among women. In another study aiming at determining the correlation between physical activity and its predictors among insurance employees based on "Pender's model of health promotion", Khodaveisi et al reported a significant relationship between the physical activity behaviors and perceived benefit, perceived self-efficacy, interpersonal influences, and commitment to a plan of action (35), which is in line with findings of the present study.

One of the limitations of the current study was the self-reporting of weight loss and obesity control behaviors, and participants may have reported a more favorable self-image. On the other hand, women's impatience could reduce their response accuracy, and these issues were beyond the control of the researcher.

Conclusion

This study sought to determine the effect of HPM constructs on weight loss and obesity control behaviors among overweight and obese women. Given the moderate status of weight loss and obesity control behaviors among the study subjects and the importance of women's health

and their important role in shaping culture and education, along with maintaining and promoting the health of the family and community, there is a need to increase awareness on weight loss and obesity control behaviors among them and other family members. Increasing awareness about weight loss and obesity control behaviors creates a favorable attitude towards these behaviors among obese and overweight women, and ultimately, leads to a behavior change. The results of the present study indicated that prior related behaviors, interpersonal influences, and commitment to a plan of action were predictors of weight loss and obesity control behaviors. Therefore, when planning to implement interventions that promote weight control behaviors, an emphasis should be placed on the strategies of the influences of family members and friends and their participation in the interventions, increasing commitment to a plan of action, and considering prior related behaviors.

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Authors' Contribution

AG (First author): Lead researcher/author of introduction (25%); MS (Second author): Lead researcher/author of the discussion (30%); FSA (Third author): Assistant researcher/nutritionist (15%); AFH (Fourth author): Assistant researcher/statistical analyst (15%); ML (Fifth author): Assistant researcher/statistical analyst (15%).

Conflict of Interests

Authors declare that they have no conflict of interests.

Ethical Permissions

This study was approved by Iran University of Medical Sciences (with the code of ethics of IR.IUMS.REC.1397.1009).

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