

✧ RESEARCH PAPER ✧

The role of motivation and self-efficacy on the practice of health promotion behaviours in the overweight and obese middle-aged American women

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The study investigated the relationship between motivation, self-efficacy and demographic variables, and determined if they affect the performance of health promotion behaviours in overweight or obese middle-aged American women. The sample consisted of middle-aged American women from a small town in Michigan. Two groups of women aged 30–65, one with a body mass index (BMI) range of 25–29, and the second with a BMI of ≥ 30 , completed the Health Self-Determinism Index, the General Self-Efficacy Scale and the Health Promoting Lifestyle Profile-II. Self-efficacy was found to be a significant predictor in the performance of health-promoting behaviours in both the overweight and obese participants in this study. Motivation was not found to be a significant predictor of performance of health promotion behaviours in either participant group. Education was found to be a significant predictor of performance of health promotion behaviours in the obese participants only. Nurses need to develop effective methods of supporting self-efficacy in both the overweight and obese middle-aged American women. Nursing-based research focusing on interventions to improve self-efficacy, as well as studies identifying effective educational techniques to improve the practice of health promotion behaviours in this population is necessary. Further investigation into the effect of motivation and demographics on the performance of health promotion behaviours is also needed.

Key words: female, health promotion, motivation, obese, overweight, self-efficacy.

Overweight and obesity are a major health problem in America. It is estimated that about 66% of American adults are overweight, and one in three are obese.^{1,2}

Body mass index (BMI) is a standard that correlates body weight with the risk of developing chronic health conditions that are associated with obesity.^{1–3} A BMI between 18 and 24.9 is considered normal, whereas a BMI between 25 and 30 is considered overweight, and a BMI > 30 is considered obese. A BMI of ≥ 40 is considered super obese.^{3,4}

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Being overweight or obese can raise an individual's risk for multiple conditions including sleep apnea, diabetes, hypertension, heart disease and depression.⁵⁻⁷ Those with excess weight also encounter increased surgical risks, fertility problems and difficulty completing daily chores.^{3,4} There are several causative factors of overweight and obesity, including biological, environmental, social, psychological and socio-economic.^{4,8}

Sedentary lifestyle, larger food portion sizes and easy access to food have all been found to increase Americans' waistlines.^{1,9} Genetic predisposition, unhealthy eating and low self-esteem have also been cited as causes of excess weight.^{3,6} As they assume a more sedentary lifestyle because of career demands, marriage and running a family, middle-aged women are especially vulnerable to excess weight gain.¹⁰

To achieve success at weight loss and maintenance, a woman must have motivation and must enact permanent lifestyle change.^{11,12} Motivation has been indicated as a key predictor in the practice of health promotion activities,¹³ and the importance of motivation in determining successful weight loss and maintenance has been established in several studies.^{11,14-16} Motivation is a complex concept that includes the beliefs, values and attitudes regarding the accomplishment of a desired behaviour or behaviours.¹⁰

Self-efficacy has also been identified as an important predictor for weight loss and maintenance.^{11,17} It has been found to be one of the strongest predictors of a health-promoting lifestyle.¹¹ Self-efficacy is a complex concept that is believed to result from an interaction between personal, behavioural and environmental factors. It includes perceived confidence about the ability to utilize personal resources of motivation, cognition and action to complete a given task.¹⁸

Health-promoting lifestyles include activities that encourage or improve overall general health.¹⁹ Behaviours that are considered health promoting include: nutrition, physical activity, stress management, health responsibility, spiritual growth and interpersonal relations.¹⁹⁻²²

Nursing has been described as a human science with a socially conscious focus.²³ Because of their multiple functions and job descriptions, nurses are in a unique position to address overweight and obesity. Nurses must be adept at tailoring interventions specifically to the individual,²⁴ and because of the complexity of the overweight and obesity problem in America, the nurse must fully understand its cause.

PURPOSE

The purpose of this study was to investigate the relationship between motivation, self-efficacy and demographic variables, and how they affect the performance of health promotion behaviours in overweight or obese middle-aged American women. The following research questions were explored:

1. What is the relationship between motivation and health promotion behaviours in the overweight and obese middle-aged American women?
2. What is the relationship between self-efficacy and health promotion behaviours in the overweight and obese middle-aged American women?
3. What is the relationship between motivation and self-efficacy and health promotion behaviours in the overweight and obese middle-aged American women?
4. Is there a relationship between BMI or demographics (age, race, education, marital status, economic status) and levels of motivation, self-efficacy, or performance of health promotion behaviours in the overweight and obese middle-aged American women?

LITERATURE REVIEW

There are limited studies investigating the relationship between motivation and self-efficacy and their effects on practice of health promotion behaviours. Most studies evaluate the determinants of health promotion behaviour. In 2006, Butler and Mellor investigated the role of motivation, emotion and self-efficacy on level of participation and perseverance in weight management activities. Motivation was found to be the only variable contributing uniquely and significantly to prediction of participation which confirmed the importance of motivation in participation in weight loss behaviours, but self-efficacy was not identified as a significant determinant.²⁵ In 2009, Furia *et al.* also investigated the effect of motivation and self-efficacy on maintaining normal weight in a group of normal weight and overweight college students. Normal weight students were found to have greater self-efficacy and intrinsic motivation to maintain normal body weight, whereas overweight women were found to be driven to maintain normal weight by more extrinsic factors.¹⁰

The role of self-efficacy on weight loss in overweight and obese adult men and women over the course of 18 months was examined by Warziski *et al.*²⁶ Findings revealed that the greatest weight loss occurred during the same time frame that demonstrated the greatest increase in self-efficacy. The mediators of weight loss and weight

loss maintenance in middle-aged overweight and obese women were evaluated by Teixeira *et al.* in 2010.¹¹ The results indicated that both short-term and long-term success of weight loss and weight loss maintenance centre around supporting self-efficacy. Increasing confidence and reinforcing flexibility and adaptation were found to be key in promoting weight loss success.

O'Dougherty, Kurzer and Schmitz found that women's performance of health promotion behaviours shifts over time.¹⁵ They found that societal values and cultural trends play a large role in maintaining health practices, and that using external motivators might be useful until levels of intrinsic motivation increase. In a 2009 study, Gavin, Rodbard, Fox and Grandy found that overweight and obese adults had a great desire to lose weight but had a more pessimistic view of their health and performed health behaviours less than their normal weight counterparts.²⁷ Overweight and obese participants were found to need more specific health goals and interventional aids than their normal weight counterparts, and development of detailed exercise and weight loss programmes, and behaviour toolkits to increase weight loss success in overweight and obese populations were recommended.

METHODS

Measures

Motivation for health behaviour was measured using the Health Self-Determinism Index (HSDI).²⁸ The HSDI is a 17-item scale, consisting of four subscales that measure self-determined health judgment, self-determined health behaviour, perceived competency in health matters and internal-external cue responsiveness using a five-point ordinal scale format. Possible scores range 17–85, with scores 17–51 being more extrinsically motivated, whereas scores 52–85 are more intrinsic in nature.²⁹ Cronbach's alpha of internal consistency for the entire HSDI range 0.82–0.78.^{30,31} Reliability of the overall HSDI was found to range from 0.81 to 0.87, and short-term stability has been demonstrated to be 0.86 via 2 week, test-retest correlation.³¹

Self-efficacy for health behaviour was measured using General Self-Efficacy Scale (GSE).³² The scale assesses a general sense of self-efficacy and is a 10-item ordinal scale, with responses ranging from 1 (not at all true) to 4 (exactly true). Scores might range 10–40, with higher scores reflecting higher levels of self-efficacy.³³ Cronbach's alpha reliability for the GSE has ranged 0.76–

0.90, with most being in the high 0.8s.³⁴ Its validity has been supported in over 26 cultures.^{33,35}

Performance of health promotion behaviours was measured by the Health-Promoting Lifestyle Profile II (HPLP-II).³⁴ The HPLP-II measures health-promoting lifestyles, focusing on self-initiated actions and perceptions that maintain or enhance wellness. It is a 52-item scale composed of six subscales that measure nutrition, physical activity, health responsibility, stress management, interpersonal relations and spiritual growth. The HPLP-II is scored using an ordinal four-point scale, with options ranging from 1 (never) to 4 (routinely). Possible scores on the HPLP-II range 52–208, with higher scores indicating more consistent practice of the health behaviour.³⁶ Alpha reliability for the total instrument has been shown to be 0.92, with subscales ranging 0.70–0.90.³⁷ Construct validity has been confirmed via factor analysis.³⁸

An instrument developed by the principal investigator was used to measure demographic variables in this study. The variables included BMI, age, race, education, marital status and economic status.

Setting and sample

The convenience sample consisted of 70 overweight (BMI 25–30) and 70 obese (BMI > 30) women, ages 30–65, recruited from the patient population at a family practice office in Lapeer, Michigan. Inclusion criteria consisted of any woman examined during the data collection period that had a calculated BMI of ≥ 25 and between the age 30 and 65 years of age. Exclusion criteria included women currently pregnant, those who had been pregnant within the last year or women unable to complete the scales because of mental or physical impairment. Human subjects' approval was obtained prior to implementing the study from Oakland University.

RESULTS

Data analysis was completed using Statistical Package for the Social Sciences (SPSS) version 19.0 (IBM Corp., Armonk, NY, USA). Mean age for the overweight participants (BMI 25–29) was 45.80 and 49.91 in the obese participants (BMI ≥ 30). Most of the participants were Caucasian, and 86% of overweight participants were married, compared with 70% of those who were obese. Most participants in both groups had graduated high school, and many had some college education. Both groups had the majority of participants in the \$31 000–50 000 income range (34 and 33%, respectively), but the

Table 1 Subject demographic data

Characteristic	BMI 25–29 (<i>n</i> = 70) (%)	BMI ≥ 30 (<i>n</i> = 70) (%)
Age (Mean)	45.80	49.91
Race		
Caucasian	64 (92)	69 (99)
Hispanic	3 (4)	0
African American	0	1 (1)
Other	3 (4)	0
Marital status		
Married	60 (86)	49 (70)
Divorced	7 (10)	5 (7)
Single	2 (3)	10 (14)
Widow	1 (1)	6 (9)
Education level		
Some high school	3 (4)	3 (4)
High school graduate	17 (24)	27 (39)
Some college	28 (40)	21 (30)
College graduate	19 (27)	16 (23)
Advanced college degree	3 (4)	3 (4)
Income		
\$10 000–30 000	15 (21)	29 (41)
\$31 000–50 000	24 (34)	23 (33)
\$51 000–70 000	12 (17)	10 (14)
≥ \$71 000	19 (27)	8 (11)

BMI, body mass index.

overweight group did have more in the highest income class (27 vs. 11% earning over \$71 000). Demographic information is listed in Table 1.

Both participant groups had low mean scores for intrinsic motivation on the HSDI. The overweight participants had a mean of 52.20, whereas the obese participants' mean was 53.64. Because both means were greater than 51, scores indicate intrinsic motivation, but the scores are very low on the intrinsic scale. GSE scores indicated high levels of self-efficacy, with mean scores of 32.21 (BMI 25–29) and 31.51 (BMI ≥ 30). Finally, both groups had mean HPLP-II scores that were mid-range: 135.09 (BMI 25–29) and 129.46 (BMI ≥ 30). Scores that are low indicate an inconsistent performance of health behaviours, whereas scores toward the maximum indicate consistent performance of health promotion behaviours. Because both groups scored toward the middle of the scale (65 and 62% of maximum, respectively), results indicate that both groups performed health behaviours intermittently. Individual scale results are shown in Table 2.

Paired *t*-test analysis of demographic factors and score on individual scale (GSE, HSDI and HPLP-II) found significant differences ($P < 0.05$) between the two groups in age, marital status and income. As seen in Table 3, those with a BMI ≥ 30 were older than those in the BMI 25–29 group and were also more likely to be single, divorced or widowed. Those in the BMI 25–29 group had a higher income overall.

Pearson's correlation of demographic factors and score on individual scale (GSE, HSDI and HPLP-II) revealed several significant relationships. For the overweight (25–29) BMI group, BMI, education and motivation (HSDI score) were found to have an inverse correlation with self-efficacy (GSE score), whereas income and self-efficacy (GSE) had a positive correlation. For the obese group, income and motivation (HSDI) were inversely correlated, whereas education and self-efficacy (GSE), marital status and motivation (HSDI), and education and performance health promotion behaviours (HPLP-II) were positively correlated. Correlation results for the two BMI groups are listed in Tables 4 and 5.

Multiple regression analysis was completed using HPLP score (performance of health promotion behaviours) as the dependent variable, and scores on the GSE (self-efficacy), HSDI (motivation) and the demographic factors (age, race, education, marital status and income) as independent variables. For the BMI 25–29 group, 26.3% of the variance was explained by all independent variables. When examining individual predictors, only the GSE score was found to be significant ($P = 0.001$) and was found to have a significant impact on use of health promotion behaviours ($\beta = 0.436$). Multi-collinearity was not found to be an issue, as tolerance for all variables was > 0.3 , and variance inflation factor (VIF) was < 10 .

For the BMI ≥ 30 group, regression analysis revealed that demographic variables, and score on GSE and HSDI explained 31.3% of the variance of performance of health promotion behaviours. Again, score on the GSE was found to be a significant individual predictor ($P = 0.001$, $\beta = 0.417$), but in the obese group, education was also found to be significant ($P = 0.009$, $\beta = 0.332$). As in the overweight group, self-efficacy was found to have the most influence on use of health promotion behaviours. Regression results are listed in Table 6.

DISCUSSION

The majority of participants in this study were married, Caucasian, of modest income and had completed high

Table 2 Range of individual scales

Scale (Range)	BMI 25–29			BMI ≥ 30		
	Range	Mean (% max score)	SD	Range	Mean (% of max score)	SD
HSDI (17–85)	27–63	52.20 (61)	5.93	40–74	53.64 (63)	6.16
GSE (10–40)	23–40	32.21 (81)	3.99	16–40	31.51 (79)	4.57
HPLP-II (52–208)	98–196	135.09 (65)	19.89	92–176	129.46 (62)	19.75

BMI, body mass index; GSE, General Self-Efficacy Scale; HPLP-II, Health-Promoting Lifestyle Profile-II; HSDI, Health Self-Determinism Index; SD, standard deviation.

Table 3 Paired *t*-test results BMI 25–29/BMI ≥ 30

<i>t</i> -Test pairing (95% CI)	<i>t</i>	<i>P</i>	d.f.
BMI	-3.29	0.000	69
GSE	0.93	0.354	69
HSDI	1.38	0.173	69
HPLP-II	1.73	0.089	69
Age	-2.82	0.006	69
Race	1.74	0.086	69
Education	1.16	0.252	69
Marital status	-2.73	0.008	69
Income	3.26	0.002	69

BMI, body mass index; CI, confidence interval; d.f., degrees of freedom; GSE, General Self-Efficacy Scale; HSDI, Health Self-Determinism Index; HPLP-II, Health-Promoting Lifestyle Profile-II.

school. Obese participants were found to be slightly older, have lower income and were less likely to be married. These findings are consistent with previous studies. The literature indicates that obesity rates decline with increasing education and income but increase with advancing age.⁵ Previous research found that those with higher education generally have lower risk behaviours and practice more preventative health behaviours.³⁹

Analysis of education levels for all participants revealed that almost all had a high school diploma, with the majority having at least some college education. Income levels for all participants had varied distribution, but 55% ($n = 39$) of those who were overweight and 74% ($n = 52$) of those who were obese had an annual income of ≤ \$50 000. Causes of obesity in those with lower income, unmarried status and less education are varied but might

include less access to healthy foods and activities, as well as less understanding of the importance of healthy behaviours.^{40,41} Single women might also be less likely to prepare healthier meals than those with families.⁴¹

Both overweight and obese participants had low levels of intrinsic motivation, indicating they lacked significant internal desire to complete health behaviours. Their levels were just outside of the range of extrinsic motivation, which indicate their decision to perform health behaviours might have some outside (reward-based) foundation. These findings are consistent with previous literature.^{10,15} Current results indicate that this population might benefit from incentives to start and continue health promotion behaviours.

When looking at performance of health promotion behaviours, both the overweight and obese participants were found to exhibit inconsistent health promotion practices. These findings are uniform with earlier literature.^{27,42} Present results indicate that overweight or obese women might benefit from education about the importance of practice of healthy behaviours and also might benefit from a screening to identify potential negative personality traits that might inhibit their practice of health promotion behaviours.

In terms of self-efficacy, both overweight and obese participants scored high.

That is, they decidedly demonstrated the capability and confidence to accomplish the practice of health promotion behaviours. This finding was also consistent with previous literature.^{11,26} This indicates that overweight and obese middle-aged women need support for their ability and confidence while trying to establish and maintain the practice of healthy behaviours.

For the overweight participants, self-efficacy decreased as BMI and education climbed, but it increased as income

Table 4 Individual scale correlation BMI 25–29

Variable	HSDI		GSE		HPLP-II	
	<i>r</i>	<i>P</i>	<i>r</i>	<i>P</i>	<i>r</i>	<i>P</i>
BMI	−0.071	0.560	−0.312	0.009	−0.201	0.095
Age	0.218	0.070	−0.122	0.315	0.111	0.359
Race	−0.044	0.719	−0.129	0.288	−0.024	0.843
Education	−0.287	0.016	0.068	0.573	−0.093	0.443
Marital status	0.067	0.582	−0.007	0.957	−0.150	0.215
Income	0.053	0.665	0.321	0.007	0.168	0.166

BMI, body mass index; GSE, General Self-Efficacy Scale; HPLP-II, Health-Promoting Lifestyle Profile-II; HSDI, Health Self-Determinism Index.

Table 5 Individual scale correlation for BMI ≥ 30

Variable	HSDI		GSE		HPLP-II	
	<i>r</i>	<i>P</i>	<i>r</i>	<i>P</i>	<i>r</i>	<i>P</i>
BMI	0.034	0.780	−0.115	0.343	−0.059	0.627
Age	0.094	0.438	0.065	0.594	0.108	0.373
Race	−0.013	0.917	−0.199	0.098	0.003	0.978
Education	−0.109	0.370	0.266	0.026	0.337	0.004
Marital status	0.324	0.006	0.194	0.107	0.127	0.295
Income	−0.329	0.005	0.110	0.363	0.020	0.872

BMI, body mass index; GSE, General Self-Efficacy Scale; HPLP-II, Health-Promoting Lifestyle Profile-II; HSDI, Health Self-Determinism Index.

escalated. The literature supports the described links between self-efficacy and BMI and income but not with that of increased education.^{11,26,43} Although more studies are needed, this finding does not appear to be consistent with previous results.

Obese participants demonstrated decreased levels of motivation with rising income. Because increased income level often requires high levels of motivation, this finding does not seem to support that found in the literature. A previous study found that low income might impact motivation, but literature supporting the link between high income and low motivation was lacking.⁴⁴ Thus, the negative relationship in this study might have occurred because of low sample size and the uniform income level. Further research needs to be completed to confirm present results.

Unlike the overweight participants, the obese participants had a positive relationship between education and self-efficacy. The positive relationship between increased education level and greater level of self-efficacy has been documented in previous studies.^{11,18,39,45} Current findings indicate that obese women might benefit from targeted education about how to increase their ability and confidence to perform healthy behaviours.

A positive relationship between marital status and motivation was found among obese participants. There is a very limited literature reviewing the relationship between motivation and marital status in obese women. One available study, completed in 1993, found no link between marital status and motivation to change diet or exercise in obese adults.⁴⁶ Current results demonstrate the need for continued investigation into the effect of

Table 6. Regression calculations

	BMI 25–29 ($R^2 = 0.263$)				BMI ≥ 30 ($R^2 = 0.313$)			
	β	<i>P</i>	VIF	Multi-collinearity	β	<i>P</i>	VIF	Multi-collinearity
HSDI	−0.061	0.609	1.17	0.856	−0.120	0.327	1.30	0.769
GSE	0.436	0.001	1.29	0.778	0.417	0.001	1.35	0.744
BMI	−0.175	0.161	1.26	0.796	0.068	0.537	1.08	0.930
Age	0.199	0.124	1.35	0.741	0.203	0.083	1.18	0.846
Race	0.067	0.554	1.05	0.956	0.139	0.227	1.16	0.865
Education	−0.092	0.458	1.26	0.791	0.332	0.009	1.33	0.752
Marital status	−0.199	0.099	1.18	0.850	0.036	0.776	1.38	0.723
Income	−0.063	0.625	1.34	0.745	−0.137	0.284	1.43	0.701

BMI, body mass index; GSE, General Self-Efficacy Scale; HSDI, Health Self-Determinism Index; VIF, Variance inflation factor.

marital status on motivation in overweight or obese middle-aged population.

A positive relationship between education and performance of health promotion behaviours was noted in obese participants. Results are consistent with those reported in previous studies.^{39,47} Current results reflect the importance of educating overweight and obese women about the importance of practicing health promotion behaviours.

In this study, motivation was not found to be a significant predictor of the performance of health promotion behaviours among overweight and obese middle-aged American women. These findings differed from previous studies that found motivation to be the only variable predicting participation in weight loss behaviours.²⁵ Because motivation's importance in weight loss and maintenance has been established in several studies,^{11,14–16} current results must be interpreted with caution. Results might have not supported motivation's importance because of small sample size.

In terms of self-efficacy, this study supported its importance in the performance of health promotion behaviours among overweight and obese middle-aged American women. Self-efficacy was found to be the strongest individual predictor for both the overweight and obese participants and was the only significant predictor of performance of health promotion behaviours for those in the overweight category. Self-efficacy is central to both short-term and long-term success of weight loss and weight loss maintenance.^{11,26} Current results underline the need to develop specific interventions to improve self-efficacy in

this population, particularly when trying to improve their performance of health promotion behaviours.

Though education was found to be significant for the obese participants, it was not as strong a predictor as self-efficacy. The positive effect that education has on performance of health promotion behaviours has been confirmed by previous authors.^{39,47} The results support the need to develop educational interventions that support the performance of health promotion behaviours in the overweight and obese middle-aged American women.

Implications for nursing practice

Based on current population trends, nurses will continue to encounter great numbers of overweight and obese American women. Although additional research is needed to verify current findings, the significance of both self-efficacy and education in performance of health promotion behaviours has been supported. Gaining insight into why overweight or obese women do not practice healthy behaviours can help to understand the epidemic of excess weight in this population. In addition, developing effective methods of supporting self-efficacy in the overweight and obese middle-aged American women is needed. Research focusing on interventions that will improve self-efficacy, as well as studies identifying effective educational techniques to improve the practice of health promotion behaviours in this population, is necessary.

Once effective methods have been investigated, nurses may undertake educational measures that will highlight

the importance performing healthy behaviours. Nurses can also intervene to help overweight or obese women incorporate healthy behaviours into daily life which might result in a lower BMI over time.

Further studies are also needed to support the role of motivation in the practice of health promotion behaviours in the overweight and obese middle-aged American women, and on the effect of demographics on the performance of health promotion behaviours. Once this has been done, nurses can identify successful motivational techniques to improve performance of health promotion behaviours and, ultimately, lower BMI in this population.

Only when all contributing factors surrounding performance of health promotion behaviours in the overweight or obese middle-aged American women are understood can nurses expect success. It will take persistence, patience and time to overcome this epidemic, but it is a vitally important task. With all the risks and detriments that overweight and obesity present, there is so much more than just weight to lose.

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