

# Fitness Intention and Its Relationship With Eating Attitudes: A Cross-Sectional Study of Iranian Female Medical College Students

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## Abstract

**Background:** Fitness is a very important goal among young adults that may lead to eating disorders.

**Objectives:** The aim of this study was to identify the factors influencing fitness intention based on the theory of planned behavior (TPB) and its relationship to eating attitudes.

**Materials and Methods:** A cross-sectional study was conducted among 231 female college students during the winter of 2012. Participants were randomly selected in proportion to their distribution among the different faculties at Hamadan University of Medical Sciences. A structured questionnaire was applied for collecting data and data was analyzed by SPSS version 21 using a T-test, ANOVA, bivariate correlations, and linear regression at a 95% significant level.

**Results:** Nearly 21.6% of the participants had abnormal eating attitudes. The TPB variables accounted for 40% of the variation in fitness intention. Bivariate correlations indicated a positive correlation between fitness intention and eating attitude ( $r = 0.417$ ,  $P < 0.05$ ).

**Conclusions:** Based on our results, it seems that designing and implementing educational programs to reduce positive attitudes and encourage subjective norms toward fitness may be useful for preventing abnormal eating attitudes.

**Keywords:** Attitude, Fitness, Intention, Student

## 1. Background

Nowadays, fitness, i.e. having an ideal weight and appearance, seems to be very important among young adults (1). Fitness is considered an important part of one's identity, which immediately appears in social situations when one is in the presence of others (2). Fitness and beauty are representative of many things, such as social base, especially for women; people use positive features to describe attractive persons, while this is not the case with regard to unappealing persons (3). Conceptual belief of weight and fitness has become one of the major criteria of beauty, especially among females (4). It seems more important to teenagers, who face a set of behavioral changes due to their biological, social, and mental growth, including a tendency towards independence, searching for patterns out of family, and their need to be approved by others (5). Therefore, a young woman may create a sense of displeasure with her body if she is not satisfied with her fitness, which results in nutrition disorder patterns (6-8). It could eventually lead to physical problems (like malnutrition,

obesity, overweight, osteoporosis, and a higher rate of mortality) and mental consequences (like lower self-esteem, depression, and anxiety) (9, 10). An eating disorder is a syndrome where one's perception of food, body weight, and nutrition patterns leads to potentially life-threatening nutritional and medical complications (11). Eating disorders are the most common type of disorders among teenagers after obesity and asthma (4). Studies in the field in other countries have reported the prevalence of eating disorders to be 1% to 10.9% (12); in the Islamic Republic of Iran, it has been reported to be from 6.3% to 9% (13, 14). Eating disorders can start as mild forms of disorders in nutrition attitudes and abnormal attitudes to eating, including abnormal attitudes to current and ideal weight, conception of body and eating behavior, and preoccupations with food, its metabolism in the body, and its excretion (15). But later, they can turn into severe clinical and almost irreversible forms like nervous anorexia and overeating, therefore identifying those at risk in this age group is important (16). The prevalence of abnormal eating attitudes in the Islamic Republic of Iran is 16.7% overall (16),

while among people with normal weight 11.1%, the obese 16.7%, and the very obese 31.8% (17). Considering the importance of the issue, it seems necessary to conduct preventive interventions. Studies have shown that a focus on mediator and predictive behaviors is essential in comprehensive health education and promotion programs (18-22). In this regard, the theory of planned behavior (TPB) is one of the most theories; it has been applied for prediction of behavior. TPB was offered by Icek Ajzen. According to TPB, the primary determinant of behavior is one's intention to engage in a certain type of behavior. In addition, intention is predicted by three constructs: (a) attitudes, (b) subjective norms (SN), and (c) perceived behavioral control (PBC). TPB has been applied in studies to link beliefs and behavior in several fields including health-related behavior (23). Fitness and its relationship with eating disorders among young adults, many studies have mentioned the role of considered factors in TPB (24-27). Furthermore, several studies have shown the usefulness of TPB in predicting health behaviors (28-31).

## 2. Objectives

Regarding the absence of similar studies in developing countries, our TPB-based study focused on exploring factors related to fitness behavior intention associated with eating attitudes among a sample of Iranian female medical college students.

## 3. Materials and Methods

This cross-sectional study was conducted among 231 female college students at Hamadan University of Medical Sciences in the west of Iran, during the winter of 2012. The sample size was calculated at 95%, a significant level according to the results of a pilot study. To enroll the participants and collect data, the following steps were taken. First, all of the faculties of Hamadan University of Medical Sciences were considered as clusters. Next, based on proportional to size among the girls student on each faculty, participants were randomly enrolled into this study on a voluntary basis. Only female college students at Hamadan University of Medical Sciences were eligible to participate in this study. In addition, unwillingness to cooperate with the research team and partially filled out questionnaires were regarded as the exclusion criteria. Then, students in the different schools were randomly selected to participate in the study. Finally, the volunteers were given the self-questionnaire. In addition, out of the population of 231, 227 (98.2%) signed the consent form and voluntarily agreed to participate in the study

### 3.1. Measure

Prior to conducting the main project, a pilot study was carried out. Initially, the relevant questionnaires were administered to 30 female students who were similar to the participants in the main study in order to obtain feedback about the clarity, length, comprehensiveness, and time of completion, as well as the internal reliability of the measures. Moreover, participants were instructed on how to fill self-report questionnaires before gathering information. Participants responded to the standard writing questionnaire.

The questionnaire included three sections comprising 56 questions:

Part one (demographic data) included 10 questions concerning age (year), field of study (medicine, dentistry, pharmacology, rehabilitation, paramedics, health, nursing and midwifery), educational degree (BSc, MD), living in a dormitory (yes, no), marital status (single, married), height (cm), weight (kg), experience with dieting to lose weight (yes, no), taking slimming pills (yes, no), and taking aperients to lose weight (yes, no).

Part two (eating attitude test) evaluated eating attitudes on a 26-item standard scale. Each item was measured on an ordinal 3-point Likert-type scaling. The maximum score was 78 and scores of 20 or higher were defined as abnormal eating attitude. An example of an item is: "I am afraid of being obese or being overweight". This questionnaire was used in several studies in Iran and its reliability and validity was proven (16).

Part three (TPB variables scale); TPB scales were as a standard questionnaire (24-27) and included 20 items under four constructs, including (a) attitude; (b) subjective norms; (c) perceived behavioral control; and (d) behavioral intention. In order to facilitate participants' responses to the items, all items were standardized to a five-point Likert scale, ranging from 1 (never) to 5 (very much). Table 1 shows some examples of the TPB scale items.

### 3.2. Data Analysis

The data was analyzed by SPSS version 21 using appropriate statistical tests including T-test, ANOVA, bivariate correlations, and linear regression at a 95% significant level.

## 4. Results

The age of respondents ranged from 18 to 32 years, while their mean age was 21.1 years (95% CI: 20.8, 21.4). Nearly 9.7% (22/227) of participants were married and 90.3% (205/227) were single. In addition, 66.5% (151/227) of participants reported living in a dormitory.

**Table 1.** Summary and Samples of TPB Variables Questionnaire using the Cronbach's Alpha

Variable	Description	Number of Items	Cronbach's Alpha	Sample Item
<b>Attitude toward fitness behavior</b>	Beliefs about the likely outcomes of the behavior and evaluations of these outcomes (23).	6	0.80	If I maintain good fitness, I would be more noticed by others.
<b>Subjective norm encouraging fitness</b>	Beliefs about the normative expectations of others and motivation to comply with these expectations (23).	8	0.75	How much do your friends pressure you to maintain fitness?
<b>Perceived behavior control to not doing unhealthy fitness behavior</b>	Beliefs about one's ability to perform (or not to perform) the behavior (23).	3	0.85	How much think to obtain fitness, can refuse unhealthy ways (such as taking aperients to lose weight)?
<b>Behavioral intention to engage in fitness behavior</b>	Reflects the motivation to perform the behavior and the likelihood it will be performed in the future (23).	3	0.84	I want to maintain my fitness in any way possible.

Out of the 227 respondents, 49 participants (21.6%) had an abnormal eating attitude. Around 7.5%, 34.8%, and 4.4% of participants reported taking aperients to lose weight, following non-prescribed diets to lose weight, and taking slimming pills, respectively.

Table 2 shows bivariate associations among the predictor variables, which were all statistically significant at either 0.05 level. As can be seen, eating attitude showed the highest correlations with fitness intention ( $r = 0.417$ ), subjective norms ( $r = 0.416$ ), and attitude ( $r = 0.352$ ), respectively; however it showed no meaningful correlation with perceived behavior control.

A hierarchical multiple regression analysis was performed to explain the variation in fitness intention, using the TPB variables of attitudes toward fitness, subjective norms, and perceived behavioral control. As can be seen in Table 3, were statistically significant predictors of the outcome measure. Collectively, TPB variables accounted for 40% of the variation in fitness intention.

Furthermore, a t-test was performed to assess the relationship between the fitness intention and 1) marital status, 2) educational degree, and 3) living in a dormitory; moreover, ANOVA was performed to assess the relationship between fitness intention and age. As can be seen in Table 4, only students who reported living in a dormitory had a significantly higher score for fitness intention.

Finally, the Pearson correlation test showed a positive correlation between heavier weight and fitness intention ( $r = 0.214$ ,  $P = 0.001$ ); however, there was no meaningful relationship between height and fitness behavior intention ( $r = 0.068$ ,  $P = 0.306$ ).

## 5. Discussion

Our findings showed 21.6% of participants had abnormal eating attitudes. Studies conducted in Iran reported

the prevalence of the disorder to range from 6.3% to 24.6% among college students (14, 16, 17, 32). In addition, studies in other countries also reported it as ranging from 5% to 32% among female students (33-39). High rates of abnormal eating attitudes among female college students can be a warning to health policy makers and should be the focus of special attention. In this regard, determined factors related to abnormal eating attitudes might help health planners to design a prevention program.

The findings of the current study suggest that the following TPB variables accounted for 40% of the variation in fitness intention. Furthermore, two variables of the TPB were strong related to the fitness intention among Iranian young female medical college students: 1) attitude toward fitness behavior, and 2) subjective norms encouraging fitness. In addition, perceived behavior control was a weak factor in fitness intention prediction. In this regard, several studies reported the role of attitude and subjective norms in predicting behaviors relative to fitness and body satisfaction (40-45). Considering that nowadays being slim is reported to be a major perceived criterion of attractiveness among females, it seems that females are easily influenced by their peers and friends, due to the fear of being rejected by friendship groups and not being considered attractive, to lose weight by choosing any possible unhealthy behaviors. In this regard, Giles et al. (40) suggested a meaningful relationship between the criteria of being accepted among peers, being in shape, and slimming norms among peers on the one hand, and eating disorders on the other. Thompson et al. (41) also showed that friends could have a large influence on self-conception and cause dissatisfaction with one's body among overweight and obese females. As seen in the results, subjective norms could be considered proper predictors of behavior intentions. In this regard, several studies reported that emulating media images of ideal fitness could result in eating dis-

**Table 2.** Predictor Variables Correlation Matrix

Variables	Scores Range	Mean ( $\pm$ SD)	X1	X2	X3	X4
X1, Attitude	6 - 30	19.86 (4.62)	1			
X2, Subjective Norms	8 - 40	23.65 (5.70)	0.411 <sup>a</sup>	1		
X3, Perceived Behavioral Control	3 - 15	6.34 (2.87)	-0.085	-0.083	1	
X4, Behavior Intention	3 - 15	9.82 (2.58)	0.458 <sup>a</sup>	0.592 <sup>a</sup>	-0.105	1
X5, Eating Attitude	0 - 78	14.01 (8.87)	0.352 <sup>a</sup>	0.416 <sup>a</sup>	0.063	0.417

<sup>a</sup>P < 0.05.**Table 3.** Predictors of Fitness Behavior Intention Among Participants Using Linear Regression Analyses<sup>a</sup>

Variable	B	SE B	B	T	P Value
<b>Step 1</b>					
Attitude	0.143	0.032	0.256	4.517	0.001
Subjective Norm	0.219	0.026	0.483	8.531	0.001
Perceived Behavioral Control	-0.038	0.047	-0.043	-0.822	0.412
<b>Step 2</b>					
Attitude	0.145	0.032	0.258	4.572	0.001
Subjective Norm	0.221	0.026	0.486	8.596	0.001

<sup>a</sup>Adjusted R<sup>2</sup> = 0.40, F = 76.445, P < 0.001.**Table 4.** Association between Demographic Variables and Fitness Behavior Intention

Variable	Mean ( $\pm$ SD)	F/t	P Value
<b>Age</b>		0.331	0.719
18 - 20	9.97 (2.66)		
21 - 24	9.68 (2.45)		
25 - 32	9.72 (2.96)		
<b>Marital Status</b>		0.942	0.347
Marital	10.32 (2.05)		
Single	9.77 (2.63)		
<b>Educational Degree</b>		1.461	0.145
BSc	10.01 (2.50)		
MD	9.48 (2.72)		
<b>Live in Dormitory</b>		4.629	0.001
Yes	10.36 (2.42)		
No	8.75 (2.58)		

orders and dissatisfaction with one's body, and could eventually lead females toward abnormal attitudes to eating (42-44). Eating disorders are considered to be risky behaviors that could be affected by subjective norms related to

fitness among females; therefore, it seems helpful to plan training programs using a variety of methods, such as peer groups, to prevent eating disorders among females.

The results from the present study suggested that there was no meaningful statistical correlation between fitness intention and age; it could be interpreted that inclination to fitness was not associated with certain age groups. However, the present study might not argue strongly in favor of this interpretation, as its participants were college students and were within a relatively narrow age range (18 to 32 with a mean age of 21.1 years).

The study also found that the more obese the females, the higher their fitness intention. As appearance and fitness were primary information resources used in social interactions with others (46, 47), it could be understood that the obese women were more willing to get into shape, which could lead them to unhealthy behaviors. Several studies reported higher rates of abnormal attitude eating disorders among obese people or those at risk of obesity; it seems essential to plan training programs by experts to avoid the consequences of such behaviors among at-risk groups (16, 17).

Although the present study has several strengths, such as being theory-driven and having a high level of participation, the findings reported in our study have certain

limitations. First of all, data collection was based on self-reporting, which is usually prone to overstatement. Second, data collection was limited to a sample of Iranian female medical college students in the west of Iran, and therefore the results cannot be generalized to other populations of college students. We suggest designing similar studies of medical and non-medical college students in order to collect comprehensive information for the purpose of designing interventions to reduce abnormal eating attitudes among female college students.

Our findings showed that positive attitudes toward fitness and encouraging of subjective norms on fitness were significant mediating factors which may improve attitudes toward eating habits and fitness programs among Iranian female medical college students. Thus, it seems that it can be useful to design and implement educational programs that encourage positive attitudes and subjective norms on fitness based on the current findings, and as a result prevent abnormal eating attitudes among women.

## Footnotes

**Author's Contribution:** Farzad Jalilian, Seyyed Nasrollah Hosseini, Shohreh Emdadi, and Mehdi Mirzaei Alavijeh developed the original idea and the protocol of this study. Behzad Karami Matin, and Mari Ataee participated in data analyses. Mehdi Mirzaei Alavijeh and Farzad Jalilian participated in data collection. All authors provided comments and approved the final manuscript.

**Declaration of Interest:** The authors declare that they have no conflict of interest.

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