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Assessing Readiness to Lose Weight among Obese Women Attending the Nutrition Clinic

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ABSTRACT

Background: Assessing individual's readiness to change and targeting the intervention to the level of readiness may improve successful weight loss rates. This study aimed to assess readiness for weight loss in obese women using the trans theoretical model.

Methods: A cross-sectional study was conducted on 90 volunteer apparently healthy obese women, in Ardabil, Iran. Participants completed the translated and validated University of Rhode Island Change Assessment questionnaire in their first visit. Subjects were categorized into one of the stages of change based on the highest of four z-transformed scale scores. The readiness to change score was calculated.

Results: More than half of the participants were in early stages of weight loss and 24.5% were in the action stage. The readiness score in the precontemplation stage was significantly lower than the other stages, but no significant difference was observed among the contemplation, action and maintenance stages. The significant correlation was observed between the stages of change and waist-to-hip ratio ($r=0.33$, $P<0.05$).

Conclusion: Obese women attending the nutrition clinic are in different stages to change for weight loss. Understanding person specific stages of change orientates the dietitian to use the most appropriate counseling strategies. Hence the stages and readiness to change should be considered before implementing any intervention in clinical settings for optimal outcomes.

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Introduction

Obesity as a public health problem is of much importance globally. Overall, 33.0% of the world's adult population in 2005 were overweight or obese.[1] Moreover, if recent trends continue, by 2030 up to 57.8% of the world's adult population could be either overweight or obese.[1] In Iran, as a developing country, the overall prevalence of obesity for adults (>18 years) has been reported 21.5% with 27.3% for women and 13.7% for men.[2] The obesity is associated with significant health risks[3] and body image dissatisfaction.[4] Obese women experience greater weight-related stigma and discrimination.[5] Therefore dieting in females is more common than male counterparts.[6]

In general, previous studies have reported that few individuals, approximately 20%,[7]

are successful in long-term weight loss.[8,9] The individual's readiness to change is increasingly cited as an important variable for predicting long-term success of weight management.[10] Readiness to change refers to the degree which an individual is motivated to change problematic behaviors and implies willingness or behavioral readiness to initiate behavior change.[11] Occasionally, persons who visit a dietitian may seem to be seeking treatment for obesity, but they may not have accepted the necessity for treatment. Some such individuals may have been forced into visiting the dietitian by their family and friends, or based on other factors. Brownell has labeled such individuals as "not ready" for treatment.[12]

The central dimension of the transtheoretical model is the stages of change (SOC) that reflects a person's readiness to change behavior or the engagement in behavior change, at a given point in time.[13] The first two stages represent people who are least ready to change (precontemplation) or are ambivalent about change (contemplation); the third stage represents people who are preparing to change in the next month (preparation); the last two stages represent activity behavior change if the change is recent (action), or sustained behavior change if the change has been maintained for more than 6 months (maintenance).[14] Indeed TTM highlights the need to assess the individual's readiness to change to determine the most appropriate intervention.[11]

The transtheoretical model is a widely supported model for dietary behaviors such as reducing fat and increasing fruit and vegetable intake.[15-17] Recently, there has been growing interest in applying the TTM to weight management in overweight and obese individuals.[18-21] Since it has not exclusively been applied among apparently healthy obese women attending nutrition clinics, the present study was conducted to determine the readiness for weight loss and to investigate the association between the stages of change and background variables among them.

Materials and Methods

Participants & Procedures

In this cross-sectional study, 90 volunteer obese women were recruited from the nutrition clinic in Ardabil City, in the northwest of Iran from September to November 2012. The participants were apparently healthy, non-pregnant, non-lactating and non-menopausal obese women, aged 18-50 years and body mass index ranged from 30 to 40 kg/m^2 from urban areas. They had no participation in weight loss programs including formal or self imposed diet and activity program in the previous 6 months. All had at least a high school education or above.

Written information including the purpose of the study and security of personal information was given to each participant. Written informed consent document was obtained from the subjects. The protocol of the study was approved by the Ethics Committee of Tabriz University of Medical Sciences, Tabriz, Iran.

Measures

The framework used in this study was the University of Rhode Island Change Assessment (URICA) questionnaire. The URICA was developed with the intention that it would be sensible to readiness for change and apply to a broad range of problems.[22] The URICA consists of 32 items representing the four stages of change in the TTM, with 8 items for each of the precontemplation, contemplation, action and maintenance subscales. URICA items are rated from 1 (strongly disagree) to 5 (strongly agree) and subscale sums were averaged across items so that subscale scores are presented as means ranging from 1 to 5. The internal consistency of the URICA is good with coefficient alphas from 0.79 to 0.89 for the four subscales. Construct validity of the URICA has been supported through factor analysis and cluster analyses indicating that the stages are associated with different behavioral profiles.[23] In our study, initially the original University of Rhode Island Change Assessment questionnaire was translated from English

into Persian. Then two bilingual experts who read and spoke both Persian and English languages evaluated the translated URICA for technical issues and wordings. Based on the experts' view, sentences recognized as weakly worded or unclear were rewritten by the researcher. Moreover, the back translation technique was used in order to attain a culturally equivalent instrument. During the processes of back translation, the equivalence of Persian and English version was ensured. The necessary modifications were applied to ensure the understandability of the questionnaire. Later, the pilot study was conducted to test the level of internal consistency reliability of the translated and modified questionnaire. During pilot study, 10 subjects with the same inclusion criteria as for main study completed the modified URICA questionnaire twice, once at baseline and again approximately 10 days later, to establish test-retest reliability. We categorized subjects as falling primarily into one of the four stages. The method used was as follows: Participants' scores on each of the four stages of change scales were standardized by conversion to z scores. Each participant was then assigned to a category corresponding to the highest of her four z-transformed scale scores. The readiness to change score was calculated by subtracting the precontemplation score from the sum of the contemplation, action and maintenance scores.[24] In a pilot study, test–retest reliability was determined by the intraclass correlation coefficient (ICC), which measures the correlation between subscores obtained by the same person on two separate occasions. Test–retest reliability was considered to be good if the ICC was greater than 0.75, moderate if between 0.50 and 0.75, and poor if less than 0.50.[25] The test-retest reliability of the URICA subscales is presented in Table 1. These values were similar to those obtained by other researchers.[23] Coefficient for each subscale higher than 0.7 and ICC greater than 0.6 were considered acceptable. Therefore the results showed a reliability of the questionnaire.

In the main study, subjects completed the URICA and demographic questionnaires before the initiation of diet therapy. The demographic questionnaire included variables such as age, marital status, age at onset of obesity, history of dieting and expected weight loss. Participants' weight and height were measured in light clothing and without shoes using a balanced scale (SECA model 224, SECA Corp., Hamburg, Germany). The circumferences of waist and hip were measured according to the WHO protocol using a non-stretchable tape without imposing any pressure to the body surface. Waist circumference was measured at the midpoint between the lowest rib and the iliac crest. Hip circumference measurement was taken around the widest portion of the buttocks. Abdominal obesity was defined as a waist circumference of >88 cm in women based on criteria for the third report of the national cholesterol education program.[26] The body mass index (BMI) was calculated as weight (kg) divided by squared height (m^2) of each participant. The waist-to-hip ratio (WHR) was calculated by dividing the waist circumference to the hip circumference.

Table1: Summary statistics, internal consistency and test-retest reliability of the URICA subscales

URICA scale	Test Mean± SD	Re-test Mean± SD	ICC (95% CI)	Cronbach's α
Precontemplation	3.71±0.94	3.70±0.62	0.68(0.35-0.89)	0.74
Contemplation	3.98±0.37	4.05±0.44	0.84(0.66-0.95)	0.88
Action	2.21±0.51	1.94±0.48	0.62(0.27-0.87)	0.72
Maintenance	4.34±0.50	4.32±0.51	0.82(0.59-0.91)	0.84

Statistical Analysis

All statistical analyses were performed using the Statistical Package for Social Science (SPSS version 13.0, SPSS Inc., Chicago, IL, USA). Data were checked for normality with the Kolmogorov-Smirnov test. Descriptive statistics, including frequency, means and standard deviations, were computed for each of the precontemplation, contemplation, action and maintenance subscales. Chi-square test and one-way analyses of variance were performed to determine differences in stages of change for categorical and continuous variables respectively. When appropriate, Tukey's Post hoc tests were used to examine pairwise significance differences between stages. The Spearman correlation coefficient was used to assess the association between stages of change and background variables. The significance level for all analyses was set at $P < 0.05$.

Results

Descriptive characteristics of the studied participants are presented in table 2. All subjects had abdominal obesity based on waist circumference. The majority of the women reported a history of one or more dieting (77.8%) and was married (72.2%).

The classification of women, according to the stages of change for weight loss indicated that 30.0%, 23.3%, 24.5% and 22.2% were in the precontemplation, contemplation, action and maintenance stages, respectively. In this study, the mean readiness score was 9.22(SD 1.13). A statistical significant difference was observed between the readiness score and stages of change ($F_{(3,86)}=30.43$, $P<0.001$).

Tukey's Post hoc tests showed that women in the precontemplation stage had a lower readiness score than women in the other stages. No significant difference was observed among the contemplation, action and maintenance stages.

Table 3 shows characteristics of the study population based on the stages of change. Although, the most studied participants experienced different methods for weight loss, no statistical significant difference was observed between women in different stages of change as regard previous attempts to lose weight ($\chi^2_3=0.76$, $P=0.86$).

Besides, no significant differences were observed between the stages of change in relation to age at onset of obesity, body mass index and waist circumference. There was a significant difference in waist to hip ratio between stages of change ($F_{(3,86)}=3.60$, $P<0.05$). Further Tukey's Post hoc tests showed that women in the precontemplation stage had lower waist to hip ratio than women in the other stages.

Table 2: Descriptive characteristics of obese women attending the nutrition clinic (n=90)

Variable	Mean ± SD
Age (yr)	27.71 ± 7.21
Weight (kg)	85.05 ± 11.72
Height (cm)	159.65 ± 6.27
BMI (kg/m^2)	33.25 ± 3.02
Waist circumference (cm)	105.67 ± 10.64
WHR	0.91 ± 0.06
Age at onset of obesity (yr)	18.04 ± 5.79
Expected weight loss (kg)	19.59±8.84

Table 3:Characteristics of obese women attending the nutrition clinic based on the stages of change (n=90)

Variable	Precon-templation n=27	Contemplation n=21	Action n=22	Maintenance n=20	Test of sig-nificance (*P* value)
Readiness score	7.97±0.84**	9.56±0.91	9.62±0.79	10.01±0.54	$F_{(3, 86)}$=30.43* (<0.001)
BMI (kg/m²)	33.35±2.93	33.10±2.45	33.65±3.34	32.82±3.43	$F_{(3, 86)}$=0.28 (0.83)
WHR	0.87±0.06**	0.93±0.06	0.93±0.06	0.91±0.06	$F_{(3, 86)}$=3.60* (<0.05)
Waist circumference(cm)	102.88±10.81	105.98±8.43	108.52±8.94	105.85±13.691	$F_{(3, 86)}$=1.13 (0.34)
Age at onset of obesity(years)	18.63±6.51	17.95±5.51	17.93±6.10	17.39±4.92	$F_{(3, 86)}$=0.16 (0.92)
Previous attempts to lose weight (n (%))					
Yes	22(24.4%)	15(16.6%)	17(18.9%)	16(17.8%)	χ^2_3=0.76 (0.86)
No	5(5.6%)	6(6.7%)	5(5.6%)	4(4.4%)	
Expected weight loss(kg)	19.13±9.42	20.05±7.95	19.31±8.33	20.02±10.02	$F_{(3, 86)}$=0.06 (0.98)

***Analysis of variance tests for difference between means were significant. /** Tukey's Post hoc tests indicated a significant difference between the precontemplation with the contemplation, action and maintenance stages at the *P*<0.05 level.**

Discussion

Determining subject's readiness for weight loss is essential for successful weight loss.[27-29] In this study, more than half of the studied participants were in early stages of change for weight loss in their first visit to the nutrition clinic. In Hawkins et al. study of 142 rural overweight or obese African-American women aged less than 40 years regarding intention for weight loss, 30% and 15% were in precontemplation and contemplation stages respectively.[30] Laforge et al. found similar distributions for losing weight in the United States and Australian women: precontemplation (29-41.4%), contemplation (3.5-18.5%), preparation (1.6-8.3%), action (14.7-24.9%) and maintenance (18.1-41%).[31] The proportions are consistent with Prochaska's assertion that most people who need to change a behavior are in precontemplation and contemplation stages.[32]

The pretreatment measures of stages of change in fifty-five overweight/obese African American women with BMI ranged 26.50-48.13 kg/m^2 and 18 to 55 years attended a 13-week weight loss treatment program, indicated 47% as actors, 31% as contemplative and 22% as maintainers.[33] It seems that a high percentage of actors at pretreatment may be due to using a single question to assign SOC categorization in this study.The distribution of stages of change in obese patients had been differently reported. In Wee's survey, 72% of overweight and obese predominantly Caucasian primary care patients were in advanced stages of weight loss.[34] Another study conducted by Logue and colleagues found that 80% of obese primary care patients were in advanced stages of change for weight loss.[35] The primary care clinic is a medical setting where weight is an issue that physicians and other health care providers often discuss with patients.[36] In the primary care clinic, patients may feel

compelled to report being actively involved in strategies to lose or maintain weight according to the physicians and health care providers' recommendations. As a result, they may endorse being at a more advanced SOC for weight loss.

Stages of change for trying to lose weight among 42 obese patients with heart failure was 4.8%, 9.5%, 14.3% and 71.4% in the precontemplation, contemplation, action and maintenance stages, respectively.[27] In our study, including only apparently healthy obese women may explain the differences between the two studies.

On the other hand, readiness score range from -2 to +14, with higher values indicating greater motivation to change.[37] The readiness score ranged 11-14 is recommended as an action stage in the general population.[38] Based on this recommendation, only 1.2% of the studied subjects were in the action stage. Hence because of diversity of stages and readiness to change in obese persons attending the nutrition clinic, their treatment must be highly individualized.[35]

Besides pretreatment self-motivation, weight loss expectation, previous dieting and body image are important factors in weight loss intervention.[39] The common cycle of failure and renewed effort that is so endemic to weight loss has been described as the "false hope syndrome", in which subjects mistakenly attribute their lack of success to either a low willpower or a poorly-conceived diet.[40] This syndrome suggests that unrealistic expectations are responsible for the cycle of repeated failure and renewed efforts at self-change characterizing many self changers.[41] In this study, the mean expected weight loss was 22.62±8.11% of initial weight but no statistical significant difference was observed between women in different stages of change as the expected weight loss. The studied subjects enrolled in weight loss programs have reported ideal weights requiring between 24% and 38% losses in body weight.[42] This amount weight loss is unrealistic expectations about the consequences of successful weight loss program. They are greater than the guidelines that recommend the loss of 5-10% initial weight for obese persons.[43] Based on the "false-hope syndrome", unrealistic expectations develop an unachievable scale for success.[41] The observed significant positive correlations between stages of change and waist to hip ratio ($r=0.33$, $P<0.05$) was in line with findings of Logue in obese patients.[35] The relationship between SOC and WHR may be useful in targeting weight loss intervention. It seems that women with a higher waist to hip ratio were more likely to be in later stages of change for weight loss. Our findings provide support for WHR's role on physical appearance. Physical appearance is one of the main reasons women seek weight loss treatment.[44,45] WHR is one body "shape" variable that may relate to dissatisfaction and the decision to lose weight. Women predict they will resemble figures with low waist to hip ratio as the result of weight loss diet.[46]

This study had its own strength and limitation. It was the first study to translate the URICA questionnaire to Persian language for the assessment of readiness for weight loss among obese women attending a nutrition clinic in Iran. Small sample size was weaknesses in this study that limits the generalizability of these results. Although self-reported data may be contaminated by self-presentation bias, this study identified the distribution of stages of change for weight loss among obese women attending the nutrition clinic.

Conclusion

The assessment of readiness for weight loss and focus on individualized approaches are essential. By knowing individual's current stage and readiness to change, the dietitian can set realistic goals for weight loss intervention. Further studies are needed using all dimensions of the transtheoretical model rather relying on stages of change with larger sample sizes.

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Competing interests

The authors declare that there is no conflict of interests.

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