Original Article

Psychometric Properties of the Persian Version of Weight Efficacy Lifestyle Questionnaire-Short Form

Abstract

Background: Currently, in low- and middle-income countries, the problem of overweight and obesity is increasing at alarming rate. Along with well-known factors, psychosocial factors such as low self-efficacy highly associated with these problems. Hence, it is necessary to assess individual self-efficacy in weight management consultations using valid instrument. The aim of this study was to determine psychometric properties of the Persian version of the Weight Efficacy Lifestyle Questionnaire-Short Form (WEL-SF). **Methods:** A cross-sectional study carried out on 400 women referring to urban community health centers in Kerman Province, Iran. Data collected using a questionnaire contained demographic data and Persian version of WEL-SF. The reliability of the questionnaire determined using Cronbach's alpha. The construct validity evaluated by exploratory principal component analysis (PCA) and confirmatory factor analysis. Data were analyzed by SPSS version 19 and Lisrel 8.8. **Results:** Internal consistency of WEL-SF was 0.83 using Cronbach's alpha. In the PCA, two factors were extracted with the total amount of 62.6% explained variance. In confirmatory factor analysis, the model had acceptable goodness of fit indices. **Conclusions:** The Persian version of WEL-SF had excellent psychometric properties.

Keywords: *Body weight, reliability, self-efficacy, validity*

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Introduction

Currently, in low- and middle-income countries, the problem of overweight and obesity is increasing at alarming rate.[1,2] According to the World Health Organization Global Noncommunicable Diseases Action Plan 2013–2020, countries are struggling to halt the prevalence of obesity by 2020.[3] The target was considered in the National Action Plan for Prevention and Control of Noncommunicable Diseases and the Related Risk Factors in the Islamic Republic of Iran. One of its strategies is capacity building to provide obesity and overweight prevention services in primary health care.[4]

Previous literatures revealed that psychosocial factors such as low self-efficacy highly associated with obesity and improving self-efficacy has positive effect on weight-loss outcome.[5-9]

The Weight Efficacy Lifestyle Questionnaire-Short Form (WEL-SF) is often used within the primary care setting to identify individuals' self-efficacy in weight-loss treatment interventions.[2] The aims of this study were translation, adaption, and validation of the Persian version of WEL-SF.

Methods

This research was a cross-sectional study carried out between February and March 2017. The statistical population was women referred to urban community health centers in Kerman (Kerman Province, southeastern area of Iran). The study was carried out on 400 women who were selected using multistage sampling method. To determine sample size, confidence interval of 95%, a standard deviation of 16 based on previous studies,[10] and an error rate of 5% considered. Due to the sampling method, a design effect of 2 was also considered. Inclusion criteria were the age of 16–64 years old and informed consent to participate. Exclusion criteria were the questionnaires with more than 10% unanswered questions.

A trained interviewer measured the participants' weight and height by seca scale with stadiometer. Data were collected using a two-section self-administered questionnaire. The first section contained demographic data such as age, marital status, and level of education, household

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income, and employment status. The second part was the Persian version of WEL-SF. The original WEL developed by Clark *et al.* in 1991[11] which "assesses an individual's perceived ability to control his/her weight by resisting eating when confronted with negative emotions, availability of food, physical discomfort, social pressure to eat, and/or positive activities."[3] In 2012, a short version of the original WEL (WEL-SF) was developed by Ames *et al.*[5] WEL-SF is an 8-item self-report tool in which each item scored from 0 (not confident) to 10 (very confident). Therefore, a total score 0–80 should be obtained. Higher score indicates higher self-efficacy to control eating behaviors. Ames *et al.* revealed that WEL-SF has good psychometric properties and is a valid tool for assessing eating self-efficacy in clinical settings.[5,12] The questionnaire was translated into Persian and back translated and adapted culturally. Face and content validity of the questionnaire was confirmed by the panel of experts. Its reliability was determined in a pilot study using Cronbach' Alpha 0.83 (0.94 and 0.70 for the first and second factor, respectively). Exploratory principal component analysis (PCA) conducted on the items using Kaiser criterion and scree plot. Confirmatory factor analysis also employed. Data were analyzed by SPSS software version 19.0 (SPSS Inc., Chicago, IL, USA) and LISREL version 8.80 (Scientific Software International, Chicago, IL, USA). Independent *t*-test, ANOVA, and linear regression also applied.

Our study approved by the Ethics Committee of Kerman University of Medical Sciences (IR. KMU. REC.94.34). The questionnaires were completed anonymously and voluntarily. It took ten minutes to complete the questionnaire. The participants were assured that the data would be used only for research purposes.

Results

A total of four hundred women interviewed of these nine participants were excluded from the study. The mean age of participants was 35.01 ± 11.8 years with minimum and maximum 16 and 63 years, respectively. The majority of participants (91.0%) were married, homemakers (82.6%), had high school diploma (46.2%), and monthly household income <250 USD (67.6%).

The mean and standard deviation of the participants' weight efficacy score was 38.26 ± 16.38 with minimum and maximum 0 and 72 years, respectively. This score was significantly less than 40 ($P = 0.04$). Table 1 shows the participants' weight efficacy score according to demographic data and body mass index (BMI). According to this table, women with higher BMI had less weight efficacy score. In multiple regression, BMI and age significantly predicted the weight efficacy score. Accordingly, with every increase of one unit in BMI, the weight efficacy score (on the average) decreases by 0.53 (95% confidence interval [CI]: $-0.80- -0.25$) units, $P = 0.001$. For increasing every one year to age, the weight efficacy score (on the average)

increases by 0.20 (95% CI: 0.01–0.34) units, $P = 0.03$. The results of the regression indicated that these two predictors explained only 6.00% of the variance ($R^2=0.06$, $F = 3.20$, $P = 0.003$).

Internal consistency of the Persian version of WEL-SF was determined by the Cronbach's alpha 0.83. There was a statistical significant reverse correlation between the participants' WEL-SF score and BMI ($r = 0.2$, $P = 0.001$).

In exploratory factor analysis, Kaiser-Meyer-Olkin Measure (KMO) was 0.8 and Bartlett's test of sphericity

Table 1: The comparison of the participants' weight efficacy score according to demographic data and BMI

Variables	Mean±SD	P
Marital status		
Single	35.95±16.27	0.38
Married	38.50±16.41	
Education level		
Under diploma	37.86±15.75	0.11
High school diploma	39.90±16.35	
Academic	35.37±17.20	
Job status		
Homemakers	38.84±15.82	0.30
Employed	35.27±15.82	
Monthly household income (USD)		
<250	38.78±15.72	0.36
≥250	37.18±17.76	
BMI		
<18.5	45.08±10.25	0.001
18.5-24.9	39.59±16.56	
25-29.9	38.01±16.33	
≥30	32.10±17.17	

BMI=Body mass index, SD=Standard deviation

Table 2: Exploratory factor loading of the Persian version of Weight Efficacy Lifestyle Questionnaire-Short Form

| Number	Items	Factor	Factor loading
1	I can resist eating when I am anxious (or nervous)	1	0.92
2	I can resist eating when I am depressed (or down)	1	0.91
3	I can resist eating when I am angry (or irritable)	1	0.90
4	I can control my eating on the weekends	2	0.85
5	I can resist eating even when I am at a party	2	0.75
6	I can resist eating even when others are pressuring me to eat	2	0.60
7	I can resist eating when I feel physically run down	2	0.53
8	I can resist eating when I am watching TV	2	0.50
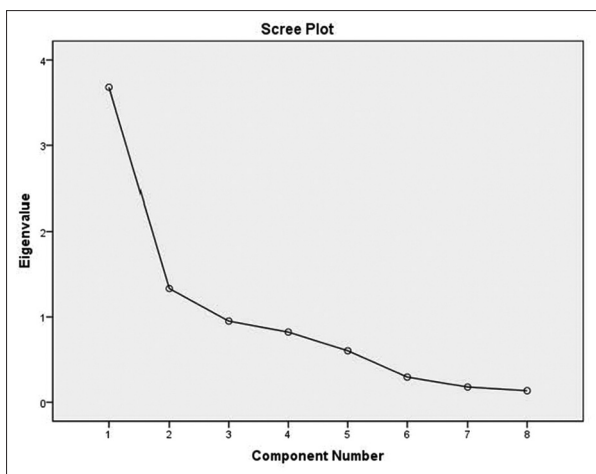
Figure 1: Scree plot in principal component analysis of the Persian version of Weight Efficacy Lifestyle Questionnaire-Short Form

was statistically significant ($P = 0.001$, $\chi^2 = 1506.5$, $df = 28$) implying adequacy of sampling and justifiability of factor analysis. In the PCA, two factors with eigenvalues >1.00 are extracted [Table 2 and Figure 1]. The total amount of variance explained by these factors was 62.6% (46.0% and 16.6% for the first and second factor, respectively). The Cronbach's alpha coefficient was 0.94 for the first factor and 0.70 for the second factor.

In confirmatory factor analysis, two-factor model had acceptable goodness of fit indices ($\chi^2/df = 5.8$, RMSEA = 0.11, SRMR = 0.06, GFI = 0.94, AGFI = 0.87, CFI = 0.82, IFI = 0.82, and NNFI = 0.75) while one-factor model did not provide a reasonable fit to the data ($\chi^2/df = 17$, RMSEA = 0.2, SRMR = 0.13, GFI = 0.82, AGFI = 0.68, CFI = 0.95, IFI = 0.81, and NNFI = 0.92).

Discussion

Our study revealed that the women s' weight efficacy score was lower in those with higher BMI that was compatible with similar studies.[5,8] Therefore, it is necessary individual's efficacy evaluated in weight control interventions using a valid instrument.

According to our results, the Persian version of WEL-SF had sufficient psychometric properties. The instrument had good internal consistency (Cronbach's alpha coefficient = 0.83) that was compatible with similar studies. Ames *et al.* revealed that the original version had excellent internal consistency (Cronbach's alpha coefficient = 0.95).[5] Flølo *et al.* found strong internal consistency (Cronbach's alpha coefficient = 0.92) of Norwegian version of WEL-SF.[10]

In our study, KMO measure and Bartlett's test of sphericity revealed proper correlation of factors, adequacy of sampling, and the justifiability of factor analysis. Principal component analysis confirmed the presence of two factors that are inconsistent with other studies. Ames *et al.* found a one-factor solution of the original version.[5] In Norwegian

version of WEL-SF, the PCA resulted in one factor with eigenvalue >1.[10] The discrepancy between the results of our study with others may be derived from dissimilarity in cultural backgrounds and different samples.

Our results showed in confirmatory factor analysis two-factor solution of the WEL-SF had acceptable goodness of fit indices compared to one-factor solution. Hence, according to the results of our study, the Persian version of WEL-SF can be used as a reliable and valid instrument for assessing individual's self-efficacy in weight control interventions in primary health care. We used cross-sectional method with its potential limitation in time measurement. However, because our main purpose was to determine psychometric properties of the instrument, it seems logical to use this method. Due to time constraints in health systems, providing a simple, short, and valid tool for screening obesity-related behaviors is very helpful. It should be noted that our study population were women referred to health centers. Therefore, it is necessary the instrument to be evaluated in other populations.

Conclusions

The Persian version of WEL-SF had excellent psychometric properties and can used by health-care providers in primary health care centers for assessing individual's self-efficacy.

Conflicts of interest

There are no conflicts of interest.

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