Assessment of eating disorder psychopathology: The psychometric properties of the Persian version of the Eating Disorder Examination Questionnaire Short Form

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Background: Eating disorders are complicated health problems that affect both the body and the mind. Eating disorders pose a serious challenge to mental health services because of their often chronic pathway. The current study was done to determine the psychometric properties of the Eating Disorder Examination Questionnaire Short Form (EDE-QS). **Materials and Methods:** Persian version of the EDE-QS was produced through forward-translation, reconciliation, and back-translation. The design of this research was cross- sectional. A sample of 302 Tehran university's students in 2019–2020 was selected through convenience sampling method and completed a set of questionnaires, including the EDE-QS, Eating Attitude Test (EAT-16), Eating Beliefs Questionnaire-18 (EBQ-18), Self-Esteem Scale (SES), and Self-Compassion Scale (SCS) Short Form. The construct validity of the EDE-QS was assessed using confirmatory factor analysis and divergent and convergent validity. Internal Consistency and test–retest reliability were conducted to evaluate the reliability. Data analysis was conducted using SPSS (version 22) software and LISREL (version 8.8). **Results:** EDE-QS was found to be valid and reliable measures, with good internal consistency and good test–retest reliability among students. Cronbach's alpha coefficient for the whole of scale was 0.85. Intraclass correlation coefficient for the whole of scale was 0.90. In terms of convergent validity, EDE-QS showed a significant positive correlation with self-report measures of EAT-16 and EBQ-18 ($P < 05$). EDE-QS showed a negative correlation with self-compassion and self-esteem, thus demonstrated a good divergent validity ($P < 05$). The results of this study also provide support for the one-factor model of the EDE-QS (root mean square error of approximation = 0.08, Normed Fit Index [NFI] = 0.90, Incremental Fit Index = 0.92, non-NFI = 0.90, and Comparative Fit Index = 0.92). **Conclusion:** The EDE-QS showed good validity and reliability and could be useful in assessing eating disorder psychopathology in a nonclinical population of students. The EDE-QS shows notable promise as a measure for use in eating disorder research and clinical settings.

Key words: Eating, factor analysis, psychological tests, psychometrics, self-report

INTRODUCTION

Eating disorders are complex and multifactorial diseases that are associated with various factors, including biological, developmental, psychological, and socioeconomic factors.[1] Eating disorders are associated with an increased risk of suicide[2] and mortality,[3] have high comorbidities with mental and physical disorders,[4] and impose significant financial costs on the health system.[5] Among all psychiatric diseases, the highest mortality rate is related to eating disorders.[6] Eating disorders have become a major concern in all age, economic, social, and cultural groups due to their increasing prevalence.[7,8] Eating disorders have become a serious challenge for mental health services due to

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the mostly chronic course[9] and psychosocial and medical consequences.[10]

College students are among the groups at high risk of eating disorders and such disorders affect approximately one-third of medical students.[1] These individuals are at high risk of eating disorders due to academic stress, high work pressure, the need for continuous learning, and exposure to illness.[11] High rates of abnormal and inappropriate eating attitudes and disordered eating are observed among college students.[12,13]

People with eating disorders often do not seek medical attention or are likely to seek help later and after a long illness.[14] On average, there is a 4-year delay between the time of onset of eating disorders and the first treatment. Sometimes, this delay can be 10 years or more.[15] Therefore, the need for early detection and identification of at-risk individuals to reduce current injuries and shortening the time between onset and treatment of disorders increase the rate of recovery.[16] Therefore, identifying people at high risk of eating disorders is needed to provide timely treatment and prevention. Psychological tools are also important to measure progress during treatment.[17] The Eating Disorder Examination Questionnaire (EDE-Q) is considered as a gold standard tool in the evaluation of eating psychopathology which is less frustrating for patients.[18] The EDE-Q has four subscales, including dietary restraint, eating concern, weight concern, and shape concern. The EDE-Q assesses the major and important features of anorexia nervosa, bulimia nervosa, and eating disorder not otherwise specified,[19] and taking into consideration the limitations of previous tools such as the lack of a specific time period, the inability to direct attention to frequency, which is the key to eating behaviors as well as the inability to operationalize binge eating.[20] There are, however, a number of problems with the EDE-Q.

Studies examining factor structure in different populations do not support its four-factor structure and have not succeeded in reaching an agreed alternative structure.[21-23] It has raised some questions about whether the existing subscales are appropriate and useful.[17] Individuals in EDE-Q have also consistently scored higher than EDE, raising concerns about the alternate use of these methods.[24] There are also some inconsistencies between EDE-Q and EDE in the measurement of eating disorder characteristics, such as objective binge eating behaviors[24] and laxative use.[25] In addition, EDE-Q is prolonged and measures the changes in symptoms and frequencies in the past 28 days, and it is difficult to identify changes from week to week.[17] Therefore, the need for a short, reliable, cost-effective, and useful tool for assessing the psychopathology of eating disorders is significant.[17] The psychometric properties of this questionnaire have been reviewed and validated in some studies.[17] The EDE- QS showed high internal consistency (Cronbach's α = 0.913) and temporal stability (intraclass correlations coefficient [ICC] = 0.93; $P < 0.001$).[17] The EDE-QS questionnaire is a single factor.[17]

Given that public health management focuses on integrating treatment and prevention to reduce the incidence and prevalence of diseases, the first step in managing health is to have an efficient and effective tool that can accurately identify people who are at high risk for eating disorders.[26] Most of the studies have also been conducted on eating and vulnerability to psychological problems in societies with individualistic cultures where the understanding of eating may be different from other societies. Assessing the psychometric properties of this scale in societies with different cultures can contribute to the increased external validity of the scale.[27] Furthermore, considering the prevalence and consequences of eating disorders, the lack of a reliable and valid scale in Persian, and its importance in clinical research and treatment, the present study aimed to evaluate the psychometric properties of the Persian version of the Questionnaire Short Form (EDE-QS).

MATERIALS AND METHODS

Sample
The design of this research was cross-sectional. The study population consisted of all students of Tehran University in the academic year 2019–2020. The recommended sample for confirmatory factor analysis is approximately 200 samples.[28] The application and use of confirmatory factor analysis are more accurate when the sample size is >250.[29] Accordingly, the study sample consisted of 340 students of the University of Tehran in 2019. The participants were selected conveniently. Confirmatory factor analysis is more accurate when the sample size is over 250.[29] Out of 340 students, 38 were excluded due to incomplete filling of the questionnaire. Inclusion criteria were being a student and consenting to research. Exclusion criteria were severe medical illness and substance abuse. The research was conducted based on the filling out of the questionnaire. After obtaining the consent of the subjects, the questionnaires were self-reported. Research participants were free to opt out at any stage. Questionnaires were presented in different orders to control the effect of order and fatigue. The research does not impose any financial burden on the participants. The present study was approved by the Ethics Committee of Iran University of Medical Sciences (IR.IUMS.REC.1398.1138).

Eating Disorder Examination Questionnaire Short Form
The questionnaire consists of 12 items. It provides an assessment of the psychopathology of eating disorders and associated behaviors and is able to distinguish between individuals with and without eating disorders.

It is a reliable and valid tool for measuring the symptoms of eating disorders. It has shown high internal consistency and good reliability.[17] This questionnaire is a short form of EDEQ questionnaire that has a single-factor structure and measures eating pathology in the last 7 days. Scoring ranges from 0 (no day for questions 1–10 or not at all for questions 11 and 12) to 3 (6–7 days for questions 1–10 or very significantly for questions 11 and 12).

The comparability between the Persian version of EDE-QS and the original EDE-QS has been validated by translation and back-translation procedures. The EDE-QS was first translated into Persian independently by four Ph. D. candidates in clinical psychology. Next, the Persian EDE-QS was back-translated by a bilingual individual, and the back-translated version was reviewed by other bilingual people. The final version of Persian EDE-QS was also compared to the original version by two bilingual clinical psychologists. In the next step, the scale was tested on a sample of 20 individuals and its defects were corrected. After ending stages, the final scale was prepared for performance on the target population.

The face validity and content validity were evaluated using the presentation of the preliminary 12-item scale to six experts in the field of clinical psychology. In the qualitative method of face validity, the experts confirmed that the questions with the dimensions of scale are appropriate and related and the words also reflect the concept of eating psychopathology. In a qualitative approach of content validity, experts affirmed that scale questions cover the concept of eating psychopathology.

Eating Attitude Test-16

Eating Attitude Test (EAT)-16 is a short form of the EAT-26 scale.[30] It contains simple sentences for assessing eating attitudes and behaviors. Items were rated on a scale ranging from 1 (never) to 6 (always), which is specific to the nonclinical population. This questionnaire has appropriate psychometric properties.[31] The Iranian version of this questionnaire has appropriate psychometric properties as well.[32]

The Eating Beliefs Questionnaire-18

The questionnaire is made up of 18 items rated on a scale ranging from 1 (strongly disagree) to 5 (strongly agree). It can be used to measure the existence and severity of binge eating associated with cognition in both clinical and nonclinical samples. Eating Beliefs Questionnaire (EBQ)-18 has appropriate psychometric properties.[33] The Persian version of this questionnaire has also appropriate psychometric properties.[34]

Self-Compassion Scale Short Form

The scale consists of 12 items rated on a Likert scale ranging from 1 (almost never) to 5 (almost always). The short form of the SCS is highly correlated with the long form ($r = 0.97$) and its test–retest reliability is reported to be 0.92.[35] The Iranian version of this scale has favorable psychometric properties.[36]

Self-Esteem Scale

It is a 10-item questionnaire. Items are scored on a scale ranging from 0 (strongly disagree) to 4 (strongly agree). Scoring for SES is done directly and inversely. The scores range from 0 to 40. This scale has desirable psychometric properties.[37,38]

Statistical analysis

Data analysis was conducted using the Statistical Package for the Social Sciences Statistics v. 22.0 (IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp, Chicago, USA, 2013). The data were refined and screened; in addition, missing data were <5% of the data set; thus, listwise deletion with no imputation of data was used in the present analyses. Removing or retaining the outliers was defined by the comparison of the original mean with the 5% trimmed mean. The assumptions of normality were checked, and skewness was not evident in the total scale score in normative group.

Test–retest reliability, internal consistency, convergent validity, and divergent validity of the Persian version of the EDE-QS were calculated. Internal consistency of the scale was calculated using Cronbach's alpha. A Cronbach's alpha within 70–95 represents a desirable internal consistency.[39] Test–retest reliability was measured with ICC. An ICC ≥0.70 identifies acceptable reproducibility of a measure.[40] All the significant values for two ranges were reported, and a level of 0.05 was considered for all the tests.

The construct validity of the EDE-QS was evaluated using structural equation modeling. The five-factor structures of the EDE-QS, as suggested in the original version, were tested with LISREL software (version 8.8). The model parameters were calculated using maximum likelihood. The model's fit was examined using multiple indices, including the Chi-square statistic, the Comparative Fit Index (CFI), Normed Fit Index (NFI), Non-Normed Fit Index (NNFI), root mean square error of approximation (RMSEA), and standardized root mean residual (SRMR). CFI, NFI, and NNFI values >0.90 were judged to indicate acceptable fit, as were RMSEA and SRMR values <0.08.[28,29]

The normal Chi-square should be <3 for an acceptable model.[41] Incremental Fit Index (IFI) ≥0.95 was indicative of good fitting models.[28] The Goodness of Fit Index (GFI) and adjusted GFI, which adjust for the number of parameters, were estimated, ranging from 0 to 1 with the values of 0.90 or greater indicating a good fitting model.[39]

RESULTS

Description of the sample

The present research was conducted on a total of 302 university students, including 169 (56%) male and 133 (44%) female participants with the age range of 18–46. Mean and standard deviation of age of participants, respectively, were 23.83 and 4.57, respectively. The mean and standard deviation of eating disorder psychopathology (EDE-QS) were 11.12 and 4.78, respectively. Through all 302 participants, scores on the EDE-QS total ranged from the minimum score of 0 and highest score of 36. With regard to the floor and ceiling effects, just 0% of participants achieved the highest possible score of 36 and 1.7% of participants achieved the bottommost possible score.

Internal consistency

Internal Consistency was calculated with the total sample of 302 university students ($n = 302$). For the total sample, the Persian version of the EDE-QS demonstrated a good internal consistency (=0.85).

Test–retest reliability

Test–retest reliability was calculated for the EDE-QS while using a sample of 31 students who completed the EDE-QS again after 2 weeks. The results showed good test–retest reliability across the EDE-QS with significant ICC between Time 1 and Time 2 scores (ICC = 0.90, 95% confidence interval = 0.78–0.94).

Convergent and divergent validity of the Eating Disorder Examination Questionnaire Short Form

The convergent validity of the EDE-QS was investigated by examining the relationship between EDE-QS with scores on self-report measures of EBQ-18 and EAT-16. The results demonstrated the expected relationship between the EDE-QS and EBQ-18 and EAT-16. Positive correlations were found between the EDE-QS with these two scales ($P < 0.01$). To evaluate the divergent validity of EDE-QS, we examined the association between the EDE-QS subscales and two theoretically less related constructs, including self-compassion and self-esteem. As expected, we found negative correlations between EDE-QS and these two scales ($P < 0.01$) [Table 1].

Table 1 shows convergent and divergent validity of the EDE-QS.

Table 1: Convergent and divergent validity of the Eating Disorder Examination Questionnaire Short Form

Scale	EAT-16	EBQ-18	Self-compassion	Self-esteem
EDE-QS	0.72**	0.61**	−0.55**	−0.48**

**Correlation is significant at 0.01 level. EDE-QS=Eating Disorder Examination Questionnaire Short Form; EAT-16=Eating Attitudes Test-16; EBQ-18=Eating Beliefs Questionnaire-18; SCS=Self-Compassion Scale; SES=Self-Esteem Scale

Confirmatory factor analysis

Confirmatory factor analysis (CFA) was used to assess the construct validity of EDE-QS and determine the fit of the factor structures obtained by Gideon *et al*. Based on the results of EDE-QS, the one-factor model was tested. Table 2 shows fit indices of a one-factor model. The results show that the one-factor model fitted the data well. The results of the fit indices for this model are summarized in Figure 1. As it can be observed, the three factor models fitted the data well.

DISCUSSION

Eating disorders pose a serious challenge to mental health services because of their often chronic pathway.[16] The EDE-QS is a potentially helpful short screen for eating disorders.[17] This research specifically aimed at standardization and validation of the EDE-QS in a nonclinical population of students.

The results showed that one-factor model had an acceptable fit. These obtained results are also consistent with the examination of the factor structure EDE-QS in a student's population.[17] The normal Chi-square should be lesser than 3 for an appropriate model,[37] but in our study, χ^2/df was >3 (4.72), which indicating a poor fit of the data to the original model. Chi-square is very sensitive to sample size and could overestimate the lack of model fit. This marks to the problem that plausible models might be rejected.[42] Since Chi-square was higher than desirable level, we used indices not sensitive to sample size, and are not affected by sample size, such as CFI, NNFI, SRMR, and RMSEA, not Chi-square tests. Indices that were not dependent on the sample size were acceptable. Test–retest reliability over 2 weeks with a sample of 31 university students showed significant ICC for the EDE-QS. The EBQ-18 and EAT-16 were used to evaluate convergent validities of the EDE-QS. According to the results, it was revealed that EDE-QS had a positive correlation with EBQ-18. These results are in consistent with other studies.[33,43] There is a link between eating pathology and beliefs about binge eating. People with binge eating suffer from a number of problems, including dietary restrictions, over-attention to shape and weight, distorted body image, and over-attention to eating. EDE-QS had a positive correlation with EAT-16. These results are in consistent with other studies.[44] In explaining these results, it can be said that girls and boys who have inappropriate attitudes related to weight control and diet or who engage in strenuous exercise are more prone to eating disorders. The results showed that EDE-QS and subscales had a negative correlation with self-compassion[45,46] and self-esteem.[47,48] In explaining these results, it can be said that self-compassion can be considered as a useful emotion-oriented coping strategy. Thus, negative emotions become a more positive

Table 2: Goodness of fit indices for four-factor model of Eating Disorder Examination Questionnaire Short Form												
Fit indices	χ^2	df	χ^2/df	RMSEA	IFI	CFI	SRMR	NNFI	NFI	GFI	RFI	AGFI
Quantity	255.16	54	4/72	0.08	0.92	0.92	0.06	0.90	0.90	0.88	0.90	0.82

RMSEA=Root mean square error of approximation; IFI=Incremental Fit Index; CFI=Comparative Fit Index; SRMR=Standardized root mean residual; NNFI=Nonnormed Fit Index; NFI=Normed Fit Index; GFI=Goodness of Fit Index; RFI=Relative Fit Index; AGFI=Adjusted Goodness of Fit Index
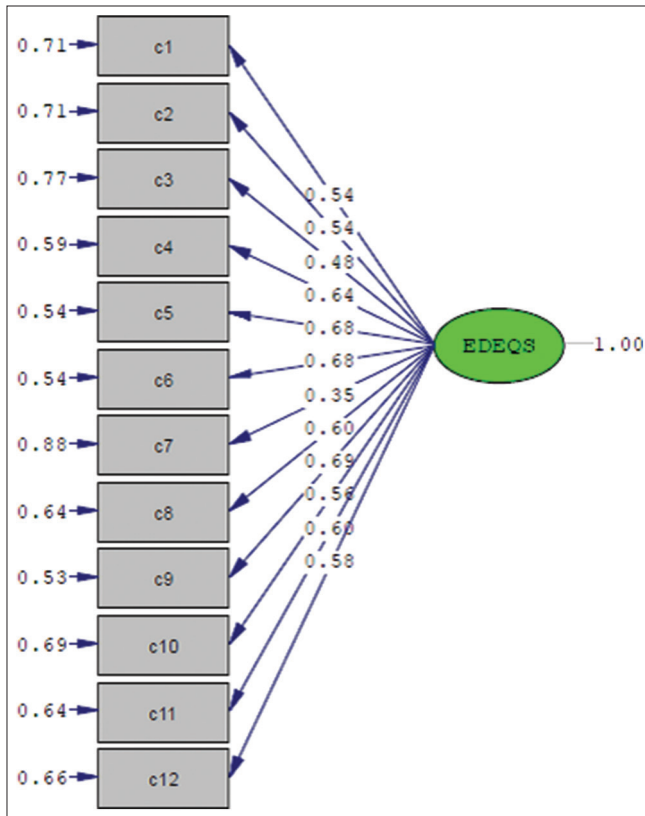

Figure 1: Construct validity of Persian version of Eating Disorder Examination Questionnaire Short Form

feeling and give us the opportunity to more accurately understand the situation and choose effective actions to change ourselves or the situation effectively and appropriately. Self-esteem increases self-volubility and endurance, and those individuals with higher degrees of self-esteem showed lower tendency to behaviors and attitudes of problematic eating. The results of the CFA supported the application of the one-factor structure in a nonclinical population of students. Due to its shortness, it is an efficient tool appropriate for assessing high-risk groups via self-report or as a first step in screening.

The main strength of the study is its contribution to screening in nonclinical college samples. This study has several limitations. First, all the scales were self-report tools. Therefore, correlations may have been inflated by common method variance. Second, eating disorder psychopathology was measured by self-report and not verified by an assessment from a mental health professional. Third, the study sample was limited to participants with certain demographic properties: They were all university students and were often single, young, well educated, and male. This hinders generalization of the results for the general population. The sample is not diverse enough to serve as a normative reference in clinical decision-making. Furthermore, in the present research, short time and small sample size were used for test–retest reliability. Thus, the psychometric properties of the EDE-QS should be assessed in other communities and related sample groups. Subsequent research will be used for longer periods of time and greater sample sizes for test–retest reliability. Future research is required to examine its validity across different populations (e.g., children, clinical sample). In addition, it may expand external validation by using expert ratings in clinical interviews. All considered results support the use of the short version EDE-QS as a screening tool of eating disorders in a nonclinical population of students.

CONCLUSION

The Persian version of EDE-QS showed good and reliable validity to measure eating disorder psychopathology in a nonclinical population of students, as well as the study supplements the literature on the cross-cultural validity of this instrument, therefore providing more support for the generalizability of the relation of eating disorder psychopathology and some previously studied psychopathologies. The results of this paper add to the existing literature on the relevance of the eating disorder psychopathology that was measured by this questionnaire. The EDE-QS shows notable promise as a measure for use in eating research and clinical practice. It is recommended to use the EDE-QS in other studies. The EDE-QS is a valid screening measure in nonclinical samples.

Conflicts of interest
There are no conflicts of interest.

REFERENCES

1. Azzouzi N, Ahid S, Bragazzi NL, Berhili N, Aarab C, Aalouane R, *et al.* Eating disorders among Moroccan medical students:

Cognition and behavior. Psychol Res Behav Manag 2019;12:129-35.

2. Smith AR, Velkoff EA, Ribeiro JD, Franklin J. Are eating disorders and related symptoms risk factors for suicidal thoughts and behaviors? A meta-analysis. Suicide Life Threat Behav 2019;49:221-39.

3. Keshaviah A, Edkins K, Hastings ER, Krishna M, Franko DL, Herzog DB, *et al*. Re-examining premature mortality in anorexia nervosa: A meta-analysis redux. Compr Psychiatry 2014;55:1773-84.

4. Swanson SA, Crow SJ, Le Grange D, Swendsen J, Merikangas KR. Prevalence and correlates of eating disorders in adolescents. Results from the national comorbidity survey replication adolescent supplement. Arch Gen Psychiatry 2011;68:714-23.

5. Erskine HE, Whiteford HA, Pike KM. The global burden of eating disorders. Curr Opin Psychiatry 2016;29:346-53.

6. Arcelus J, Mitchell AJ, Wales J, Nielsen S. Mortality rates in patients with anorexia nervosa and other eating disorders. A meta-analysis of 36 studies. Arch Gen Psychiatry 2011;68:724-31.

7. Sweeting H, Walker L, MacLean A, Patterson C, Räisänen U, Hunt K. Prevalence of eating disorders in males: a review of rates reported in academic research and UK mass media. International journal of men's health 2015;14. 10.3149/jmh.1402.86. https://doi.org/10.3149/jmh.1402.86.

8. Smink FR, van Hoeken D, Hoek HW. Epidemiology of eating disorders: Incidence, prevalence and mortality rates. Curr Psychiatry Rep 2012;14:406-14. doi: 10.1007/s11920-012-0282-y. PMID: 22644309; PMCID: PMC3409365.

9. Steinhausen HC. Outcome of eating disorders. Child Adolesc Psychiatr Clin N Am 2009;18:225-42. doi: 10.1016/j.chc.2008.07.013. PMID: 19014869.

10. Bohn K, Doll HA, Cooper Z, O'Connor M, Palmer RL, Fairburn CG. The measurement of impairment due to eating disorder psychopathology. Behav Res Ther 2008;46:1105-10. doi: 10.1016/j.brat.2008.06.012. Epub 2008 Jul 2. PMID: 18710699; PMCID: PMC2764385.

11. Pacheco JP, Giacomin HT, Tam WW, Ribeiro TB, Arab C, Bezerra IM, *et al*. Mental health problems among medical students in Brazil: A systematic review and meta-analysis. Braz J Psychiatry 2017;39:369-78.

12. Lazarevich I, Irigoyen-Camacho ME, Velázquez-Alva Mdel C. Obesity, eating behaviour and mental health among university students in Mexico City. Nutr Hosp 2013;28:1892-9.

13. Yu Z, Tan M. Disordered eating behaviors and food addiction among nutrition major college students. Nutrients 2016;8:673.

14. Evans EJ, Hay PJ, Mond J, Paxton SJ, Quirk F, Rodgers B, *et al*. Barriers to help-seeking in young women with eating disorders: A qualitative exploration in a longitudinal community survey. Eat Disord 2011;19:270-85.

15. Identifying People at Risk. Available from: http://www.nedc.com.au/identifyin g-people-at-risk. [Last accessed on 2018 Apr 04].

16. Richter F, Strauss B, Braehler E, Altmann U, Berger U. Psychometric properties of a short version of the Eating Attitudes Test (EAT-8) in a German representative sample. Eat Behav 2016;21:198-204.

17. Gideon N, Hawkes N, Mond J, Saunders R, Tchanturia K, Serpell L. Development and psychometric validation of the EDE-QS, a 12 item short form of the eating disorder examination questionnaire (EDE-Q). PLoS One 2016;11:e0152744.

18. Berg KC, Peterson CB, Frazier P, Crow SJ. Psychometric evaluation of the eating disorder examination and eating disorder examination-questionnaire: A systematic review of the literature. Int J Eat Disord 2012;45:428-38.

19. Allen KL, Byrne SM, Lampard A, Watson H, Fursland A.Confirmatory factor analysis of the eating disorder examination-questionnaire (EDE-Q). Eat Behav 2011;12:143-51.

20. Palmer R. Binge eating: Nature, assessment & treatment. Edited by CG Fairburn and GT Wilson. Guilford Press: New York. 1993. p. 419.

21. Allen KL, Byrne SM, Lampard A, Watson H, Fursland A. Confirmatory factor analysis of the eating disorder examination-questionnaire (EDE-Q). Eating Behaviors. 2011 Apr 1;12(2):143-51.

22. Hrabosky JI, White MA, Masheb RM, Rothschild BS, Burke-Martindale CH, Grilo CM. Psychometric evaluation of the eating disorder examination-questionnaire for bariatric surgery candidates. Obesity 2008;16:763-9.

23. White HJ, Haycraft E, Goodwin H, Meyer C. Eating disorder examination questionnaire: Factor structure for adolescent girls and boys. Int J Eat Disord 2014;47:99-104.

24. Berg KC, Peterson CB, Frazier P, Crow SJ. Convergence of scores on the interview and questionnaire versions of the eating disorder examination: A meta-analytic review. Psychol Assess 2011;23:714-24.

25. Fairburn CG, Beglin SJ. Assessment of eating disorders: interview or self-report questionnaire? Int J Eat Disord 1994;16:363-70.

26. Austin SB. Accelerating progress in eating disorders prevention: A call for policy translation research and training. Eat Disord 2016;24:6-19.

27. Mohammadian Y, Mahaki B, Lavasani FF, Dehghani M, Vahid MA. The psychometric properties of the Persian version of interpersonal sensitivity measure. J Res Med Sci 2017;22:10.

28. Kline RB. Principles and Practice of Structural Equation Modeling. 4th ed. New York: Guilford Publications; 2015.

29. Hu LT, Bentler PM. Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. Structural equation modeling: a multidisciplinary journal.1999;6:1-55.

30. Garner DM, Garfinkel PE. The eating attitudes test: An index of the symptoms of anorexia nervosa. Psychol Med 1979;9:273-9.

31. McLaughlin E. The EAT 16: Validation of a Shortened Form of the Eating Attitudes Test; 2014. Available from: https://digitalrepository.unm.edu/psy_etds/94.

32. Mousavi Asl E, Mahaki B, Bardezard A, Mohammadian Y. Eating disorders screening tools: The psychometric properties of the Persian version of eating attitude test. Int J Prev Med 2020. [In press].

33. Burton AL, Mitchison D, Hay P, Donnelly B, Thornton C, Russell J, *et al*. Beliefs about binge eating: psychometric properties of the eating beliefs questionnaire (EBQ-18) in eating disorder, obese, and community samples. Nutrients 2018;10:1306.

34. Mousavi Asl E, Mahaki B, Gharraee B, Asgharnejad Farid AA, Shahverdi-Shahraki A. Beliefs about binge eating: The psychometric properties of the Persian version of the eating beliefs questionnaire. J Res Med Sci 2020;25:73.

35. Raes F, Pommier E, Neff KD, Van Gucht D. Construction and factorial validation of a short form of the self-compassion scale. Clin Psychol Psychother 2011;18:250-5.

36. Khanjani S, Foroughi AA, Sadghi K, Bahrainian SA. Psychometric properties of Iranian version of self-compassionscale (short form) Pajoohande 2016;21:282-9.

37. Rosenberg M. Society and the adolescent self-image. Princeton, NJ. Princeton university press; 2015.

38. Moshki M, Ashtarian H. Perceived health locus of control, self-esteem, and its relations to psychological well-being status in Iranian students. Iran J Public Health 2010;39:70-7.

39. Browne MW, Cudeck R. Alternative ways of assessing model fit. Sociol Methods Res 1992;21:230-58.

40. Terwee CB, Bot SD, de Boer MR, van der Windt DA, Knol DL, Dekker J, *et al*. Quality criteria were proposed for measurement properties of health status questionnaires. J Clin Epidemiol 2007;60:34-42.

41. Mulaik SA, James LR, Van Alstine J, Bennett N, Lind S, Stilwell CD. Evaluation of goodness-of-fit indices for structural equation models. Psychol Bull 1989;105:430-45.

42. Chermelleh-Engel K, Moosbrugger H, Müller H. Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. Methods Psychol Res Online 2003;8:23-74.

43. Burton AL, Abbott MJ. The revised short-form of the eating beliefs questionnaire: Measuring positive, negative, and permissive beliefs about binge eating. J Eat Disord 2018;6:37.

44. Jáuregui Lobera I, Bolaños-Ríos P, Valero-Blanco E, Ortega-de-la-Torre Á. Eating attitudes, body image and risk for eating disorders in a group of Spanish dancers. Nutr Hosp 2016;33:588.

45. Kelly AC, Tasca GA. Within-persons predictors of change during eating disorders treatment: An examination of self-compassion, self-criticism, shame, and eating disorder symptoms. Int J Eat Disord 2016;49:716-22.

46. Fresnics AA, Wang SB, Borders A. The unique associations between self-compassion and eating disorder psychopathology and the mediating role of rumination. Psychiatry Res 2019;274:91-7.

47. Iannaccone M, D'Olimpio F, Cella S, Cotrufo P. Self-esteem, body shame and eating disorder risk in obese and normal weight adolescents: A mediation model. Eat Behav 2016;21:80-3.

48. Smink FR, van Hoeken D, Dijkstra JK, Deen M, Oldehinkel AJ, Hoek HW. Self-esteem and peer-perceived social status in early adolescence and prediction of eating pathology in young adulthood. Int J Eat Disord 2018;51:852-62.