Cultural adaptation and validation of SATAQ-4 *"Sociocultural Attitudes towards appearance Questionnaire-4"* for Peruvian population

Carolina Zevallos-Delzo[1], Jorge L. Maguiña[2], Manuel Catacora[3], Percy Mayta-Tristán[4]

Introduction: Eating disorders (anorexia and bulimia) have been increasing worldwide and nationally. Prior to the development of this disorder, adolescents' present body dissatisfaction, whose study through the ¨Tripartite Influence Model¨ gives us three main pressures: Pressure from parents, media and peers. Factors that are studied through SATAQ-4. We conduct a study to validate the Peruvian version of SATAQ-4 "Sociocultural Attitudes Toward Appearance Questionnaire-4". Methods: A cross-sectional study was carried out in 2015. It was started by culturally adapting the test. Subsequently, validity was determined through the validity of the construct, and reliability through internal consistency assessment and intra-observer reliability (test-retest). Results: We obtained a culturally adapted instrument which presented a mean greater than 3 in the Delphi method, an intraclass correlation equal to 0.83 and an internal consistency (Cronbach alpha) of 0.90. The confirmatory factor analysis supported the original five-factor structure and the convergent validity analysis (r Pearson) when compared with BSQ a correlation of 0.70. Conclusions: The instrument adequately measures the construct for which it was created and can be applied in the Peruvian university environment.

Key words: Validation, Eating disorder, Peru

Introduction

According to the World Health Organization (WHO), in the last 50 years there has been an increase in eating disorders (ACT), with anorexia nervosa (0.9 to 4.1%) and bulimia (0.5 to 1%) being the disorders that most affect the young female population[1]. The appearance of these disorders occur more frequently between adolescence and early adulthood, and represent a health risk, given their progressive clinical course and their tendency to become chronic (25-33% of patients), which can lead to death[1, 2]. In Peru, according to the registry of the Ministry of Health (MINSA), the number of new cases of eating disorders multiplied by eight between 1998 and 2008[3] and, in a study carried out by the Pontificia Universidad Católica del Perú (PUCP) in school-age adolescents from Metropolitan Lima, 16.4% of them were at risk of developing eating disorders[4].

In addition to the change in weight perception,

The authors declares that there was no conflict of interest.

Accepted: 19/03/2020
Received: 10/12/2019

1 Escuela de Medicina, Universidad Peruana de Ciencias Aplicadas, Lima, Perú.
2 Tecnólogo Médico. Escuela de Medicina, Universidad Científica del Sur, Lima, Perú.
3 Departamento de Psiquiatría, Hospital Nacional Hermilio Valdizan, Lima, Perú.
4 Dirección de Investigación y Desarrollo, Universidad Científica del Sur, Lima, Perú

abnormal eating behavior and other comorbidities and/or disorders (obesity, substance abuse, depression, and anxiety), patients with eating disorders suffer a disturbance in the perception of body shape[5] and a negative visualization of this mental representation leads to the development of body dissatisfaction[6, 7]. However, it has been observed that not only patients with eating disorders present an altered body perception, but also young women who do not have this medical condition[8]. Body dissatisfaction is influenced by a culture of thinness, where people who are thinner are seen as people with greater success, beauty, youth, and attractiveness compared to their peers[9,10]. A recent study showed a positive relationship between women who were overweight and obese and a greater dissatisfaction in body image and a negative perception of it[11]. Contrary to what was believed, this phenomenon occurs in a similar way in different societies. In a study carried out in Brazil and Argentina, where the body dissatisfaction of Latina university students was compared to that of American university students, it was found that these three groups of young people presented similarities in their body appreciation: they had a negative self-esteem and pursued an ideal of thinness[12]

The sociocultural factors that influence the development of body dissatisfaction are diverse, but it was found that those that influenced in a deeper and more rooted way were those explained through the "Tripartite Influence Model," which is the model that has the most empirical support and is based on sociocultural forms that would explain body dissatisfaction and eating disorders[13]. This model shows three main pressures on young people, which are exerted by the media, parents, and peers[14,15]. Firstly, the constant exposure of young women to the mass media (magazines, internet, television) that promote Western values of beauty and an ideal of unattainable thinness leads young women to feel their bodies are not beautiful[16]. Secondly, feedback given by the family group (parents, siblings) within the home about the body, diet and weight of adolescent girls and young women influence how they internalize their body ideal[17]. Lastly, peers influence young women through comments about their weight, discussions about the best diet, and discussions about their preconceived ideal of beauty[18].

Starting in 1994, the first version of the Sociocultural Attitudes Toward Appearance Questionnaire (SATAQ-1) began to study the various factors that influence body image dissatisfaction in adolescent and young women[19, 20]. Attempting to improve the results obtained, new versions were made; version 3 of the Sociocultural Attitudes Toward Appearance Questionnaire (SATAQ-3) effectively evaluated the influence of the media on the ideal of thinness, but not the other factors that influence body dissatisfaction[21, 22]. Thus, a new version, Sociocultural Attitudes Toward Appearance Questionnaire 4 (SATAQ-4)[23], where the three pressures mentioned above (peer pressure, parental pressure, and media pressure) are evaluated based on a better study of body dissatisfaction in young women, was created and validated in Spanish by Llorente et al., in a Spanish university[24]

In Peru, there are no publications on this subject, and the studies in which it is mentioned are scarce[25, 26, 27]. A study carried out at a Peruvian university using the Body Shape Questionnaire (BSQ), showed a positive association between BMI and body dissatisfaction, with a percentage of women who had high body dissatisfaction and similar to that of other countries[25]. However, the BSQ only evaluates body dissatisfaction, so it is important to have an instrument that accurately evaluates the sociocultural pressures that influence its development. Therefore, it is necessary to assess the Peruvian version of the SATAQ-4, which will allows us to conduct further studies on the subject.

Methods

We conducted a cross-sectional validation study from August to December 2015 at the Universidad Peruana de Ciencias Aplicadas (UPC) (UPC) in Lima, Peru. It was divided into the following phases: (a) cultural adaptation, (b) intra-observer reliability, (c) internal consistency and construct validity, and (d) convergent validity.

(a) Cultural Adaptation

The translated and validated version of SATAQ-4[22] for the Spanish population was used to translate the instrument culturally, and seven

experts (two linguists, two bio-statisticians, two psychologists, and one psychiatrist) were employed, who used the Escobar-Perez instrument for the Delphi method[30]. The category of cultural adaptation was added to this instrument, giving a total of five categories to be evaluated: Sufficiency, clarity, coherence, relevance, and cultural adaptation. The items were evaluated with a score from one to four. Observations were collected and the method was completed when all the experts scored each of the items of the final version delivered with 3 or more.

(b) Intra-observer reliability

With the culturally adapted instrument, intra-observer reliability was then evaluated, and the instrument was applied twice seven days apart[28] to a population of thirty university students of legal age who agreed to participate freely, did not have a history of eating disorders, and had signed an informed consent form. With this group, the stability of the entire instrument and by domain was evaluated through the intraclass correlation test (ICC).

(c) Internal Consistency and (d) Construct Validity

After evaluating intra-observer reliability, internal consistency and construct validity were evaluated next, applying the instrument to older UPC university students who did not have a history of eating disorder, signed the informed consent form, and did not participate in the intra-observer reliability assessment.

The number of items on the scale and the relationship of people included per items were taken into consideration. It was estimated that 20 subjects per item would have a better classification of the items in each domain[29]. Since the scale has 22 items, it was calculated that 440 students with complete data were necessary. An error rate of 10% was estimated; therefore the number of students surveyed through a non-probability sample was 484. To evaluate both global and domain internal validity, Cronbach's alpha was calculated. For construct validity, we performed a confirmatory factor analysis (CFA).

(e) Convergent validity

Convergent validity was evaluated in 484 surveyed students, to whom the Body Shape Questionnaire (BSQ) was applied together with the new version of SATAQ-4 through Pearson's r coefficient.

Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4)

The SATAQ-4 has 22 items that use a Likert-type scale from 1 to 5, ranging from "completely disagree" to "completely agree". These items are divided into five domains or subscales: Two are for internalization that have 5 items each. Within the internalization of the ideal of thinness, the desire to have a body with little body fat is measured. Within the internalization of the athletic ideal, the desire to have a muscular and toned body is measured. Likewise, the three are pressure subscales have 4 items each, which assess the pressure exerted by family, friends, and the media to have a slim and toned body in each of the subscales.

The Spanish version of SATAQ-4 shows a high internal consistency in the population where it was applied (university women), having a Cronbach's alpha for the global scale of 0.93, and a Cronbach's alpha between 0.88 and 0.97 for each of the domains[24].

Body Shape Questionnaire (BSQ)

The BSQ is an instrument that measures the degree of body dissatisfaction[31]. It was created and initially validated in English and validated for the Peruvian population in 2006[32]. It consists of 34 direct questions with six options, ranging from "never" to "always."

Other variables

The participants self-reported their age, weight, and height, which allowed the calculation of their body mass index (BMI).

Ethical Aspects

The study was reviewed and approved by the Ethics Committee of Universidad Peruana de Ciencias Aplicadas (CEI/399-10-14); all the participants signed the written informed consent after the study objectives were explained to them. All the surveys were anonymous except in the group that participated in the test-retest.

Statistical Analysis

The data obtained from the surveys was en-

tered by double typing in Microsoft Excel ® (Microsoft Corp, USA), and the statistical program STATA v14 ® (Stata Corp, TXT, USA) was used. For the analysis of the results of the Delphi method, the medians of the expert judgments for each item were calculated.

For the evaluation of intra-observer reliability (test-retest), the intraclass correlation coefficient (ICC) was calculated globally and by domain; the ICC was interpreted as follows 0 – 0.2 poor correlation; 0.3 – 0.4 good correlation; 0.5 – 0.6 moderate correlation; 0.7 – 0.8 strong correlation; y >0.8 almost perfect correlation.[33] Also, the Pearson correlation test was used both globally, by domain, and by item to assess stability, expecting to obtain positive results close to 1. On the other hand, Cronbach's alpha was calculated globally and by domain, considering values greater than 0.70 that were adequate to ensure the internal consistency of the test[28].

For the validity of the construct, we used structural equation models (SEM), and a confirmatory factor analysis was performed using the RMSEA (Root mean squared error of approximation), the Comparative Fit Index (CIF), and the Index of Tucker-Lewis (TLI) to evaluate the fit of the model.

Finally, to assess the convergent validity, the Pearson correlation between the global and domain SATAQ-4 with the BSQ was used. $p<0.05$ was considered significant.

Results

Cultural adaptation

From the first round of the Delphi, the term "seem" was changed to "shine" and the term "media" to "communication media." Although the terms "lean" and "body fat level" were initially suggested to be changed, since no better terms were found and their understanding was verified, the experts agreed to retain them. The modified instrument was evaluated in a second Delphi round, and a score equal to or greater than three was found in each of the five aspects evaluated, giving a median greater than 3, with the acceptance of the instrument as culturally adapted by each of the experts. The final wording of the items is shown in Table 1.

Intra-observer reliability

With the culturally adapted instrument, two UPC classrooms were surveyed (20 students per classroom); from those who attended on the two days of the survey, 30 students were selected. The instrument was given to solve on two occasions, with a difference of 7 days between each resolution. The mean age was 19.7 with a standard deviation (SD) of 2.2, of which 23.3% were overweight.

The scores obtained at both the item and domain levels in the test-retest evaluated with the Pearson correlation test were positive and close to 1 (see Table 1 and 2). The overall intraclass correlation of the instrument was 0.83, and domains ranged from 0.74 to 0.89 (Table 2).).

Construct validity

After checking the stability of the instrument, 531 university students were surveyed, of which 32 surveys were eliminated for presenting positive antecedents for eating disorders and 15 for not completing the survey. The mean age of the surveyed students was 19.7 (SD: 2.4), and the mean weight was 58.4 (SD: 8.5); of which 25% were overweight.

The average SATAQ-4 score was 61.2. The average scores for each of the dimensions, thinness ideal, athletic ideal, family pressure, friend pressure, and media pressure were 16.6, 20.8, 10.4, 9.2, and 12.1, respectively.

The SATAQ-4 with its 5 dimensions (thin, muscular, family, friends and media) raised by Schaefer et al., are shown in Figure 1. Confirmatory factor analysis revealed that the model presented showed an adequate fit, Likelihood ratio Chi2 = 936.214, $p <0.001$; Comparative Fit Index (CFI) = 0.898; Tucker-Lewis Index (TLI) = 0.882; Root mean squared error of approximation (RMSEA) = 0.087 IC95% (0.082 – 0.093). (Table 1). The adequacy of the sample for the individual elements ranged from 0.52 to 0.91, suggesting that the data is adequate for factor analysis. Likewise, the independent confirmatory factor analysis of the instrument showed a division into five factors, as did the versions of the instrument validated in the United States and Spain[3.7].

Internal consistency

Cronbach's alpha was used to assess the internal

Table 1. Final items, factor load values and dimension to which they belong for said load, mean of each item, results of Pearson's correlation test-retest analysis (n = 484)

Dimension/Items	Dimension	Load	Media	r Pearson*
Internalization of the thin ideal				
p1. I want my body to look very lean (with very little fat)	1	0.76	3.66	0.51
p2. I think a lot about having very little body fat	1	0.76	3.10	0.70
p3. I want my body to look very thin.	1	0.77	3.16	0.66
p4. I want my body to appear low in fat	1	0.75	3.54	0.68
p5. I think a lot about looking thin.	1	0.65	3.19	0.59
Internalization of the athletic ideal				
p6. It is important for me to appear athletic.	2	0.52	2.94	0.56
p7. I spend a lot of time doing things to look more athletic.	2	0.80	2.55	0.63
p8. I think a lot about looking athletic.	2	0.69	2.87	0.60
p9. I spend a lot of time doing things to look more muscular.	2	0.82	2.39	0.62
p10. I think a lot about looking muscular	2	0.78	2.13	0.55
Parental pressure *Indication: Answer the following questions with relevant information about your family (include parents, brothers, sisters, relatives)*				
p11. I feel pressure from my family members to appear thinner	3	0.76	2.43	0.64
p12. I feel pressure from my family members to improve my appearance	3	0.77	2.50	0.51
p13. My family members encourage me to reduce my body fat level	3	0.85	2.57	0.53
p14. My family members encourage me to get in better shape	3	0.80	2.88	0.48
Peer pressure *Indication: Answer the following questions with relevant information about your friends (include close friends, classmates, and other social contacts)*				
p15. My peers encourage me to lose weight	4	0.75	2.43	0.61
p16. I feel pressure from my peers to improve my appearance	4	0.86	2.24	0.71
p17. I feel pressure from my peers to appear in better shape	4	0.88	2.30	0.66
p18. I feel pressure from my peers to reduce my level of body fat	4	0.83	2.28	0.41
Media pressure *Indication: Answer the following questions with relevant data about the media (including television, magazines, the internet, movies and commercials)*				
p19. I feel pressure from the media to look better	5	0.91	3.06	0.43
p20. I feel pressure from the media to look slimmer	5	0.90	2.98	0.48
p21. I feel pressure from the media to improve my appearance	5	0.90	3.08	0.63
p22. I feel pressure from the media to reduce my body fat level	5	0.87	2.94	0.43

Note: SATAQ-4, Sociocultural Attitudes Towards Appearance Questionnaire.

*test retest (n=30)

Table 2. Reliability, internal consistency and convergent validity of the Peruvian version of SATAQ-4 (Sociocultural Attitudes Towards Appearance Questionnaire-4)

Scales	Test retest	Intraclass correlation	Cronbach's alpha		BSQ
	r Pearson		Peruvian	Spanish*	r Pearson
SATAQ-4	0.72	0.83	0.90	0.93	0.70
Internalization: Thinness	0.81	0.89	0.84	0.90	0.56
Internalization: Muscular	0.65	0.76	0.82	0.89	0.35
Pressure: Familiar	0.61	0.75	0.87	0.88	0.49
Pressure: Peers	0.34	0.83	0.92	0.94	0.51
Pressure: Media	0.47	0.74	0.95	0.97	0.51

Note: BSQ, Body Shape Questionnaire;
* Spanish version validated by Llorente (24)

consistency of the instrument. The global result was 0.90. For the subscales, it was good. It varied between 0.82 and 0.95 (Table 2). These values are similar to the validation carried out in Spain, which indicates that the instrument has good internal consistency.

Convergent validity

The correlation between SATAQ-4 and BSQ was high, with a Pearson's r of 0.70. When evaluating each subscale, the correlation varied between 0.49 and 0.56 (Table 2).

Discussion

This work presents the validation and cultural adaptation of the SATAQ-4 for the female Peruvian university population. Basing its importance on studies previously conducted in other countries, where SATAQ was applied in its various versions and where the risk posed by the various sociocultural factors in the development of eating disorders and body dissatisfaction was verified[34].

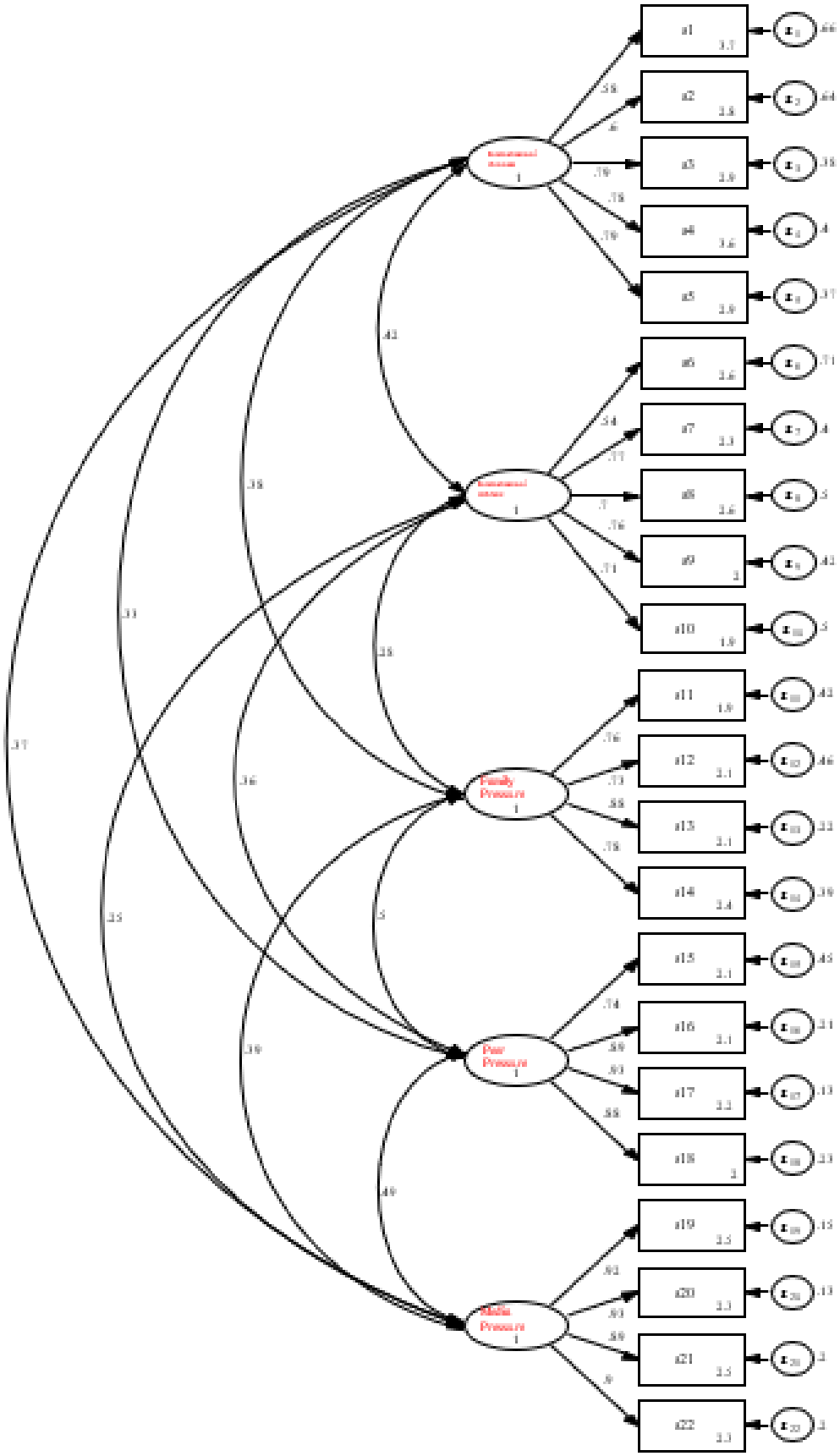
The reliability and validity of the SATAQ-4 presented an optimal psychometric property, the values of the sample adequacy, and the Cronbach's alpha for the general scale and the five subscales were good. The pilot sample adequacy showed values > 0.53 that are lower than those obtained in Spain by Llorente et al. (> 0.70), but similar (> 0.41) to the original study carried out by Schafer et al.,[9]. On the other hand, the Cronbach's alpha of the sample obtained results superior to 0.69, values similar to those obtained by Llorente et al.,[23] and Schafer et al.[22], in their respective studies. Therefore, it can be concluded that the construct validity and the internal consistency of the instrument are adequate.

The pattern of eigenvalues resulted in a five-factor model; this result was similar to that obtained in studies conducted in other countries[23, 24, 34]. Furthermore, the confirmatory factor analysis for the subscales showed an adequate fit to the five-factor structure for all items similar to the Spanish validation[24] and the two validations performed by Schafer et al.,[23, 34].

We use the BSQ for the evaluation of convergent validity. The majority of the subscales showed a good correlation with the BSQ. However, the muscular internalization subscale showed a low correlation, as reported in the Spanish version of SATAQ-4[24].

Our study has some limitations; the instrument was self-applied, so there may be an information bias in the female population. Nevertheless, the study conducted by Schafer et al.[34], who worked with the male and female population, reported similar results for both popu-

Figure 1. Five-factor model for SATAQ-4 (Sociocultural Attitudes Towards Appearance Questionnaire-4) obtained from the Confirmatory Factor Analysis



lations. Therefore, in subsequent studies, the male population should be included.

The study did not find university students with obesity, despite the fact that in recent years there has been an increase in the rates of overweight and obesity worldwide[38] with groups that present a higher risk of unhealthy behaviors for weight control[39].

Currently, an increase in eating disorders[1, 35, 36] and body dissatisfaction[4.7] has been observed; therefore, it is critical to conduct this validation study, which will allow us to understand the influencing factors in body satisfaction and identify these factors in order to create prevention and control strategies. Our study only sought to validate the SATAQ-4 in the undergraduate population of a Peruvian private university. However, it would be important to validate it in other populations, such as adolescents, men, different socioeconomic levels, and other Spanish-speaking countries.

In conclusion, the version of the SATAQ-4 for the Peruvian population is culturally adapted, with adequate construct validity, high internal consistency, and right temporal stability; it adequately measures the construct for which it was created and can be applied in the Peruvian university environment.

Bibliography

1. Organización Mundial de la Salud. Prevención de los trastornos mentales, intervenciones efectivas y opciones de políticas. Informe compendiado. Ginebra: OMS; 2014.

2. Mitchison D, Hay PJ. The epidemiology of eating disorders: genetic, environmental, and societal factors. Clin Epidemiol. 2014;6:89-97.

3. Perú. Ministerio de Salud. En los últimos 10 años el número de casos aumentó 10 veces. Recuperación depende del diagnóstico temprano de la enfermedad. Lima: MINSA; 2009. [Accessed on: February 10, 2015]. Available at: http://www.minsa.gob.pe/portada/prensa/nota_completa.asp?nota=7484.

4. Martínez P, Zusman L, Hartley J, Morote R, Calderón A. Estudio epidemiológico de los trastornos alimentarios y factores asociados en Lima Metropolitana. Rev Psicol (Lima)2003;21(2):234-69.

5. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Arlington, VA: American Psychiatric Association. 2013.

6. Francisco R, Espinoza P, González ML, Penelo E, Mora M, Rosés R, et al. Body dissatisfaction and disordered eating among Portuguese and Spanish adolescents: The role of individual characteristics and internalisation of sociocultural ideals. J Adolesc. 2015 Jun;41:7-16.

7. Polivy J, Coleman J, Herman CP. Causes of eating disorders. Int J Eat Diord. 2005;38(4):301-9.

8. Coker E, Abraham S. Body weight dissatisfaction: A comparison of women with and without eating disorders. Eat Behav. 2014; 15(3):453-9.

9. Grogan S. Body Image, understanding body dissatisfaction in men, woman and children. 2nd Ed. New York: Routledge; 2008.

10. Vaquero-Cristóbal R, Alacid F, Muyor JM, López-Miñarro PA. Imagen corporal: revisión bibliográfica. Nutr. Hosp. 2013 Feb; 28(1): 27-35.

11. Lora C, Saucedo T. Conductas alimentarias de riesgo e imagen corporal de acuerdo al índice de masa corporal en una muestra de mujeres adultas de la ciudad de México. Salud Mental. 2006;29(3):60-7.

12. Forbes G, Jung J, Vaamonde J, Omar A, Paris L, Soares N. Body dissatisfaction and disordered eating in three cultures: Argentina, Brazil, and the U.S. Sex Roles. 2012;66(9):677-94.

13. Zevallos-Delzo Carolina, Catacora-Villasante Manuel M. Influencia de los factores socioculturales en el Trastorno de Conducta Alimentaria. Rev. chil. neuro-psiquiatr. 2014 Dic; 52(4): 308-309.

14. Van den Berg P, Thompson J. K, Obremski-Brandon K, Coovert M. The Tripartite Influence model of body image and eating disturbance a covariance structure modeling investigation testing the meditational role of appearance comparison. J Psychosom Res. 2002;53(5):1007-20.

15. Yamamiya Y, Shroff H, Thompson J. K. The tripartite influence model of body image and eating disturbance: a replication with a Japanese sample. Int J Eat Disord. 2008;41(1):88-91.

16. Dos Santos M, Lenz K, Tucunduva S, Baeza F. Influência da mídia em universitárias brasileiras de diferentes regiões. J Bras Psiquiatr. 2010;59(2):111-8.

17. Williams L, Ricciardelli L, McCabe M, Swinburn B, Bavadra K. A comparison of the sources and nature of body image messages perceived by indigenous Fijian and European Australian adolescent girls. Sex Roles 2006;55(7):555-66.

18. Mancilla J, López X, Franco K, Alvarez G, Vasquéz R, OcampoM, et al. Role of peer influence and thin-ideal internalization on body dissatisfaction and disordered eating in Mexican girls. Rev Colomb Psicol. 2012;2(21):343-53.

19. Heinberg L, Thompson K, Stormer S. Development and validation of the Sociocultural Attitudes Towards Appearance Questionnaire. Int J of Eat Disor, 1995;17(1):81-9.

20. Griffths R, Beumont P, Russell J, Schotte D, Thornton C, Touyz S, et al. Sociocultural Attitudes Towards Appearance in Dieting Disordered and Nondieting Disordered Subjects. Eur Eat Disorders Rev. 1999; 7: 193-203.

21. Thompson K, van den Berg P, Roehrig M, Guarda A, Heinberg L. The Sociocultural Attitudes Towards Appearance Scale-3 (SATAQ-3): Development and Validation. Int J Eat Disord. 2004;35(3):293-304.

22. Llorente E. Warren C. Perez L. Gleaves D. A Spanish Version of the Sociocultural Attitudes Towards Appearance Questionnaire-3 (SATAQ-3): Translation and Psychometric Evaluation. J Clin Psychol. 2013;69(3):240-51
.

23. Schaefer LM, Thompson JK, Heinberg LJ, Calogero RM, Nerini A, Dittmar H, et al. Validation of the Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4) in Italian, British, and Australian Women. Poster presented at: The Annual Academy of Eating Disorders International Conference on Eating Disorders; 2012 May 3–5; Austin, TX.

24. Llorente E, Gleaves D, Warren C, Perez L, Rakhkovskaya L. Translation and Validation of a Spanish Version of the Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4). Int J Eat Disord. 2015;48(2):170-5.

25. Benel R, Campos S, Cruzado L. Insatisfacción corporal en estudiantes de medicina de las Universidad Peruana Cayetano Heredia medida con el Body Shape Questionnaire. Rev Neuropsiquiatr 2012;75(3):85-92.

26. Herrera T. Validez y confiabilidad del inventario sobre trastornos alimentarios en una muestra de adolescentes varones universitarios y pre universitarios de Lima Metropolitana. [Tesis]. Lima: Facultad de Psicología, Pontificia Universidad Católica del Perú, 2008.

27. Caballero L. Relación entre la autopercepción de la imagen corporal y hábitos de alimentación en adolescentes del 5to año de secundaria de la Institución Educativa Teresa Gonzáles de Fanning, 2007. [Tesis]. Lima: Facultad de Medicina Humana, Universidad Nacional Mayor de San Marcos; 2008.

28. Ramada J, Serra C, Delclós G. Adaptación cultural y validación de cuestionarios de salud: revisión y recomendaciones metodológicas. Salud Publica Mex. 2013;55(1):57-66.

29. Costello A, Osborne J. Best Practices in exploratory factor analysis: four recommendations for getting the most from your analysis. Practical Assessment Research & Evaluation.

2005;10(7): 1-9

30. Escobar J, Cuervo A. Validez de contenido y juicio de expertos: una aproximación a su utilización. Avances en medición 2007;6:27-36.

31. Cooper P, Taylor M, Cooper Z, Fairburn C. The development and validation of the Body Shape Questionnaire. Int J Eat Disord. 1987;6(4):485-95.

32. Flores M. Validez y confiabilidad del Body Shape Questionnaire en adolescentes universitarias de Lima Metropolitana. [Tesis]. Lima: Facultad de Psicología, Pontificia Universidad Católica del Perú; 2009.

33. Kuna S, Benca R, Kushida C, Walsh J, Younes M, Staley B, et al. Agreement in Computer-Assisted Manual Scoring of Polysomnograms across Sleep Centers. Sleep. 2013 Apr 1; 36(4): 583–589.

34. Schaefer LM, Thompson JK, Heinberg LJ, Calogero RM, Nerini A, Dittmar H, et al. Development and validation of the Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4). Psychol Assess. 2015;27(1):54-67.

35. Perú. Ministerio de Salud. En los últimos 10 años el número de casos aumentó 10 veces. Recuperación depende del diagnóstico temprano de la enfermedad. Lima: MINSA; 2009. [Recovered May 11, 2016]. Available : http:// www.minsa.gob.pe/portada/prensa/ nota_completa. asp?nota=7484.

36. Lazo Y, Quenaya A, Mayta-Tristán P. Influencia de los medios de comunicación y el riesgo de padecer trastornos de la conducta alimentaria en escolares mujeres en Lima, Perú. Arch Argent Pediatr 2015;113(6):519-525

37. Rodgers R, Schaefer L, Thompson J, Girard M, Bertrand M, Chabrol H. Psychometric properties of the Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4) in French women and men. Body Image 17 (2016) 143-151.

38. World Health Organization. Obesity: Preventing and managing the global epidemic Geneva, Switzerland. Report No. 894. (2000).

39. Thompson J, Schaefer L, Menzel J. Internalization of the thin-ideal and muscular-ideal. In T. F. Cash (Ed.), Encyclopedia of body image and human appearance. San Diego, CA: Elsevier. (2012) 499-504.

Acknowledgements:

The researchers thank each of the university students participating in the study for their collaboration, and the professors and authorities of the university who provided all the facilities for the execution of the study.
Jorge L. Maguiña is a doctoral candidate studying Epidemiological Research at the Universidad Peruana Cayetano Heredia under the FONDECYT/CIENCIACTIVA grant and supported by the D43 TW007393 training grant from the Fogarty International Center of the National Institute of Health of the United States.

Correspondence to:
Jorge L. Maguiña
Escuela de Medicina, Universidad Científica del Sur, Lima, Perú. Carretera Panamericana Sur 19, Distrito de Villa EL Salvador 15067
jorge.luis.maguina@gmail.com
Teléfono: 51 994553258