Variables associated with disordered eating behaviors among freshman students from Mexico City

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Abstract

Objective. To estimate the prevalence of disordered eating behaviors (DEB) and identify their associations with demographic and psychological variables among freshman students at a public university in Mexico City. **Materials and methods.** A sample of 892 subjects participated in the study. Bivariate and multinomial models were performed to determine associations between DEB and covariates. **Results.** Of those surveyed, 6.8% of the women and 4.1% of the men exhibited DEB ($p<0.05$). The variables increasing the risk of eating disorders (ED) for women were internalization of the aesthetic thin ideal (IATI), body mass index (BMI), self-esteem and physical activity, while for men they were IATI, drive for muscularity, and self-esteem. **Conclusions.** The frequency of DEB among women and men and the internalization of the thin ideal in both sexes suggest the possibility of a change in the precursor conditions for eating disorders, particularly for men, who exhibit increased risk of such behaviors.

Keywords: eating behavior; risk; students; universities; Mexico

Díaz de León-Vázquez C, Rivera-Márquez JA, Bojorquez-Chapela I, Unikel-Santoncini C. Variables asociadas con conductas alimentarias de riesgo en estudiantes de la Ciudad de México. Salud Publica Mex 2017;59:258-265.
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Resumen

Objetivo. Estimar la prevalencia de conductas alimentarias de riesgo (CAR) e identificar asociaciones con variables sociodemográficas y psicológicas en estudiantes de nuevo ingreso de una universidad pública de la Ciudad de México. **Material y métodos.** Se aplicó una encuesta a 892 estudiantes de ambos sexos. Para analizar asociaciones entre CAR y sus covariables se emplearon modelos bivariados y multivariados. **Resultados.** Se estimó que 6.8% de las mujeres y 4.1% de los hombres presentaron CAR ($p>0.05$). Entre las mujeres las variables que aumentaron el riesgo de CAR fueron interiorización del ideal estético de la delgadez (IIED), índice de masa corporal (IMC), autoestima y actividad física. Entre los hombres, las variables que sobresalieron fueron IIED, deseo por un cuerpo musculoso y autoestima. **Conclusiones.** La frecuencia de CAR entre mujeres y hombres, así como la IIED en ambos sexos sugiere un cambio en las condiciones de riesgo, especialmente entre los varones.

Palabras clave: conducta alimentaria; riesgo; estudiantes; universidades; México

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Disordered eating behaviors (DEB) are conditions that may lead to eating disorders (ED), which are most common during adolescence and early adulthood,[1] and due to the morbidity, mortality, and disability associated with them, they qualify as a public health issue.[2-5] Although there are as yet no unified criteria in the literature by which to define DEB, they include all the manifestations of ED in similar form but with lesser frequency and intensity.[6] DEB can be grouped into three categories: restrictive behaviors, purging behaviors and binge eating.[7]

Prospective evidence indicates, for example, that voluntary dieting is associated with a higher incidence of ED.[8] DEB have also been associated with functional impairments and mental problems.[9,10] People that have a genuine desire to maintain a healthy weight do not engage in DEB, such as restrictive dieting, excessive exercising or purging behaviors.

Women and adolescents are considered most at risk for ED, although some researchers now include university students,[5] adolescents and young men as risk groups.[11,12] A study of the young adult population, and particularly of university students, represents a much-needed new direction for the public health agenda. Entering the university brings a series of problems that can trigger a variety of mental health pathologies, including ED; therefore, their detection and timely treatment call for the attention of health care professionals.

Professions and activities that place great value on thin bodies influence the appearance and development of ED.[5,13,14] Until a few decades ago, ED were considered illnesses of the higher socioeconomic levels.[15] A review of the literature[16] suggests that between 1979 and 1990, socioeconomic status (SES) did not affect the risk of ED. However, in Mexico, Palma and colleagues[17] found that the sample of young people aged 10 to 19 years who participated in the National Survey of Health and Nutrition (Ensanut, by its Spanish acronym) in 2006 showed a greater prevalence of DEB than those with a higher SES.

Overweight and obesity are risk factors for ED, owing to an increased desire for thinness, dissatisfaction with one's body, and attempts to lose weight.[18] Overweight and obese men and women have a greater frequency of DEB than those whose weight is low to normal, because the former tend to adopt a greater number of unhealthy eating strategies in order to lose weight.[19]

Thompson and Stice[20] have found correlations between the internalization of the aesthetic thin ideal (IATI), body dissatisfaction (BD), and ED. Longitudinal studies have shown the presence of IATI and body image disorders as two of the most consistent risk factors for ED.[21] While most people evaluate themselves based on such aspects of their lives as personal relationships or performance at work or at sports, those with ED focus their self-esteem on their weight and their ability to control it.[22] There is also evidence from longitudinal studies that low self-esteem is present prior to the appearance of an ED.[1]

Because the ideal of masculine beauty is a mesomorphic muscular body, it is necessary to evaluate the drive for that type of body as a precursor to ED in men and the health implications of substance use, dieting, and exercise to attain such a body.[23,24]

Research on ED and DEB in Mexico has focused mostly on adolescents. According to Ensanut, the prevalence of DEB in subjects aged 10 to 19 years doubled between 2006[25] and 2012,[26] going from 0.9 to 1.9% in women and from 0.4 to 0.8% in men. Among college students, the frequency of DEB has been reported to be between 5.0 and 18.0% in women;[27] among men, the figures range from 4.0% in students, in Hidalgo,[28] to 13.0%, in Yucatán.[29]

The purpose of this study was to estimate the prevalence of DEB by sex, and their association with demographic variables (age, area of study, and socioeconomic status), psychological variables (internalization of the aesthetic thin ideal, self-esteem, body dissatisfaction, and drive for muscularity), and body mass index in freshman students at a public university in Mexico City.

Materials and methods

Sample

A representative sample consisting of 892 subjects (502 women and 390 men) was drawn from freshman students of both sexes in all the academic majors offered at the Metropolitan Autonomous University, campus Xochimilco (UAM-X, by its Spanish acronym), in Mexico City. The sample constituted 51.8% of the freshman students enrolled in the last term of 2012. All students in their first trimester were invited to volunteer. Those aged 18 years or more were given an informed consent form, while those aged 17 or less were given an informational letter and consent form for their parents.

The research protocol on which this article is based was reviewed and approved by the Health and Biological Sciences Academic Board of UAM-X.

Instruments

The study had an analytic cross-sectional design. A survey including demographic data (age, sex, and academic major), body mass index (BMI) and physical activity was performed. Assessments of SES, DEB, ITI,

self-esteem, drive for muscularity and body dissatisfaction were performed using the AMAI Index[30] (Spanish acronym), a Brief Questionnaire for the Measurement of Risky Eating Behaviors[31] (CBCAR, Spanish acronym), an Attitudes Towards Appearance Questionnaire,[32] a Self-esteem Questionnaire,[33] a Drive for Muscularity Questionnaire[34,35] and an analog scale of body figures,[36,37] respectively. See Table I for a detail description of the questionnaires included in the survey and the BMI assessment.[38,39]

Statistical analysis

Data were analyzed by sex. Two age groups were defined: the first included adolescents, according to the criteria of the 2006 and 2012 Ensanut (≤19 years),[26] while the second consisted of those aged 20 years and over. A descriptive analysis of the population yielded simple frequencies and chi-squares, as all the variables were categorical. Given the existence of three categories in the outcome variable DEB –no risk (DEB-NR), moderate risk (DEB-MR), and high risk (DEB-HR)–, a bivariate analysis was carried out using a 2 x 3 contingency table. The effect of the BMI on the association of DEB with the other variables was measured. Finally, a multinomial logistic regression using all the variables, in which the elimination criteria were based on a plausibility test, was utilized to estimate the association between DEB and its covariates. A value of $p<0.05$ was considered statistically significant, and confidence intervals (CI) were estimated at 95.0%. Data were processed using the statistical package STATA 11.*

Results

The sample included 892 students (56.2% women and 43.7% men). The average age of the women was 19.3 years (SD=2.4), and that of the men was 20.4 years (SD=3.3) (data not shown in the tables). Table II shows a descriptive analysis by sex. A significant difference was found between the sexes according to age range

* StataCorp. 2007. Stata Statistical Software: Release 10. College Station, TX: StataCorp LP.

Table I
Description of the instruments

Variable	*Questionnaire*
Socioeconomic status (SES)	10 x 6 Version of the Index of the Mexican Association of Market and Public Opinion Research Agencies (AMAI).*[26] Includes five categories, ranging from "A/B," the highest socioeconomic level, to "E," the lowest.
Disordered Eating Behavior	Brief Questionnaire for the Measurement of Risky Eating Behaviors (CBCAR).*[28] Two cutoff points: a score of 7-10 indicating subjects with moderate risk for DEB, and a score above 10 for those with high risk. In order to obtain additional data regarding the validity and reliability of the CBCAR questionnaire as applied to men, the psychometric properties of the instrument were analyzed for the male students in the sample, and the total scale was found to have a Cronbach's alpha value for internal consistency of 0.646. The analysis found three factors that accounted for 58.3% of the total variance
Internalization of the aesthetic thin ideal	"Attitudes towards appearance"[7] Cutoff point ≥37. This instrument was modified to create an ad hoc version for men (Cronbach's alpha=0.89, explained variance=56.83%). The items "Thin women are more feminine" and "Fat women are less feminine" were replaced with "Thin men are more attractive" and "Fat men are less attractive." In the rest of the items, the Spanish adjectives for "fat," "thin," "accepted," and "valued" were changed from their grammatically feminine forms ("gorda," "delgada," "aceptada," and "valiosa") to grammatically masculine forms ("gordo," "delgado," "aceptado," and "valioso").[28]
Self-esteem	Self-esteem questionnaire,[29] modified by Unikel and Gómez.[7] A higher score indicates lower self-esteem.
Drive for muscularity	"Drive for muscularity" survey,[30] validated for the Mexican population.[31]
Body dissatisfaction	Analog scale of body figures,[32] as modified by Acosta and Gómez.[33]
Physical activity	Questions about the number of minutes devoted to physical activity. Recorded in hours and minutes. More than two hours/day was considered as excessive.
Body mass index	Anthropomorphic measurements were taken of weight in kilograms and height in meters in order to calculate the BMI (kg/m^2). The classification followed the criteria of the World Health Organization (WHO): malnourished ≤18.4; normal, 18.5 to 24.9; overweight, 25 to 29.9; and obese ≥30.[34] Height was measured with four Seca 206 measuring tapes, with the subject's back to the wall, vision fixed horizontally, and feet separated slightly, forming a V; weight was measured with four Seca 813 scales, with the subject assuming an erect posture and looking forward, and without shoes, jacket, sweater, or objects such as keys or bags.[35]

* Spanish acronym

Table II
DESCRIPTION OF THE POPULATION, BY SEX. MEXICO CITY, 2012

	Women %(*n*)	*Men* %(*n*)	*Total* %(*n*)	*p*
Age				
≤19	71.3(356)	53.6(208)	63.5(564)	<0.000
≥20	28.6(143)	46.3(180)	36.4(323)	
Socioeconomic status				
A/B	22.9(115)	30.0(117)	26.0(232)	0.042
C+	30.8(155)	31.7(124)	31.2(279)	
C	22.9(115)	20.5(80)	21.8(195)	
D+/D	23.3(117)	17.6(69)	20.8(186)	
Area of study				
Design, Arts and Sciences	13.4(67)	19.4(75)	16.0(142)	0.008
Humanities and Social Sciences	35.3176)	38.8(150)	36.8(326)	
Biological and Health Sciences	51.3(255)	41.7(161)	47.0(416)	
BMI				
Underweight	5.8(29)	3.8(15)	4.9(44)	0.207
Normal	64.2(320)	60.2(235)	62.4(555)	
Overweight	22.6(113)	26.6(104)	24.3(217)	
Obese	7.4(37)	9.2(36)	8.2(73)	
Disordered Eating Behaviors (DEB)				
No risk (NR)	74.3(373)	80.7(315)	77.1(688)	0.068
Moderate risk (MR)	19.5(98)	15.1(59)	17.6(157)	
High risk (HR)	6.8(31)	4.1(16)	5.2(47)	

Source: Direct survey

(p<0.000). The analysis of SES by sex showed a statistically significant difference between women and men. A larger number of women fell into the categories "C" and "D+/D," which correspond to the lowest socioeconomic levels in the sample. No individuals were found in category "E," which represents the lowest level of the AMAI Index. Analysis of the distribution between women and men according to area of study found a significant difference (p=0.008), with a greater proportion of women in the biological and health sciences, and of men in design, arts and sciences, and humanities and social sciences.

The analysis of DEB by age, SES and area of study showed no statistical significance for either men or women (table III). The differences in the prevalence of DEB-MR and DEB-HG were statistically significant for both female and male students. In order to determine whether the BMI changed the association of the DEB with the other variables, a logistic regression analysis including the interaction terms was carried out. The BMI showed no effect on these associations; the hypothesis tests showed no significant differences (data not shown in the tables).

A multinomial regression analysis generated two models (Table IV). In Model 1, the results show a significant association (p<0.05) among women between DEB-MR and BD (OR=2.8), IATI (OR=6.6), self-esteem (OR=2.3), BMI (OR=1.5), and physical activity >2 h/day (OR=1.4). In men with DEB-MR, there are significant associations with BD (OR=2.0), IATI (OR=4.8), drive for muscularity (OR=4.0), and self-esteem (OR=2.6). Model 2 shows significant associations for women (p<0.05) between DEB-HR and IATI (OR=22.0), self-esteem (OR=3.8), BMI (OR=2.0), and physical activity >2 h/

Table III

Prevalence of disordered eating behaviors by age, SES, and BMI. Mexico City, 2012

	Disordered Eating Behaviors							
	Women				Men			
	No risk %(n)	Moderate risk %(n)	High Risk %(n)	p	No risk %(n)	Moderate Risk %(n)	High risk %(n)	p
Age								
≤19	74.7(266)	18.8(67)	6.4(23)	0.886	83.6(174)	12.0(26)	3.8(8)	0.254
≥20	74.1(106)	20.2(29)	5.5(31)		77.2(139)	18.3(33)	4.4(8)	
Socioeconomic Status								
A/B	74.7(86)	20.8(24)	4.3(5)	0.858	76.0(89)	17.9(21)	5.9(7)	0.661
C+	72.9(113)	19.3(30)	7.7(12)		80.6(100)	16.1(20)	3.2(4)	
C	72.1(83)	21.7(25)	6.0(7)		82.5(66)	13.7(11)	3.7(3)	
D+/D	77.7(91)	16.2(19)	5.9(7)		86.9(60)	10.1(7)	2.9(2)	
Area of study								
Design, Arts and Sciences	64.1(43)	28.3(19)	7.4(5)	0.130	92.0(69)	5.3(4)	2.6 (2)	0.051
Humanities and Social Sciences	77.8(137)	14.7(26)	7.3(13)		76.6(115)	20.0(30)	3.3(5)	
Biological and Health Sciences	74.5(190)	20.3(52)	5.1(13)		79.5(128)	15.5(25)	4.9(8)	
BMI								
Underweight	93.1(27)	6.9(2)	0(0)	<0.0001	100(15)	0(0)	0(0)	0.001
Normal	78.7(252)	17.5(56)	3.7(12)		84.6(199)	11.9(28)	3.4(8)	
Overweight	64.6(73)	22.1(25)	13.2(18)		77.8(81)	18.2(19)	3.8(4)	
Obese	51.3(19)	37.8(14)	10.8(4)		55.5(20)	33.3(12)	11.1(5)	

Source: Direct survey. SES: Socio-economic status; BMI: Body mass index

Table IV

Multinomial regression analysis, by sex. Mexico City, 2012

Variable	Women					Men				
	Risk	Wald	p	95%CI		Risk	Wald	p	95%CI	
				lower	upper				lower	upper
Model 1: Group 0 (no risk) vs. Group 1 (moderate frequency of DEB)										
Body dissatisfaction	2.89	3.80	0.000	1.673	5.007	2.05	2.85	0.004	1.251	3.358
Internalization of the aesthetic thin ideal	6.65	4.63	0.000	2.982	14.866	4.86	2.88	0.004	1.657	14.274
Drive for muscularity	1.39	1.07	0.287	0.754	2.586	4.09	3.98	0.000	2.045	8.197
Self-esteem	2.36	3.16	0.002	1.386	4.039	2.64	2.78	0.005	1.332	5.233
BMI	1.50	2.77	0.036	1.026	2.216	1.55	1.84	0.066	0.970	2.504
Physical activity >2 hrs./day	1.49	2.77	0.006	1.125	1.992	1.02	0.15	0.881	0.707	1.496
Socioeconomic status	.9096	-0.75	0.453	0.710	1.165	0.78	-1.48	0.140	0.574	1.081
Age	1.04	0.14	0.889	0.594	1.821	1.47	1.16	0.247	0.762	2.869
Model 2: Group 0 (no risk) vs. Group 2 (high frequency of DEB)										
Body dissatisfaction	2.83	1.88	0.060	0.955	9.771	1.50	0.99	0.323	0.671	3.359
Internalization of the aesthetic thin ideal	22.06	6.00	0.000	8.875	73.803	17.34	4.16	0.000	4.517	66.614
Drive for muscularity	1.25	0.09	0.929	0.365	3.009	5.31	2.78	0.005	1.636	17.294
Self-esteem	3.88	2.77	0.006	1.473	9.691	3.37	2.03	0.043	1.040	10.966
BMI	2.09	2.63	0.009	1.227	4.116	1.73	1.34	0.179	0.777	2.319
Physical activity >2 hrs./day	1.68	3.14	0.002	1.692	9.709	1.18	0.50	0.620	0.605	3.285
Socioeconomic status	0.93	-0.30	0.767	0.608	1.443	0.75	-0.99	0.321	0.425	1.323
Age	0.73	-0.62	0.535	0.273	1.962	1.53	0.72	0.472	0.477	4.934

Source: Direct survey

day (OR=1.6). Men with DEB-HR showed significant associations (p<=0.05) only with IATI (OR=17.3), drive for muscularity (OR=5.3), and self-esteem (OR=3.3).

Discussion

The prevalence of DEB-HR found in this sample of Mexico City university students (6.8% in women and 4.1% in men) is similar to that reported among higher education students in Hidalgo (7.9% in women and 4.2% in men).[28] Both sets of frequencies are higher than the estimated prevalence of DEB in the national sample of adolescents who participated in the Ensanut in 2006[25] and 2012.[26] The international literature has reported a prevalence of 20.0% in women and 15.0% in men in Spain,[40] 44% in women and 10.0% in men in Colombia,[5] and 9.0% in women and 2.0% in men in Venezuela.[12]

In contrast to the associations found in adolescents who participated in the 2006 Ensanut,[26] the students at the UAM-X showed no significant associations between SES and the prevalence of moderate or high levels of DEB. In a study of female students at a university in southern Brazil, no differences were found in the risk of ED by income level.[41] These findings suggest that the variability between socioeconomic levels in samples of university students does not allow for the detection of differences between groups.

The results also showed no differences by sex, age, or area of study for moderate or high levels of DEB. In contrast with reports in the literature, this study shows no evidence that women have a greater risk of exhibiting eating disorders.[1,17,42,43] The results here confirm that adolescents and young adults share a risk of DEB, in accordance with the findings of other studies.[44] The lack of association with the area of study among the men and women with DEB in this sample also contrasts with the results obtained for female university students in the State of Mexico, where those studying administrative and social sciences showed the highest prevalence of DEB.[45]

The findings in the bivariate analysis with respect to BMI coincide with literature reports, where a greater BMI increases the prevalence of DEB.[28] However, the significance of this association in men disappeared in the multivariate regression. Analysis of the frequency of DEB among different categories of BMI found results similar to those in the international literature[1] as well as in other studies conducted in Mexico,[19] where subjects with greater BMI consistently showed higher frequencies of DEB. The association between DEB and the BMI in men was not, however, constant when controlled for the other variables. The interaction of BMI was tested with the other variables, and the hypothesis tests showed no significant differences.

The multivariate analysis also examined the association between DEB and SES, area of study, and age group. Other associations with increased risk of DEB in women and men were found here: in women, this increase was related to IATI, self-esteem, BMI, and physical activity >2 h/day, while in men, it was associated with IATI, self-esteem and the drive for muscularity.

Although the literature describes the existence of distinct risk factors –such as age and sex– that are associated with the development of DEB and ED, this finding is not borne out by the present study. A differentiation can be observed, however, between the associated variables for men (drive for muscularity) and those for women (BMI and physical activity). It is noteworthy that no significant differences in the prevalence of DEB between women and men were found in this study. The increase in media images of lean and muscular male bodies[46] may be generating pressure to achieve this ideal among male university students, motivating them to change their eating behaviors and limit their intake of certain food groups and macronutrients.[24] Given this and other findings regarding increased risk of ED in men[13] and a lack of interest in diagnosis and treatment,[47] the precursor conditions to these disorders require further study, and instruments must be developed for the evaluation of risk factors specific to men.

We recommend carrying out cohort studies in Mexican children and adolescent populations in order to identify ED risk factors and implement prevention strategies.

This study illustrates the limitations of cross-sectional studies, in the sense that it was not possible to differentiate DEB from risk factors. Another limitation is that, because the sample includes only freshman college students, and therefore represents neither the rest of the population of young people nor university students in general, the non-probabilistic sampling results cannot be generalized and must be taken with discretion.

Declaration of conflict of interests. The authors declare that they have no conflict of interests.

References

1. Jacobi C, Hayward C, de Zwaan, Kraemer HC, Agras S. Coming to terms with risk factors for eating disorders: application of risk terminology and suggestions for a general taxonomy. Psychol Bull 2004;13(1):19-65. https://doi.org/10.1037/0033-2909.130.1.19
2. Fairburn CG, Harrison PJ. Eating disorders. Lancet 2003;361(1):407-416. https://doi.org/10.1016/S0140-6736(03)12378-1
3. Striegel-Moore R, Bulik CM. Risk Factors for Eating Disorders. Am Psychol 2007;62(3):181-198. https://doi.org/10.1037/0003-066X.62.3.181

4. Hoek HW. Incidence, prevalence and mortality of anorexia nervosa and other eating disorders. Curr Opin Psychiatry 2006;19(4):389-394. https://doi.org/10.1097/01.yco.0000228759.95237.78
5. Fandiño A, Giraldo SC, Martínez C, Aux CP, Espinosa R. Factores asociados con los trastornos de la conducta alimentaria en estudiantes universitarios de Cali, Colombia. Colombia Médica 2007;38(4):344-351.
6. Shisslak C, Crago M. Risk and protective factors in the development of eating disorders. In: Thompson JK & Smolak L (eds). Body Image Eating Disorders, and Obesity in Youth. Washington DC: American Psychological Association, 2001: 103-125.
7. Unikel-Santoncini C, Gómez-Peresmitré G. Validez de constructo de un instrumento para la detección de factores de riesgo en los trastornos de la conducta alimentaria en mujeres mexicanas. Salud Mental 2004;27(1):38-49.
8. Stice E, Marti CN, Durant S. Risk Factors for Onset of Eating Disorders: Evidence of Multiple Risk Pathways from an 8-Year Prospective Study. Behav Res Ther 2011;49(10):622-627. https://doi.org/10.1016/j.brat.2011.06.009
9. Stice E, Marti CN, Shaw H, Jaconis M. An 8-year Longitudinal Study of the Natural History of Threshold, Subthreshold and Partial Rating Disorders from a Community Sample of Adolescents. J Abnorma Psychol 2009;118(3):587-597. https://doi.org/10.1037/a0016481
10. Unikel Santoncini C, Díaz de León-Vázquez C, González-Forteza C, Wagner Echeagaray F, Rivera Márquez JA. Conducta alimentaria de riesgo, síntomas depresivos y correlatos psicosociales en estudiantes universitarios de primer ingreso. Acta Universitaria 2015;25(NE-2):35-39. https://doi.org/10.15174/au.2015.847
11. Márquez S. Trastornos alimentarios en el deporte: factores de riesgo, consecuencias sobre la salud, tratamiento y prevención. Nutr Hosp 2008;23(3):183-190.
12. Lugli-Rivero Z, Vivas-Peñalver E. Conductas y actitudes sugestivas de trastornos del comportamiento alimentario en estudiantes universitarios venezolanos. Revista de la Facultad de Medicina, Caracas 2006; 29(2):168-173.
13. Torresani ME. Conductas alimentarias y prevalencia de riesgo de padecer trastornos alimentarios en estudiantes de nutrición. Rev Esp Nut Comunit 2003; 9(1):30-33.
14. Rodríguez-Aguilar B, Oudhof Van Barneveld H, González-Arratia NI, Unikel-Santoncini C. Desarrollo y validación de una escala para medir imagen corporal en mujeres jóvenes. Salud Mental 2010; 33(4):325-332.
15. Bruch H. La jaula dorada. El enigma de la anorexia nerviosa. Barcelona: Ediciones Paidós Ibérica, 2002.
16. Gard MC, Freeman CP. The dismantling of a myth: a review of eating disorders and socioeconomic status. Int J Eat Disord 1996;20(1):1-12. https://doi.org/10.1002/(SICI)1098-108X(199607)20:1<1::AID-EAT1>3.0.CO;2-M
17. Palma-Coca O, Hernández-Serrato MI, Villalobos-Hernández A, Unikel-Santoncini C, Olaiz-Fernández G, Bojorquez-Chapela I. Association of socioeconomic status, problem behaviors, and disordered eating in Mexican adolescents: Results of the Mexican national health and Nutrition Survey 2006. J Adol Health 2011;49(4):400-406. https://doi.org/10.1016/j.jadohealth.2011.01.019
18. Stice E. Risk factors for eating pathology: recent advances and future directions. In: Eating Disorders: Innovative directions in research and practice. Washington: American Psychological Association, 2001: 51-73. https://doi.org/10.1037/10403-003
19. Unikel-Santoncini C, Saucedo-Molina T, Villatoro J, Fleiz C. Conductas alimentarias de riesgo y distribución del índice de masa corporal en estudiantes de 13 a 18 años. Salud Mental 2002;25(2):49-57.
20. Thompson KJ, Stice E. Thin-ideal internalization: mounting evidence of a new risk factor for body-image disturbance and eating pathology. Cur Dir Psychol Sci 2001;10(5):181-183. https://doi.org/10.1111/1467-8721.00144
21. Stice E, Ng J, Shaw H. Risk factors and prodromal eating pathology. J Child Psychol Psychiatry 2010;51(4):518-525. https://doi.org/10.1111/j.1469-7610.2010.02212.x
22. Polivy J, Herman CP. Causes of eating disorders. Ann Rev Psychol 2002; 53:187-213. https://doi.org/10.1146/annurev.psych.53.100901.135103
23. Cafri G, Thompson K. Measuring Male Body Image: A Review of the Current Methodology. Psychol Men Masc 2004;5(1):18-29. https://doi.org/10.1037/1524-9220.5.1.18
24. Cafri G, Thompson KJ, Ricciardelli L, McCabe M, Smolak L, Yesalis C. Pursuit of the muscular ideal: Physical and psychological consequences and putative risk factors. Clin Psychol Rev 2005;25(2):215-239. https://doi.org/10.1016/j.cpr.2004.09.003
25. Olaiz-Fernández G, Rivera-Dommarco J, Shamah-Levy T, Rojas R, Villalpando-Hernández S, Hernández-Ávila M, Sepúlveda-Amor J. Encuesta Nacional de Salud y Nutrición 2006. Cuernavaca, Mexico: Instituto Nacional de Salud Pública, 2006.
26. Gutiérrez JP, Rivera-Dommarco J, Shamah-Levy T, Villalpando-Hernández S, Franco A, Cuevas-Nasu L, *et al*. Encuesta Nacional de Salud y Nutrición 2012. Resultados Nacionales. Cuernavaca, Mexico: Instituto Nacional de Salud Pública, 2012.
27. Unikel-Santoncini C, Bojorquez-Chapela I, Villatoro-Velázquez J, Fleiz-Bautista C, Medina-Mora Icaza ME. Conductas alimentarias de riesgo en población estudiantil del Distrito Federal: tendencias 1997-2003. Rev Invest Clin 2006;58(1):15-27.
28. Saucedo-Molina TJ, Unikel-Santoncini C. Conductas alimentarias de riesgo, interiorización del ideal estético de delgadez e índice de masa corporal en estudiantes hidalguenses de preparatoria y licenciatura de una institución privada. Salud Mental 2010;33(1):11-19.
29. Cruz-Bojórquez RM, Ávila-Escalante ML, Cortés-Sobrino MC, Vázquez-Arévalo R, Mancilla-Díaz JM. Restricción alimentaria y conductas de riesgo de trastornos alimentarios en estudiantes de Nutrición. Psicología Salud 2008;18(2):189-198.
30. López-Romo H. Asociación Mexicana de Agencias de Investigación de Mercado y Opinión Publica A.C. AMAI. Índice AMAI. Regla AMAI 10x6. Los niveles socioeconómicos y la distribución del gasto. Instituto de Investigaciones Sociales, S.C. 2009 [accessed November 2, 2011]. Available from: http://www.amai.org/congreso/2008/memorias/ponencias/lopezromo.pdf
31. Unikel-Santoncini C, Bojorquez-Chapela I, Carreño-García S. Validación de un cuestionario breve para medir conductas alimentarias de riesgo. Salud Publica Mex 2004;46(6):509-515. https://doi.org/10.1590/S0036-36342004000600005
32. Díaz de León-Vázquez C. Conductas alimentarias de riesgo, interiorización del ideal estético de delgadez e insatisfacción corporal en estudiantes universitarios de la Ciudad de México (dissertation). Mexico City: Universidad Nacional Autónoma de México, 2013.
33. Pope AW, McHale SM, Craighead WE. Self-esteem enhancement with children and adolescents. 1998. USA: Allyn & Bacon Eds. Quoted in: Caso J. Validación de un instrumento de autoestima para niños y adolescentes (dissertation). Mexico City: UNAM, 1999.
34. McCreary D, Sasse D. An exploration of the drive for muscularity in adolescent boys and girls. J Am Coll Health 2000;48(6):297-304. https://doi.org/10.1080/07448480009596271
35. Escoto C, Álvarez-Rayón G, Mancilla-Díaz JM, Camacho-Ruiz E, Franco-Paredes K, Juárez-Lugo CS. Psychometric properties of the Drive for Muscularity Scale in Mexican males. Eat Weight Disord 2013;18(1):23-28. https://doi.org/10.1007/s40519-013-0010-6
36. Stunkard, Sorensen and Schulsinger. Use of the Danish Adoption Register for the study of obesity and thinness. Res Publ Assoc Res Nerv Ment Dis 1983;60:115-120.
37. Acosta-García MV, Gómez-Peresmitré G. Insatisfacción corporal y seguimiento de dieta: una comparación transcultural entre adolescentes de España y México. Int J Clin Health Psychol 2003;3(1):9-21.

38. World Health Organization (WHO). Global database on body mass index. BMI classification [accessed August 22, 2013]. Available from: http://apps.who.int/bmi/index.jsp?introPage=intro_3.html
39. Shamah-Levy T, Villalpando-Hernández S, Rivera-Dommarco J. Manual de Procedimientos para Proyectos de Nutrición. Cuernavaca, Mexico: Instituto Nacional de Salud Pública, 2006.
40. Sepúlveda AR, Gandarillas A, Carrobles JA. Prevalencia de trastornos del comportamiento alimentario en la población universitaria. Psiquiatria.com 2004;8(2) [accessed May, 2011]. Available from: http://www.psiquiatria.com/trastornos_de_alimentacion/prevalencia_de_trastornos_del_comportamiento_alimentario_en_la_población_universitaria/
41. Costa LCF, Guedes de Vasconcelos FA, Glazer-Peres K. Influence of Biological, Social and Psychological Factors on Abnormal Eating Attitudes among Female University Student in Brazil. J Health Popul Nutr 2010;28(2):173-181.
42. Jacobi C, Fitting E. Psychosocial risk factors for eating disorders. In: Agras WS. The Oxford Handbook of Eating Disorders. New York: Oxford University Press, 2010 pp. 123-136. https://doi.org/10.1093/oxfordhb/9780195373622.013.0008
43. Garfinkel PE, Garner DM. The multidetermined nature of anorexia. In: Garfinkel PE and Garner DM. Anorexia Nervosa: a multidimensional perspective. New York: Bruner/Mazel, 1982: 188-213.
44. Masheb RM, Grilo CM, White MA. An Examination of Eating Patterns in Community Women with Bulimia Nervosa and Binge Eating Disorder. Int J Eat Disord 2011;44(7):618-624. https://doi.org/10.1002/eat.20853
45. Rodríguez-Aguilar B, Oudhof Van Barneveld H, González-Arratia NI, Unikel-Santoncini C, Becerril-Bernal MI. Conductas alimentarias de riesgo: Prevalencia en mujeres de nivel superior del Estado de México. Revista Científica Electrónica de Psicología- UAEH, 2006;6:159-170.
46. Leit R, Gray J, Pope H. The media's representation of the ideal male body: A cause for muscle dysmorphia. Int J Eat Disord 2002;31:334-338. https://doi.org/10.1002/eat.10019
47. Strother E, Lemberg R, Chariese-Stanford S, Turberville D. Eating Disorders in Men: Underdiagnosed, Undertreated, and Misunderstood. Eat Disord: J Treat Prevention 2012;20(5):346-355. https://doi.org/10.1080/10640266.2012.715512