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Characteristics associated with risky eating behaviors among university students in Mexico City

Características asociadas a conductas alimentarias de riesgo en estudiantes universitarios de la Ciudad de México

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Abstract

The purpose of this work was to identify characteristics associated with risky eating behaviors (REB) in university students. Participants were 781 women and 570 male students of a public university, with an average age of 20.1 years ($SD = 2.7$) and 21.2 years ($SD = 3.3$), respectively. The participants completed a set of self-report questionnaires, and their weight and height were measured. The prevalence of moderate frequency REB among women was 23.0% and high frequency 10.1%, while among men it was 22.3% and 6.7%, respectively ($p = 0.07$). Among women, the characteristics that increased

the risk to present REB were: body dissatisfaction ($OR = 5.4$), negative affect ($OR = 3.8$), internalization of the ideal of thinness ($OR = 3.6$), and practicing some sport ($OR = 2.8$). Among men, these characteristics were: having being teased ($OR = 10.3$), drive for muscularity ($OR = 3.4$), body mass index ($OR = 3.5$) and practicing some sport ($OR = 3.1$). Given the different characteristics that increase the probability of presenting REB among university students and men, it is necessary to establish models that describe the specific risk conditions according to sex, as well as, to develop appropriate instruments and interventions.

Keywords: Risky eating behaviors; Body image; University students; Ideal of thinness; Muscularity.

Resumen El objetivo de este trabajo fue identificar características asociadas a conductas alimentarias de riesgo (CAR) en estudiantes universitarios. Participaron 781 mujeres y 570 hombres estudiantes de una universidad pública, con edad promedio de 20.1 años ($DE = 2.7$) y 21.2 años ($DE = 3.3$), respectivamente. Los participantes completaron una batería de cuestionarios de autoinforme y se registró su peso y talla. La prevalencia de CAR de frecuencia moderada entre las mujeres fue 23.0% y de frecuencia alta 10.1%, mientras que entre los hombres fue 22.3% y 6.7%, respectivamente ($p = 0.07$). Entre las mujeres, las características que aumentaron el riesgo para presentar CAR fueron: insatisfacción corporal ($OR = 5.4$), afecto negativo ($OR = 3.8$), interiorización del ideal de delgadez ($OR = 3.6$) y practicar algún deporte ($OR = 2.8$). Entre los hombres, estas características fueron: haber recibido burlas ($OR = 10.3$), motivación por la musculatura ($OR = 3.4$), índice de masa corporal ($OR = 3.5$) y practicar algún deporte ($OR = 3.1$). Ante las diferentes características que aumentan la probabilidad para presentar CAR entre mujeres y hombres universitarios, es necesario plantear modelos que describan las condiciones específicas de riesgo según sexo, así como desarrollar instrumentos e intervenciones apropiadas.

Palabras clave: Conductas alimentarias de riesgo; Imagen corporal; Estudiantes universitarios; Ideal de delgadez; Muscularidad.

Introduction

In adolescents and young adults, risky eating behaviors (REB) are quite frequent and over time can lead to eating disorders (ED). REB are defined as negative and harmful behaviors, derived from excessive weight and food concerns and directed at controlling or reducing body weight. They comprise three groups: restrictive behaviors (restrictive diet, fasting, and excessive exercise), purgative behaviors (self-induced vomiting, use of laxatives, and diuretics), and binge eating. All of them are similar to the behaviors presented in ED but different in frequency and intensity (Unikel & Gómez-Peresmitré, 2004).

The prevalence of REB, which has been reported among university students (UNS) in countries such

as Colombia, Venezuela, Saudi Arabia and Greece, fluctuate between 5.5% and 61% in women (Fragkos & Frangos, 2013; Sáenz, González & Díaz, 2011; Taha, Abu-Zaid & Desouky, 2018), and 1.9% and 38.9% among men (Fragkos & Frangos, 2013; Lugli & Vivas, 2006; Yu et al., 2018). In the United States and Spain, REB prevalence of 17% and 20.8%, respectively, have been reported in women UNS, whereas in men, prevalence rates were of 8.5% and 14.9%, respectively (Forney & Ward, 2013; Lipson & Sonnevile, 2017; Sepúlveda, Carrobbles & Garandillas, 2008).

In Mexico, a higher prevalence of REB has been found among UNS than in the general population (Díaz de León, 2013; Núñez et al., 2008; Rodríguez, Oudhof, González-Arratia, Unikel-Santoncini & Becerril-Bernal, 2006; Saucedo-Molina & Unikel, 2010).

The National Survey of Health and Nutrition, ENSA-NUT-2012 (Gutiérrez et al., 2012) reported an increase in the frequency of REB in teenagers from 2006 to 2012 (Olaiz et al., 2006) in both women (from 0.9% to 1.9%) and men (from 0.4% to 0.8%). Other nationwide studies on UNS reported prevalence rates between 6.1% and 18.9% in women (Alvarez et al., 2003; Díaz de León, 2013; Kim et al., 2018), and between 1.9% and 13.0% in men (Cruz, Ávila, Cortés, Vázquez & Mancilla, 2008; Kim et al., 2018; Morán, Cruz & Iñárritu, 2009).

Although women are considered to have a higher prevalence of REB, studies have begun on men in the last few years. The stigma of considering REB and ED as female disorders, remains, and clinicians do not recognize that some men need help. Recent research, however, has found that concerns regarding weight and body image are present in men and they are different from women (Murray et al., 2017; Strother, Lemberg, Chariese & Turberville, 2012).

In the past decade, changes in the behavior of adolescent and young adult men attributable to the desire for a more muscular body have raised concerns. Whether for athletic or aesthetic reasons, these changes can have consequences on their physical and mental health (Cafri et al., 2005). Strother et al. (2012) suggest that men face negligence in the diagnosis and treatment of illnesses such as ED, since most of the studies on the subject were conducted on women. Weltzin et al. (2005) published a literature review in which it was found that 10% of anorexia and bulimia nervosa cases occur in men. In a representative sample carried out between 2001 and 2003 in the United States (*National Comorbidity Survey Replication*), Hudson, Hiripi, Pope and Kessler (2007) found that 25% of ED cases occurred in men. Some conditions have been suggested as possible predisposing factors for REB in males, such as body dissatisfaction, negative affect, body mass index (BMI), participation in sports and drive for muscularity (Cafri et al., 2005). Taking this data into account, it was decided to explore those predisposing factors in both women and men and to add the characteristic of an internalization of the aesthetic ideal of thinness, which is a recognized variable associated with REB in women (Thompson & Stice, 2001).

The hypothesis of this study was that the characteristics that put women and men at risk of developing REB are different. Therefore, the purpose of this study was to identify specific characteristics associated with REB in women and men UNS.

Method

Participants

A total of 1,430 students from Biological and Health Sciences (BHS), Social Sciences and Humanities (SSH), and Sciences and Arts for Design (SAD), from the Universidad Autónoma Metropolitana, Xochimilco (UAM-X) campus, in Mexico City, were invited to participate in February 2017. The inclusion criteria were: being a student enrolled at the university, participating on a voluntary basis, and completing the survey. There were 66 students who did not agree to participate in this survey. The exclusion criteria were: Students who participated in previous phases of this study ($n = 10$), students under 18 years ($n = 2$) and pregnant women ($n = 3$). The sample eventually included 1,349 students: 779 (57.7%) women and 570 (42.3%) men, with a response rate of 94.3%.

Instruments and measures

Socioeconomic status (SES) was measured using the index developed by the Mexican Association of Market Research and Public Opinion Agencies (2011), which proposes seven categories from A/B to E. The highest SES is defined as “A/B”, and this segment covers all welfare needs and is the only level that has resources to invest and plan for the future. The second group of living is “C+”. Like the previous segment, this covers all the needs of quality of life, however, it has certain limitations regarding investing and saving for the future. Segment “C” is characterized as having reached a standard of practical living and having certain amenities, entertainment and technology. At level “C-”, homes are characterized as having covered the needs of space and sanitation and as having equipment to ensure the minimum comfort at home. Segment “D+” is characterized as having the minimum sanitary

infrastructure at home, followed by “D”. The poorer segment with lower quality of life or well-being is “E”, lacking all satisfactory services and goods.

Brief Questionnaire of Risky Eating Behaviors (BQREB; Unikel-Santoncini, Bojórquez-Chapela & Carreño-García, 2004), which proposes the following two cut-off points, was used to determine the frequency of REB: 1. score between 7 and 10, moderate frequency of REB (MF-REB), and 2. score > 10, high frequency of REB (HF-REB). These frequencies have also been interpreted as indicating the probability of suffering an ED, in other words, being at a moderate or high risk of ED, respectively. Subjects who receive a score of less than 7 are regarded as not being at risk. Cronbach’s α was .83 and the questionnaire was divided into three factors (Unikel-Santoncini et al., 2004). The internal consistency of the scale for this sample was .70 for females and .58 for males.

Questionnaire of Attitudes toward Body Figure (Unikel, Juárez & Gómez, 2006) was utilized for to estimate the presence of the internalization of the aesthetic ideal of thinness. These was included with a cut-off point ≥ 37 , with $\alpha = .93$. In this sample, the internal consistency of the scale was .92 for females and .90 for males.

Drive for Muscularity Scale (DMS; McCreary & Sasse, 2000), measure that was validated in the Mexican population by Escoto et al. (2013). This scale has $\alpha = .86$ and is divided into three factors. For the sample of this study, internal consistency was .87 for females and .89 for males.

Positive and Negative Affect Schedule-X (PANAS-X), proposed by Watson and Clark (1992), was utilized for measure negative affect, in which respondents report the degree they have experienced various negative emotional states, such as anger, guilt, depression, and anxiety. The internal consistency of the scale for this sample was .94 for both sexes.

Perception of Teasing Scale (POTS; Chad & Ric, 2010; Thompson, Cattarin, Fowler & Fisher, 1995) was used to identify people who had been teased about their body and way of being. The questionnaire evaluates the frequency of teasing, as well as how much it upset the respondents. The internal consistency of the scale for this sample was .93 for both sexes.

Body dissatisfaction was measured using the questionnaire proposed by Berscheid, Walster and Bohrnstedt (1973), which assess dissatisfaction with nine parts of the body. In the present study, the internal consistency of the scale was .93 for women and .94 for men.

It also inquired about the practice of a sport, with dichotomous answers (yes/no), distinguishing this action from ordinary physical activity such as walking, climbing stairs or household chores.

Finally, weight (in kg) and height (in mts) were measured to calculate the BMI. Students previously trained in anthropometric techniques obtained the measures. The scales used were SECA brand, Robusta 813 and Bellisima 841 models, and the wall stadiometers were the SECA brand, model 206. BMI was classified according to the categories proposed by the World Health Organization (2018): underweight ≤ 18.4 , normal weight between 18.5 and 24.9, overweight from 25 to 29.9, and obesity ≥ 30 kg/m².

Procedure

A cross-sectional survey was applied to UNS and anthropometric measurements were taken. The facilitators and those taking the anthropometric measurements were students from the nutrition degree program. The respondents’ participation was voluntary, participants were informed about the confidentiality of the data and they did not receive any economic or academic incentive to participate. Those who decided to participate signed a Letter of Informed Consent for Research, of which they were given a copy. This work is attached to research protocol “Disordered eating behaviors and eating disorders prevention in university students”, which was reviewed and approved by the Academic Board of Biological and Health Sciences at UAM-X.

Statistical analysis

All results were analyzed by sex. The variables of age, BMI, academic division and SES were used in the descriptive analysis, and simple frequencies and χ^2 tests were estimated. The dependent variable, REB, was divided into three categories: no REB, MF-REB, and HF-REB. A 2 x 3 table was developed for the bivariate

analysis, followed by a multinomial logistic regression for the multivariate analysis. In the multinomial logistic regression, two models were set up for both sexes: Model 1, group without REB vs. group with MF-REB, and Model 2, group without REB vs. group with HF-REB. The independent variables were: internalization of the aesthetic ideal of thinness, drive for muscularity, body dissatisfaction, having been teased about one's body and way of being, negative affect, BMI and practicing any sport. The dependent variable was REB, with three categories. A p -value $< .05$ was considered statistically significant and confidence intervals were estimated at 95%. The statistical package STATA v. 11 was used for data processing.

Results

The sample consisted of 1,349 students, 57.7% ($n = 779$) were women and 42.3% ($n = 570$) men. The average age was 20.1 years ($SD = 2.7$) for women and 21.2 years ($SD = 3.3$) for men; 43.2% ($n = 245$) of the men were enrolled in a degree course in the SSH field, while 52.0% ($n = 405$) of the women were enrolled in the field of BHS; 23.2% ($n = 182$) of the women and 27.9% ($n = 159$) of the men were found on the second highest level of the SES scale. Regard BMI, 60.2% ($n = 469$) of the women and 51.3% ($n = 290$) of the men were found to be in the normal weight category (Table 1).

Table 1. Description of the participants by sex

| | Women = 779 <i>n</i> (%) | Men = 570 <i>n</i> (%) | Total = 1349 <i>n</i> (%) | <i>p</i> |
|-----------------------------|-----------------------------|---------------------------|------------------------------|----------|
| Age groups | | | | |
| 18-19 | 426 (54.7) | 191 (33.7) | 614 (45.8) | .000 |
| 20 to 24 | 310 (39.9) | 312 (55.0) | 621 (46.3) | |
| 25 and older | 43 (5.4) | 64 (11.3) | 106 (7.9) | |
| Body mass index | | | | |
| Underweight | 40 (5.2) | 21 (3.7) | 61 (4.5) | .002 |
| Normal weight | 469 (60.2) | 290 (51.3) | 757 (56.5) | |
| Overweight | 196 (25.1) | 178 (31.5) | 373 (27.8) | |
| Obesity | 74 (9.5) | 76 (13.5) | 150 (11.2) | |
| Academic division | | | | |
| SSH | 283(36.4) | 245(43.2) | 525(39.3) | .000 |
| BHS | 405(52.0) | 206(36.3) | 606(45.4) | |
| SAD | 90(11.6) | 116(20.5) | 205(15.3) | |
| Socioeconomic status | | | | |
| E* | 0(0.0) | 1(0.2) | 1(0.1) | .001 |
| D | 64(8.2) | 32(5.6) | 96(7.1) | |
| D+ | 116(14.9) | 72(12.6) | 188(13.9) | |
| C- | 156(20.0) | 79(13.9) | 235(17.4) | |
| C | 150(19.3) | 111(19.5) | 261(19.3) | |
| C+ | 182(23.4) | 159(27.9) | 341(25.3) | |
| AB** | 111(14.2) | 116(20.4) | 227(16.8) | |

Notes. AB** = Highest socio-economic level, BHS = Biological and health sciences, E* = Lowest socio-economic level, SAD = Sciences and art for design, SSH = Social sciences and humanities.

The prevalence of MF-REB and HF-REB among women was 23.0% and 10.1%, respectively; the corresponding prevalence for men was 22.3% and 6.7%, respectively. No statistically significant difference between the sexes was found ($p = .07$).

Bivariate analysis

Except for drive for muscularity, significant associations ($p < .05$) were found in women between the different categories of frequency of REB and the rest

of the independent variables, whereas significant associations between REB and all the study variables were found in males. Approximately 40.0% of the women and 47.0% of the men with a presence of internalization of the aesthetic ideal of thinness showed MF-REB, compared with subjects who did not display it ($p = .0001$). The 36.3% of the women and 45.8% of the men who had been teased were found to have MF-REB ($p = .0001$), see Table 2.

Table 2. Risky eating behaviors and their association with psychological characteristics related to body image, negative affect, body mass index, and practicing a sport.

| | Women (n = 779) | | | p | Men (n = 570) | | | p |
|---|-----------------|---------------------------|-----------------------|------|---------------|---------------------------|-----------------------|------|
| | No REB | Moderate frequency of REB | High frequency of REB | | No REB | Moderate frequency of REB | High frequency of REB | |
| | n (%) | n (%) | n (%) | | n (%) | n (%) | n (%) | |
| Internalization of the aesthetic ideal of thinness | | | | | | | | |
| Without | 509 (72.3) | 145 (20.6) | 50 (7.1) | .000 | 392 (75.6) | 103 (19.8) | 24 (4.6) | .000 |
| With | 14 (18.7) | 33 (44.0) | 28 (37.3) | | 13 (25.5) | 24 (47.0) | 14 (27.5) | |
| Drive for muscularity | | | | | | | | |
| Without | 463 (68.4) | 150 (22.2) | 64 (9.4) | .14 | 361 (73.0) | 108 (21.9) | 25 (5.1) | .000 |
| With | 60 (58.3) | 28 (28.0) | 14 (13.7) | | 44 (57.9) | 19 (25.0) | 13 (17.1) | |
| Body dissatisfaction | | | | | | | | |
| Without | 128 (87.6) | 15 (10.3) | 3 (2.1) | .001 | 99 (84.6) | 14 (12.0) | 4 (3.4) | .001 |
| With | 395 (62.4) | 163 (25.8) | 75 (11.8) | | 306 (67.6) | 113 (24.9) | 34 (7.5) | |
| Teasing | | | | | | | | |
| Without | 484 (71.4) | 141 (20.9) | 52 (7.7) | .000 | 383 (76.9) | 94 (18.9) | 21 (4.2) | .000 |
| With | 39 (38.2) | 37 (36.3) | 26 (25.5) | | 22 (30.6) | 33 (45.8) | 17 (23.6) | |
| Negative affect | | | | | | | | |
| Without | 480 (70.9) | 145 (21.4) | 52 (7.7) | .000 | 364 (74.0) | 99 (20.1) | 29 (5.9) | .001 |
| With | 43 (42.1) | 33 (32.4) | 26 (25.5) | | 41 (52.6) | 28 (35.9) | 9 (11.5) | |
| Body mass index | | | | | | | | |
| Underweight | 36 (90.0) | 4 (10.0) | 0 (0) | .000 | 21 (100) | 0 (0) | 0 (0) | .000 |
| Normal weight | 339 (72.6) | 97 (20.8) | 31 (6.6) | | 243 (83.8) | 40 (13.8) | 7 (2.4) | |
| Overweight | 111 (56.9) | 51 (26.2) | 33 (16.9) | | 91 (51.2) | 67 (37.6) | 20 (11.2) | |
| Obese | 35 (47.3) | 25 (33.8) | 14 (18.9) | | 46 (60.5) | 20 (26.3) | 10 (13.2) | |
| Practicing any sport | | | | | | | | |
| No | 317 (73.6) | 85 (19.7) | 29 (6.7) | .000 | 170 (78.0) | 40 (18.3) | 8 (3.7) | .008 |
| Yes | 205 (59.1) | 93 (26.8) | 49 (14.1) | | 234 (66.7) | 87 (24.8) | 30 (8.5) | |

Note. REB = Risky eating behaviors.

Multivariate analysis

In women, a statistically significant association was found between all the study variables and the likelihood of displaying REB, except for drive for muscularity. In Model 1, the highest risk was reported for the variables body dissatisfaction (OR = 2.9; *p* = .0001; CI = 1.56-4.93) and having been teased (OR = 2.1; *p* = .006; CI = 1.22-3.56). In Model 2, the risk of REB was found in association with the variables: body dissatisfaction (OR = 5.5; *p* = .006; CI = 1.61-18.66), negative affect (OR = 3.8; *p* = .0001; CI = 1.98-7.41), internalization of the aesthetic ideal of thinness (OR = 3.6; *p* = .0001; CI = 1.97-6.86), and practicing any sport (OR = 2.8; *p* = .0001; CI = 1.63-4.88), see Table 3. Among men, Model 1 suggests that the highest risk of REB was observed in the condition of having been teased (OR = 4.4; *p* = .0001; CI = 2.37-8.37) and BMI (OR = 2.1; *p* = .0001; CI = 1.60-2.87). In Model 2, an increased risk of REB was seen in the variables of having been teased

(OR = 10.3; *p* = .0001; CI = 4.32-24.73), BMI (OR = 3.5; *p* = .0001; CI = 2.09-5.85) and drive for muscularity (OR = 3.4; *p* = .009; CI = 1.35-8.54).

Discussion

The results of this study suggest that characteristics associated with REB vary according to sex, as it was hypothesized. In women, associations were found between internalization of the aesthetic ideal of thinness, body dissatisfaction, having been teased about one’s body and way of being, negative affect, BMI, and REB, which are similar to results that have already been described in the literature. Stice (2001), in his double path model of explaining the etiology of bulimic symptoms in women, posits that internalization of the aesthetic ideal of thinness, body dissatisfaction and negative affect are predisposing conditions

Table 3. Association of risky eating behaviors with the variables of study (multinomial logistic regression)

| | Women | | | Men | | |
|--|-------|----------|------------|------|----------|------------|
| | OR | <i>p</i> | CI 95% | OR | <i>p</i> | CI 95% |
| Model 1. Non-REB group vs. MF-REB group | | | | | | |
| Internalization aesthetic ideal of thinness | 1.8 | .01 | 1.14-3.07 | 1.9 | .04 | 1.04-3.47 |
| Drive for muscularity | 1.1 | .67 | 0.65-1.93 | 1.0 | .93 | 0.52-2.03 |
| Body dissatisfaction | 2.9 | .0001 | 1.63-5.31 | 1.7 | .10 | 0.90-3.26 |
| Teasing | 2.1 | .006 | 1.23-3.59 | 4.4 | .0001 | 2.37-8.37 |
| Negative affect | 1.9 | .013 | 1.15-3.37 | 1.9 | .03 | 1.08-3.62 |
| Body mass index | 1.5 | .001 | 1.17-1.95 | 2.1 | .0001 | 1.60-2.87 |
| Practicing any sport | 1.7 | .003 | 1.21-2.54 | 1.8 | .009 | 1.16-2.97 |
| Model 2. Non-REB group vs. HF-REB group | | | | | | |
| Internalization aesthetic ideal of thinness | 3.6 | .0001 | 1.97-6.86 | 1.1 | .75 | 0.43-3.16 |
| Drive for muscularity | 1.1 | .67 | 0.56-2.55 | 3.4 | .009 | 1.35-8.54 |
| Body dissatisfaction | 5.5 | .006 | 1.61-18.66 | 1.6 | .41 | 0.49-5.56 |
| Teasing | 2.4 | .008 | 1.25-4.82 | 10.3 | .0001 | 4.32-24.73 |
| Negative affect | 3.8 | .0001 | 1.98-7.41 | 2.0 | .16 | 0.76-5.39 |
| Body mass index | 2.2 | .0001 | 1.57-3.19 | 3.5 | .0001 | 2.09-5.85 |
| Practicing any sport | 2.8 | .0001 | 1.63-4.88 | 3.1 | .01 | 1.30-7.80 |

Notes. HF-REB = High frequency of risky eating behaviors, MF-REB = Moderate frequency of risky eating behaviors, REB = Risky eating behaviors.

for bulimic symptoms. Moreover, the existence of associations of REB with the internalization of the aesthetic ideal of thinness (Thompson & Stice, 2001), BMI (Unikel, Díaz de León & Rivera, 2016; Unikel, Saucedo-Molina, Villatoro & Fleiz, 2002), and having been teased (Gan, Nasir, Zalilah & Hazizi, 2011; Menzel et al., 2010; Quick, McWilliams & Byrd-Bredbenner, 2013) has been discussed previously.

In women, both in Model 1 (without REB vs. MF-REB) and Model 2 (no REB vs. HF-REB), the variables that increase the risk of REB were the same: internalization of the aesthetic ideal of thinness, body dissatisfaction, having been teased, negative affect, a higher BMI, and practicing any sport, and it was possible to estimate that these associations were stronger in the second model. Similarly, previous results have shown constancy of predisposing variables in women regardless of the frequency and intensity of risk behaviors (Díaz de León-Vázquez, Rivera-Márquez, Bojorquez-Chapela & Unikel-Santoncini, 2017). However, for the male group, the variables that increase the risk of REB were not the same for the two models proposed in the analysis.

Among men with MF-REB, the internalization of the aesthetic ideal of thinness increased the risk of REB, whereas drive for muscularity did not show a significant association with the risk of REB. An analysis of the second model of men with HF-REB showed that drive for muscularity was significantly associated with REB while the association between REB and the internalization of the aesthetic ideal of thinness was no longer significant. This finding may be related to the presence of men with different aesthetic ideals: men who want to be thin and those who wish to be muscular. In this study, men who wish to be muscular have a higher probability of REB. According to literature, about a third of men want to lose weight, another third want to gain muscle and the remaining third are satisfied with their body (Furnham & Calnan, 1998; Middleman, Vazquez & Durant, 1998). These proportions could explain the presence of different variables associated in Model 1 (MF-REB) and Model 2 (HF-REB) in male populations from the present sample. Amaya, Alvarez and Mancilla (2010) found in their systematic review that, among women, it is generally observed that about 70% want to be

thinner. Therefore, predisposing characteristics were similar in Model 1 (MF-REB) and Model 2 (HF-REB) in women, but not for men.

Regarding the risk factors of ED for males proposed by Cafri et al. (2005), in the present study it was only possible to confirm the association between negative affect and REB among men with HF-REB, while the association between REB and BMI and the practice of any sport was present in both models. Considering body dissatisfaction, a very frequent condition among women with REB or ED (Jacobi, Hayward, de Zwaan, Kraemer & Agras, 2004), it was not possible to corroborate this characteristic in the present study in men. In the same way, Neumark-Sztainer, Paxton, Hannan, Haines and Story (2006) found that adolescents (men and women) with lower body dissatisfaction presented more instances of dieting, unhealthy weight control behaviors and binge eating. The variances between the results may be explained by different methodological designs, samples, cultures, age, level or interpretation of the concept of body dissatisfaction.

Considering physical exercise, the literature has reported that people with higher BMI are practicing a sport as the first choice of weight loss strategies. At the same time, sport is the preferred choice among males who want to gain muscle. The American Psychiatric Association (2013) views the practice of a sport as excessive and as a compensatory strategy when it interferes with the development of other important aspects of life. As mentioned earlier, it is common among the general population to use exercise for weight modification, and findings similar to this study have already been reported in other populations. It is important to mention that women use exercise to lose weight, while men use it to acquire muscle mass (Aylwin et al., 2016; Berengüi, Castejón & Torregrosa, 2016).

This study provides evidence on the different conditions that precede ED in women and men. In men, both the internalization of the aesthetic ideal of thinness and drive for muscularity can increase the risk of REB, whereas in women the internalization of the aesthetic ideal of thinness is a constant risk for REB.

The first constraint of this study was the impossibility of extrapolating the results to other population

groups because the sample only represents a specific group of students. The second limitation was that respondents' participation was contingent on the authorization of their class teacher. Nevertheless, its strengths include the fact that it was a representative sample of first-year UNS, a wide battery of scales were applied to both men and women and anthropometric measures of weight and height were collected.

In conclusion, REB were frequent in women as well as in men, and according to the results of this study, no significant differences in prevalence by sex were found. The characteristics associated with the risk of developing REB differ between women and men. Internalization of the aesthetic ideal of thinness, body dissatisfaction and BMI were the main characteristics related to REB in women, whereas in men the main features were drive for muscularity, having been teased, and BMI.

Research on the development and validation of instruments for measuring REB in men is as yet incipient in Mexico. The information generated in this study can be used as a reference point for the development of explanatory models, as well as REB screening instruments. Furthermore, the data can be useful in the design of timely preventive actions for UNS of either sex.

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