DISSATISFACTION WITH BODY IMAGE AND NUTRITIONAL STATUS IN UNIVERSITY STUDENTS

INSATISFACCIÓN DE LA IMAGEN CORPORAL Y ESTADO NUTRICIONAL EN ESTUDIANTES UNIVERSITARIOS

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Abstract

The imposition of the aesthetic model in today's societies, excessively thin in women and muscular for men, leads to the body representation being greatly influenced by these external standards, generating dissatisfaction. Aim: Describe the degree of dissatisfaction with body image, and relationship with objective nutritional status, perception and concordance in university men and women. Materials and Methods: Transactional study of quantitative type with descriptive-correlational scope. The sample was 120 university students (44 men and 76 woman) whit ages between 18 and 28 years. BMI was calculated, and The Multidimensional Body Self Relations Questionnaire (MBSRQ), the "Body Dissatisfaction" sub-scale of the Eating Disorders Inventory in version 2 (EDI-2), and a sociodemographic questionnaire were applied. Results: 17.5% (n= 21) of the sample overestimated their nutritional status. Of these, 90.5% (n= 19) were women. BMI was directly and significantly associated with body image dissatisfaction ($r = .45$; $p < .001$). The overestimation of nutritional status is significantly associated with concern about weight ($p < .05$) and dissatisfaction with body image ($p = .001$). Conclusion: Overestimation of nutritional status is associated with greater dissatisfaction with body image and less positive evaluation of appearance. This could trigger problematic eating behaviors, and eating disorders, which would make it possible to avoid making oneself so distant from the cultural aesthetic ideal.

Keywords: *Body image, Body image dissatisfaction, Assessment scales, Body mass index.*

Resumen

La imposición del modelo estético en las sociedades actuales, excesivamente delgado en las mujeres y musculoso para los hombres, lleva a que la representación corporal se vea muy influida por estos estándares externos, generando insatisfacción con el propio cuerpo, lo que puede desencadenar conductas alimentarias poco saludables. Los jóvenes universitarios son un grupo vulnerable debido a los cambios propios de la juventud. El objetivo del estudio fue describir el grado de insatisfacción con la imagen corporal, y su relación con el estado nutricional objetivo, el percibido y la concordancia en hombres y mujeres universitarios. Para ello se realizó un estudio transaccional de tipo cuantitativo con alcance descriptivo-correlacional. La muestra fue de 120 estudiantes universitarios (44 hombres y 76 mujeres) con edades comprendidas entre los 18 y 28 años. Se calculó el IMC, y se aplicaron los instrumentos Multidimensional Body Self Relations Questionnaire (MBSRQ), la sub-escala "Insatisfacción corporal" del Eating Disorders Inventory en su versión 2 (EDI-2), y un cuestionario sociodemográfico. El 17,5% (n = 21) de la muestra sobreestimó su estado nutricional. De estos, un 90,5% (n = 19) fueron mujeres. El IMC se asoció significativamente con la insatisfacción de la imagen corporal ($r = .45$; $p < .001$). Los estudiantes que sobrestimación su estado nutricional presentaron mayores niveles de preocupación por el peso ($F = 13,37$; $p < .001$) e insatisfacción con la imagen corporal ($F = 7.24$; $p = .001$) que los estudiantes que lo subestimaron o concordaron. La sobreestimación del estado nutricional se asocia a una mayor insatisfacción con la imagen corporal y una menor evaluación positiva de la apariencia. Ello podría desencadenar conductas alimentarias problemáticas, y trastornos de la conducta alimentaria, que permitiesen no autopercibirse tan distante del ideal estético cultural.

Palabras clave: *Imagen corporal, Insatisfacción con la imagen corporal, Escalas de valoración, Índice de masa corporal.*

Introduction

Body image is a mental representation that each person constructs in relation to his body and experience in terms of feelings, behaviors and attitudes towards his own body (Baile, 2003; Raich, 2004; Rodríguez, Oudhof, González and Unikel, 2010). It is considered a complex and dynamic multidimensional construct (Baile, 2003). In addition, body image is composed of three components: perceptual, cognitive-affective and behavioural (Botella, Ribas and Benito, 2009; Kirszman and Salgueiro, 2015; Raich, 2004; Wertheim and Paxton, 2011). To be more specific, the distinction refers to the way in which the subject perceives, imagines, feels and acts in relation to his own body. In this direction, Slade (1994, p.502) points out *"body image is a broad mental representation of the body figure, its shape and size, which is influenced by historical, cultural, social, individual and biological factors that vary over time"*. Likewise, Van der Hofstadt (2012) points out that body image is related to weight in Western societies. From an evolutionary perspective, body image is built on the integration of how the body feels and lives, starting from how we look and are seen since childhood (Beato-Fernández & Rodríguez-Cano, 2020; Pallan, Hiam, Duda & Adab, 2011). In fact, studies showing that both girls and boys between the ages of 5 and 7 report dissatisfaction, concern and inaccurate perception of body image (Pallan et al., 2011) has been observed even since the age of three (Tremblay, Lovsin, Zecevic and Larivière, 2011).

On the other hand, body image influences the processing of information. Namely, the way we perceive the world is influenced by the way we feel and think about our own body, and we may feel satisfied or dissatisfied with that image (Baile, 2003). Moreover, according to Pruzinsky & Cash (1990), Cash (2004) and Cash and Smolak (2011), there are several interrelated body images: a perceptual image, a cognitive image and an emotional image. It is noteworthy that the emotional image includes feelings about the degree of satisfaction with our figure and with the experiences that our body provides us.

According to the Cash and Deagle meta-analysis (1997), the perceptive body image represents the precision with which a person can judge the physical dimensions of his own body. Self-perception has been categorized as correct (matches objective BMI or body volume data), underestimated (self-perceived with a lower BMI than the person has, or a lower body volume) and overestimated (self-perceived with a higher BMI than the person has, or higher body volume); and the type of valuation could generate bodily satisfaction or dissatisfaction. There are authors who consider that the perceptual distortion is the alteration of perception manifested by an inability to accurately estimate body size (Contreras, Gil-Madrona, Garcia Lopez, Fernández-Bustos and Pastor-Vicedo, 2012).

Regarding dissatisfaction with body image, some longitudinal studies have reported greater dissatisfaction with body image in young adults than in adolescents (Bearman, Presnell, Martinez and Stice, 2006; Bucchianeri, Arikian, Hannan, Eisenberg and Neumark-Sztainer, 2013).

From a research point of view in university students (emerging adult) (Arnett, 2000; Barrera-Herrera & Vinet, 2017), we will mention some studies that seem pertinent to us. A study carried out in Spain by Míguez, De la Montaña, González and González (2011) in a sample of 145 university students, the aim of which was to detect possible eating disorder through self-perception of their body image, found that more than half of the women and men who compose the sample (55% of the women, and 63% of the men) were perceived differently from body mass index values (BMI), noting that men underestimated their weight and women underestimated and overestimated their weight. In addition, this study found that women who were most dissatisfied with their body image were overweight or underweight and those most worried about losing weight were found at the upper limit of normal weight. As for men, those who were overweight and obese were the most dissatisfied and the most obsessed with losing weight. In another study conducted in the same country and directed by Soto et al. (2015), whose objective was to describe the perception of the body image of 1162 university students, it was found that 55,6% had body image perception that did not correspond to objective data (BMI). 9.7% of men and 58.1% of women overestimated their BMI. The authors also found that a significant percentage of students presented alterations in body image perception, being these more frequent in women. Specifically, they found that women had a greater tendency to overestimate their BMI compared to men, whose tendency was to underestimate it.

As for the investigations carried out in Chile, the study carried out by Mujica et al. (2009), with a sample of 1007 subjects, deserves special mention: whose objective was to determine the concordance between nutritional status and self-perception of weight status in adults between 18 and 74 years of age. The result was that 73% of the subjects were overweight or obese and 44% underestimated their nutritional status. 60% of subjects with a BMI between 25 and 26 kg/m2, perceived themselves as normal.

A greater underestimation was observed in subjects with obesity, in overweight individuals, in men and in people between 45 and 59 years of age. This last group presented 70% more risk of underestimating their nutritional status when compared to the age group of 18 to 29 years. The authors concluded that about half of the population studied had an erroneous self-perception of weight, mainly due to underestimation.

More recently in our country, Cruzat et al. (2016, 2017) have investigated body image and its dissatisfaction in different samples of young people. In a sample of 1438 adolescents and young people of whom 68.3% were between the ages of 18 and 25, the researchers found that 70% of adolescent girls and young women wanted to be thinner, showed greater concern for weight and had higher levels of body image dissatisfaction than their male counterparts (Cruzat et al., 2016). In another study Cruzat et al. (2017a) in 376 young people aged 18 to 25 with normal weight and malnutrition due to excess, found that young people with overweight/obesity

presented greater dissatisfaction with body image ($p<0.001$), worse evaluation of their physical condition ($p<0.05$) and greater concern for weight ($p<0.001$) than young people in the normopeso-BMI range (Cruzat et al., 2017a).

In an intercultural study among Chilean and Panamanian university students, Durán et al. (2013) sought to determine the association between nutritional status and body image perception in a sample of 792 students. The results indicated that the perceived BMI was overestimated in 60% of Chileans. In contrast, in the Panamanian sample the overestimation is less than 50%. In both countries, only 20% of the subjects were perceived as they really are. In the Chilean sample, it was specifically found that there is a concordance between BMI and body image in half of Chilean men and one third of Chilean women. However, there is a better agreement in overweight students (69% in men; 90.5% in women). In contrast, in Panamanians, there is a 40 per cent agreement between men and 19.9 per cent between women. In summary, in both university samples, students in the normal weight range tend to overestimate. However, students with obesity tend to underestimate their weight.

Due to the prevalence characteristics of eating disorders and obesity in Chile, we highlight the following studies, so as to contextualize the information more accurately.

On the one hand, studies in general in samples of young people and adults, dissatisfaction with body image is among the most relevant factors that condition food intake and body weight (Cáceres, 2005; Fehrman-Rosas et al., 2016; Gismero González, 2020; Ramos, Rivera y Moreno, 2010; Ramos, Rivera, Pérez, Lara y Moreno, 2016; Williamson et al., 2000). Similarly, it can lead to risky dietary practices (Treasure and Schmidt, 2013) and can be a predisposing and precipitating factor for the development of a body image distortion, diagnostic and psychopathological criteria for eating and eating disorders such as anorexia and bulimia (American Psychiatric Association, 2013; Fairburn, Cooper, and Shafran, 2003; Mölbert et al., 2017).

In this sense, the early detection of the dissatisfaction of the body image and its components, can also have an important role in the prevention of eating disorders.

On the other hand, various studies also show that dissatisfaction with body image is greater in people with excess malnutrition (Cruzat-Mandich et al., 2017; Trejo, Castro, Facio, Mollinedo and Valdez, 2010; Streeter, Milhausen and Buchholz, 2012). Both globally and locally, overweight and obesity are a health problem of global relevance (WHO, 2018; MINSAL, 2017a). Specifically, Chile until 2016 had the second highest level of excess malnutrition in the world, with 34.4% obesity in the adult population (FAO, 2017). Moreover, the latest National Health Survey showed that overweight and obesity continue to increase at the national level (MINSAL, 2017a), despite the implementation of Law 20.606 (MINSAL, 2017b) and various programs such as "choose to live healthy" that have tried to mitigate this situation. In our country, the number of bariatric surgeries in both the private

and public sectors has been increasing year after year (Csendes, 2015; Guzmán et al., 2013). However, all these interventions have not had the expected impact on curbing the prevalence of overweight and obesity, which continues to increase (Ugarte, Quiñones and Vicente, 2019).

The purpose of this study is to address the relationship between body image and dissatisfaction with the image in relation to the objective nutritional status according to BMI, the perceived nutritional status and the concordance between the two.

Aim

The aim of this study was to describe the degree of dissatisfaction with body image between men and women, and its relationship with the objective nutritional status, the perceived and the concordance between these, in students of Psychology at the University of San Sebastian.

Material and Method

A quantitative study of descriptive-correlational scope was carried out, using a non-experimental design based on a cross-sectional survey. The sample was made up of 120 students (44 men and 76 women) from the Psychology career of the University of San Sebastian, Concepcion headquarters. Students from the courses between 1 and 5 years were included, selected on the basis of a non-probability sample for accessibility to the sample.

The inclusion criteria were to be a university student over the age of 18 and without visual impairment. And those of exclusion, presenting sensory-perceptive limitations (particularly visual limitation) that prevent performance in the tests. The participants responded a self-administered questionnaire that included socio-demographic data built especially for this research. In addition, the scales "Multidimensional Body Self Relations Questionnaire (MBSRQ)", and the sub-scale "Body Dissatisfaction" of the "Eating Disorders Inventory in its version 2 (EDI-2)."

Outcome variables

Objective nutritional status: was determined by calculation of BMI. This index was calculated by dividing the weight by the square size (BMI= weight in Kg/ size 2 in metres). Thus, nutritional status was classified according to World Health Organization standards as: low weight<18.5Kg/m2, normal 18.5 to 24.9 Kg/m2, overweight 25 to 29.9 Kg/m2 and obesity BMI > 30 Kg/m2. For the calculation of the BMI, a Seca 762 scale was used, which is a mechanical scale with fine graduation, with a maximum capacity of 150 kg and a margin of error of 50 grams. The size was measured with a mobile Seca 217 meter, measuring up to a size of 205 cm, with a margin of error of 1 mm.

Perceived nutritional status: It was evaluated from the self-perception of the nutritional status of the students. In order to record their nutritional self-perception, the dossier of instruments asked them the question "How do you feel about your

nutritional status?" whose possible response alternatives were 'underweight', 'normal weight', 'overweight', 'obese'.

Concordance between objective and self-perceived nutritional status: In relation to the degree of concordance between objective and subjective nutritional status (self-perception), three possibilities were distinguished according to the subject's own classification. First, weight was considered to be underestimated when it was classified in a category of nutritional status lower than the corresponding according to clinical criteria (BMI). Secondly, it was established as an overestimation of the weight itself when it was classified in a higher category than the corresponding one. Third: it was established as a concordance when it was classified in the same nutritional status category according to clinical criteria.

Psychometric instruments:

Multidimensional Body Self Relations Questionnaire (MBSRQ): A questionnaire that evaluates attitudinal aspects of body image and attitudes towards one's physical appearance. It was created by Brown, Cash and Mikulka (1990), to evaluate the components of: satisfaction with the aspect of oneself, concern for body image, self-perception of physical form, evaluation of one's own health/illness, intention to follow a healthy lifestyle, concern for weight, self-rating regarding weight and satisfaction with various areas of the body. It is a self-applied questionnaire that consists of 69 items that allude to different attitudes towards body image, is answered in Likert format of five points where 1 is "totally disagreeing" to 5 "totally agreeing", according to the degree that you feel identified with the item. Its Spanish version was validated by Botella, Rivas and Benito (2009), and in Chile it was validated by Cruzat et al. (2017b). The Spanish version (Botella et al., 2009) obtained internal consistency rates higher than α= . 7 for all subscales. The factorial analysis of the Chilean validation Cruzat el at. (2017b) reported a structure of seven factors. Factor I (Orientation and evaluation of physical activity), Factor II (Evaluation of appearance), Factor III (Weight concern), Factor IV (Appereance orientation), Factor V (Health orientation), Factor VI (Evaluation of disease) and Factor VII (Disease orientation). And the internal consistency of the factors was α= 0.92 for *orientation and evaluation of physical activity* (Factor I), α = . 91 for *appearance evaluation* (Factor II), α= . 70 for *weight concern* (Factor III), α = . 84 for *appearance orientation* (Factor IV), α = . 74 for *health orientation* (Factor V), α = . 70 *evaluation of disease* (Factor VI), and α = . 70 for *disease orientation* (Factor VII).

Sub-scale Body Dissatisfaction of the Eating Disorders Inventory in its version 2 (EDI-2): The EDI-2 scale was created by David Garner in 1983. It is a scale that measures psychological symptoms commonly associated with anorexia nervosa, bulimia nervosa, and other eating disorders. In Chilean population it was adapted by Urzúa, Castro, Lillo and Leal (2009). The current scale of EDI-2 evaluates 11 subscales through 91 items. For the present investigation, only the "body dis-

satisfaction" sub-scale composed of 9 items was used, with a response format on a six-point Likert scale: "always", "almost always", "frequently", "sometimes", "rarely" or "never". This sub-scale has shown good reliability rates in the Chilean population (α = .77).

Sociodemographic questionnaire. An ad hoc questionnaire was constructed for this research. This questionnaire recorded data such as sex, age, career year and morbid background

Statistical analysis:

The variables were described as normal according to the Shapiro Wilk test. The Student t-test was used to study the relationship between sex and body image and dissatisfaction with body image. One-factor ANOVA was used to assess whether students showed differences in dissatisfaction with body image according to the degree of agreement with their objective nutritional status (match, underestimates, overestimates).

Ethical considerations: All participants signed an Informed Consent. In addition, this research included a review of the main ethical principles protocols for human research, the Helsinkin Declaration in Spanish 2013, the Nuremberg Code and Standards of Good Clinical Practice (GCP), both in the collection and codification of data for the safeguarding of information according to the corresponding ethical requirements.

Results

Of the sample, 37.2% (n=44) were men and 62.8% (n=76) were women. The average age was 21.4 years (SD=2.0), with a minimum of 18 years and a maximum of 28 years. The average BMI was 24.6 kg/m2 (SD= 4.3), with a minimum of 17.4 kg/m2 and a maximum of 44.9 kg/m2. In terms of sex, it was found that the average BMI in men was 25.1 kg/m2 and in women 24.4 kg/m2.

In terms of objective nutritional status, 60.8% of the sample was classified according to their BMI in the category normal weight, 27.5% in overweight and 11.7% in obesity. Regarding the perceived nutritional status, 51.7% of the participants self-rated in a category of "normal weight", 41.7% in "overweight" and 6.6% in the category "obesity". The detail breakdown by sex is shown in Table 1.

In another order of things, the reliability analysis of the instruments for this study, indicate a cronbach alpha of α= . 83 for the EDI-2 body image insatifaction subscale. Cronbach's alpha for the *Multidimensional Body Self Relations Questionnaire scale* factors was α= . 91 for Factor I (Orientation and evaluation of physical activity) and II (Evaluation of appearance), α= . 66 for Factor III (Weight concern), α= . 82 for Factor IV (Appearance orientation), α= . 74 for Factor V (Health orientation), α= . 71 for Factor VI (Disease evaluation), and α= . 51 for Factor VII (Disease orientation).

Table 1. *Distribution by gender in objective and perceived nutritional status.*

Gender	Objective nutritional status			Self- perceived nutritional status		
	Normal weight n (%)	Overweight n (%)	Obesity n (%)	Normal weight n (%)	Overweight n (%)	Obesity n (%)
Man	24 (54.5%)	14 (31.8%)	6 (13.6%)	27 (61.4%)	16 (36.4%)	1 (2.3%)
Woman	49(64.5%)	19(25.0%)	8(10.5%)	35 (46.1%)	34 (44.7%)	7(9.2%)

The analyses do not show significant differences between gender and nutritional status (X2= 1.15; p= .5) and self-perceived (X2=3.74; p= .15) when analysed differently.

However, in relation to the degree of concordance between the objective and self-perceived nutritional status, it was found that 69.2% (n= 83) of the participants were correctly classified in their objective nutritional status. While 17.5% (n= 21) overestimated their nutritional status and 13.3% (n= 16) underestimated it. Of the 16 students who underestimated their weight, 62.5% (n=10) were males. While of the 21 students who overestimated their weight, 90.5% (n= 19) were female. These differences between degree of concordance and gender were significant (X2=11.39; p=003) and are presented in Table 2.

Table 2. *Degree of concordance between objective and self-perceived BMI and gender.*

Gender	Degree of concordance		
	Underestimate n (%)	Match n (%)	Overestimate n (%)
Man	10 (62.5%)	32 (38.6%)	2 (9.5%)
Woman	6 (37.5%)	51 (61.4%)	19 (90.5%)
Total	16 (100%)	83 (100%)	21 (100%)

Regarding the relationship between gender, body image and dissatisfaction with body image, significant differences between men and women were observed only in the factors of the MBSRQ "orientation and evaluation of physical activity" a factor in which men presented a significantly higher mean (M= 56.2 ;SD= 17.3 versus M= 45.2; SD= 12.7; t= 4.00; p< .001), and "Appearance orientation", a factor in which the mean for women is significantly higher (p< .05). The effect size was .72 (large effect) for Factor I, and . 39 (small effect) for Factor IV (Cohen, 1988) (see Table 3).

Table 3. *Relationship between gender, body image and dissatisfaction with body image.*

Variable	Man M (SD)	Woman M (SD)	*t*	Cohen's d
Factor I (Orientation and evaluation of physical activity)	56.2 (17.3)	45.2(12.7)	4.00***	.72
Factor II (Appeareance evaluation)	44.7(15.8)	42.8(12.4)	.73	-
Factor III (Weight concern)	11.16(4.9)	12.3(4.3)	-1.33	-
Factor IV (Appereance orientation)	45.9(12.8)	50.0(8.0)	-2.16*	.39
Factor V (Health orientation)	24.1(8.6)	24.0(5.4)	.05	-
Factor VI (Disease evaluation)	11.1(6.0)	12.6(4.0)	-1.60	-
Factor VII (Disease orientation)	18.6(6.3)	17.3(4.0)	1.40	-
Sub-scale EDI-2 Dissatisfaction with body image	21.4 (12.2)	12.2 (10.2)	-1.24	-

*p < .05, **p < .01,***p < .001

Then, the analysis of correlations showed a direct and significant association between the BMI of the students and the dissatisfaction of body image, evaluated through the sub-scale of EDI-2 ($r = .45$; $p < .001$). That is, the higher the BMI the higher levels of instafisfaction with body image.

As for the association of the BMI with the MBSRQ subscales, the correlations showed significant associations only in factors II and III. An inverse association was observed between factor II (appearance evaluation) and BMI ($r= -.30$; $p= .001$), and a direct association between BMI and factor III (weight concern) ($r= .38$; $p < .001$). The higher the BMI, the lower the positive evaluation of the appearance and the greater the concern for the weight.

Finally, differences in body image and dissatisfaction with body image were evaluated, according to the degree of concordance with nutritional status. In this case, significant differences were found in two factors of MBRSQ, Factor III (weight concern) ($F = 13.37$;$p < .001$) and Factor IV (appereance orientation) ($F= 9.22$; $p < .001$). In factor VI (disease evaluation) the differences were close to the significance ($F = 2.94$; $p = .057$). In addition, differences in body image dissatisfaction were found ($F= 7.24$; $p < .001$) (See Table 4).

Table 4. *Relationship between body image and dissatisfaction with the degree of concordance between objective and self-perceived BMI.*

Variable	Underestimate M(SD)	Match M(SD)	Overestimate M(SD)	*F*
Factor I (Orientation and evaluation of physical activity)	50.7(12.8)	48.5(12.8)	46.8(13.8)	.42
Factor II (Appeareance evaluation)	41.0(9.45)	43.9(11.5)	39.7(13.1)	1.32
Factor III (Weight concern)	12.0(2.4)	10.7(2.9)	15.2(5.5)	13.37***
Factor IV (Appereance orientation)	47.5(8.0)	46.4(7.99)	54.3 (5.7)	9.22***
Factor V (Health orientation)	23.8(6.0)	23.5(5.2)	24.0 (4.4)	.068
Factor VI (Disease evaluation)	11.7(6.0)	11.4(4.1)	14.1(2.9)	2.94
Factor VII (Disease orientation)	17.2(3.5)	17.6(3.9)	17.2(3.8)	.11
Dissatisfaction with body image (EDI-2)	22.7(8.0)	20.8(9.4)	29.4(9.0)	7.24**

*p < .05, **p < .01,***p < .001

To analyse between which groups the significant differences are specifically presented, a post hoc analysis was performed using the Bonferroni test. The results showed that the students who overestimated their nutritional status had higher levels of concern for weight (difference of means = 3.17; SD= 1.22; p < .05) and greater orientation towards appearance (difference of means = 6.8; SD= 2.5; p < .05) than those who underestimated his weight. Also, students who overestimated their weight had higher levels of weight concern (mean difference = 4.4; SD= .87; p < .001) and greater orientation towards appearance than those who were successful in self-perception (mean difference = 7.97; SD= 1.8; p < .001). Finally, dissatisfaction with body image was significantly greater only among people who overestimated their nutritional status versus those who defined themselves correctly (mean difference = 8.6; SD = 2.2; p = .001).

Discussion

The aim of this research was to describe the degree of dissatisfaction with body image in men and women and its relationship with the objective nutritional status, perceived and concordance between them in university students.

The results found are discussed below:

First, it should be noted that 38.7% of the sample had an BMI corresponding to overweight or obesity. This percentage of students with excess malnutrition confirms that the prevalence of overweight and obesity in university students is high (Durán, Valdés, Godoy and Herrera, 2014).

Secondly, regarding self-perception of nutritional status, it was found that almost 70% of the participants correctly self-perceived. This result, found in our research, does not match the percentages reported in the revised studies (Duran et al., 2013; Mujica et al., 2008), which report a self-perception that does not coincide in the university population. Specifically, the study by Durán et al. (2013) found

higher levels of overestimation. This finding can be explained in terms of how this information was reported. This is because images of anatomical models were not used for this purpose, but rather through a written question and answer.

Thirdly, in relation to the association between body image and gender, our results show that men presented higher scores in the area of physical activity evaluation and women showed a greater orientation towards appearance. This was consistent with studies that indicate that men are more concerned about muscle development and women about thinness (Cruzat-Mandich et al., 2016; Tiggemann, Martins and Churchett, 2008).

In terms of body image satisfaction, it was observed that the greater the BMI, greater dissatisfaction with body image, greater weight concern and worse evaluation of physical appearance. This result is consistent with research in the area, which shows that people with a higher BMI have higher levels of dissatisfaction in these three areas (Cruzat-Mandich et al., 2017; Trejo et al., 2010; Streeter et al., 2012).

The results also show that, students who overestimated their nutritional status had higher levels of concern for weight, greater orientation and appearance concern and greater dissatisfaction with body image than students who correctly self-perceived or underestimated their nutritional status. This result is consistent and expected according to literature (Cruzat-Mandich et al., 2017; Trejo et al., 2010; Streeter et al., 2012). The student perceives his nutritional status in an overestimated way, visualizing that his body volume distances itself more from the cultural aesthetic ideal, which increases dissatisfaction. Dissatisfaction in these cases is therefore independent of actual nutritional status (BMI). This could generate desire a thinner silhouette than perceived (Díaz et al., 2019), and in consequence trigger unhealthy eating behaviors and eventually a eating disorder (Cruzat-Mandich et al., 2017; Díaz et al., 2019).

In conclusion, our results in the university population indicate that body dissatisfaction is more related to subjective weight perception than to objective weight. Our interpretation is that the perceived body image is more relevant depending on the imposition of the aesthetic model, excessively thin in women and muscular for men, which is typical of Western societies (Craig, Swinburn, Matenga-Smith, T., Matangi, and Vaughn, 1996; Craig, Halavatau, Comino and Caterson, 1999). This leads to body configuration and representation being strongly influenced by these cultural standards, generating frustration and dissatisfaction with body image when this standard has not been reached. This is an aspect to consider in public health, since this dissatisfaction with body image can be a risk factor for the development of eating disorders (Cruzat-Mandich et al., 2017; Díaz et al., 2019).

Limitations of the study

The limitations of this study were type of sampling, small sample size and a predominant sample of women.

Scope and future lines of research.

It is suggested to carry out random studies with larger samples, of different careers, in order to generalize the results to the age group. Also, to evaluate the presence and relationship between constructs evaluated and symptoms of eating disorders in this type of population.

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